

# **KAHUNA MAVERIK**

PRODUCTION SWITCHER CONTROL SURFACE

## **User Manual**

13-06514-020

2020-12-17

(Document 1 of 2)

www.grassvalley.com

## FCC Compliance

In order to comply with FCC/CFR47: Part 15 regulations, it is necessary to use high-quality, triple-screened Media or Monitor cable assemblies with integrated ferrite suppression at both ends.

## **Patent Information**

This product may be protected by one or more patents.

For further information, please visit: www.grassvalley.com/patents/

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Warranty information is available from the Legal Terms and Conditions section of Grass Valley's website.

(See www.grassvalley.com.)

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## **Important Safety Information**

This section provides important safety guidelines for operators and service personnel. Specific warnings and cautions appear throughout the manual where they apply. Please read and follow this important information, especially those instructions related to the risk of electric shock or injury to persons.

### **Symbols and Their Meanings**



Indicates that dangerous high voltage is present within the equipment enclosure that may be of sufficient magnitude to constitute a risk of electric shock.



Indicates that the user, operator or service technician should refer to the product manuals for important operating, maintenance, or service instructions.



This is a prompt to note the fuse rating when replacing fuses. The fuse referenced in the text must be replaced with one having the ratings indicated.



Identifies a protective grounding terminal which must be connected to earth ground prior to making any other equipment connections.



Identifies an external protective grounding terminal which may be connected to earth ground as a supplement to an internal grounding terminal.



Indicates that static sensitive components are present, which may be damaged by electrostatic discharge. Use anti-static procedures, equipment and surfaces during servicing.



Indicates that the equipment has more than one power supply cord, and that all power supply cords must be disconnected before servicing to avoid electric shock.



The presence of this symbol in or on Grass Valley equipment means that it has been tested and certified as complying with applicable Underwriters Laboratory (UL) regulations and recommendations for USA.



The presence of this symbol in or on Grass Valley equipment means that it has been tested and certified as complying with applicable Canadian Standard Association (CSA) regulations and recommendations for USA/Canada.



The presence of this symbol in or on Grass Valley equipment means that it has been tested and certified as complying with applicable Underwriters Laboratory (UL) regulations and recommendations for USA/Canada.

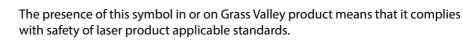


The presence of this symbol in or on Grass Valley equipment means that it has been tested and certified as complying with applicable Intertek Testing Services regulations and recommendations for USA/Canada.





The presence of this symbol in or on Grass Valley product means that it complies with all applicable European Union (CE) directives.



#### Warnings



A warning indicates a possible hazard to personnel, which may cause injury or death. Observe the following general warnings when using or working on this equipment:

•Appropriately listed/certified mains supply power cords must be used for the connection of the equipment to the rated mains voltage.

- This product relies on the building's installation for short-circuit (over-current) protection. Ensure that a fuse or circuit breaker for the rated mains voltage is used on the phase conductors.
- Any instructions in this manual that require opening the equipment cover or enclosure are for use by qualified service personnel only.
- Do not operate the equipment in wet or damp conditions.
- This equipment is grounded through the grounding conductor of the power cords. To avoid electrical shock, plug the power cords into a properly wired receptacle before connecting the equipment inputs or outputs.
- Route power cords and other cables so they are not likely to be damaged. Properly support heavy cable bundles to avoid connector damage.
- Disconnect power before cleaning the equipment. Do not use liquid or aerosol cleaners; use only a damp cloth.
- Dangerous voltages may exist at several points in this equipment. To avoid injury, do not touch exposed connections and components while power is on.
- High leakage current may be present. Earth connection of product is essential before connecting power.
- Prior to servicing, remove jewelry such as rings, watches, and other metallic objects.
- To avoid fire hazard, use only the fuse type and rating specified in the service instructions for this product, or on the equipment.
- To avoid explosion, do not operate this equipment in an explosive atmosphere.
- Use proper lift points. Do not use door latches to lift or move equipment.
- Avoid mechanical hazards. Allow all rotating devices to come to a stop before servicing.
- Have qualified service personnel perform safety checks after any service.

#### Cautions



A caution indicates a possible hazard to equipment that could result in equipment damage. Observe the following cautions when operating or working on this equipment:

- This equipment is meant to be installed in a restricted access location.
- When installing this equipment, do not attach the power cord to building surfaces.
- Products that have no on/off switch, and use an external power supply must be installed in proximity to a main power outlet that is easily accessible.
- Use the correct voltage setting. If this product lacks auto-ranging power supplies, before applying power ensure that each power supply is set to match the power source.
- Provide proper ventilation. To prevent product overheating, provide equipment ventilation in accordance with the installation instructions.

- Do not operate with suspected equipment failure. If you suspect product damage or equipment failure, have the equipment inspected by qualified service personnel.
- To reduce the risk of electric shock, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.
- This unit may have more than one power supply cord. Disconnect all power supply cords before servicing to avoid electric shock.
- Follow static precautions at all times when handling this equipment. Servicing should be done in a static-free environment.
- To reduce the risk of electric shock, plug each power supply cord into separate branch circuits employing separate service grounds.

## **Electrostatic Discharge (ESD) Protection**

Electrostatic discharge occurs when electronic components are improperly handled and can result in intermittent failure or complete damage adversely affecting an electrical circuit. When you remove and replace any card from a frame always follow ESD-prevention procedures:

- Ensure that the frame is electrically connected to earth ground through the power cord or any other means if available.
- Wear an ESD wrist strap ensuring that it makes good skin contact. Connect the grounding clip to an *unpainted surface* of the chassis frame to safely ground unwanted ESD voltages. If no wrist strap is available, ground yourself by touching the *unpainted* metal part of the chassis.
- For safety, periodically check the resistance value of the antistatic strap, which should be between 1 and 10 megohms.
- When temporarily storing a card make sure it is placed in an ESD bag.
- Cards in an earth grounded metal frame or casing do not require any special ESD protection.

## **Battery Handling**

This product may include a backup battery. There is a danger of explosion if the battery is replaced incorrectly. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions. Before disposing of your Grass Valley equipment, please review the *Disposal and Recycling Information* at:

http://www.grassvalley.com/assets/media/5692/Take-Back\_Instructions.pdf

## **Cautions for LCD and TFT Displays**



Excessive usage may harm your vision. Rest for 10 minutes for every 30 minutes of usage.

If the LCD or TFT glass is broken, handle glass fragments with care when disposing of them. If any fluid leaks out of a damaged glass cell, be careful not to get the liquid crystal fluid in your mouth or skin. If the liquid crystal touches your skin or clothes, wash it off immediately using soap and water. Never swallow the fluid. The toxicity is extremely low but caution should be exercised at all times.

## Mesures de sécurité et avis importants

La présente section fournit des consignes de sécurité importantes pour les opérateurs et le personnel de service. Des avertissements ou mises en garde spécifiques figurent dans le manuel, dans les sections où ils s'appliquent. Prenez le temps de bien lire les consignes et assurez-vous de les respecter, en particulier celles qui sont destinées à prévenir les décharges électriques ou les blessures.

#### Signification des symboles utilisés



Signale la présence d'une tension élevée et dangereuse dans le boîtier de l'équipement ; cette tension peut être suffisante pour constituer un risque de décharge électrique.



Avertit l'utilisateur, l'opérateur ou le technicien de maintenance que des instructions importantes relatives à l'utilisation et à l'entretien se trouvent dans la documentation accompagnant l'équipement.



Invite l'utilisateur, l'opérateur ou le technicien de maintenance à prendre note du calibre du fusible lors du remplacement de ce dernier. Le fusible auquel il est fait référence dans le texte doit être remplacé par un fusible du même calibre.



Identifie une borne de mise à la terre de protection. Il faut relier cette borne à la terre avant d'effectuer toute autre connexion à l'équipement.



ldentifie une borne de mise à la terre externe qui peut être connectée en tant que borne de mise à la terre supplémentaire.



Signale la présence de composants sensibles à l'électricité statique et qui sont susceptibles d'être endommagés par une décharge électrostatique. Utilisez des procédures, des équipements et des surfaces antistatiques durant les interventions d'entretien.



Le symbole ci-contre signifie que l'appareil comporte plus d'un cordon d'alimentation et qu'il faut débrancher tous les cordons d'alimentation avant toute opération d'entretien, afin de prévenir les chocs électriques.



La marque UL certifie que l'appareil visé a été testé par Underwriters Laboratory (UL) et reconnu conforme aux exigences applicables en matière de sécurité LISTED électrique en vigueur au Canada et aux États-Unis.



La marque C-CSA-US certifie que l'appareil visé a été testé par l'Association canadienne de normalisation (CSA) et reconnu conforme aux exigences applicables en matière de sécurité électrique en vigueur au Canada et aux États-Unis.



La marque C-UL-US certifie que l'appareil visé a été testé par Underwriters Laboratory (UL) et reconnu conforme aux exigences applicables en matière de sécurité électrique en vigueur au Canada et aux États-Unis.



La marque ETL Listed d'Intertek pour le marché Nord-Américain certifie que l'appareil visé a été testé par Intertek et reconnu conforme aux exigences applicables en matière de sécurité électrique en vigueur au Canada et aux États-Unis.



Le marquage CE indique que l'appareil visé est conforme aux exigences essentielles des directives applicables de l'Union européenne en matière de sécurité électrique, de compatibilité électromagnétique et de conformité environnementale.



Le symbole ci-contre sur un appareil Grass Valley ou à l'intérieur de l'appareil indique qu'il est conforme aux normes applicables en matière de sécurité laser.

#### **Avertissements**



Les avertissements signalent des conditions ou des pratiques susceptibles d'occasionner des blessures graves, voire fatales. Veuillez vous familiariser avec les avertissements d'ordre général ci-dessous :

- Un cordon d'alimentation dûment homologué doit être utilisé pour connecter l'appareil à une tension de secteur de 120 V CA ou 240 V CA.
- La protection de ce produit contre les courts-circuits (surintensités) dépend de l'installation électrique du bâtiment. Assurez-vous qu'un fusible ou un disjoncteur pour 120 V CA ou 240 V CA est utilisé sur les conducteurs de phase.
- Dans le présent manuel, toutes les instructions qui nécessitent d'ouvrir le couvercle de l'équipement sont destinées exclusivement au personnel technique qualifié.
- N'utilisez pas cet appareil dans un environnement humide.
- Cet équipement est mis à la terre par le conducteur de mise à la terre des cordons d'alimentation. Pour éviter les chocs électriques, branchez les cordons d'alimentation sur une prise correctement câblée avant de brancher les entrées et sorties de l'équipement.
- Acheminez les cordons d'alimentation et autres câbles de façon à ce qu'ils ne risquent pas d'être endommagés. Supportez correctement les enroulements de câbles afin de ne pas endommager les connecteurs.
- Coupez l'alimentation avant de nettoyer l'équipement. Ne pas utiliser de nettoyants liquides ou en aérosol. Utilisez uniquement un chiffon humide.
- Des tensions dangereuses peuvent exister en plusieurs points dans cet équipement. Pour éviter toute blessure, ne touchez pas aux connexions ou aux composants exposés lorsque l'appareil est sous tension.
- Avant de procéder à toute opération d'entretien ou de dépannage, enlevez tous vos bijoux (notamment vos bagues, votre montre et autres objets métalliques).
- Pour éviter tout risque d'incendie, utilisez uniquement les fusibles du type et du calibre indiqués sur l'équipement ou dans la documentation qui l'accompagne.
- Ne pas utiliser cet appareil dans une atmosphère explosive.
- Présence possible de courants de fuite. Un raccordement à la masse est indispensable avant la mise sous tension.
- Après tout travail d'entretien ou de réparation, faites effectuer des contrôles de sécurité par le personnel technique qualifié.

### Mises en garde



Les mises en garde signalent des conditions ou des pratiques susceptibles d'endommager l'équipement. Veuillez vous familiariser avec les mises en garde cidessous :

- L'appareil est conçu pour être installé dans un endroit à accès restreint.
- Au moment d'installer l'équipement, ne fixez pas les cordons d'alimentation aux surfaces intérieures de l'édifice.

- Les produits qui n'ont pas d'interrupteur marche-arrêt et qui disposent d'une source d'alimentation externe doivent être installés à proximité d'une prise de courant facile d'accès.
- Si l'équipement n'est pas pourvu d'un modules d'alimentation auto-adaptables, vérifiez la configuration de chacun des modules d'alimentation avant de les mettre sous tension.
- Assurez une ventilation adéquate. Pour éviter toute surchauffe du produit, assurez une ventilation de l'équipement conformément aux instructions d'installation.
- N'utilisez pas l'équipement si vous suspectez un dysfonctionnement du produit. Faites-le inspecter par un technicien qualifié.
- Pour réduire le risque de choc électrique, n'effectuez pas de réparations autres que celles qui sont décrites dans le présent manuel, sauf si vous êtes qualifié pour le faire. Confiez les réparations à un technicien qualifié. La maintenance doit se réaliser dans un milieu libre d'électricité statique.
- L'appareil peut comporter plus d'un cordon d'alimentation. Afin de prévenir les chocs électriques, débrancher tous les cordons d'alimentation avant toute opération d'entretien.
- Veillez à toujours prendre les mesures de protection antistatique appropriées quand vous manipulez l'équipement.
- Pour réduire le risque de choc électrique, branchez chaque cordon d'alimentation dans des circuits de dérivation distincts utilisant des zones de service distinctes.

## Protection contre les décharges électrostatiques (DES)

Une décharge électrostatique peut se produire lorsque des composants électroniques ne sont pas manipulés de manière adéquate, ce qui peut entraîner des défaillances intermittentes ou endommager irrémédiablement un circuit électrique. Au moment de remplacer une carte dans un châssis, prenez toujours les mesures de protection antistatique appropriées :

- Assurez-vous que le châssis est relié électriquement à la terre par le cordon d'alimentation ou tout autre moyen disponible.
- Portez un bracelet antistatique et assurez-vous qu'il est bien en contact avec la peau. Connectez la pince de masse à une *surface non peinte* du châssis pour détourner à la terre toute tension électrostatique indésirable. En l'absence de bracelet antistatique, déchargez l'électricité statique de votre corps en touchant une surface métallique *non peinte* du châssis.
- Pour plus de sécurité, vérifiez périodiquement la valeur de résistance du bracelet antistatique. Elle doit se situer entre 1 et 10 mégohms.
- Si vous devez mettre une carte de côté, assurez-vous de la ranger dans un sac protecteur antistatique.
- Les cartes qui sont reliées à un châssis ou boîtier métallique mis à la terre ne nécessitent pas de protection antistatique spéciale.

## Manipulation de la pile

Ce produit peut inclure une pile de sauvegarde. Il y a un risque d'explosion si la pile est remplacée de manière incorrecte. Remplacez la pile uniquement par un modèle identique ou équivalent recommandé par le fabricant. Disposez des piles usagées conformément aux instructions du fabricant. Avant de vous séparer de votre équipement Grass Valley, veuillez consulter les *informations de mise au rebut et de recyclage* à:

http://www.grassvalley.com/assets/media/5692/Take-Back\_Instructions.pdf

## Précautions pour les écrans LCD et TFT



Regarder l'écran pendant une trop longue période de temps peut nuire à votre vision. Prenez une pause de 10 minutes, après 30 minutes d'utilisation.

Si l'écran LCD ou TFT est brisé, manipulez les fragments de verre avec précaution au moment de vous en débarrasser. veillez à ce que le cristal liquide n'entre pas en contact avec la peau ou la bouche. En cas de contact avec la peau ou les vêtements, laver immédiatement à l'eau savonneuse. Ne jamais ingérer le liquide. La toxicité est extrêmement faible, mais la prudence demeure de mise en tout temps.

## **Environmental Information**

European (CE) WEEE directive.



This symbol on the product(s) means that at the end of life disposal it should not be mixed with general waste.

Visit www.grassvalley.com for recycling information.

Grass Valley believes this environmental information to be correct but cannot guarantee its completeness or accuracy since it is based on data received from sources outside our company. All specifications are subject to change without notice.

If you have questions about Grass Valley environmental and social involvement (WEEE, RoHS, REACH, etc.), please contact us at environment@grassvalley.com.

#### **Lithium Batteries**

#### **Battery Warning**

#### **CAUTION**

This equipment contains a lithium battery. There is a danger of explosion if this is replaced incorrectly. Replace only with the same or equivalent type. Dispose of used batteries according to the manufacturer's instructions. Batteries <u>shall only</u> be replaced by trained service technicians.

Your Grass Valley equipment usually comes with at least one button battery located on the main printed circuit board. The batteries are used for backup and should not need to be replaced during the lifetime of the equipment.

#### **Battery Disposal**

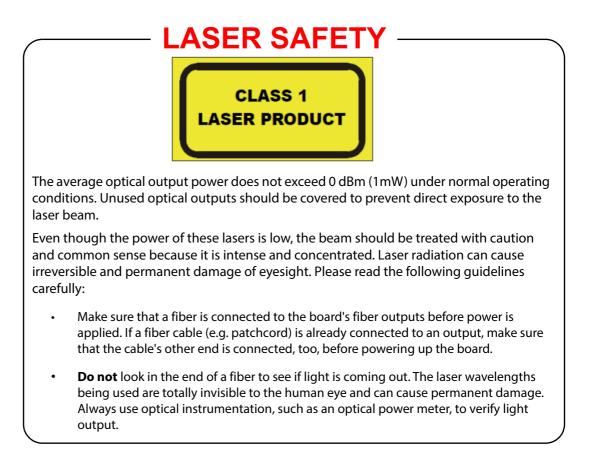
Before disposing of your Grass Valley equipment, please remove the battery as follows:

- 1 Make sure the AC adapter / power Cord is unplugged from the power outlet.
- 2 Remove the protective cover from your equipment.
- 3 Gently remove the battery from its holder using a blunt instrument for leverage such as a screwdriver if necessary. In some cases the battery will need to be desoldered from the PCB.
- 4 Dispose of the battery and equipment according to your local environmental laws and guidelines.

#### WARNING

- Be careful not to short-circuit the battery by adhering to the appropriate safe handling practices.
- Do not dispose of batteries in a fire as they may explode.
- Batteries may explode if damaged or overheated.
- Do not dismantle, open or shred batteries.
- In the event of a battery leak, do not allow battery liquid to come in contact with skin or eyes.
- Seek medical help immediately in case of ingestion, inhalation, skin or eye contact, or suspected exposure to the contents of an opened battery.

#### Laser Safety - Fiber Output SFP and QSFP Modules Warning



#### **Mains Supply Voltage**

Before connecting the equipment, observe the safety warnings section and ensure that the local mains supply is within the rating stated on the rear of the equipment.

Mains Inputs for the Kahuna 9600 Mainframe



#### Mains Inputs for the Kahuna 6400 Mainframe

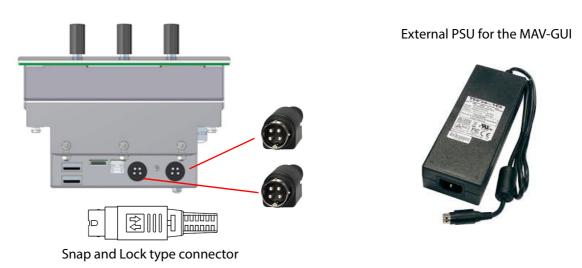
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	0	CAUTION THIS EQUIPMENT HAS MORE THA A ONE POWER CORD. TO REDUCI	8		•
۲	100-B40V AC SOUGHE TEA MAX	A RISK OF ELECTRIC SHOCK DISCONNECT ALL POWER SUPPLY CORDS BEFORE SERVICE	4 <u>1</u>	100-240V AC SQUOHE 16A MAX	000

**MAV-GUI** Power Supplies

Each MAV-GUI that is purchased is supplied with 2 external 12V power supplies. One of the power supplies powers the MAV-GUI, the other is for redundancy.



The Power Supplies have NO user serviceable parts inside and are welded shut. Do not attempt to open the power supply cases.



Note: Make sure that the mains power is turned Off before connecting the PSU to the MAV-GUI.

The power supply connector plug that connects to the MAV-GUI is a 4 pin "Snap and Lock" type, care should be taken when connecting and un-connecting from the MAV-GUI.

Note: Do not allow the power supplies to hang freely from the MAV-GUI. Make sure that the cables are not under any stress.

## Safety and EMC Standards

This equipment complies with the following standards:

**Safety Standards** 

CE

Information Technology Equipment - Safety Part 1

EN60950-1: 2006

Safety of Information Technology Equipment Including Electrical Business Equipment.

UL1419 (4<sup>th</sup> Edition)

Standard for Safety - Professional Video and Audio equipment (UL file number E193966)

#### **EMC Standards**

This unit conforms to the following standards:

EN55032:2015 (Class A)

Electromagnetic Compatibility of multimedia equipment - Emission requirements

EN61000-3-2:2014 (Class A)

Electromagnetic Compatibility - Limits for harmonic current emissions

EN61000-3-3:2013

Electromagnetic Compatibility - Limits of voltage changes, voltage fluctuations and flicker

EN55103-2:2009 (Environment E2)

Electromagnetic Compatibility, Product family standard for audio, video, audio-visual and entertainment lighting control apparatus for professional use. Part 2. Immunity

WARNING This equipment is compliant with Class A of CISPR 32. In a residential environment this equipment may cause radio interference.

FCC / CFR 47:Part 15 (Class A)

Federal Communications Commission Rules Part 15, Subpart B

Caution to the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

#### **EMC Performance of Cables and Connectors**

Grass Valley products are designed to meet or exceed the requirements of the appropriate European EMC standards. In order to achieve this performance in real installations it is essential to use cables and connectors with good EMC characteristics.

All signal connections (including remote control connections) shall be made with screened cables terminated in connectors having a metal shell. The cable screen shall have a large-area contact with the metal shell.

#### **SIGNAL/DATA PORTS**

For unconnected signal/data ports on the unit, fit shielding covers. For example, fit EMI blanking covers to SFP+ type ports; and fit 75  $\Omega$  RF terminators to BNC type ports

#### **COAXIAL CABLES**

Coaxial cables connections (particularly serial digital video connections) shall be made with high-quality double-screened coaxial cables such as Belden 8281 or BBC type PSF1/2M and Belden 1694A (for 3Gbps).

#### **D-TYPE CONNECTORS**

D-type connectors shall have metal shells making good RF contact with the cable screen. Connectors having "dimples" which improve the contact between the plug and socket shells, are recommended.

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Table of Contents

## **Product Overview**

### **Overview**

Note: This manual is part 1 of 2 manuals and is to be used in conjunction with the Kahuna 9600 and 6400 User Instruction Manual, which is part 2of 2. This User Manual refers to the operation of the Kahuna Maverik MAV-GUI menus and the Control Surface MAV Modules Only.

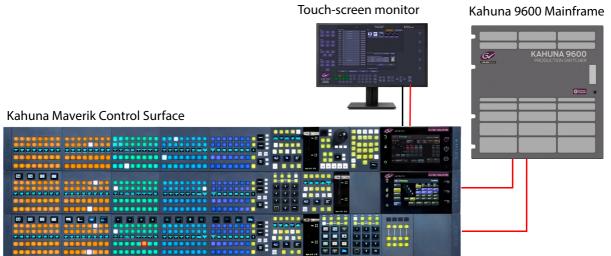
This User Manual relates to the Kahuna Maverik Control Surface, the MAV-GUI and the operation of the Kahuna software. Please see the Kahuna Maverik Installation Manual for connectivity of the Mainframe, Kahuna Maverik Control Surfaces and Ancillary Panels.

Note: Diagrams are for illustration purposes only.

Kahuna Maverik is a revolutionary style of control surface that throws away the rule book for how a switcher control surface should be configured. Splitting the Key elements into smaller modules, with ground breaking new architecture that gives the customer a truly customizable production switcher control surface.

Kahuna Maverik can support the largest multiple-M/E productions with a smaller control surface, making it a perfect solution for OB trucks where space is at a premium. In the studio, Maverik offers complete flexibility to design the control surface in the manner in which the studio is laid out - making complex live productions more efficient and intuitive.

#### Example of Kahuna Maverik and Kahuna 9600



## Kahuna Mainframe Introduction and Overview

#### Kahuna 9600



The Kahuna 9600 and Kahuna 6400 are part of the Kahuna Family of Video Production Switchers.

They both bring advanced functionality and flexibility to meet the most demanding production requirements. Kahuna 9600 and 6400 break the tradition of fixed M/Es, fixed resources and fixed formats, and supports many simultaneous productions that would normally require multiple switchers.

The Kahuna 9600 and Kahuna 6400 have unmatched feature sets that have never been possible until now and offers a completely scalable path to all functionality and format requirements.

Up to 6 Full Mix Effects with Backgrounds A/B, C/D, 4 SuperKeyers and 4 eKeys and 2 Util Buses per M/E. Kahuna mainframes have the ability to mix HD, SD, single link 1080p sources and UHD into a single production and provide multiple outputs of SD, HD and 1080p, FormatFusion3<sup>TM</sup> is available everywhere to give the desired video format.

Any one of the M/E banks on the control surface may be configured to control any of the Kahuna switcher M/Es in the mainframe. Thus a system may have fewer or more M/E switching banks on the control surface than there are actual M/Es in the Kahuna mainframe, up to 16 individual studio's can be created and run from a single Kahuna mainframe.

Kahuna is designed for live studio based production, large sports production, fast paced news, mobile or multi-screen productions.

Kahuna may be configured in a number of different ways to meet requirements for video standards, control protocols, source mapping and video/Key coupling, among others. The various set-up parameters are split into two separate groups.

The configuration settings may be saved for future use allowing various set-up options to be available.

As well as the configuration set-up the actual operation set-up of the panel can be stored. This includes the selected transition, the Key sources, the still store contents and the timeline settings. All these settings are accessed via menus on the GUI and will be explained later in this manual. The Kahuna mainframe can be networked so other mainframes and even more control surfaces can be connected.

The Kahuna mainframe has up to 4 power supplies. These give n+1 or dual redundant capability, depending on the facilities fitted. The Kahuna mainframe requires a minimum of 2 power supplies, however, this gives no redundancy.

All video input and output connections and timing signals are to the mainframe.

Kahuna has up to 120 video inputs and 64 outputs (Kahuna 9600 mainframe), which may be SD, HD,1080p or UHD or any combination of all three. All of the inputs are usable as either video or Key.

Kahuna provides a full mixer/effects architecture with modifiers, wipe patterns, Linear, Non-Additive and Matte Mixes and Fade to Black.

#### The Kahuna Maverik and Kahuna System Components

Switcher Mainframe (Kahuna 9600 - 11RU rack height) or (Kahuna 6400 - 6RU rack height)
MAVRow Frames - (number dependent on customer design)
MAV Modules (number dependent on customer design)
MAV-GUI (number dependent on MAV modules ordered)
Soft MLC GUI (Touch screen) Note: This is an independent customer purchase
2x External DC PSU modules (per MAV-GUI)
For each MAV-GUI that is purchased, there are 16x RJ45 Comms cables supplied:
4x 0.5 meters ~ 1 foot 7.68 inches
8x 1 meters ~ 3 foot 3.37 inches
4x 2 meters ~ 6 foot 6.74 inches

Note: Installation and User Manuals are supplied regardless of system components purchased.

#### **On Receipt of the System**

The equipment is supplied in dedicated packaging provided by the manufacturer and should not be accepted if delivered in inferior or unauthorized materials.

Carefully unpack the system components and check them against the packing list. If there is anything incorrect notify your Grass Valley Partner, or Grass Valley, at once.

Check that the equipment has not been damaged in transit. If any damage has occurred notify your Grass Valley Partner (or Grass Valley) and the carrier immediately.

Always retain the original packing materials if possible, they could prove useful should it ever be necessary to transport or ship the system units.

Read the Installation Manual (separate manual) carefully, it will provide you with helpful hints and tips about care and maintenance and help you get the most out of your Kahuna Maverik and Kahuna.

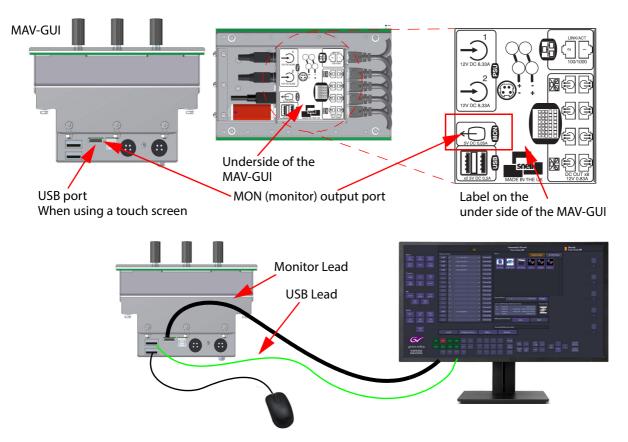
## Kahuna Maverik Quick Setup Guide

**Overview** 

The Quick Setup Guide is designed to enable the user to get the Kahuna Maverik control surface up an running quickly and correctly, to the point where the user can start adding button maps, configuring the system and creating effects.

#### **Connecting the External Soft MLC GUI**

Before setting up the Maverik control surface, the external "Soft MLC GUI" monitor has to be connected. The MAV-GUI has a "monitor" output port on its underside near the USB ports, the monitor port is used to connect to an external "computer" style touch screen monitor. The external monitor will run the "Soft MLC" menus which are used in conjunction with the MAV-GUI to setup, configure and use the Kahuna system. The monitor will need to have a 1920 x 1080 display resolution and it is recommended that the monitor be larger than 21 inches.



**Touch screen monitor** - once the external monitor is connected to the MAV-GUI, a USB control lead (also connected to the MAV-GUI - shown above) is connected, allowing the touch screen functions to be used.

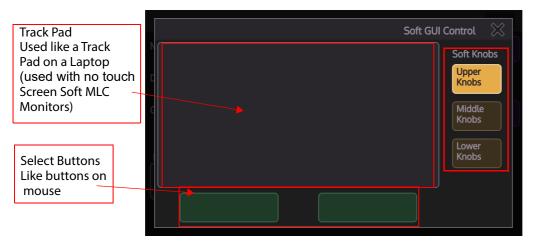
**Non- touch screen monitor** - once the external monitor is connected to the MAV-GUI, a USB mouse (also connected to the MAV-GUI - shown above) is used to control the soft MLC menus on the monitor screen.

Soft MLC GUI Control

The MAV-GUI has an option that allows the rotary controls on the MAV-GUI to be attached to the parameters in the Soft MLC GUI menus.

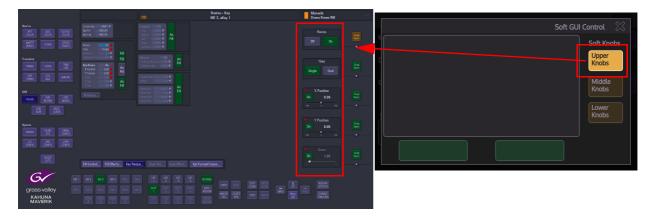


When in any menu, press and hold the **Star** navigation button and a popup menu will appear. The menu has an option button called "**Soft GUI Control**", touch the button and a new menu called "**Soft GUI Control**" will appear.



The menu has 3 "**Soft Knob**" selection buttons; Upper, Middle and Lower (as shown above), touching one of the buttons will attach the 3 rotary controls on the MAV-GUI to the parameter controllers on the Soft MLC GUI menu.

In the diagram below, selecting the "Upper Knobs" button, sets the rotary controls to the top 3 parameter controls.



#### **System Quick Setup**

**Step 1 - Setting the IP Addresses** 

With the Kahuna Maverik control surface laid out and connected up in the desk. The first menu to appear will be the "**Connect**" menu. From this menu and its sub menus, the user can setup the IP addresses for the "**Panel**" (MAV-GUI) and the "**Mainframe**".

**Panel IP Address** 

Touch the **{Panel Config}** menu link button to open the **Panel Configuration** menu.

	k	Kahuna Maverik - Connect	Kahuna Maverik - Panel Configuration 🗌 🔨						
Switcher q	Mainframe :	Maverick	Panel Name	S J Maverik					
News Room	Serial No :	147D-2261-1D55-15F8	Cluster Name	Cluster #1					
			Current Cluster Index	2 New Index 2 Apply New Index					
	Switcher Statu	is : Unused	Current IP Address	10.54.170.76 / 16 Apply New IP Address					
			New IP Address	10.54.170.76 / 16					
			Version	7.7 Release4					
			Serial Number	GUM55040681					
			Touchscreen Version	5 Lamp Test					
Mainframe Finder		Refresh	External Monitor	50 Hz 52.94 Hz 60 Hz (Reboot Required)					
	Config		MSP Config	IP Mainframes Upgrade Panel Clusters Lamp White					

To change the Panel IP address, touch the "**Keyboard**" symbol at the end of the "**New IP Address**" parameter. Then using the on-screen keyboard to input the applicable IP Address. Touch the {**Return**} button to go back to the Panel Configuration menu, and then touch the {**Apply New IP Addresses**} button.

Kahuna Maverik - Panel Configuration 🔼						Panel	Confi	gurati		Kahuna Maverik - Panel Configuration 🗌 🔨			
New	P Addr	ess	124.23	.170.80	/16						$\otimes$	Panel Name	S J Maverik 🗰
1	2					8	9				Back Space	Cluster Name Current Cluster Index	Ctuster #1 2 New Index 2 Apply New Index
q											$\overline{)}$	Current IP Address	10.54.170.76 / 16 Apply New IP Address
Caps Lock											Return	New IP Address	10.54.170.76 / 16
Shift										Sł	nift	Version Serial Number	7.7 Retease4 GUM55040681
												Touchscreen Version	5 Lamp Test
												External Monitor	50 Hz 59.94 Hz 60 Hz (Reboot Required)
												MSP Config	IP Mainframes Upgrade Panel Clusters Lamp White
												L	

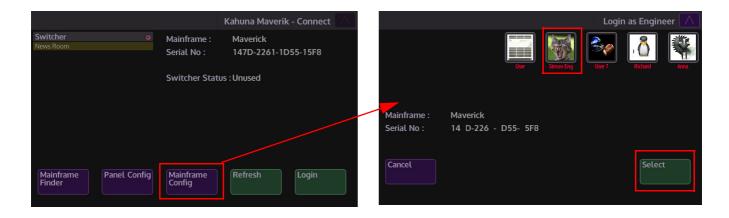
Touch the keyboard symbol for the "**Panel Name**" parameter and a name can be given to the MAV-GUI panel. This is useful to identify the panel if there are a number of MAV-GUIs within a network.

Repeat this step if there is more than one MAV-GUI in the control surface.

#### **Mainframe IP Address**

To get to the Mainframe IP address menu, in the "**Connect**" menu, touch the **{Mainframe Config}** button.

In the "Select Mainframe" touch the {Select} button. If the "Login as Engineer" menu is displayed, touch an "Engineer Login" icon and then touch the {Select} button.



The "Mainframe Configuration" menu is displayed, in this menu, touch the {Mainframe Config} button. Once again, use the "New IP Address" on-screen keyboard to input the applicable IP Address. Touch the {Return} button to go back to the Mainframe Configuration menu, and then touch the {Apply Changes} button.

	Mainframe Configuration			Mainframe Configuration
Predefined Switcher Resource Co	nfigurations	Version	7.8 Release 1	
4K IBC 2015	2M/E + 2M/E	Built	17th Mar 2017 16:43:40	
New Maverik Panel	2ME HDV	Current Address	10.54.170.80 / 16	
		New IP Address	10.54.170.80 / 16	
REDBEE	2ME 4K	Main Jame Name	Maverick	Apply
ALPHA TEST	NAB 2015 Stone JP	Inhibit Master Control	No Yes	
1st rtr fail	ВВС	Network Topology	Dual Link 2 x 8 Port Sw	itch 16 Port Switch
	Mainframe Config Upgrade Config		twork ble Check	

At this point, the mainframe and the panel/panels will be able to communicate with each other.

#### Step 2 - Creating a Cluster

The next thing to do is to "Cluster" all the GUIs together.

Use the rotary control (red in this case) to select a **Cluster Number**, cluster numbers are important for the MAV-GUIs, cluster numbers enable them to know how many MAV-GUIs there are in a single cluster (associates them with each other). Do not use "0" as a cluster number or the cluster setup will not be saved later.

	Kahuna Maverik - Panel Configuration
Panel Name	S J Maverik
Cluster Name	Cluster #1
Current Cluster Index	2 New Index 2 Apply New Index
Current IP Address	10.54.170.76 / 16 Apply New IP Address
New IP Address	10.54.170.76 / 16
Version	7.7 Release4
Serial Number	GUM55040681
Touchscreen Version	5 Lamp Test
External Monitor	50 Hz 59.94 Hz 60 Hz (Reboot Required)
MSP Config	IP Mainframes Upgrade Panel Clusters Lamp White

Next, touch the **{Panel Clusters}** menu link button to setup MAV-GUIs into the same cluster.

		Kahuna Ma	verik - Panel Co	nfiguration 🔨					
Panel Name	S J Maverik								
Cluster Name	Cluster #1								
Current Cluster Index	2 New Index	2 O Apply	New Index				Multi-P	anel Cluste	rs $\triangle$
Current IP Address	10.54.170.76 / 1	6 Apply N	lew IP Address	Visible Clusters Name	Members	Create Cluster	High	light ter	
New IP Address	10.54.170.76 / 1	6 🗰		Cluster #1	1				
Version	7.7 Release4			Cluster #2		Destroy		light	Remove
Serial Number	GUM55040681					Cluster	Pane	el/Module	From Cluster
Touchscreen Version	5					Cluster Name	Cluster #	±1	
External Monitor	50 Hz 59.94 Hz	60 Hz (Rebo	ot Required)	1		closter nume	- coster ,		
				Visible Panels/Modules					
MSP Config	IP	Upgrade	Panel	Name		Serial Number	Туре	Cluster	Index
	Mainframes		Clusters			GUM55040681			
				DNH GUI Proc Simon's Desk		00058100FC59	K360 GUI	Cluster #2	

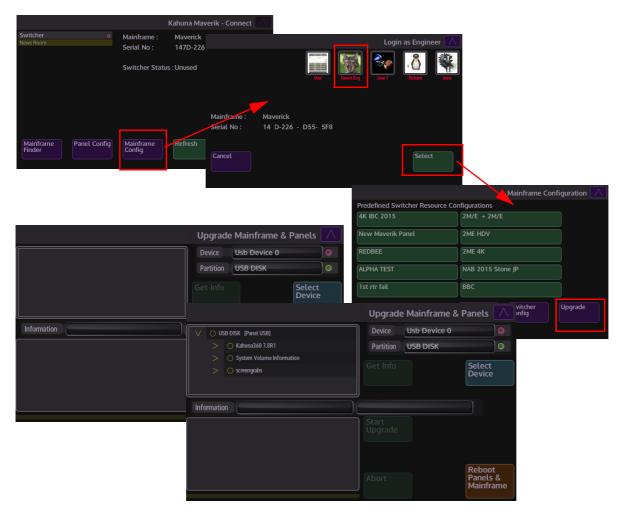
The Multi-Panel Clusters menu will then be displayed as shown above.

The MAV-GUI or MAV-GUIs when connected to the mainframe are displayed in the "**Visible Panels/Modules**" table (highlighted in red above).

The first step in this menu is to **Create a Cluster**, press the **{Create Cluster**} button and a new row will be added to the "**Visible Clusters**" table. Then use the **Cluster Name** box on-screen keyboard to give the cluster a name. Finally, select a MAV-GUI in the **Visible Panels/Modules** table, and then press "**Add to Cluster**". Do this for each MAV-GUI required in the cluster. The cluster will be saved when the menu is exited.

## Step 3 - Update the Software

With all the IP Addresses set and all the GUIs in the same Cluster, if the Mainframe, the GUI and the MAV-GUI/MAV-GUIs all have different software versions, then a software upgrade has to be done so the whole system is running the same software. Place a USB memory stick either into one of the USB ports in the mainframe (recommended way), or into a USB port on the MAV-GUI.



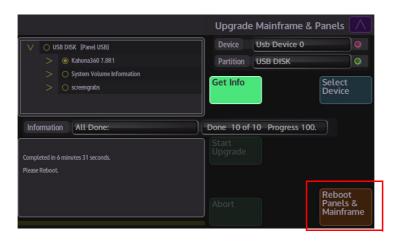
In the "**Connect**" menu, press the {**Mainframe Config**} button, then in the Login as Engineer menu, select an engineer login and then touch the {**Select**} button. The Mainframe Configuration menu will be displayed. In this menu, touch the {**Upgrade**} menu link button. Use the "**Device**" parameter to scroll to the USB device with the software, touch the {**Select Device**} button and the contents of the USB stick will be displayed in the top left window. Select the software by touching and selecting it in the window. Touch the lit **{Get Info}** button and information related to the selected software from the software.txt file will be displayed in the information area. When happy that the correct software has been selected, touch the **{Start Upgrade}** button.

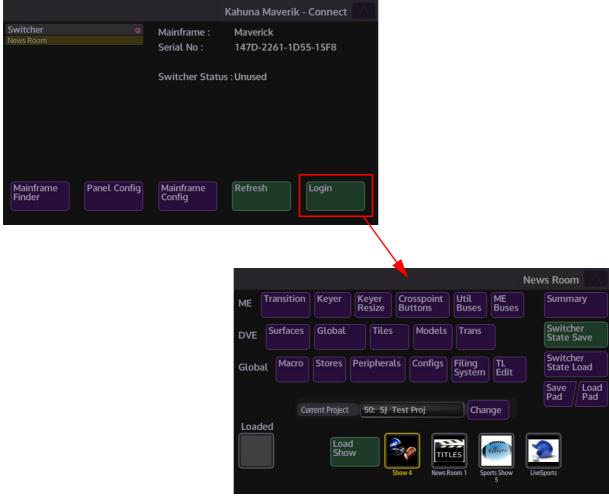
	Upgrade	e Mainframe &	Panels 🔨			Upgrade	e Mainframe & Panels	s \land
USB DISK [Panel USB]       @ Kaluna340 7.8R1       O System Volume Information       > creengrabs	Device Partition Get Info	Usb Device 0 USB DISK	O Select Device	V         O         US           >         >         >           >         >         >	SB DISK [Panel USB]  Kahuna360 7.8R1  System Volume Information  screengrabs	Device Partition Get Info	Usb Device 0 USB DISK Select Device	ct ce
Information	Start Upgrade Abort		Reboot Panels & Mainframe	Informatic Upgrade for- Kahuna Stor Kahuna Stor Kahuna Stor Kahuna 400 Kahuna 9600 Maverik Maretik	Compact	Start Upgrade Abort	Rebc Pane Main	

The progress of the upgrade is displayed in the Information bar.

	Upgrade	e Mainframe & F	Panels			
USB DISK [Panel USB]	Device	Usb Device 0		•		
> 💿 Kahuna360 7.8R1	Partition	USB DISK		0		
System Volume Information     Screengrabs			Select Device			
Information Phase 2/5: Copying & Checking:						
Upgrade for- Kahuna 360 Kahuna Faze Kahuna 360 Compact Kahuna 4800	Upgrade					
Kahuna 6400 Kahuna 9600 Maverik	Abort					

Once complete, touch the **{Reboot Panels & Mainframe}** button, a dialog box is displayed asking the user if they want to reboot.





Once the system has rebooted, the "Connect" menu will be displayed ready to login to the switcher.

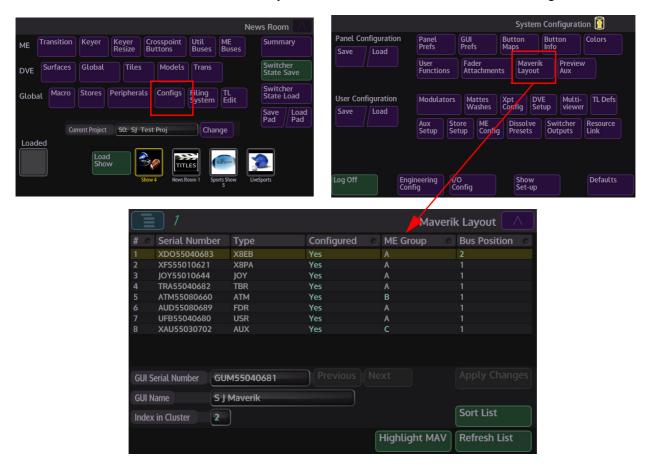
MAV-GUI logged in menu

Finally, press the {Login} button, and the MAV-GUI will login ready to use.

Step 4 - Maverik Layout (for the setup of the Maverik control surface)

Once the MAV-GUI has logged in to the mainframe, the MAV-GUI or MAV-GUIs now have to know where the MAV modules are positioned within the control surface, so that for example, the crosspoint MAV module buses are setup correctly.

In the home menu, touch the **{Configs}** button, then in the **"System Configuration**" menu, touch the **{Maverik Layout}** menu link button in with the Panel Configuration functions.



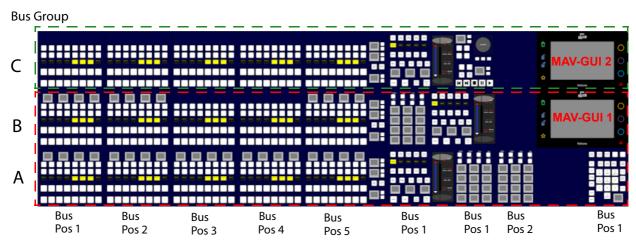
The table in the menu, displays all the MAV modules that are physically connected to the MAV-GUI that is currently selected. The "**GUI Serial Number**" box under the main table shows the user which GUI is currently selected, this can also be confirmed by pressing the **{Highlight MAV**} button. This becomes useful when there are multiple MAV-GUIs in a control surface.

It is vital to set the layout of MAV Xpt modules correctly to make sure that the crosspoints run in the correct numbered sequence.

To do this, use the rotary parameter to scroll through the table and select the first MAV Xpt module (the first MAV Xpt module on the left side of the control surface), again, this can be confirmed by pressing the **{Highlight MAV}** button. Then, using the BUS Position parameter, give the MAV module the number "1", use the ME Group parameter to place the module in an ME Group (e.g. A) and finally, press Configured **{Yes}**.

The above steps are repeated for the MAV Xpt module to the right of the first one, giving the module a Bus Position of 2, and so on for all the MAV Xpt modules and the other modules.

If there is a second MAV-GUI in the control surface, touch the **{Next}** button and then the "**GUI Serial Number**" box under the main table will display the second MAV-GUI and the table will display all the MAV modules connected.



## Example of Maverik Module Layout

The example above displays a Maverik Module Layout where all the MAV modules in **Bus Group A/B** are connected to **MAV-GUI 1** and the all the MAV modules in **Bus Group C** are connected to **MAV-GUI 2**.

**Bus Group A** shows the correct **Bus Position** numbering for the MAV Xpt modules, the MAV Tbar module, MAV UFB modules and the MAV Number Pad.

Once the **Maverik Module Layout** has been configured for the whole control surface, press the **{Save Changes}** button to save the layout.

Note: If any MAV Xpt modules are removed or their position changed and the system is re-booted the module layout will be lost.



# **Graphical User Interface - MAV-GUI Operation**

The Graphical User Interface (MAV-GUI) is a touch screen interface; displaying menus that are used to setup, configure and control the production switcher system. This part of the document will describe how the user interacts with the MAV-GUI and its on-screen user interface.



Note: Throughout this manual, where brackets around text like this "[TRANS]" or {Input Setup...} are displayed, this means that a button in a menu or on the Control Surface is meant to be pressed.

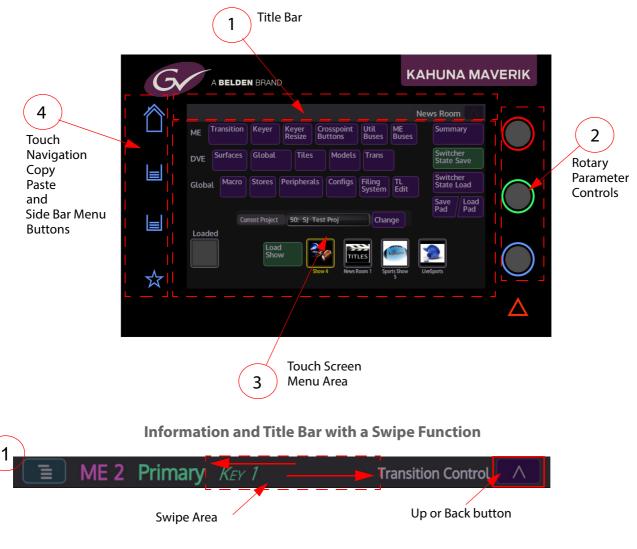
Note: The MAV-GUI buttons described in this section of the manual are set to their default state.

They can be changed to a user defined state in the Global - Configs menu.

# The MAV-GUI

The MAV-GUI is part of the physical control surface, there can be a single MAV-GUI in the control surface or a number of them. The way the MAV-GUI interacts with the MAV modules in the control surface will depend on how many MAV modules are directly connected and linked to them.

Before going through setup and configuration of the system it is important to understand how the user interacts with the MAV-GUI controls.



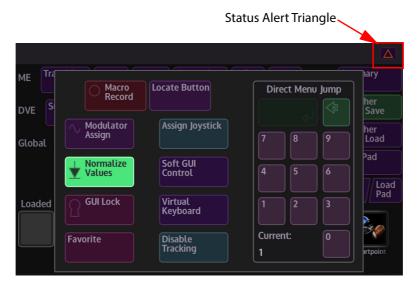
The Title Bar displays the M/E, Background or Key the menu is controlling and the functional title of the current menu.

Swiping a finger in the "Swipe Area" in a left to right action will go back through the previous menus. If the user wishes to go forward then swipe in a right to left motion.

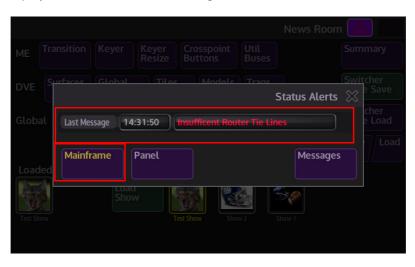
There is also an "**Up**" or "**Back**" buttons that will back to the previous menu.

## **Status Alert Triangle**

An "**Status Alert Triangle**" may be displayed in the information bar, as shown below. This is to alert the user to a possible problem that may have occurred.

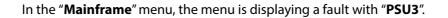


Touch the triangle and a "**Status Alert**" dialog box will appear. An alert message will be displayed in the center of the dialog box menu.



There are 3 menu link buttons in the menu, if the name text on the menu link buttons is a yellow color, it indicates that there is a problem within that menu. Touch the button to display the cause of the alert.

				St	tatus Mo	nitor M	ainfram	eΔ	
Router Card 1	Router Card 2	ME / DVE 1	ME / DVE 2	ME / DVE 3		ME / DVE 5	ME / DVE 6	Out Card 1	Out Card 2
Input Fin A									
Net Fin A	Net Fin B	Output Fin A		Output Fin C		Ref. Fin A			
PSU 1	PSU 2	PSU 3		Fans		SATA Router 1	SATA Router 2	Extern SATA	



## **Delegates Menu Button**

If the user touches the blue Delegate button at the top of a menu, then a **Delegates** menu will appear (in some menus) over the current menu. The Delegates menu gives the user selection options. In the example below, allowing the user to switch to a different M/E, Background, DVE or Key depending on which menu is being used.

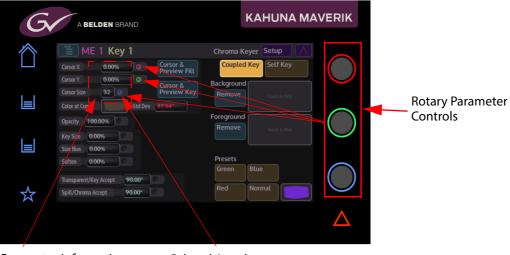


Delegates will in some menus also include "Partial Delegates", this are italicized - small caps on the title bar of some menus, and this partial delegate is repeated on the label of each relevant value strip. Changing delegates will sometimes alter the contents of a menu.

Note: Make sure to select the correct M/E in the Delegate menu, that is, the same M/E as the user is working in.

## **Rotary Parameter Controls**

The rotary parameter controls adjust some parameters within menus. The colors are directly linked to the "Colored Attachers" displayed at the end of some parameters. Adjusting the rotary controls will adjust the parameter information.



Parameter Information



Note: The Colored Attachers will be explained in full later in this section.

## **Touch Screen Menu Area**

This is the menu selection area (marked in red in the menu below), where the user selects which menu they require, turns functions On/Off, adjusts parameter controls or steps through to sub menus.



Note: How the menus work will be described in full later in the section.

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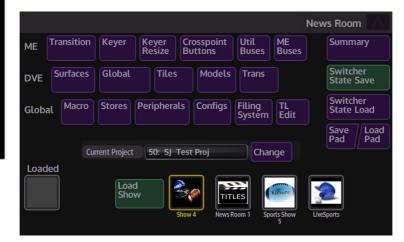
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## **Touch Navigation Buttons**



## Home Navigation Button

The **Home** button - the button is blank until touched, when touched it will turn blue. When in any other menu than the Home menu, touching the Home button will switch back to the home menu (shown below).





**Copy Clone Navigation Button** 

The **Copy Clone** button - the button is blank as a default, when touched the button will turn a purple color and flash, indicating that it is ready to copy. As an example, this allows the user to copy one buttons functionality (Wipe, Auto, Cut etc.) ready to be pasted onto a User Function button. Notice that the copy button on the Soft GUI is also flashing. When finished, the button will return to its default blank state.



#### **Paste Clone Navigation Button**

The **Paste Clone** button - the button is blank as a default, when touched the button will turn a purple color and flash, indicating that it is ready to paste the copied function. It allows the user to paste the copied functionality (mentioned above) onto a User Function button. Notice that the copy button on the Soft GUI is also flashing. When finished, the button will return to its default blank state.

#### How to Copy and Paste

There are several ways the user can copy and paste button functions, parameters, modules or Key layers using the MAV-GUI or the Soft MLC GUI.

The **"Copy Clone"** and **"Paste Clone"** function is used to copy button functions, almost any button function can be copied and cloned to almost any button on the Maverik control surface. Button functions would normally be copied onto the OLED buttons on the Maverik control surface, for example as quick access to a button function that may be in a menu away from the menu that was currently being used. Most functions can be copied and even whole M/Es. Copying button function on Kahuna is quick and easy and just takes a couple of seconds. The example listed below will describe how to copy parameters.

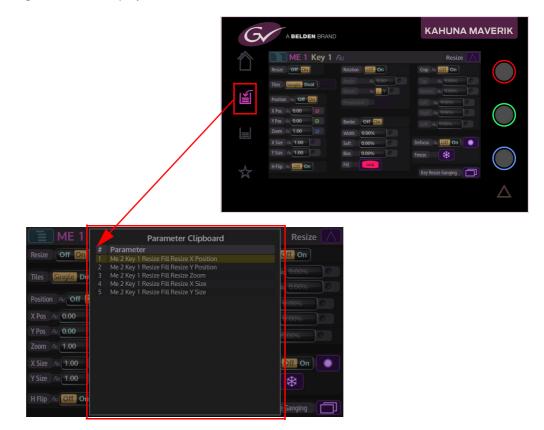
There are two ways to start the copy process, the user can either press the **"Copy"** button on the MAV-GUI (shown below left), or press the **{COPY CLONE}** button on the Soft MLC GUI (shown below right).



The buttons will flash until the **"Paste"** button on the MAV-GUI is pressed or the **{PASTE CLONE}** button is pressed, once again the buttons will flash. A dialog box will be displayed on the Soft MLC GUI with a selection of M/E, Bus and Lamp options. Finally press the button that will have the clone function attached. The selected button will now have the cloned function attached.

G A BELDEN BRAND	KAHUNA MAVERIK
ME 1 Key 1 Fill Resize Off OD Rotation Tites Effortio Duat Position // OO B YPos // 00 B Zoom // 1.80 With 0 X Size // 100 Soft 0	

The **"Copy"** and **"Paste"** function would be used to copy parameters, Key layers etc. This would be used for example; to copy Color Correction parameters from one color corrector to another with in the Kahuna menus, or DVE parameters from one DVE model to another. To start the copy process, press the **"Copy"** button the MAV-GUI (shown below left), or the **{Copy}** button on the Soft MLC GUI (shown below right). The button will start to flash and a dialog box will be displayed on the MAV-GUI and the Soft MLC GUI.



On the Soft MLC GUI, touch the **{Snap Norm}** buttons for the parameter that you want to copy. As you select the parameters, notice that a table of copied parameters is created in the center on both MAV-GUI and the Soft MLC GUI.

In the example below, the user is prompted to select the parameters to be copied (below left), then press the **"Paste"** button, the user is then prompted to attach the copied parameters (below right), the **"Paste"** button will continue to flash until touched again to confirm it is OK and what was required.

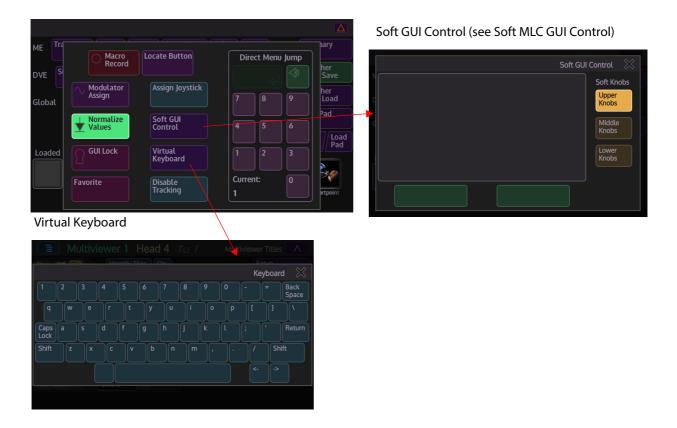


To attach the copied parameters, use the **{Up}/{Down}** buttons to select a parameter in the "**Parameter Clipboard**" table. When selected, touch a **{Snap Norm}** button to attach the copied parameter.



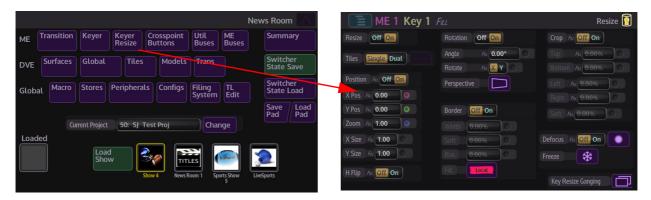
## **Star Navigation Button**

The **Star** button - the button is blank as a default. Touch and hold the button, the button will turn purple and a side bar menu will appear in the current menu (as shown below) with options which include: Macro Record/Quick Macro, Normalize Values and set a Favorite menu. Touch and hold the lit star button and the side bar menu will close and the star button will go back to the default setting.



# **MAV-GUI Menu Controls and Buttons**

Buttons and controls within the MAV-GUI menus have to be explained, so the user is immediately aware of the state of a menu at a glance.



Note: Button colors and menu colors have a default color setting, but they are also user definable, so may vary from the descriptions in this part of the manual.

The way the colored buttons and attachers behave are all very important in understanding how to control and adjust functionality of the production switcher.

Menu Buttons, Controls and Gesture Controls



**Menu Link Buttons** 

Menu Link buttons are dark when off and a blue color when selected. Touching a menu link button will open a different or sub menu with more parameter options. There is no set location in the menu for these buttons and may be placed anywhere within a menu. Menu Link buttons are different to "Menu Expander" buttons, which will be explained later in this chapter.

#### **Action Buttons**



Action buttons are brown color. When and action button is touched (selected), the button will turn and orange/yellow color.

#### **Toggle Buttons**



Toggle buttons will toggle **On** then straight away go **Off** when touched. The border around the button will light up a bright green color, and stay lit until the users finger is taken off the button.

#### **On/Off Buttons**



When pressed, these buttons will switch the selected function On or Off.

## **Option List Select Button**

Matte Select Local Matte	Matte Select	Local Matte	Black	$\approx$
	Current	White	Red	
	Local Wates	Yellow	Green	6
		Cyan	Blue	E C
		Magenta	Grey	S(
		Orange	Dark Red	
	Zoom 1.00			

Some parameters will have a green **Option List Select** button at the end of the parameter. Touching this button will open an options menu, allowing the user to quickly select one of a number of options available to them.

## **Keyboard Select**



Some parameters will have a blue keyboard symbol at the end of the parameter (as shown above). Touching the keyboard symbol twice will display an on-screen QWERTY keyboard. While entering text using the keyboard, the text being entered is displayed above the keyboard, when finished press the **{Return}** button to confirm the text entry, then press the **"X**" symbol button to go back to the previous menu. The user can alternatively use a USB keyboard plugged into the MAV-GUI to enter text.



	W	ash	1					٧	Vashes	
Descr	iption	Ne	w Wash	12						$\approx$
1										Back Space
							P			
Caps Lock										Return
Shift		X			b			]/	Sh	ift
									->	

#### **Shift Button**

Currently in the **Save Pad** menu, there is a **shift "Enables" button**. When pressed and held, it will cause some buttons to change state and become menu link buttons. Pressing one of the menu link buttons will then open a different menu with enables options specific to the function in the menu link button.

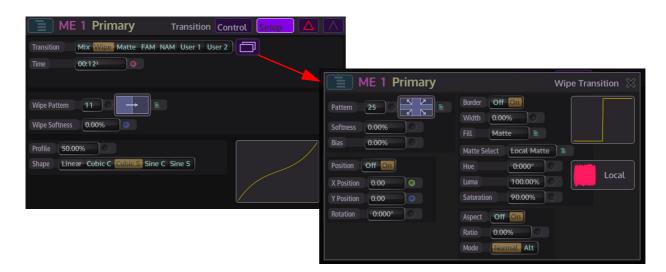
In the example below, the "**ME1**" menu link button is selected, which then opened the ME1 enables options.

					Save	Load						
ME PRO	ОЈЕСТ 🕜	MEMOR	Y	ME 1	Enables							
<sup>dve</sup> 5	0	10	Next Free	ME 2	Enables							
STORE				ME 3	Enables	Aute Run						
USER 7	8	9	Cancel	ME 4	Enables							
ENG 4	5	6				Save Inhibit Ref.		ME 1			Laye	r Enables
1/0							Key 1	All	Bgnd A/B	All	Util 1	All
EVENTS 1	2	3		oissolve			Key 2	All	Bgnd C/D	All	Util 2	All
	t 0	Sav	ve				Key 3	All	Primary	All	Util 3	All
GLOBAL							Key 4	All	Trans Secondary		Util 4	All E
									Trans	Au		
							eKey 1	All				
							eKey 2	All				Sources
							eKey 3	All				A11
							eKey 4	All	Events	All		All

#### **Menu Expanders**

When touched, these buttons will expand a menu to reveal sub control parameters for the selected function. When selected the button will light up.

#### MAV-GUI Operation MAV-GUI Menu Controls and Buttons



## **Colored Attachers**



When a menu has parameters with colored attachers, it shows that a parameter can be adjusted using the rotary controls on the right side of the MAV-GUI. On entry to a menu, if the menu has only 1 colored attacher, it will be lit the same color as the top rotary control, if there are 3 or more colored attachers the top 3 will be lit the same color as the 3 rotary controls to show that they can be adjusted.

The MAV-GUI diagram (previous page) left, notice that the bottom 3 colored attachers are not lit. To attach these to the rotary controls, touch the first (top) unlit attacher and all 3 will light up the same color as the rotary controls, as shown on the MAV-GUI on the right.

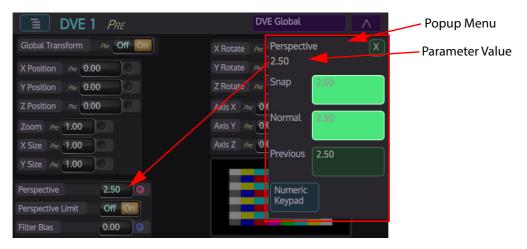
If a rotary knob is pressed and held down, all other colored attachers are cleared or turned off. If a parameter is now touched whilst still holding down the rotary control, it will be attached to the selected parameter. Any rotary control can be attached to any attacher.

Note: Adjusting the parameters in the MAV-GUI menus will also adjust the parameters on shared menus between the GUI and the MAV-GUI.

#### **Popup Menu Controls**

The rotary controls also have a "**Popup Menu**" feature, where an overlay menu will appear from the right hand side of the MAV-GUI display.

Note: The amount of time that the popup menu appears can be adjusted in the System Configs/ Panel Config/Preferences/Prefs/GUI menu. Adjust the "Knob Popup Timeout" parameter.



Pressing down on any of the rotary controls, then releasing will activate the popup menu, the popup menu will display parameters linked to the rotary control that was just depressed. The popup menu will always have the same controls each time it appears; and contains the parameter value from the parameter attached to the rotary control (at the top).

**Snap** - when pressed, notice that the parameter has jumped to an incremental value, normally in steps of five or ten. The border of the button will turn red

**Normal** - when pressed, the parameter will revert back to its original default state, the border of the button will once again turn Green.

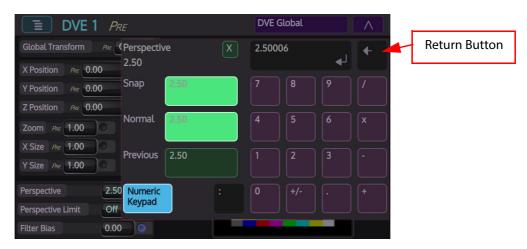
Previous - this will return the parameter back to a previous user defined state.

#### Numeric Keypad

Pressing the **{Numeric Keypad}** button in the popup menu, will display the on-screen numeric keypad.

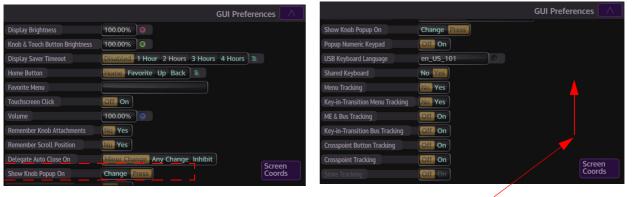
Note: To empty the numeric keypad display, touch and hold the "**return**" button.

To exit the numeric keypad, touch the "**X**" button.



The numeric keypad allows the user to directly enter values for the attached parameter. It also has a second function as a calculator.





Touch menu and with the same movement swipe upwards

Some menus are longer in length (have more parameters) than others, this means that the bottom of the menu will be below the viewing area of the MAV-GUI screen. Place a finger on a parameter and hold, whilst holding, scroll upwards, the menus can be "**flicked**" upwards or held and pushed upwards. Once the bottom of the menu is reached, the menu will "**bounce**" downwards slightly.

# Kahuna Maverik Control Surface

## **Overview**

The Kahuna Maverik control surface is a revolutionary new style, that throws away the rule book for how a switcher control surface should be configured. The Maverik modules (MAVs) can be assembled in a huge variety of configurations without expending precious desk space. Operators can easily put together the modules that make sense for their productions and provide the quickest access to multiple Key functions.

#### Examples of Kahuna Maverik Control Surfaces

#### **Sports**

M WERK

#### Music

#### News

MAVERIX		IIII	

This section of the manual will describe the individual MAV modules and their functionality.

# Kahuna Maverik MAV Module Overview

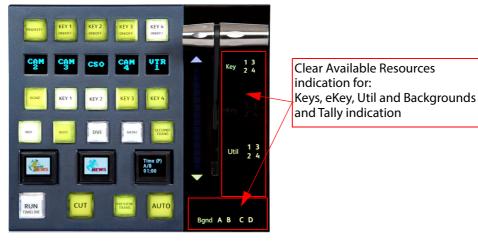
**MAV-GUI** 



Touch screen GUI interface which provides power and control for up to 16 MAV modules. With dual redundant external PSUs and a network connection to the mainframe. The MAV-GUI allows the user to quickly access touch screen setup and configuration menus. With assignable rotary controls to adjust parameters.

Note: Please see the GUI and Menu Familiarization section of this manual for full details about the MAV-GUI.

## **MAV-TRANS**



Transition module with Key, Background and Wipe selection and programmable OLED buttons. This module is used to control Background and Key transitions.

The blue Mnemonics display the source selected for BGND Bus or the source selected on the Key Bus..

#### PRIORITY

Enables the user to set the Key transition a priority.

#### **KEY 1 to KEY 4 ON/OFF**

The four KEY On/Off buttons are used to cut a Key layer on or off, the affected Key layers are 1 to 4 from left to right. The lamps within the buttons have three states; Off, White or Red, these indicate the following situations:

- Off The Key layer is off.
- White The Key layer is on but not contributing to the program or M/E output.
- Red The Key layer is on and contributing to the program or M/E output.

By pressing one of these buttons the following will happen: Press once and the Key layer is on but will only contribute to the programme or M/E output if set to contribute.

Press once again and the Key layer is turned off.

If part way through a transition, pressing one of buttons removes the layer from the transition process.

#### BGND, KEY 1 to 4

Sets the BGND to be On/Off, when selecting Key layers 1 - 4 to be on-screen. It also selects the Key layer(s) for the next transition. Any number may be active at any one time. Pressing any one of these buttons will clear all others. Holding one button down and then pressing any others will make all of those selected active.

When **KEY 1 to 4** is used with the **{Local**} button (MAV-GUI Transition Control menu), they enable the use of a Key layers' own transition (Each Key layer can have its own Wipe and Mix transitions). With the **"Local"** buttons turned on for the selected Keys, the Key buttons on the MAV-Trans module will turn a pink color, also on the MAV-GUI menu, when the transition is made the Key On/Off buttons for the selected Key layers will also be lit. Any or all of these buttons can be selected as required. The transition for the selected layer(s) is started by pressing the Auto button (see below). This facility allows one or more of the Key layers to be transitioned, using a different transition for each layer, at the same time as the background transition.

## ΜΙΧ

Selects Mix as the main transition. When using this function, the type of mix used in a transition is setup in the Transition menu

#### WIPE

Selects Wipe as the main transition.

#### DVE

Selects a DVE that will be used in the next transition. Pressing either one of the buttons will cause the GUI to jump to the **DVE Primary Transform** menu.

#### MENU

This is a future feature.

#### **SECOND TRANS**

This will switch to a secondary transition if the user has setup transitions on A/B and C/D backgrounds. Pressing the [SECOND TRANS] button will switch from a A/B transition to a C/D transition.

**Programmable OLED Buttons** 

#### **TIME - OLED Button**

Allows the time for an auto transition to be set from the on-screen number pad. press the button and an on-screen number pad will appear on the GUI, allowing the user to set the time for an auto transition.

#### CUT

An immediate "Cut" between the Background or Key sources causing bus swap.

#### **PVW TRANS**

Allows the next transition to be previewed on the preview monitor without affecting the program output.

#### AUTO

Starts an automatic pre-timed transition, using whatever transition types and times have been selected for the layers included in the transition. The transition time for each layer can be different as can any time offsets.

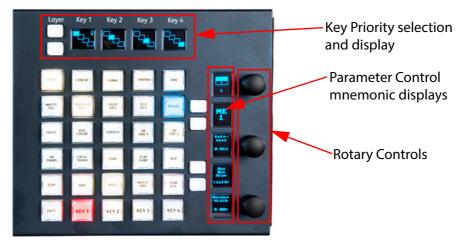
## T-Bar

Performs a manual transition using whatever transition types have been selected.

Key 1 3 Key 2 4 eKey 2 4 Util 1 3 Util 2 4 Bgnd A B C D The area around the T-Bar displays the resources available on the selected M/E, they are highlighted down the right side and at the bottom of the T-Bar (as shown in the diagram). If one of the resources is live to air, and the **Tally Now** is enabled, the resource will be displayed in red.

Resources available on the selected M/E

**MAV-KEY-CONTROL** 



These buttons and parameter controls are used to select and set functions for individually selected Key Layers. When using these functions, it is important to make sure that the Key layers being viewed are the ones that are selected on this Key Control MAV module or else any changes to parameters made here may change the wrong Key Layer.

Note: Setting the "Menu Tracking" parameter to "Yes" in the Panel Config -GUI Preferences menu, will allow the MAV-GUI menus to jump to the relevant menu when some button functions are pressed on the Key Control MAVmodule. Double press the Key 1 to 4 buttons for menu tracking. The type of Keying to be used is selected by the top row of buttons in the Key Control group.



**FULL** - The Fill is a full layer over the background hiding it completely.

LIN - Selects a linear Key (see ME Keyer chapter; 1st page for full explanation).

LUM - Selects a Luma Key (see ME Keyer chapter; 1st page for full explanation).

CHROM - Selects chroma Key (see ME Keyer chapter; 1st page for full explanation).

**INV** - Inverts the Key signal so that the parts, which were Keyed off, become Keyed on and vice versa.



**MATTE FILL** - Causes the Fill to be the Key Matte regardless of whether in Coupled Key, Split Key or Self Key.

COUPLED KEY - Uses the Fill and Key sources allocated to the crosspoint.

**SPLIT KEY** - By selecting a Key (1 - 4) then holding down the **[SPLIT KEY]** button, the two Key bus selection buttons will display for example "**Key 1 Fill**" on the top Key bus button and "**KEY 1**" on the bottom, the user is also able to see which source crosspoint buttons are selected for the Key/Fill sources, and change the sources if required.

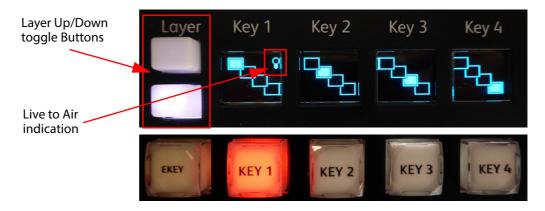
**SELF KEY** - In Coupled Key mode Self Key causes the Key, as well as the Fill, to be derived from the Fill source allocated to the crosspoint. Also known as a Video Key. In Split Key mode Video Key causes the Key to be derived from the Fill source of the crosspoint

used as the split away.

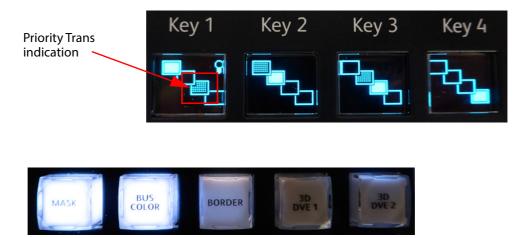
**RESIZE** - Selects the resize options X/Y and Zoom position of the selected Key. Stepping Up/Down through the bottom two toggle buttons next to the rotary controls, will display Key Resize menu (2 of 2), where the user is able to use the X/Y Size and H-Flip parameters. To select the **Resize X Pos, Y Pos** and **Zoom** functions, select the Key ([**KEY1**] - [**KEY4**]) buttons at the bottom of the module, then press the [**RESIZE**] button. Notice that the mnemonic displays running vertically down the right side of the module display the resize parameters, they can be adjusted using the rotary controls associated with them.

## **Key Priority Selection**

The Key layer priority "**in front**" / "**behind**" position of each of the four Key layers, is displayed by the Key Priority mnemonic displays above the Key Control buttons. The priority of the layers is changed by the Layer Up/Down toggle buttons next to the mnemonic displays, in conjunction with the Key 1 to Key 4 buttons. The Key layers are displayed as a solid square, if a Key layer is "live to air" a light bulb symbol will be displayed in the top right corner if the mnemonic display.



When the **[PRIORITY] Transition Control** button is **On**, the **Key Control Priority** symbols in the mnemonic displays, will display the next Key transition priority and will shown as a "**Box Grid**" instead of a solid box. The Up/Down toggle buttons move the selected "Priority Transition" Key layer up or down one level per press.



**MASK** - Enables the Box and Wipe Mask facility. The parameters for the mask are set in the Mask menus which are entered via the top level Keyer menu.

**BUS COLOR** - Enables the Bus Color Correction which is set-up in the Bus Color menus. Pressing the [**BUS COLOR**] button displays parameters in the mnemonic displays next to the rotary controls. Stepping Up/Down through the bottom two toggle buttons next to the rotary controls, will display Bus Color menus; 2 of 3 and 3 of 3.

**BORDER** - Selects the Key border facility allowing Border, Extrusion and Drop Shadow to be accessed. Pressing the **[BORDER]** button displays parameters in the mnemonic displays next to the rotary controls

## 3D DVE1 and 3D DVE2 - Future Feature.



IN TRANS - This button takes the selected Key layer in or out of a transition toggling the state on each press. It is just like using the in/out of transition Key buttons for the Key layers on the Transition Control MAV module. Instead of a dedicated Key for each Key layer as in the Transition Control area, for the Keyer section, the user can select the Key and then press [IN TRANS] button to place the Key layer it in/out of transition.

LOCAL TRANS - Tells the selected Key layer to come out of the main transitions and can be set to make a separate and independent transition instead. For instance, if every Key and background was set-up to make a mix transition, the user is able to select one Key layer to perform a wipe instead by making it a [LOCAL TRANS] and selecting a [WIPE]. Now everything mixes during the transition except for the Key layer that was selected as the [LOCAL TRANS] which is now performing a wipe transition.

**TIME** - Sets the duration of the Auto Key Transition. Pressing the **[TIME]** button displays parameters in the mnemonic displays next to the rotary controls, which include Trans Time and Trans off-set.

FLIP-FLOP - If [FLIP-FLOP] is selected the start point alternates.

**REV** - If [REV] is selected the start point is reversed.



**CLIP** - Allows the Key transition to be associated with a selected ClipStore when creating a "Clip Transition". Altering the clip position relative to the transition point, is determined by the **Transition Time** in the **[TIME]** buttons parameters.

MIX - Selects a standard mix (also known as a dissolve or crossfade) as the Key transition.

**WIPE** - Selects a Wipe as the Key transition. Wipe parameters are displayed in the mnemonic displays next to the rotary controls. The top parameter selects the type of wipe pattern required.

**MATTE MIX** - Selects a Matte-mix where the source passes through the Matte color before reaching the selected signal.

**PVW KEY** Previews the **Key** and **Fill** layers individually. Press the button once it will turn pink and display the Key portion of the Key layer, press it a second time and it will light a slightly brighter pink color and display the Fill portion of the Key layer, press it a third time to turn it off.



Working in eKey mode

Working in SuperKey mode

**eKey** - Press and hold and select on of the **[KEY1]** - **[KEY4]** buttons, selects eKey 1 - 4 (if available).

KEY1 to 4 - Selects the SuperKey layer that will be affected by the Key Control buttons

Key, eKey, Util and Aux Selection Key, eKey, Util and Aux Selection Single color mnemonic displays M/E Selection

MAV-8Xpt-Del-OB

An 8 crosspoint Delegate MAV module with programmable OLED buttons.

This is the full function M/E, Key, Aux delegate and crosspoint selection MAV module, with programmable OLED buttons that will accept color graphics. The buttons can be programmed to trigger Macros, DMEMs, GMEMs and Timelines etc. (please see the User Config - Button Info section of the manual.).

M/E, Key, eKeys, Util and Aux selection is a simple process where the user steps up or down through the delegate options, using the white buttons and selects the option by pressing the OLED button.

Key 1	Step Up/Down through the Keys, eKeys, Utils and Auxes, using these buttons. The options will be displayed in the OLED button.
Key 2	To confirm the selection, press the OLED button.
HOLD	
	The same method as above is used to select the required M/E.
ME 3 A/B	Step Up/Down through the options, and then press the OLED button to confirm the selection.

When using the "Key" delegate buttons, pressing and holding the OLED button will give the user some selection options:

**Follow** - this is the default setting where the selected function will follow the M/E bank it is assigned to.

**Follow ME 1 - 6** (or highest M/E number in the mainframe) - Pressing and holding down the OLED button and then using the scroll down button will allow the selected function to "Follow" an M/E, then pressing the OLED button again to confirm the selection. This would be useful for example, if the user wanted a Key layer, from one M/E to work and follow the actions from a Key Layer on another M/E.

When selecting a source for a Key layer, eKey layer, Util or Aux, the top OLED button selects the bus for the top row of crosspoint buttons, and the bottom OLED button selected the bus for the bottom row.

HOLD - Future feature

**MACRO SHIFT** - Future Feature

# MAV-8Xpt-Del-FS



An 8 crosspoint Delegate MAV module without programmable OLED buttons.

This MAV module has all the same functions as the MAV-8Xpt-Del-OB except it does not have the programmable OLED buttons.

## MAV-8Xpt-OB



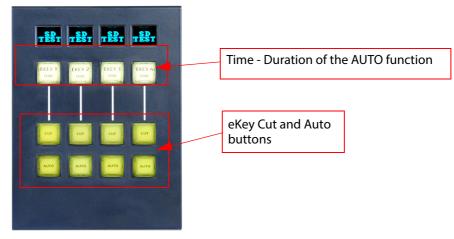
An 8 crosspoint MAV module with programmable OLED buttons.

**MAV-8xpt-FS** 



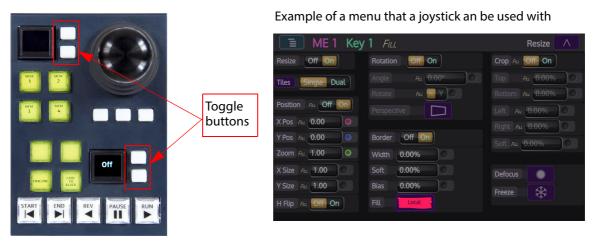
An 8 crosspoint MAV module without programmable OLED buttons.

## **MAV-DSK**



Down Stream Keyer (DSK) control module for eKeys.

## **MAV-JOY**



A Joystick MAV module, with memory recall functionality.

The MAV-JOY module is multi functional, the user is able to use the joystick with any "Current" menu that has applicable parameters that can be adjusted with the joystick, such as, Key Resize - X, Y and Zoom parameters (as shown above). OLED Button Displays:

• CURR

Note: Pressing down and holding on a rotary control and then touching a parameter in a menu, allows the use to pick the attachers they want to be used with the joystick. So for example, in the menu above the user can select X Position, Zoom, and Y Size only for use with the joystick.

**Memory Recall Buttons Mem 1 to Mem 4** - If using the joystick to move or manipulate Key layers for example, each Key layer can be individually attached to one of the 4 Memory **[Mem 1]** to **[Mem 4]** buttons for recall, simply by pressing and holding the memory button until it lights. The Key layer can be selected by pressing the memory button.

**Transport Control Buttons** - using the toggle buttons, step through the functions that can be used with the transport buttons i.e. Stores (clips), Timelines.... then press the OLED button to select the function, and use the transport buttons to Run, Pause, Rev the function.

- OLED Button Displays:
- Off
- T/L TIME LINE
- FTB
- STOR 1 20 (Store 1 20)

For example, running a Store Clip. The selected function can be attached to one of the two buttons above the **[Timeline]** and **[Fade to Black]** buttons. As with the memory buttons, simply by pressing and holding the button until it lights and the selected function will be attached to the button i.e. Store 1.

Timeline - This will select the current timeline so that the transport controls can be used.

**Fade To Black** - Enables a Fade to Black (FTB). The button will alternate lit/unlit if part way through FTB and FTB function is selected.

## MAV-KEYPAD



A Number Keypad MAV module used to: Set Live Mode, Clone Enable, Macro Enable.

The keypad is used to load files into "Target" functions such as ME, DVE, Stores and Misc (Configs).

#### Using the Keypad to Load

Example of how to use the keypad to load a file into a store: Press the **[PROJ]** project button, and use the number pad to Key in the project number. Press the **[MEM]** memory file button and use the number pad to Key in the memory file number. press the **[STORE]** button and then select the store number on the number pad. Finally, press the OLED button to confirm the selection.

The keypad can be used to load Config files into M/Es, load files into User/Eng/Panel and I/O Configs.

#### **GMEM Load sequence**:

Press [PROJ] and Key in the Project number.

Press [MEM] and Key in your Memory number.

Press [MISC] to access the functions detailed on Keys 1,2,3,4,5,0 - they will light up.

Press [0] for the Global memory

Press the OLED button to load.

Note: The OLED button will not say "Load" but the GMEM will load.

The OLED button will update to show the Project number, memory location and GMEM. Whilst in this state, the user can press the **[MEM]** button and then the number of the memory file required from the same project without needing to enter the project number again.

#### LIVE MODE

Inhibits the use of selected buttons to limit errors when switching live.

The Live Mode button toggles (Lit) On and (Unlit) Off, determining whether the inhibits are active.

To setup Live Mode, press and hold the button and the button will go Orange. All the button back-lights will go out on the control panel, GUI and any Aux panels connected, press the required buttons to inhibit their function (the inhibited buttons will turn Red). Finally press the **[LIVE MODE]** button once again to use the system. To remove the button inhibits, go through the same process and press the inhibited buttons to unlock them. **Remember** - When ready to use this Mode turn the Live Mode button On. When pressed, the inhibited buttons will have no function and will not interfere with the main output.

## **CLONES ENABLE**

When lit, this button enables any of the Button Clones that are attached to Panel buttons. When Red (press and hold) the panel will display any clones that are attached, in Red and turn out other lamps. When Off it disables all clones attached to Panel buttons.

#### **MACRO ENABLE**

When lit, this button enables any Macros that are attached to Panel buttons. When Red (press and hold) the panel will display any macros that are attached, in Red and turn out other lamps. When Off it disables all macros attached to Panel buttons.

## HOLD INPUTS

When on, prevents a DMEM or GMEM load from altering any of the current crosspoint selections, when enabled the button will light up Red.

## **OVERIDE ENABLES**

To load only a subset of a DMEM or GMEM, select the required parts using the ME Enables and turn this function On before loading the DMEM or GMEM.

Press once to turns the function On/Off (when On the button is Green), press and hold the button to latch ON (button goes Red). When On (Green) a DMEM/GMEM can still be loaded, when latched (Red) nothing can be loaded.

**EFF DIFF** (Effects Dissolve)

This button will turn the Effects Dissolve function On/Off

#### MAV-UFBPAD



Note: The Layout Pages for the MAV-UFBPAD module are user defined and can be setup in the User Config - User Functions menus.

A User Function Button Pad that allows the user to directly load Macro/Clone/SS (snapshot), ME Memory, DVE Memory, Store, GMEM, eKey and ME/DVE Memory. The OLED buttons are user defined in the **User Config - Macros** menu.



**DMEM** - press the DMEM button and the OLED buttons display numbers 0 - 9 and a "/" (forward slash), OLED button - bottom right displays the current M/E.

Hold down the DMEM button and the available M/Es are displayed in the OLED buttons. Loading a DMEM - Hold down the DMEM button and select which M/E the DMEM is to load into (or press {Current ME} bottom left). Then use the number pad to enter the Project number, then press "/" and enter the File number, finally press the OLED button "bottom right" to select.

Example: M/E3 - 12 (project) / 05 (file) - Press OLED button to select.

The same procedure as above will apply when loading a DVE or Store.

GMEMs are slightly different, the user does not have to enter the M/E as GMEM's are global and will affect the whole control surface.



**Macro** - the macro User Function Buttons are setup and programmed by the user, so are empty until macros are loaded into them.

Each of the 4 Macro buttons has ten pages of layouts and each layout can have 10 macros attached to them, so, a MAV-UFBPAD can hold 400 macros.

To access a macro, hold down a [Macro] button, then select a "Layout" using one of the OLED buttons. Then select a macro using the OLED buttons.

# AV-AUTO Page Selection Buttons Page Mnemonics Page Mnemonics Layout Selection Buttons

Note: The Layout Pages for the MAV-AUTO module are user defined and can be setup in the User Config - User Functions menus.

The Automation module that allows the user to directly load Macro/Clone/SS (snapshot), ME Memory, DVE Memory, Store, GMEM, eKey and ME/DVE Memory. The OLED buttons are user defined in the **User Config - Macros** menu.

**DMEM** - press the DMEM button and the OLED buttons display numbers 0 - 9 and a "/" (forward slash), OLED button - bottom right displays the current M/E. Hold down the DMEM button and the available M/Es are displayed in the OLED buttons.

**Loading a DMEM** - Hold down the DMEM button and select which M/E the DMEM is to load into, (or press **{Current ME}** bottom left). Then use the number pad to enter the Project number, then press "/" and enter the File number, finally press the OLED button "bottom right" to select.

Example: M/E3 - 12 (project) / 05 (file) - Press OLED button to select.

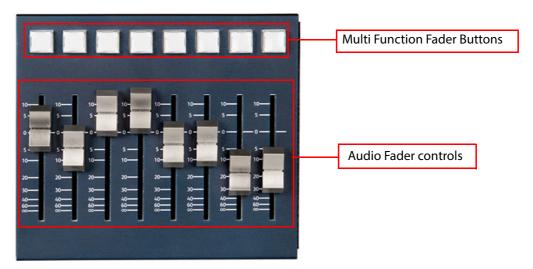
The same procedure as above will apply when loading a DVE or Store. GMEMs are slightly different, the user does not have to enter the M/E as GMEM's are global and will affect the whole control surface.

**Macro/User Function Buttons** - the macro User Function Buttons are setup and programmed by the user, so are empty until macros are loaded into them.

Each of the 4 Macro buttons has ten pages of layouts and each layout can have 10 macros attached to them, so, a MAV-UFBPAD can hold 400 macros.

To access a macro, hold down a **[USER]** button, then select a "Layout" using one of the OLED buttons. Then select a macro using the OLED buttons.

#### MAV-AUDIO



Kahuna is able to communicate with and have a level of control over audio mixing consoles, the MAV-Audio module is used to control certain function of external Audio Mixers.

#### **Fader Controls:**

The audio fader controls in the Faders menu correspond to the faders setup in the **Fader Map** menu. At the top of each fader is the button that was selected in the fader map menu

#### **Multi Function Fader Buttons:**

The fader Buttons can be set to 3 different options; Cut, PFL and AVFO.

Cut - this will cut the fader On or Off.

**PFL** - (Pre Fade Listen), this displays if the "PFL" function is set or available to use. **PFL** allows the user to listen to the channel's audio at a point before the fader takes effect.

**AVFO** - (Audio Follow Video Override), this is an audio sources that is associated with a video source which can be linked in the Fader Map.

#### **MAV-AUX**



**MAV-AUX** Panels are Aux Bus control panels that have three mnemonic displays which give the operator three levels of information:

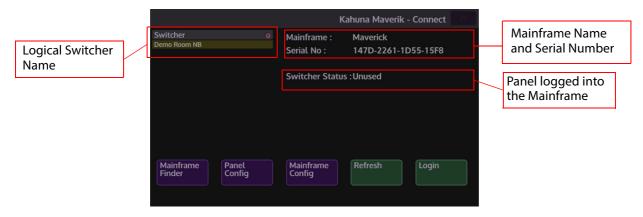
**Aux Output Designation Mnemonic** - Aux output selection, the Auxes can be renamed as required in the User Config - Aux Setup menu.

**Current Source to the Aux Output Mnemonic** - Default source for the selected Aux output. **Crosspoint Mnemonic** - This displays the crosspoint button map. Pressing the bottom row of buttons will select Xpt sources for the selected Aux output



# **Connect - Mainframe and Panel (MAV-GUI) Setup**

When the system has gone through the initial boot sequence, the **Kahuna Maverik Connect** menu will be the first menu to appear on the GUI screen.



The menu displays the name of the mainframe and panel logged into the mainframe and the mainframe serial number. There are also menu link buttons to the **MAV-GUI Panel Configuration** menu and the **Mainframe Configuration** menu, these will be explained later in this section.

Note: If this menu does not display the Mainframe Name or Serial Number, then touch the {Panel Config} menu link button and check that the IP Address and Cluster settings are correct.

The **Refresh** button will refresh the menu so that any other logical switchers are displayed or if a different mainframe has been connected.

The **Login** menu displays the **Operator Accounts** (shown below) so that the user is able to log into their account. This may be because they have an account which has bee setup for them that has limited access to Engineering or User Configs.

		Login as Operator							Ne	ews Room		
	🖄 🔚 💿 🥖		Ν	ME	Transition	Keyer	Keyer Resize	Crosspoint Buttons	Util Buses		Sumr	nary
	Eng User 6 Eng 7 Power Us	er User	C	DVE	Surfaces	Global	Tile	s Model	s Trans		Swite State	
			Ģ	Globa	Macro	Stores	Peripher	als Configs	Filing System	TL Edit	Swite State	
Mainframe : Serial No :	Maverick 147D-2261-1D55-15F8										Save	Load
Switcher :	Demo Room NB		ſ	Loade	ed	Loa	d			<b>}</b>		
Cancel		Select	l			Sho	Ŵ	Test Show S		Show 1		

To login to the mainframe, in the Connect menu, press the **{Login}** button and then select a User Account from the list and press the **{Select}** button. The MAV-GUI will now display the "Home" screen.

## **Mainframe Finder**

This menu allows the user to search a network for Kahuna mainframes or to change the IP address of a mainframe so that it is able to match the MAV-GUIs IP Address.

Note: Mainframes must be on the same physical network as the control surface.

					Mainframe Fir	nder 🔨
Serial Number		Name			IP Address	
147D-2261-1D55-15F	8	Maverick			10.54.170.70/16	
This mainframe s	hould be v	isible on	the connect	: menu		Search Again
Current IP Address	10.54.170.7	70 / 16		7.	.6 Release 3	
New IP Address	10.54.170.7	/0 / 16		0	CT 04 2016 10:35:4	18
Ô				b	y SAM	

To find a mainframe on the network, enter the mainframe IP address into the "**New IP Address**" parameter box, then touch the {**Apply**} button. The mainframe serial number, name of the mainframe and IP address will be displayed at the top of the menu.

Note: As shown above, a note will be displayed telling the user that "This mainframe should be visible on the connect menu"

The user can then change the IP address to match the control surface (MAV-GUI) IP network address.

Touching the "i" information button, will display a message about the menu. As shown below.



## **Panel Config**

This menu is where the user will set the IP Address for the MAV-GUI, Custer Index number and set the Name for the MAV-GUI.

To change the IP Address (make sure that a USB Keyboard is attached to the MAV-GUI), touch the Keyboard symbol and a cursor line will flash in the **New IP Address** box, then type the new IP Address into the text box and then press the **{Apply New IP Address}** button.

	Kahuna Maverik - Panel Configuration 🔨 🖕 Up or Previous
Panel Name	S J Maverik Menu Button
Cluster Name	Cluster #2
Current Cluster Index	2 Apply New Index
New Cluster Index	2
Current IP Address	10.54.170.76 / 16 Apply New IP Address
New IP Address	10.54.170.76 / 16
Version	7.6 Release3
Serial Number	GUM55040681
Touchscreen Version	5
	IP Mainframes         Upgrade         Panel Clusters         Lamp White

Next, enter a name for the MAV-GUI and a **Cluster Index** number. The Cluster Index number denotes the number of MAV-GUIs in a cluster connected to the mainframe. The MAV-GUI is now ready to login to the mainframe.

Press the "Up" (previous menu) button to return to the Connect menu.

#### **IP Mainframes**

This menu allows the user to connect to Kahuna mainframes that are on remote networks.

		Mainframes o	on Remote IP Networks 🚺 🔨
Outgoing Gateway	Return Path	h Gateway	Mainframe IP
			dd IP
Outgoing Gateway	0.0.0		etwork
Return Path Gateway	0.0.0.0 / 0		
Mainframe IP	0.0.0.0		emove etwork

To connect to a Kahuna mainframe on a remote network, touch the on-screen keyboard button at the end of the Outgoing Gateway parameter. Enter the outgoing gateway IP address from your network.

Touch the on-screen keyboard button at the end of the Return Path Gateway parameter. Enter the return path gateway IP address from the network you are trying to connect to.

Finally, enter the IP address of the mainframe you are trying to connect to, then touch the **{Add IP Network}** button.

The mainframe will be displayed at the top of the menu and when back in the "Connect" menu, the mainframe will be displayed in the "Switcher" list ready to select and log into.

#### Upgrade

The Upgrade menu allows the user to upgrade the software on the MAV-GUI (only) from a USB stick.



Insert a USB stick into one of the USB ports on the MAV-GUI or the mainframe. Use the USB Device rotary parameter to search and select the USB stick.

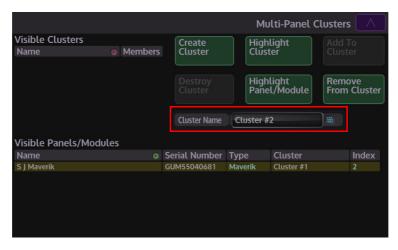
	Upgrade Panel From	m USB 🔼
Usb Device 0	Information Info File: Progress 0.00% **********************************	Start Upgrade Abort Reboot Panel Only
	1. Maverik Screen Lock could fail to fully lock the menus. 2. Maverik Macro Edit improved.	

Touch the selected software displayed on the left hand side of the menu. The details of the software are displayed in the middle section of the menu as a scrolling text file. Touch the green **{Start Upgrade}** button and the software upgrade process will start, this will take a few minutes.

When the software has finished uploading the **{Reboot Panel Only}** button will turn red, touch the button to reboot the MAV-GUI only.

#### **Panel Clusters**

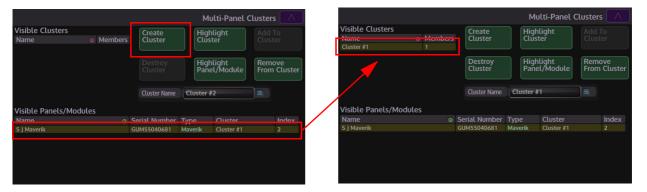
The Panel Clusters menu allows the user to bring MAV-GUI or MAV-GUI's into a visible cluster so that the mainframe knows how many MAV-GUIs there are connected within a control surface.



All MAV-GUI's connected to the mainframe will be displayed in the "Visible Panels/Modules" area of the menu.

Before creating a cluster, give the cluster a name using the on-screen keyboard. This will allow the user to visually identify all MAV-GUIs in a cluster. This is useful if there are multiple MAV-GUIs attached to a mainframe.

To create a cluster, touch one of the MAV-GUIs in the "Visible Panels/Modules" list then touch the **{Create Cluster}** button.



The MAV-GUI will then be part of a "Visible Cluster". Do the same for all other MAV-GUIs that are required in the cluster.

Destroy Cluster - will remove all the MAV-GUIs from the selected Visible Cluster group.

Highlight Cluster - will display information on the current cluster.

Highlight Panel/Module - will highlight all MAV-GUIs in the "Visible Panels/Modules" list.

Remove From Cluster - will remove individual MAV-GUIs from the visible Clusters list.

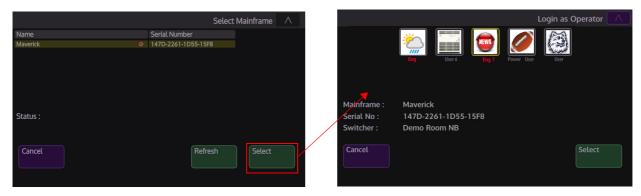
	Kahuna Maverik - Panel Configuration 🔼
Panel Name	S J Maverik
Cluster Name	Cluster #2
Current Cluster Index	2 Apply New Index
New Cluster Index	2
Current IP Address	10.54.170.76 / 16 Apply New IP Address
New IP Address	10.54.170.76 / 16
Version	7.6 Release3
Serial Number	GUM55040681
Touchscreen Version	5 Lamp rest
	IP Mainframes         Upgrade         Panel Clusters         Lamp White

**Lamp Test** - On/Off button, tests the different color values of the LEDs under the buttons on the controls surface.

**Lamp White** - On/Off button, tests the white values of the LEDs under the buttons. All buttons will light up bright white.

# **Mainframe Config**

The Mainframe Config button will display the **"Select Mainframe"** menu. This menu as the name suggests is where the user is able to select a mainframe and then get access to the **Mainframe/Switcher Config** menus.



If there is a list of mainframes displayed, use the rotary parameter control to scroll to the required mainframe then press the **{Select}** button. The menu will switch to the "**Login as Engineer**" menu (this may be **User** or **Power User** depending on the access rights setup) see the next page.

The **Refresh** button will refresh the menu and display any new logical switchers.

Touching one of the "User, Engineer" etc. icons to select which mainframe configuration to go into will highlight the icon with a yellow box (to show its selected), then touch the **{Select}** button to enter the "Mainframe Configuration" menu.



			Mainframe Configu	
	Predefined Switcher Resource Confi	gurations		
	4K IBC 2015	2M/E + 2M/E		
	New Maverik Panel	2ME HDV		
	NAB 2015 1	2ME 4K		
Λ	ALPHA TEST	NAB 2015		
	1st rtr	NAB 2015 2		
		Mainframe Config	Switcher Config	Upgrade Info

The Mainframe Configuration main menu allows the user to switch to a different **Predefined Switcher Resource Configuration**, if any have been created. These are created in the "Switcher Config" menu. Touch one of the Predefined Configurations and a dialog box will appear asking if "You are sure you want to change logical switcher Configurations". The **Mainframe Config** menu displays the current software version running on the mainframe, allows the user to change the IP address, name the mainframe and the Inhibit Master Control parameter.

	Mainframe Configu	uration 🔨
Predefined Switcher Resource Config	jurations	
4K IBC 2015	2M/E + 2M/E	
New Maverik Panel	2ME HDV	ĺ
NAB 2015 1	2ME 4K	
NAB 2015 1		J
ALPHA TEST	NAB 2015	
1st rtr	NAB 2015 2	Ì
	Mainframe	Upgrade Info
	Config	

#### **Network Topology**

Network Topology allows the user to select the way they want to work with the Net Fins.

**Dual Link** - This allows the user to connect an Ethernet switch to the system on "Both Net Fins" and effectively give dual Ethernet redundancy (i.e. the user can now connect the Ethernet switch to the panel.

**2x 8 Port Switch** - Single mode, each 8 port Net Fin works independently. Do not connect a Network Switch across the two Net Fins.

Note: **Caution** - Do not connect two MAV-GUIs in a cluster across the two separate Net Fins.

**16 Port Switch** - Connects the two 8 port Net Fins together internally, as if they are now a single 16Port Switch. The user can now connect MAV-GUIs etc. in the same cluster on either Net Fin (i.e. MAV-GUI 1 on Net Fin A and MAV-GUI 2 on Net Fin B).

Note: **Caution** - Do not create Ethernet loops e.g. Do not connect both Net Fins to a single Ethernet Switch.

#### **SATA Drive Config**

The Kahuna mainframe has SATA hard drives installed on the Control Cards in the mainframe. They are shown as RTR 1 and RTR 2 in the menu, depending on the system setup, the mainframe may contain 2 SATA hard drives (RTR 1) or 4 SATA hard drives (RTR 1 and RTR 2).

		Mainframe Configuration			SA	TA Drive Configuratio
	7.6 Release 3		SATA Dev	vices Internal (Upper)	Internal (Lower)	External
Built	4th Oct 2016 10:35:48	)		RTR 2 Upper Select		RTR 1 Upper Select
Current Address	10.54.170.70 / 16					
New IP Address	10.54.170.70 / 16 🚟		Model	ST91000640NS	Model	ST91000640NS
Mainframe Name	Maverick		Revision	SN03	Revision	SN03
Inhibit Master Contro	ol No Yes		Serial No.	9XG7NEMC	Serial No.	9XG7NECM
			Status	K360 RAID		K360 RAID
	Network		Partner	RTR 1 Upper	Partner	RTR 2 Upper
Config	Cable Check					
				Select devic	e or devices to be	configured
		Apply Changes				
		changes				

Two of the SATA drives (in this case, RTR 1 Upper and RTR 2 Upper) are the System drives containing saved information such as Projects and Stills/Clips, its status in the menu is displayed as "K360 System RAID", the two SATA drives work together as a RAID pair; allowing faster access to information on the drives.

		SA	TA Drive Configuration			S/	ATA Drive Configuration
SATA Dev	vices Internal (Upper) Inter	nal (Lower)	External	SATA Dev	vices Internal (Upper) Inte	ernal (Lower)	) External
	RTR 2 Upper Select		RTR 1 Upper Select		Select		RTR 1 Upper Select
Model	ST91000640NS	Model	ST91000640NS	Model	ST91000640NS	Model	ST91000640NS
Revision	SN03	Revision	SN03	Revision	SN03	Revision	SN03
Serial No.	9XG7NEMC	Serial No.	9XG7NECM	Serial No.	9XG7NEMC	Serial No.	9XG7NECM
	K360 RAID		K360 RAID	Status	K360 RAID		K360 RAID
Partner	RTR 1 Upper	Partner	RTR 2 Upper	Partner	RTR 1 Upper	Partner	RTR 2 Upper
	Select device or de	vices to be	configured		Also select the RA	ID partner (	drive

Kahuna is capable of using a single drive as the mainframe's system disk, although the usual configuration is to RAID a pair of drives together for speed and redundancy. The location of the system drive or drive pair is not important. Any of the six possible locations can be used (2 on each RTR card and 2 external eSATA drives).

By default, the system drives are the ones labeled RTR 1 (Upper/Lower), but users may wish to configure one system drive on each of the two router cards, the advantage of this is that if RTR 1 fails, the control card can be unplugged and the system will continue to use the disk on RTR 2

		SAT	A Drive Configuration
SATA Devices	Internal (Upper)	Internal (Lower)	External
NET A			TB Not Fitted
	Select device	e or devices to be c	onfigured

The hard drives can be in one of four states -

- Unallocated
- Independent K360 Disk
- RAIDed K360 disk
- DOS (FAT32) formatted.

The disks can be converted between these states in this **SATA Drive Configuration** menu. In addition, one independent K360 disk or one RAID'ed pair of disks are marked as the system drive for the mainframe.

An Unallocated drive is one that has not got either a DOS file system or our native SWNFS file system on it. A drive that has been DOS FAT32 formatted can be used in the same way as USB drives, they will appear in the list of devices on the Import and Export menus. Since SATA is faster than USB, this is a better way to transfer large amounts of data from one Kahuna to another. The *Filing System - Import/Export - Manage Media* menu (Soft MLC GUI), can be used to partition and reformat a DOS disk.

A drive that is configured as an independent K360 disk can have another unallocated drive paired with it to form a RAID. A pair of drives that are configured as a K360 RAID can be split into two independent K360 drives. If the RAID had been the system drive, one of the new independent drives will become the new system drive.

#### **Network Cable Check**

The purpose of the Network Cable Check menu is to check the status of the ethernet cables that are connected to the Ethernet ports on the NET Fins at the back of the mainframe. There are 1 or 2 NET Fins connected at the back of the mainframe depending on the type of mainframe or the number of Router Cards fitted to the mainframe. Each NET Fin at the rear of the mainframe has 8 Ethernet ports.

	Mai	inframe (	Configuration							Net	work Cable	Check
	7.8 Release 5			Port	Length				Status			
Built	10th May 2017 14:07:04			TOIL	A	В	С	D	A	B	C	D
	Totti May 2017 14.07.04			1	0 50	0 50	0 50	0 50	Open OK	Short OK	Open OK	Open OK
urrent Address	10.54.170.80 / 16			2	0	0	0	0	Open	Short	Short	Open
In the second second	10.54.170.80 / 16			4					Open	Short	Short	Open
lew IP Address	10.54.170.80 / 16			5					Open	Short	Short	Open
lainframe Name	Maverick			6					Open	Short	Short	Open
nhibit Master Control	No Yes			7 8	0	0	0	0	Open Open	Open Short	Short Short	Open Open
Network Topology	oual Link 2 x 8 Port S	witch 10	6 Port Switch	Net	Card A	Net	Card B					Refresh
	work le Check											

A standard Ethernet cable has four pairs of wires A/B/C/D. Their states can be one of 3 states; Open (not connected), Shorted or crossed or OK. It also determines the length of each pair of cables in meters.

# Switcher Config

In the Mainframe Configuration menu press the **{Switcher Config...}** button and the first menu to appear is the Configuration Summary menu.

	Mainframe Confi	guration 🔨	1		(	Configurat	tion Summary
Predefined Switcher Resource Conf	figurations		# o Name	ME	DVE Wa	sh Store	Active o
4K IBC 2015	2M/E + 2M/E		1 Demo Room NB		4 2	20	
4K IBC 2015			2 Switcher 2	0	0 0	0	
			3 Switcher 3	0	0 0	0	
New Maverik Panel	2ME HDV		4 Switcher 4				
	J.		5 Switcher 5				
			6 Switcher 6				
NAB 2015 1	2ME 4K		7 Switcher 7				
			8 Switcher 8				
ALPHA TEST	NAB 2015		9 Switcher 9				
	14AB 2013		10 Switcher 10				
			11 Switcher 11				
1st rtr	NAB 2015 2		12 Switcher 12				
			13 Switcher 13				
			14 Switcher 14				One Big
	Mainframe Switcher	Upgrade Info	15 Switcher 15				Switcher
	Config Config		16 Switcher 16				
			Name Demo Room NE		)		Apply

#### **Summary**

This menu displays all 16 possible switcher configurations and all the resources allocated to each switcher.

# •	Name	ME	DVE	Wash	Store	Active o	
<i>"</i> •	Demo Room NB	4	4	2	20	Active O	
2	Switcher 2	0	0	0	0		
23	Switcher 3	0	0	0	0		
4	Switcher 4	0	0	0	0		
5	Switcher 5	0	0	0	0		
6	Switcher 6	0	0	0	0		
7	Switcher 7	0	0	0	0		
8	Switcher 8						
9	Switcher 9						
	Switcher 10						
11	Switcher 11						
12	Switcher 12						
13	Switcher 13						
14	Switcher 14						One Big
	Switcher 15						Switcher
16	Switcher 16						
							Apply

The resources allocated to each individual switcher are shown in the columns. The Name attacher can be used to give each switcher a name.

A unique color code can be used to identify a switcher by using the (#) number parameter to select a switcher in the table, then use the color swatch parameter to scroll through the colors. Once happy with the selected color press the {Apply} button.

The selected color will also be displayed next to the switcher login button in the **Connect** menu.

All the switchers in the table can be forced to make one logical switcher by touching the **{One Big Switcher}** button, this will force all the resources into one switcher.

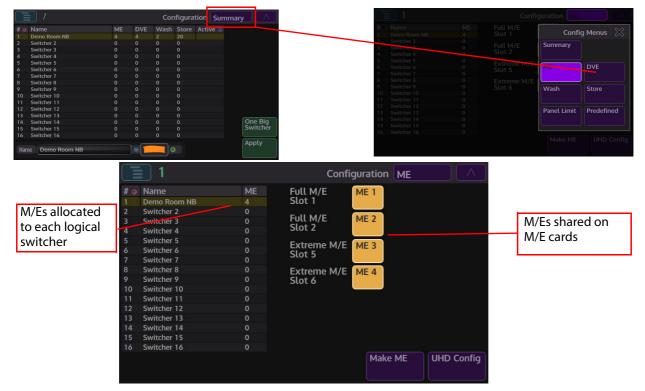
2 Swi 3 Swi 4 Swi 5 Swi 6 Swi	no Room NB tcher 2 tcher 3 tcher 4 tcher 5 tcher 5	4 0 0 0 0	4 0 0 0	2 0 0	20 0 0	
3 Swi 4 Swi 5 Swi 6 Swi	tcher 3 tcher 4 tcher 5	0		0		
4 Swi 5 Swi 6 Swi	tcher 4 tcher 5					
5 Swi 6 Swi	tcher 5					
6 Swi		0				
	tehen /					
7 Stari	icher o					
/ 31/1	tcher 7					
8 Swi	tcher 8					
9 Swi	tcher 9					
10 Swi	tcher 10					
11 Swi	tcher 11					
12 Swi	tcher 12					
13 Swi	tcher 13					
14 Swi	tcher 14					One Big
15 Swi	tcher 15					Switcher
16 Swi	tcher 16					

Caution is needed when using this function as all other switcher setups will be lost, after pressing the button a caution dialog box will appear, if the user wishes to continue press **{OK}**.

#### M/Es and Make ME<sup>TM</sup>

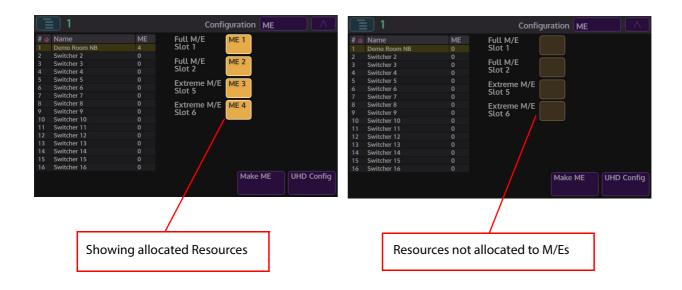
The MEs menu is where all the resources are assigned to the logical switchers using the Make ME<sup>TM</sup> technology. In the Summary menu, touch the **{Summary}** menu link button top right, then touch the **{ME}** menu link button from the dialog box.

In the ME menus, the column showing the 16 logical switchers displays the quantity of M/Es each logical switcher has been allocated. The second column (to the right) in the menu identifies the M/E configuration on each of the M/E cards.

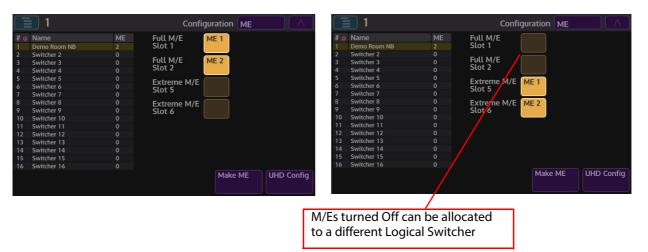


The **{ME1}** - **{ME4}** buttons will display the M/Es allocated status. M/Es in yellow if the M/Es are active, the M/E buttons can cause 3 different states:

- ON (yellow) as shown above resources allocated to M/Es.
- Brown Resources not allocated to M/Es
- OFF nothing visible (no resources allocated in the "Make ME" menu).

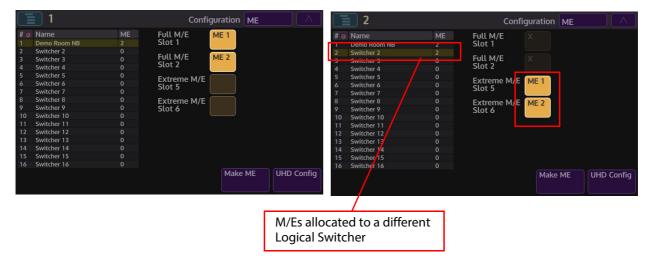


As mentioned earlier the user can touch the M/E allocation buttons to turn the M/Es On and Off. Turning them Off will allow the user to change the order of the M/Es, it will also allow the M/Es to be allocated to a different logical switcher.



In the example below, the bottom two M/Es have been deselected. Use the rotary control to scroll down to a different switcher, then touch the bottom two M/E positions, and M/E 1 and M/E2 have been created for the second logical switcher.

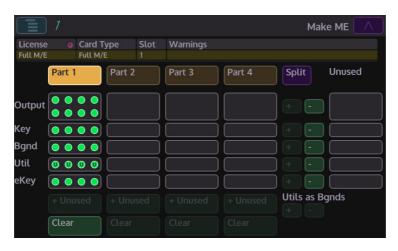
A second logical switcher can now be created and the M/Es and resources allocated to that switcher, as shown below:



Note: If all the M/Es in the menu are deselected, the order priority of the M/Es can be changed i.e. if as above there are 4 M/Es available and the original M/E configuration was M/E 1 at the top and M/E 4 at the bottom, once deselected, the M/E order can be changed. The first M/E touched will be M/E 1 and the last M/E touched will be M/E 4, in any order the user wishes.

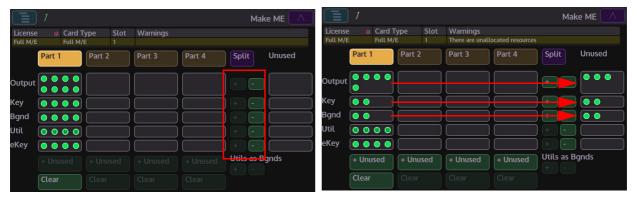
#### **Allocating Resources to M/Es**

Touch the **{Make ME...}** button at the bottom of the main ME menu and the **Make ME** menu will open. This is where the user can allocate resources on each M/E card to create an M/E or multiple M/Es.



At the top of the menu is a row showing the information related to the selected M/E card. It displays the type of license allocated to the card, the type of card fitted and which slot in the mainframe the card is placed.

Select a card using the red parameter and now the user can start allocating resources to M/Es.



The flexibility of Make ME technology allows the user to create an M/E exactly the way they wish. The M/E can be as simple as; 1 M/E Output with 1 Key, 2 M/E Outputs with 2 Backgrounds or allocate all resources to 1 M/E, or any combination the user wishes.

In the default state, all resources are allocated to **Part 1** (shown above). Moving resources around is done using the {+/-} buttons, as the {-} button is pressed resources are taken away from the **Part 1** column and moved into the Unused column.

Selecting **Part 2**, the user can now use the **{+}** button to move resources form the Unused column into the **Part 2** column, one by one or by pressing the **{+ Unused}** button all the resources will be moved into **Part 2**.



							Mak	æ ME (	
License		Card T		Slot	Warnings				
Full M/E		Full M/			There are unal				
	Part 1		Part 2		Part 3	Part 4	Split	Unuse	d
Output	• • •	••	••				+ -	•	
Key	••		••				+ -		
Bgnd	••						+ -		
Util	00	00					+ -		
eKey	••	••					+ -		
	+ Unu	sed		sed	+ Unused	+ Unused	Utils as B	gnds	
	Clear		Clear						

Pressing the **{Clear}** button will move all resources from the selected Part into the Unused Resources column.

Note: The Allocation of eKeys to an M/E and how they affect the switcher resources will be discussed in detail in the User Config - eKey Config menu.

Note: The maximum number of M/Es that can be created for a logical switcher is 6 (as shown below), this does not mean that all the resources on the cards in the mainframe would be used. The remaining resources can be shared between other logical switchers.

	1			Co	onfigurat	ion ME					
# 🔾					ME 1	ME 2	ME 3	ME 4			
1		NB	6	Slot 1							
2											
3	Switcher 3	Warni	na								
4	Switcher 4		2								
5											
6											
7		(									
8		Can't have more than 6 MEs in a single logical switcher									
9	Switcher 9		a sing	te togical swi	lunei						
10	Switcher 10										
11	Switcher 11										
12	Switcher 12			Close				l in the second s			
13	Switcher 13										
14	Switcher 14										
15											
16											
								Config			

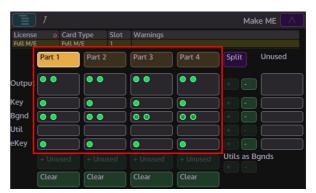
A quick method of assigning resources across an M/E and creating multiple M/Es in a slot on a single card is by using the **{Split}** function.



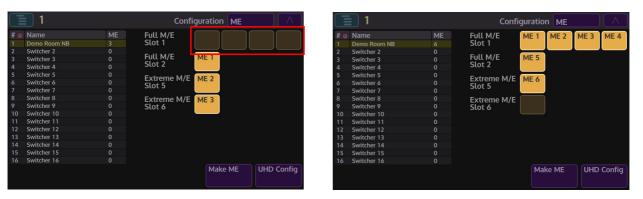
Part 1		Split	8
		•	Single
		Ď ⊕∎ ⊡	Dual
			Quad
		Utils as	

A dialog box will open with 3 options "**Single**, **Dual** and **Quad**" this means that when "Single" is touched, all the resources will remain in "Part 1". Touching "Dual" will split all the resources evenly between Part 1 and Part 2. Finally, touching the "Quad" button will split all resources evenly between Part 1 to Part 4 (as shown below).





Going back to the **ME** main menu (below). The result of this example is that the M/E card in "Slot 1" has now been split into 4 M/Es, with the resources split evenly over them. Notice that they are not selected. If the user de-selects all the M/Es, all the M/Es can now be placed in the order required by touching each one of them in order.



When leaving the ME menu, the user will be prompted by a dialog box to "**Save**" or "**Discard**" the new setup.

Once logged back in, the new M/E setup can now be selected using the M/E Delegate buttons on the control surface. The available resources for each M/E are displayed next to the T-bar on the control surface.

#### MakeME<sup>TM</sup> and UHD

The unique MakeME software of Kahuna allows the user to allocate resources to a UHD and a SD/HD/1080p logical switcher setup. The mixture of a UHD and SD/HD/1080p setup can either be for a single broadcast studio setup or split across a number of studios. Allowing one studio to broadcast in SD/HD/1080p and another in UHD or a mixture of both.

In the "**MakeME**" menu, as with a non UHD setups, is where the resources are allocated to each M/E. Then in the "**UHD Config**" menu, the user will allocate the UHD quadrants within the M/Es.



The flexibility of MakeME software, allows the user to make a single M/E in to a UHD M/E or make all M/Es UHD. It will all depend on how much resource is required for each UHD output. The easiest way to set the M/Es up is to use the "**Split**" function in the MakeME menu. Press the **{MakeME...}** menu link button, then in the "**MakeME**" menu use rotary parameter to select the M/E that will be use for UHD. Use the MakeME **Dual** or **Quad** buttons to quickly split the resources over the selected M/E.



When using the "**Dual**" resource split, this would also have to be done for the second M/E card in the mainframe, as this would eventually make up the resources for the 4 quadrants over the 2 M/E cards. This will allow more resources to the UHD M/E.

Selecting the "**Quad**" resource split would eventually divide the resources for the 4 quadrants split over 1 M/E card.

Now go back to the main **ME** menu.

In the "MEs" menu, touch the {UHD Config} menu link button to open the "UHD Quadrant Linking" menu.

If the user selected "Quad" split in the MakeME menu, then the ME menu and the UHD Config menu will look like the menus shown below.

Notice that the M/E in "Slot 1" has been split into 4. This means that in the UHD Config menu, the 4 UHD quadrants are allocated to 1 M/E card.

1	Configu	ration ME	1	UHD Quadrant Linking
1 Demo Room NB	ME Full M/E o Slot 1		Full M/E Slot 1 Full M/E	
4 Switcher 4	o Full M/E O Slot 2		Slot 2	
6 Switcher 6	o Extreme M/E Slot 5		Extreme M/E Slot 5	
8 Switcher 8	0 Extreme M/E 0 Slot 6		Extreme M/E Slot 6	
11 Switcher 11	0 0 0			
13 Switcher 13	0 0 0			
	0 0			Make ME
		Make ME UHD Config		Маке МЕ

If the user selected "Dual" split in the MakeME menu, then the ME menu and the UHD Config menu will look like the menus shown below.

The M/E cards in "Slot 1 and Slot 2" are now both split, which means that the in the UHD Config menu, the 4 UHD quadrants are allocated over the 2 M/E cards as well.

	1		Configuration ME
# 0		ME	Full M/E Full M/E
1	Demo Room NB		Slot 1 Slot 1
2	Switcher 2		
3	Switcher 3		Full M/E Full M/E
4	Switcher 4		Slot 2 Slot 2
5	Switcher 5		Extreme M/E
6	Switcher 6		Extreme M/E Extreme M/E Slot 5
7	Switcher 7		
8	Switcher 8		Extreme M/E Extreme M/E
9	Switcher 9		Slot 6
10	Switcher 10		
11	Switcher 11		
12	Switcher 12		
13	Switcher 13		
14	Switcher 14		
15	Switcher 15		
16	Switcher 16		
			Make ME UHD Config

1		UHD Quadrant Li	nking 🔨
Full M/E Slot 1		)	
Full M/E Slot 2		)	
Extreme M/E Slot 5			
Extreme M/E Slot 6			
			Make ME

To set the UHD quadrants, touch the **first or top left quadrant** blank button and the first quadrant will light. This will be the **UHD (T/L)** top left quadrant, now touch the other blank buttons in sequence and the remaining quadrants are assigned (as shown below), UHD (T/L), UHD (T/R), UHD (B/L) and UHD (B/R).

Quad Split UHD setup

1	l i		UHD Qua	drant Linking	$\frown$
Full M/E Slot 1	UHD (T/L)	UHD (T/R)	UHD (B/L)	UHD (B/R)	
Full M/E Slot 2					
Extreme M/E Slot 5					
Extreme M/E Slot 6					
				Make	ME

Dual Split UHD Setup

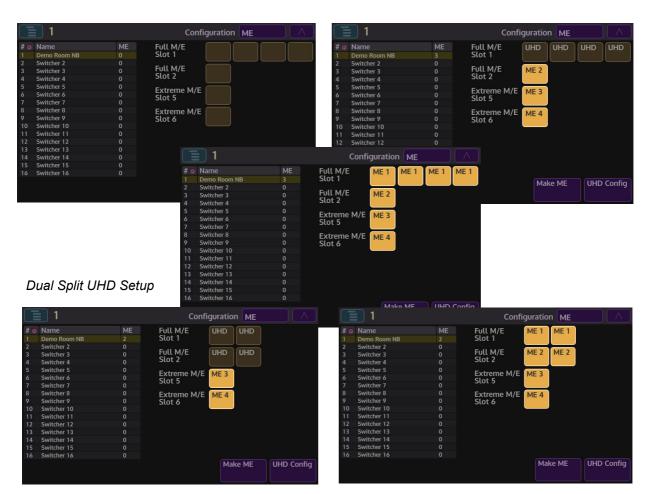
1			UHD Quadrant Linking 📃 🔨
Full M/E Slot 1	UHD (T/L)	UHD (T/R)	
Full M/E Slot 2	UHD (B/L)	UHD (B/R)	
Extreme M/E Slot 5			
Extreme M/E Slot 6			
			Make ME

Touch the **{MakeME}** menu link button to go back to the **"MEs**" menu. The M/Es now have to assigned in the M/E card slots.

This is done in the normal way by touching each of the blank buttons in turn, notice that each button now has "UHD" displayed on the button, the buttons have to be pressed once again to assign the M/Es.

Notice that the buttons have now turned yellow and each one says "**ME 1**" in the diagram below. Obviously this will be different depending on the user defined setup.

Note: If the M/E Assignment buttons are not pressed twice so that they turn yellow and display the allocated M/E, the UHD setup will not work!



The UHD setup in these menus is now complete and ready for the user to log into the system and complete the UHD system setup.

Press the "**Back**" or "**Up**" button to come out of the menu and a dialog box will give a prompt to save the setup that has just been created, once saved, the **Mainframe Configuration** menu will now be displayed, then press the "**Up**" button once again to display the "Connect" menu. From here press the "Logical Switcher" button for the required logical switcher, to login.

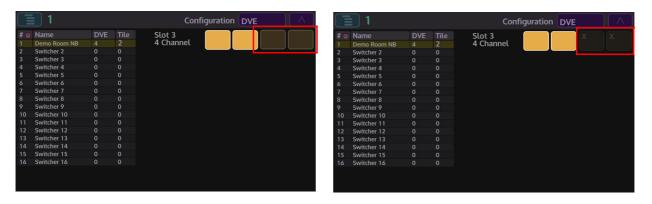
#### DVEs

Touch the menu option button at the top right of the menu, then touch the **{DVE}** button. This menu displays all the DVE resources allocated to logical switchers at a glance.

				$[ ] \Lambda ]$					Config	uration DVE	
				$\sim$	# (	Name	DVE	Tile	Slot 3		
		Confi	g Menus	$\otimes$	1	Demo Room NB		4	4 Channel		
		Summary			2	Switcher 2					
		Summary			3	Switcher 3					
					4	Switcher 4					
					5	Switcher 5					
		ME	DVE		6	Switcher 6					
					7	Switcher 7					
					8	Switcher 8					
		Wash	Store		9	Switcher 9					
					10	Switcher 10					
					11	Switcher 11					
		Panel Limit	Predefin	bo	12	Switcher 12					
		Parlet Littit	Predenin	eu	13	Switcher 13					
					14	Switcher 14					
					15	Switcher 15					
					16	Switcher 16					

The menu displays the number of DVE cards fitted to the mainframe and how the DVE Tiles are allocated across logical switchers.

Notice that there are 4 DVE Tiles in the DVE card slot. Any of these DVE Tiles can be assigned to other switchers, by simply touching the yellow DVE tile buttons to turn them off (brown), then use the red parameter control to select one of the other 15 switchers in the table. Touch the DVE tile button once again it will turn yellow indicating that the DVE tile has been selected and assigned to the selected logical switcher.

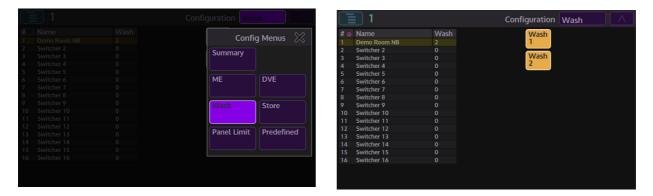


If the DVE tile button is brown and has a cross on it, this means that the DVE tile is assigned to another logical switcher.

Note: When any changes are made to the Configuration DVEs menu, a warning dialog box will be displayed asking the user if the changes are to be Saved or Discarded.

#### Washes

Touch the menu option button at the top right of the menu, then touch the **{Wash**} button. There are 2 Washes available if 2 Router cards are fitted to a Kahuna mainframe (1 per Router card). Washes can be allocated to logical switchers in the same way as M/Es. Select a logical switcher using the red parameter control and then press the **{Wash**} button. The wash is allocated to the logical switcher. If there is only 1 router card; and the user tries to select the second wash the button will turn Red; signalling that the wash is not available to use.



#### **Stores**

Touch the menu option button at the top right of the menu, then touch the **{Store}** button. There are 20 Stores available if 2 Router cards are fitted to a Kahuna mainframe (10 per Router card). Stores can be freely allocated to logical switchers in the same way a s M/Es, DVEs and Washes. Select a logical switcher using the red parameter control and then touch the store buttons **{1}** - **{20}** selecting the number of stores for each logical switcher. The Stores are allocated to the logical switcher. If there is only 1 router card; and the user tries to select Stores 11 - 16 the buttons will not select; signalling that the stores are not available to use.

		re	1		Configuratio	n Stor		
			# O Name	Store	Store	Store	Store	Store
	Confi	g Menus  🛛	1 Demo Room NB		1	6	11	16
	Summary	)	2 Switcher 2					
	Summary		3 Switcher 3		Store	Store	Store	Store
			4 Switcher 4		2	1	12	17
			5 Switcher 5		Store	Store	Store	Store
	ME	DVE	6 Switcher 6		3016	Store	13	18
			7 Switcher 7		3	Ů	13	10
	L		8 Switcher 8		Store	Store	Store	Store
	Wash	Store	9 Switcher 9		4	9	14	19
			10 Switcher 10					
			11 Switcher 11		Store	Store	Store	Store
	Den el Lineit	Duadafinad	12 Switcher 12		5	10	15	20
	Panel Limit	Predefined	13 Switcher 13			-		
			14 Switcher 14					
			15 Switcher 15					
			16 Switcher 16					

#### **Panel Limit**

Touch the menu option button at the top right of the menu, then touch the **{Panel Limit}** button.

The Panel Limit menus allows the user to set a limit on the number of panels that can be connected/used with a single logical switcher.

The maximum number of panels that can be used with a single logical switcher is 6. Select a logical switcher using the red parameter control and then touch a panel limit button to limit the number of panels that can log into the logical switcher.

		el Limit		1		Configuration Panel Limit
	Config	g Menus 🛛 🕅	# (	Demo Room NB	Panel 6	1
	Summary		2 3 4	Switcher 2 Switcher 3 Switcher 4	6 6 6	2
	ME	DVE	5 6 7	Switcher 5 Switcher 6 Switcher 7	6 6 6	3
	Wash	Store	8 9 10		6 6 6	4
	Panel Limit	Predefined	11 12 13	Switcher 11 Switcher 12 Switcher 13	6 6 6	5
			14 15 16	Switcher 14 Switcher 15 Switcher 16	6 6 6	8

#### Predefined

Touch the menu option button at the top right of the menu, then touch the **{Predefined}** button.

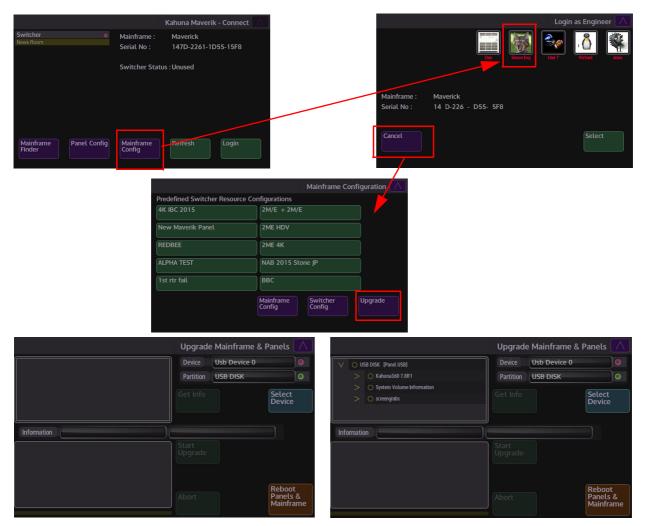
Predefined Config menu allows the user to create up to 10 predefined switcher configurations. The logical switcher configurations will have been setup and resources allocated in the previous menu's. In this menu the user has the ability to save a configuration and then access that configuration to add or take away resources with out having to build a new logical switcher.

Once a predefined config has been created and saved, the user is able to add to each of the resource menu's in the future, a prompt menu to save any updates will appear, this will then be saved to the predefined switcher configuration.

					Configuration	Predefin	ed 🔨
	Config	Menus 💥	File o	2 ME 4K IBC 2015			
	Summary		2 3 4	2M/E + 2M/E New Maverik Panel 2ME HDV			
	ME	DVE	5 6 7 8	REDBEE 2ME 4K ALPHA TEST NAB 2015 Stone JP			
	Wash	Store	8 9 10	Ist rtr fail BBC			
	Panel Limit	Predefined	Name	2 ME 4K IBC 2015			
	Save	Delete			Save	Load	Delete

# Upgrade

This menu allows the user to upgrade the software for the Mainframe and the Panel. All system software upgrades have to be done in this menu. To do this, place a USB memory stick either into one of the USB ports in the mainframe (recommended way), or into a USB port on the MAV-GUI.



In the "Connect" menu, press the **{Mainframe Config}** button, then in the Login as Engineer menu, select an engineer login and then touch the {Select} button. The Mainframe Configuration menu will be displayed. In this menu, touch the **{Upgrade}** menu link button. Use the "**Device**" parameter to scroll to the USB device with the software, touch the **{Select Device}** button and the contents of the USB stick will be displayed in the top left window. Select the software by touching and selecting it in the window. Touch the lit **{Get Info}** button and information related to the selected software from the software.txt file will be displayed in the information area. When happy that the correct software has been selected, touch the **{Start Upgrade}** button.

	Upgrade	e Mainframe & I	Panels 🔨		Upgrade	Mainframe & Pan	iels 🔨
USB DISK [Panel USB] <ul> <li></li></ul>	Device Partition Get Info	Usb Device 0 USB DISK	Select Device	O USB DISK. [Panet USB]     S & Kahuna360 7.8R1     System Volume Information     S creengrabs	Device Partition Get Info		elect evice
	Start Upgrade		Reboot	Upgnde for- Kahuna 340 Kahuna Bare Kahuna 340 Compact Kahuna 4400 Kahuna 4400 Kahuna 9400	Start Upgrade		eboot
	Abort		Panels & Mainframe		Abort	Pa	anels & ainframe

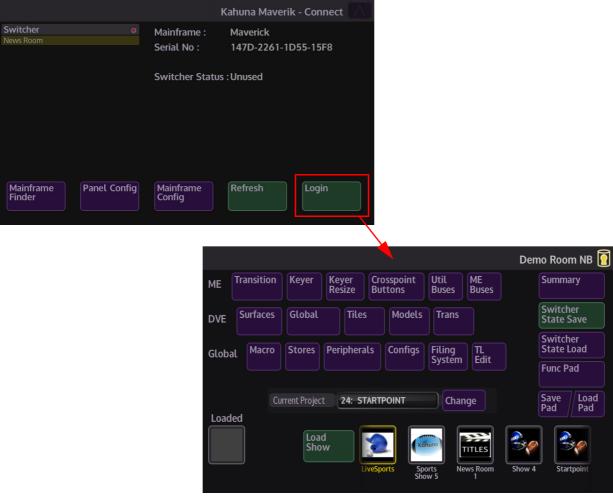
The progress of the upgrade is displayed in the Information bar.

	Upgrade	Mainframe & F	anels	
USB DISK [Panel USB]	Device Partition	Usb Device 0 USB DISK		
System Volume Information     Screengrabs			Select Device	
Information Phase 2/5: Copying & Checking:	/panel2.tar.	gz		
Upgrade for- Kahuna 360 Kahuna 18ae Kahuna 360 Compact Kahuna 4800 Kahuna 4400 Kahuna 6400	Start Upgrade			
Maverik	Abort			

Once complete, touch the **{Reboot Panels & Mainframe}** button, a dialog box is displayed asking the user if they want to reboot.

	Upgrade	e Mainframe 8	Panels	$\land$
USB DISK [Panel USB]	Device	Usb Device 0		•
> 💿 Kahuna360 7.8R1	Partition	USB DISK		0
System Volume Information     Screengrabs	Get Info		Select Device	
Information All Done:	Done 10 of	10 Progress 10	0.	
Completed in 6 minutes 31 seconds. Please Reboot.				

Once the system has rebooted, the "Connect" menu will be displayed ready to login to the switcher.



Finally, press the {Login} button, and the MAV-GUI will login ready to use.

MAV-GUI logged in menu

# Home Menu, Defaults and Shows

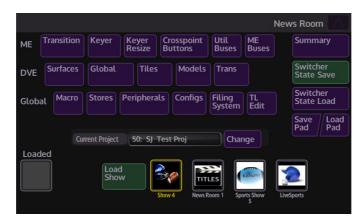
#### **Overview**

The Home menu is the first menu that is displayed after logging into the system, it allows the user to access all the menus on the MAV-GUI and select and load a show.



When working in menus other than the home menu, the user can easily get back to the home menu by pressing the **"Home"** button.

The line of icons at the bottom of the menu are the **"Shows"**, shows are user defined individual setups that contain Projects, Configs and GMEMs, they can have icons assigned to them so that they can instantly be associated with a particular setup. They are a very quick and easy way to instantly load files.



Depending on the number of shows created, the menu can only display 5 show shows at a time, the user is able to touch one of the shows and swipe horizontally left or right to scroll through the shows until the required show is displayed.

To load a show, touch the required show and a yellow outline will appear around the icon, press the **{Load Show}** button.

# Summary

The Summary menu allows the user to see information about the overall setup of the mainframe and control surface.

The user is able to setup "Control Rights" and setup passwords, but all the other menus are just a quick view summary.

						Ne	ws Room				Summary
ME	Transition	Keyer	Keyer Resize	Crosspoint Buttons	Util Buses	ME Buses	Summary	Panel	М	ainframe	
							Cultober	Name	Kahuna Panel		Maverik
DVE	Surfaces	Global	Tiles	Models	Trans		Switcher State Save	IP Address	10.54.253.187 / 16		10.162.5.100 / 16
	Macro	Stores	Periphera	ls Configs	Filing		Switcher	Version	9.2 Release3		9.2 Release3
Globa		Stores	Peripriera	conings	System	Edit	State Load	Built	21st Oct 2020 16:01:36		21st Oct 2020 16:01:36
							Save Load Pad Pad	Cluster		Serial No.	147D-2261-1D55-15F8
		rent Project	50: SJ 1	Test Proj	Char	nge		Index	1		26th Nov 2020 16:55:07
Load	led	Load	Ŵ	Show 4 News R		Kahuna prts Show Liv	esports	Last Load Configs	ed Current Connected Vser Panels	Config I Reso	Licence Info

The main summary menu displays information about the MAV-GUI (Panel) and the mainframe, which includes IP addresses, the software version that is currently being used and the serial number of the mainframe.

#### **Current Configs**

This menu displays the list of Configurations, Engineering, User, I/O and Panel that are currently loaded and being used.

		Current Configs
Eng	22/0	NOV DEMO
User	22/0	NOVEMBER DEM
I/0	None	
Panel	22/3	NOV6

#### **Current User**

From the Summary main menu, touch the {Current User} menu link button. The Current User menu, as the name suggests, displays the current user that is logged into the system.



The menu will also allow the user to set Control Rights over their profile and set a (PIN number) password over their own profile to limit access into their own setup.



The Control Rights menu allows the user to enable/disable control features.

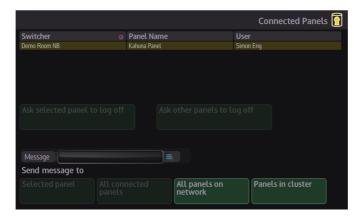
This is useful if an administrative user wanted to limit the control for example, of contract staff, limiting there ability to change configuration setups.

As the name suggests, the "**Update Password**" menu allows the user to add a PIN number password or update the current password. This function is also useful for restricting access to broadcast critical configurations and setups.

			Current User
	new pas		
	ABC	DEF	
4			
GHI	JKL	MNO	
7			
PQRS		WXYZ	
4			

#### **Connected Panels**

This menu displays all the control surfaces/MAV-GUIs that are connected to the mainframe. As can be seen below, the top of the menu displays the name of the logical switcher, the "**Panel Name**" and the current user.



The user can also ask any other panels to log off by sending a message, or they can force other panels to log off.

#### **Resources**

This menu gives you an overview of the resources allocated to the selected logical switcher. The menu will display the number of Keys, eKeys (DSKs), Backgrounds, Util Buses and Outputs.

								Resource	ces (
Switc	her Nar	me <b>Der</b>	no Room	NB		Id O			
MEs	4						DVEs	4	
	ME	Keyers	DSKs	Bgnd	Utils	Outputs	Total Tile	es 4	
		4		4		8			
	ME 2						D\	/E Til	les
	ME 3								
	ME 4						DV		
							DV		
							DV	E 4	
Was	hes	0							
Store	es	0							

# Config

The Config menu allows the user to see the "Switcher Config" setup which includes Make ME, Store Setup configuration, DVE configuration etc. without having to log out of the mainframe and go into the Mainframe Configuration menus.

This is a visual display of the Switcher Config menus. The user cannot change any of the setup parameters. Below are a few of the menus that can be seen.

					Cor	nfigura	tion	Sum	imary	
# 0	Name		ME	DVE	Wash	Store	Activ	ve		
	Demo Room NB									
	Switcher 2									
	Switcher 3									
	Switcher 4									
	Switcher 5		0	0	0	0				
	Switcher 6 Switcher 7		0	0	0	0 0				
8	Switcher 8		0	0	0	0				
9	Switcher 9		0	0	0	0				
10	Switcher 10		0	0	0	0				
	Switcher 11									
	Switcher 12									
	Switcher 13									
	Switcher 14									
	Switcher 15									
	Switcher 16									
	e Demo Room I	٩B								
	e Demo Room I	NB			Col	nfigura	tion	DVE		
	1	NB	Tile	Slot		nfigura	tion	DVE	:	$\land$
Nam			Tile 4	Slot 4 Ch		nfigura	tion	DVE	:	
Nam # • 1 2	1 Name Demo Room NB Switcher 2	DVE 4 0	4	Slot 4 Ch	3	nfigura	tion	DVE		
Nam # • 1 2 3	Name Demo Room NB Switcher 2 Switcher 3	DVE 4 0 0	4 0 0	Slot 4 Ch	3	nfigura	tion	DVE		
Nam # 0 1 2 3 4	Name Demo Room NB Switcher 2 Switcher 3 Switcher 4	DVE 4 0 0 0	4 0 0 0	Slot 4 Ch	3	nfigura	ition	DVE		
Nam # • 1 2 3 4 5	Name Demo Room NB Switcher 2 Switcher 3 Switcher 4 Switcher 5	DVE 4 0 0 0 0	4 0 0 0 0 0	Slot 4 Ch	3	nfigura	tion	DVE		
Nam # • 1 2 3 4 5 6	Name Demo Room NB Switcher 2 Switcher 3 Switcher 4 Switcher 5 Switcher 6	DVE 4 0 0 0 0 0 0	4 0 0 0 0 0	Slot 4 Ch	3	nfigura	tion	DVE		
Nam # • 1 2 3 4 5 6 7	Name Demo Room NB Switcher 2 Switcher 3 Switcher 3 Switcher 4 Switcher 5 Switcher 6 Switcher 7	DVE 4 0 0 0 0 0 0 0 0	4 0 0 0 0 0 0 0	Slot 4 Ch	3	nfigura	ition	DVE		
Nam # • 1 2 3 4 5 6 7 8	Name Demo Room NB Switcher 2 Switcher 3 Switcher 4 Switcher 5 Switcher 5 Switcher 7 Switcher 8	DVE 4 0 0 0 0 0 0 0 0 0	4 0 0 0 0 0 0 0 0 0	Slot 4 Ch	3	nfigura	ition	DVE		
Nam # • 1 2 3 4 5 6 7	Name Demo Room NB Switcher 2 Switcher 3 Switcher 3 Switcher 4 Switcher 5 Switcher 6 Switcher 7	DVE 4 0 0 0 0 0 0 0 0	4 0 0 0 0 0 0 0	Slot 4 Ch	3	nfigura	ition	DVE		
Nam # • 1 2 3 4 5 6 7 8 9	Name Demo Room NB Switcher 2 Switcher 3 Switcher 4 Switcher 5 Switcher 6 Switcher 7 Switcher 7 Switcher 9	DVE 4 0 0 0 0 0 0 0 0 0 0 0 0	4 0 0 0 0 0 0 0 0 0 0 0	Slot 4 Ch	3	nfigura	ition	DVE		
Nam # • 1 2 3 4 5 5 6 7 8 9 10	Name Demo Room NB Switcher 2 Switcher 3 Switcher 4 Switcher 5 Switcher 6 Switcher 7 Switcher 7 Switcher 9 Switcher 9 Switcher 10	DVE 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Slot 4 Ch	3	nfigura	ition	DVE		
Nam # 0 1 2 3 4 5 5 6 7 8 9 10 11 12 13	1 Name Demo Room NB Switcher 2 Switcher 3 Switcher 3 Switcher 4 Switcher 5 Switcher 5 Switcher 5 Switcher 5 Switcher 7 Switcher 7 Switcher 10 Switcher 11 Switcher 13	DVE 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Slot 4 Ch	3	nfigura	tion			
Nam # • 1 2 3 4 5 6 7 8 9 10 11 12 13 14	Deno Room NB Switcher 2 Switcher 3 Switcher 4 Switcher 5 Switcher 5 Switcher 5 Switcher 5 Switcher 7 Switcher 7 Switcher 10 Switcher 11 Switcher 11 Switcher 12 Switcher 13	DVE 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Slot 4 Ch	3	nfigura	tion			
Nam # 0 1 2 3 4 5 5 6 7 8 9 10 11 12 13	1 Name Demo Room NB Switcher 2 Switcher 3 Switcher 3 Switcher 4 Switcher 5 Switcher 5 Switcher 5 Switcher 5 Switcher 7 Switcher 7 Switcher 10 Switcher 11 Switcher 13	DVE 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Slot 4 Ch	3	nfigura	tion	DVE		

	1		Configuratio	n ME		$[ \land ]$
# 0	Name	ME	Full M/E ME 1			
1	Demo Room NB	4	Slot 1			
2	Switcher 2			2		
3	Switcher 3		Full M/E ME 2			
4	Switcher 4		Slot 2			
5	Switcher 5		Extreme M/E ME 3	í		
6	Switcher 6		Slot 5			
7	Switcher 7		3.00 5			
8	Switcher 8		Extreme M/E ME 4			
9	Switcher 9		Slot 6			
10	Switcher 10					
11	Switcher 11					
12	Switcher 12					
13	Switcher 13					
14	Switcher 14					
15	Switcher 15					
16	Switcher 16				Make	
	1		Configuratio	on Store	e )	
# 0	1 Name	Store	Configuratio	on Store	e Store	Store
# 0 1	1 Name Demo Room NB	Store 20				Store 16
1 2			Store 1	Store 6	Store 11	16
1	Demo Room NB	20	Store 1 Store	Store 6 Store	Store 11 Store	16 Store
1 2 3 4	Demo Room NB Switcher 2 Switcher 3 Switcher 4	20 0 0 0	Store 1	Store 6	Store 11	16
1 2 3 4 5	Demo Room NB Switcher 2 Switcher 3 Switcher 4 Switcher 5	20 0 0 0 0	Store 1 Store 2	Store 6 Store 7	Store 11 Store 12	16 Store 17
1 2 3 4 5 6	Demo Room NB Switcher 2 Switcher 3 Switcher 4 Switcher 5 Switcher 6	20 0 0 0 0 0 0	Store 1 Store 2 Store	Store 6 Store 7 Store	Store 11 Store 12 Store	16 Store 17 Store
1 2 3 4 5 6 7	Demo Room NB Switcher 2 Switcher 3 Switcher 4 Switcher 5 Switcher 6 Switcher 7	20 0 0 0 0 0 0 0	Store 1 Store 2	Store 6 Store 7	Store 11 Store 12 Store 13	16 Store 17 Store 18
1 2 3 4 5 6 7 8	Demo Room NB Switcher 2 Switcher 3 Switcher 4 Switcher 5 Switcher 6 Switcher 7 Switcher 8	20 0 0 0 0 0 0 0 0	Store 1 Store 2 Store 3 Store	Store 6 Store 7 Store 8 Store	Store 11 Store 12 Store 13 Store	16 Store 17 Store 18 Store
1 2 3 4 5 6 7 8 9	Demo Room NB Switcher 3 Switcher 3 Switcher 4 Switcher 5 Switcher 6 Switcher 7 Switcher 7 Switcher 9	20 0 0 0 0 0 0 0 0 0 0	Store 1 Store 2 Store 3	Store 6 Store 7 Store 8	Store 11 Store 12 Store 13	16 Store 17 Store 18
1 2 3 4 5 6 7 8 9 10	Demo Room NB Switcher 2 Switcher 3 Switcher 4 Switcher 5 Switcher 6 Switcher 7 Switcher 7 Switcher 9 Switcher 9 Switcher 10	20 0 0 0 0 0 0 0 0 0 0 0	Store 2 Store 3 Store 4	Store 5 Store 8 Store 9	Store 11 Store 12 Store 13 Store 14	16 Store 17 Store 18 Store 19
1 2 3 4 5 6 7 8 9 10 11	Demo Room NB Switcher 2 Switcher 3 Switcher 4 Switcher 5 Switcher 5 Switcher 6 Switcher 7 Switcher 8 Switcher 9 Switcher 10 Switcher 11	20 0 0 0 0 0 0 0 0 0 0 0	Store Store Store Store Store Store	Store 5 Store 8 Store 9 Store	Store 11 Store 12 Store 13 Store 14 Store	16 Store 17 Store 18 Store 19 Store
1 2 3 4 5 6 7 8 9 10 11 12	Demo Room NB Switcher 2 Switcher 3 Switcher 4 Switcher 5 Switcher 5 Switcher 7 Switcher 7 Switcher 7 Switcher 8 Switcher 9 Switcher 10 Switcher 11	20 0 0 0 0 0 0 0 0 0 0 0 0 0	Store 2 Store 3 Store 4	Store 5 Store 8 Store 9	Store 11 Store 12 Store 13 Store 14	16 Store 17 Store 18 Store 19
1 2 3 4 5 6 7 8 9 10 11 12 13	Demo Room NB Switcher 2 Switcher 3 Switcher 4 Switcher 5 Switcher 5 Switcher 5 Switcher 7 Switcher 8 Switcher 8 Switcher 10 Switcher 10 Switcher 11 Switcher 13	20 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Store Store Store Store Store Store	Store 5 Store 8 Store 9 Store	Store 11 Store 12 Store 13 Store 14 Store	16 Store 17 Store 18 Store 19 Store
1 2 3 4 5 6 7 8 9 10 11 12 13 14	Demo Room NB Switcher 2 Switcher 3 Switcher 4 Switcher 5 Switcher 5 Switcher 5 Switcher 7 Switcher 7 Switcher 7 Switcher 10 Switcher 11 Switcher 12 Switcher 13	20 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Store Store Store Store Store Store	Store 5 Store 8 Store 9 Store	Store 11 Store 12 Store 13 Store 14 Store	16 Store 17 Store 18 Store 19 Store
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	Demo Room NB Switcher 2 Switcher 3 Switcher 4 Switcher 5 Switcher 5 Switcher 7 Switcher 7 Switcher 8 Switcher 8 Switcher 9 Switcher 10 Switcher 10 Switcher 11 Switcher 13	20 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Store Store Store Store Store Store	Store 5 Store 8 Store 9 Store	Store 11 Store 12 Store 13 Store 14 Store	16 Store 17 Store 18 Store 19 Store
1 2 3 4 5 6 7 8 9 10 11 12 13 14	Demo Room NB Switcher 2 Switcher 3 Switcher 4 Switcher 5 Switcher 5 Switcher 5 Switcher 7 Switcher 7 Switcher 7 Switcher 10 Switcher 11 Switcher 12 Switcher 13	20 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Store Store Store Store Store Store	Store 5 Store 8 Store 9 Store	Store 11 Store 12 Store 13 Store 14 Store	16 Store 17 Store 18 Store 19 Store

### License

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Licence Information	
Snell	
1. Licence	
1.1. The Licensor whose name is set out in the Schedule to this licence ("the Licensor) hereby grants you a non-exclusive licence to use software stored on the media enclosed in this software package and the accompanying documentation and all enabling licence keys ( Software) on the following terms.	e the ('the
1.2. The copyright and all other rights in the Software and the accompanying documentation remains with the Licensor.	
2. Acceptance	
2.1. You are deemed to accept the terms of this Licence by selecting the "Yes" button when asked if you wish to proceed with installat of the software within the installer application. If you do not wish to accept these terms, you should within fourteen days of purchase return the software package, with its documentation, unused to your supplier together with proof of purchase.	tion e
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3.1.3. Transfer the Software to someone else, provided that you assign all of your rights and obligations under this Licence to such oth person, you erase all copies of the Software under your control and stored on any medium (including the hard disk copy and any back in the software under your control and stored on any medium (including the hard disk copy and any back in the software under your control and stored on any medium (including the hard disk copy and any back in the software under your control and stored on any medium (including the hard disk copy and any back in the software under your control and stored on any medium (including the hard disk copy and any back in the software under your control and stored on any medium (including the hard disk copy and any back in the software under your control and stored on any medium (including the hard disk copy and any back in the software under your control and stored on any medium (including the hard disk copy and any back in the software under your control and stored on any medium (including the hard disk copy and any back in the software under your control and stored on any medium (including the hard disk copy and any back in the software under your control and stored on any medium (including the hard disk copy and any back in the software under your control and stored on any medium (including the hard disk copy and any back in the software under your control and stored on any medium (including the hard disk copy and any back in the software under your control and stored on any medium (including the hard disk copy and any back in the software under your control and stored on any medium (including the hard disk copy and any back in the software under your control and stored on any medium (including the hard disk copy and any back in the software under your control and stored on any back in the software under your control and stored on any back in the software under your control and stored on any back in the software under your control and stored on any back	ner up

# Info

The Upgrade Information menu displays a list of new features for the current version of software loaded onto the mainframe.



# Defaults

In the **Global Configs** menu, the **Defaults** menu is used to set and load pre-saved Projects, GMEM's and Configs, which dictate the way the mainframe starts up after power-up and login. In this menu, the mainframe may also be reset to a default configuration state.

			Syste	em Configu	ration 🔨				Defaults	
Panel Configuration	Panel Prefs	GUI Prefs	Button Maps	Button	Colors	Startup Defaults			Panel Auto-	Connect
Save Load	User	Fader	Maverik	Preview		Default Project	3: JW		Disabled	
	Functions	Assign	Layout	Aux		Default Panel Project	36: 4K - SHOW		Last Mainfra	ime
ana caa caa kat						Default Panel Config	0: start			
User Configuration	Modulators	Mattes Washes	Crosspoint Config	DVE Setup	Multiviewer	Default User Project	9: BBC Studio 1		Preferred M	ainframe
Luau		ore ME	TL	Switcher	Resource	Default User Config	0: Demo		Set Preferre	d
	Setup	Confi	g Defaults	Outputs	Link	Default I/O Project	36: 4K - SHOW			
						Default I/O Config	None		y Factory De	
								ME	DVE	Panel
Log Off Con		O onfig	Show Set-up		Defaults	Save Changes	d Default s GMEM	I/O	User	Eng

On the left hand side of the menu under the Startup Defaults heading there are three sets of attacher boxes. Touch the top attacher box to change the Default Project, Default Panel Project and Default Panel Config. The next attacher down is the Default User Project/Config and Default I/O Project and Config.

After making changes to the startup default parameters, press the **{Save Changes}** action button to save the new Startup Defaults.

Press the **{Default GMEMs}** button to open the Default GMEMs menu, as the name depicts, this is where the user sets up the start up GMEM.

Note: The Startup GMEM loads when the mainframe is powered up. Normal GMEM is used when any GMEM is set to use normal values when saved.

			Default GMEMs
Startup Defaults			
Startup GMEM Project	70: Maverk Test		
Startup GMEM	1:		
Normal GMEM Project	70: Maverk Test		
Normal GMEM	1:		
Save Changes Load De Files	fault Other Defau	lts	

Press the {Other Defaults} button to go back to the main Defaults menu.

Pressing one of the menu buttons in the **Apply Factory Defaults** box, will cause the system to be reset to a factory reset configuration.

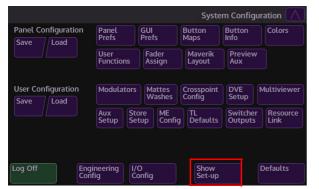
Pressing one of the Apply Factory Defaults buttons will not erase the startup files stored in mainframe hard drive, it will only step out of the default startup files that are currently loaded. The pre-saved startup GMEM/Config files may be accessed at any time. A warning dialog box will be displayed prompting the user to make a choice.

		Defaults 🔨				Defaults	
Startup Defaults		Panel Auto-Connect	Startup Defaults				
Default Project	3: JW	Disabled	Default Project		$\approx$	Disabled	
Default Panel Project	36: 4K - SHOW	Last Mainframe	Default Panel Project	Warning		Last Mainfra	
Default Panel Config	0: start		Default Panel Config	All ME's			
Default User Project	9: BBC Studio 1	Preferred Mainframe	Default User Project	FACTORY RESET			
Default User Config	0: Demo	Set Preferred	Default User Config			Set Preferred	
Default I/O Project	36: 4K - SHOW		Default I/O Project	OK Cancel			
Default I/O Config	None	Apply Factory Defaults	Default I/O Config			y Factory De	
		ME DVE Panel					
Save Changes Load Files	Default GMEMs	I/O User Eng	Save Changes Load Default Files				

Top right of the menu is the **Panel Auto-Connect** options, from here the system can be set to automatically connect to a preferred mainframe each time the system is switched on and boots up. Press the **{Preferred Mainframe}** button, the next time the system is switched on, at boot up, the system will go straight to the **Home** menu. The **{Last Mainframe}** button sets the mainframe to start up as the last mainframe that the system was being used as. Press the **{Disabled}** button to disable these functions.

#### **Creating a Show**

In the Global Configs menu is the **{Show Set-up}** button, this menu allows the user to create startup shows, shows are user defined individual setups that contain Projects, Configs and GMEMs.

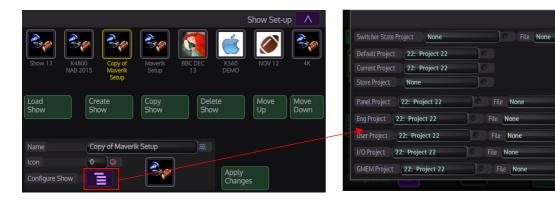




**Configure Show** 

To create a show, press the **{Create Show}** button and a new show will be added to the row of shows at the top of the menu. The new show will be called "Show (number)" the number relates to how many shows have been created, so as shown above in the Show Set-up menu, Show 13 has been created.top of the table, the show can be moved up or down the show order by pressing the **{Move Up}** or **{Move Down}** buttons.

New shows can be renamed by touching the keyboard symbol at the end of the **"Name"** parameter, then touch and hold the **"Star"** button on the MAV-GUI surface to open a side menu. Touch the **{Virtual Keyboard}** button to display the on-screen keyboard. Type in the new name for the show and press return. Close the virtual keyboard and the new name is displayed. Use the **"Icon"** rotary parameter control to select an icon for the show.



A show will need a configuration setup assigned so that the system will load the correct show when the show button is pressed. To get to the configs, press the Configure Show menu link expander button and a dialog box will be displayed with all the Project, Config and GMEM options.

Use the options to set the required Project, Configs and GMEMs and then close the dialog box. When happy with the show setup press the **{Apply Changes}** button.

Note: If there are no Projects, Configs or GMEM's already setup, they can be added to a show at any point later when created. See the section "Important Things to you need to Know" for more information about creating projects.



To Delete a show, touch a show to select the show and then press the **{Delete**} button. To Load a show, again ouch a show to select the show and then press the **{Load Show}** button.

# **Save Pad and Other Save Menus**

# **Save Pad**

Note: This section will mention:

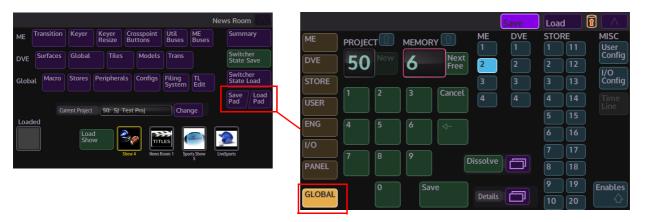
**Global memory files** (GMEMs - Global memory), these save and load the state of the entire control surface.

and

**ME memory files** (DMEMs - Dynamic memory), saves the state of the selected mix effect.

To save confusion, this section will describe the memory files as DMEMs and GMEMs

The Save Load Pad allows the user to quickly setup save and load **ME memory files** (DMEMs) and **Global memory files** (DMEMs), the menus also allow the user to setup Enables to enable/disable functionality within the DMEMs and GMEMs. Kahuna is a project driven system where the user is able to create 98 individual projects which can each contain up to 1000 GMEMs and 1000 DMEMs.



The diagram above is the default menu when entering the Save Pad. The save options and parameters are setup to save a GMEM; the **{GLOBAL}** button is lit. The menu options will change as the user steps through the brown action buttons running down the left side of the menu.

#### **Controls and Buttons**

**Project** and **Memory** number indicators can be set/adjusted by touching the number window then using either the number pad to enter the numbers or the number window will light up the same color a one of the rotary controls on the MAV-GUI, allowing the user to scroll.

In the GMEM menu, there is a **shift "Enables" button**. When touched, it will cause some buttons to change state and become menu link buttons (they will turn a dark blue/purple color). Touching one of the menu link buttons will then open a different menu with enables options specific to the function to the menu link button.

In the example below, the ME1 menu link button is selected, which then opened the ME1 enables options.



Shift Enables Button

The "Details" menu expander button allows the user to give a project a Name and Description.



Touch the menu expander button and the above menu will appear. Pressing the keyboard symbol twice will open an on-screen keyboard allowing the user to give the project a name and description, enter the text and press "Return" on the on-screen keyboard. When finished press the **"X"** to go back to the main menu. The name and description that was just entered for the GMEM/DMEM will be saved when the **{Save}** button is pressed.

# Saving a GMEM

Saving a GMEM or "Global Memory" is an easy process and can be done very quickly. Touch the **{GLOBAL}** button in the Save Pad main menu. Select an existing **Project**, or create an new project by touching the project number; a colored surround around the number will light up, then use the corresponding colored rotary parameter control to select a project number that is not being used. A box with "New" will light up next to the project number when an unused project is selected. If a project is locked, the "Keyhole" symbol will be lit light blue. Next, select an existing **Memory** file, using the rotary control with the same highlighted color to select the memory position, or select the next free memory file by touching the "Next Free" button. Then select what M/E, DVE, Stores, User Config or I/O Config enables are required in the GMEM.





Touching and selecting each of the enables options will turn the button light blue. As mentioned previously, pressing and holding the **{Enables}** button will make the M/E, DVE, User Config and User Config buttons turn into menu link buttons, this will allow the user to select or de-select specific elements of the selected enables option.



When happy with the enables setup, go back to the main menu, if saving to an existing memory file just press the **{Save}** button, there will be an option to save a "Hard GMEM" or "Soft GMEM" touch the option required and then press the **{Save}** button.



**Hard GMEM** - will store all the stores and ME data in a single file, or a "Complete Snapshot". **Soft GMEM** - will save "pointers" to the DMEM files and Stores.

> Note: For more information on DMEMs and GMEMs, please see the DMEM and GMEM section of the Kahuna 9600/6400 User Manual, which is the other User Manual supplied with this system.

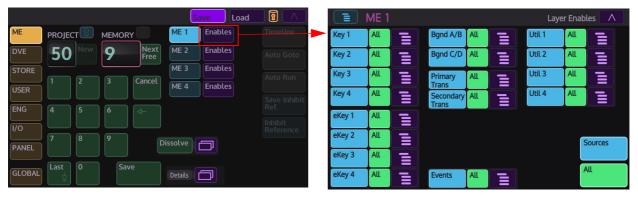
# Saving a DMEM

A DMEM or Dynamic Memory, saves set-up information related to a single M/E, which may contain information such as:

- Bus set-up (Crosspoints, Keyers, Wipes, Transitions)
- Color Effects
- Key Layer Priorities
- Masks, Crops, Borders

DMEM's are stored within a user defined Project, the user can save up to 1000 DMEM's within a single project.

To save a DMEM, select one of the DMEM options down the left side of the Save Pad main menu, the **{ME}** to **{Panel}** option buttons. Select the **Project** that the DMEM is going to be saved to by touching the project number box, then using the rotary control with the same highlighted color to select the project (if a project is locked, the "Keyhole" symbol will be lit light blue), next, select the **Memory** file, again using the rotary control with the same highlighted color to select the memory position, or touch the "Next Free" button to select the next free memory number. In the example below, the ME is selected, then ME1 is selected for the DMEM, touch the **{Enables}** menu link button to get to the ME1 Layer Enables.



The user can expand the enables options further by pressing one of the enables menu link buttons.



When happy with the enables setup, go back to the main menu, if saving to an existing memory file just press the **{Save}** button. if it is a new memory file, use the **"Memory"** rotary control to select a new memory position.

If a new name and description is needed for the memory file, use the "**Details**" menu link button to go to the "**File Details**" dialog box and enter a name and description, go back to the main menu then press the **{Save}** button.



# **Effects Dissolve**

Effects Dissolve is a function that allows a user to create smooth transitions from one memory state to another by interpolating any variable values (i.e. size, position, border width, etc.). Any state-change variables (e.g. button pushes) can be set to change at the start or end of the dissolve. It provides for example; a very simple way of creating a two key-frame effect.

The Effects Dissolve function can be used on Global Memories (GMEM), ME Memories (DMEM), DVE Memories, and User Config. memories.

An Effects Dissolve can be applied to a Memory as it is saved using the Save-Pad. It can also be applied to an existing Memory in the Filing System menu. It can also be activated temporarily for an individual Memory Load.



#### **Save Pad Operation**

When saving a memory, a Dissolve can be applied and then recalled when the memory file is loaded. When saving a memory file, touch the **{Dissolve}** button and it will light up green. Touch the menu link button (to the right of the Dissolve button) to display the "**Dissolve Setup**" sub menu (below). This sub menu allows the operator to set the parameters which are applied to change the action of the Dissolve.



		Canal State		Load
ME	DDOJECT	Dissolve Setup 💥		MISC
	PROJECT	As Saved Override Inhibit	11	User Config
DVE	24		12	
STORE		Preset None O	13	I/O Config
USER	7	Cut Point Auto Early Late	14	Events
ENG		Duration 01:00	15	T/L
	4	Shape 0.00%		Time
1/0		Profile Linear Cubic C Cubic S Sine C Sine S	16	Line
EVENTS	1		17	
PANEL			18	Copy File Enables
			19	Enables
GLOBAL			20	

**Dissolve Setup Parameters** 

#### **Cut Point**

**Auto** - the switcher determines the most useful point for state-change variables to be changed, i.e. at the start or end of the dissolve. States which are switching on will change at the start of the dissolve and those which are switching off will change at the end of the dissolve.

Early - Changes the state of all state-change variables at the start of the dissolve

Late - Changes the state of all state-change variables at the end of the dissolve

Duration - Sets the overall duration of the dissolve.

Shape - Controls the shape of the chosen dissolve profile.

**Profile** - Sets the profile of the dissolve path allowing a linear change or smooth acceleration / deceleration (among other options). A graphical illustration of the dissolve path is shown at the bottom of the pop-up and shows the selected shape and profile.

#### 1 ME 1 Enables Enables Override Enables PROIECT Override Enables PROJECT MEMORY MEMORY ME 2 Enables DVE 9 MF 2 Enables 50 9 50 Merge Enables Merge Enables ME 3 ME 3 STORE Enables ME 4 Enables Enables USER Hold Inputs Hold ENG ENG 6 Dissolve Contents Contents GLOBAL

# Load Pad Operation

When loading a memory file which already has an Effects Dissolve applied, the switcher will automatically "Dissolve" to the new state. If a dissolve is required on a memory which has not already been set as a dissolve, this can be achieved by switching on the Dissolve button. If a Dissolve is not wanted, but the file has been saved with on, this can temporarily be inhibited during a load by touching, and holding the Dissolve button (it changes to the orange "alert" color).



Touch the memory link button to the right of the **{Dissolve}** button. This will display the Dissolve Setup sub menu. This menu allows the user to override the dissolve settings for a when loading a saved memory file, without altering the values saved in the memory file.

**Dissolve Setup Parameters:** 

As Saved - the dissolve uses the settings from the original file

Override - the dissolve uses these new settings for this next load. The file retains its original settings.

**Inhibit On Load** - there will be no dissolve on the next load and the switcher will make an instant change to the new state. The file will retain its original settings for future loads.

During the Effects Dissolve operation, the **Dissolve** button flashes and a progress bar moves across the MAV GUI screen. Pressing the flashing **Dissolve** button fill stop the dissolve. A progress indicator and Stop button also appear in the message box at the top of the Legacy GUI.

#### Filing System ME 1 Name Date/Time Description 00 01 XXX Hold Inputs Override Enables Merge Enables Delete Dissolve 6: IBC 2015 Nev Enables Enables Enables Enables Load ME 1 ME 2 ME 3 ME 4

Applying an Effects Dissolve to an existing file

Files which have an Effects Dissolve applied to them are shown in the Filing System menu with an "X" icon next to the file number.

If a memory file in the list is selected, touching the {Dissolve} button brings up the following sub menu.

		Fil	ling System ME	
File Nai		D	issolve Setup 🖇	ke/Time iep '15 15:10
11 100 101	Disabled	Active	Inhibit On Load	6ep '15 15:10 Dec '14 11:16 6ep '15 09:07
200 201 202	Cut Point	Auto Early Late		Dec '14 15:02 Sep '15 10:43 Sep '15 10:47
File Name		00:00		de Merge Enables
Description	Profile	Linear Cubic C Cu	bic S Sine C Sine S	
Project Enables	Load		Apply	mit Revert
ME 1 ME 2	ME 3	ME 4		

The above sub menu allows a user to apply new Effects Dissolve settings to an existing memory file.

Disabled - the file will have no Dissolve applied. Touch {Apply} to change the file.

Active - the file will have a Dissolve applied. Touch {Apply} to change the file.

Inhibit On Load / Inhibit - the selected file will be loaded with all Effects Dissolve settings inhibited for the next load only using the Filing System load button.

The settings in this sub menu function in the same way as described in the Save Pad section.



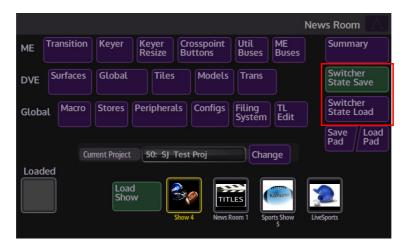
# Using Effects Dissolve with the Number Pad MAV module

There is a dedicated Effects Dissolve button on the top right of the number pad. This button can be selected when loading a memory in order to apply an Effects Dissolve to the load. The button will flash during an active dissolve and pushing the button will stop the dissolve.Pushing, and holding the button will inhibit the Effects Dissolve function of a memory load (the button lights in the "Alert" color).

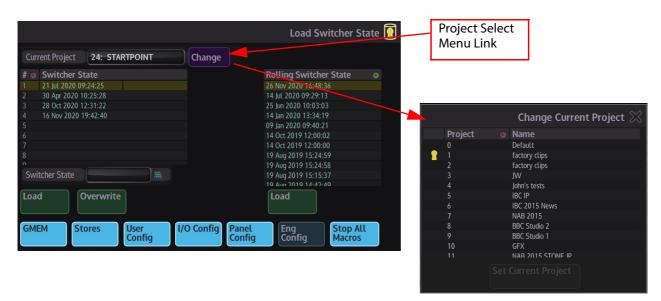
During a dissolve operation, the progress of the dissolve is displayed on OLED "Take" button, bottom right. Any further file operation during an active dissolve will remove this figure from the display, and the button will display the file load operation in the normal manner.

# Switcher State Save and Switcher State Load

A button in the "**Home"** menu allows the user to save the current state of the entire system "a global SnapShot" with one button press **{Switcher State Save}**. The snapshot saves Stores, GMEM, I/O Configs, User Configs, Eng Configs and Panel Configs.



The Switcher State Save function will save the current state of the system to the current project that the user is working in. When wanting to save into a different project or a default project, the user will need to go into the **"Switcher State Load"** menu, where the user can select which project the Switcher State Save snapshot will save to.



The **Switcher State Load** menu allows the user to recall (load) the global snapshot saved by the Switcher State Save function. The menu allows the user to select a different project where previous snapshots are saved and load the snapshot, or to scroll through previous snapshots in the current project and load them.

The menu also allows the user to disable Stores, GMEM's and Configs etc. as required before recalling the snapshot.

#### **Rolling Switcher State**

This allows the user to save Switcher States in to a **"Rolling List"** of saved states. The **"Rolling Switcher State"** function is different to the Switcher State Overwrite mentioned above, because the menu will change to display a list of saved states. The user is able to scroll down the list to a saved state, then choose to select or un-select Stores, GMEMs, Panel, User and Eng Configs before loading the switcher state, using the buttons at the bottom of the menu.

# **Using the other Save Menus**

The MAV-KEYPAD has a **"Save"** Button, when the button is pressed a save menu will be displayed, this is the top save menu where all the other save menus can be accessed. The first save menu displayed is the **"Save DMEM"** menu, if the user touches the **"Save DMEM"** menu link button a **"Save Menus"** dialog box will be displayed with menu link button to all the other save menus.



All of the save menus have basically the same layout allowing the user to select a Project, and File to save to, and the option to give file a name and description.

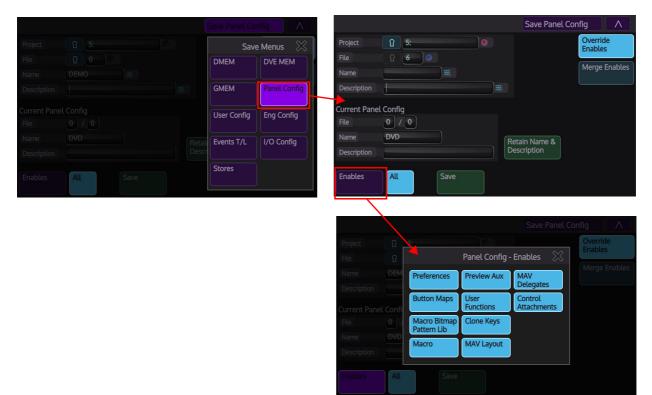
On the next page is an example of the Panel Config Save menu and how to use the save function.

#### **Example of Panel Config Save**

Before looking at the Panel Configuration menus, it is important to know how to Save to and Load Projects and Files.

The **Save** menu below allows the user to see the current **Panel Config** they are currently working in (shown at the bottom of the menu). Use the **Project** and **File** parameters to select where the **Panel Config** file is going to be saved to.

A Name and Description can be given to the new panel Config file. To do this, touch the **Name** or **Description** bar, a cursor line will flash in the bar, then touch and hold the **"Star"** button and when the dialog box opens, touch the **{Virtual Keyboard}** button and use the keyboard to type. Alternatively, use a USB keyboard attached to the MAV-GUI.



#### **Enables**

Touch the **{Enables}** button and the **Panel Config - Enables** will be displayed. The menu allows the user to Enable/Disable enables options that will be saved with the new Panel Config file.

All - enables all Enables

**Override Enables** - will override any enables that have been de-selected and turn the enable on.

**Merge Enables** - this function merges the enables currently set in the switcher with the enables saved in the file is being loaded (a 'logical OR' of the enables).



# **Using the Load Pad**

Loading files is done in a similar manner to saving files. The "**Load**" menu is accessed through the **Save Pad** menu, as shown below.

The Load menu would mainly be used for recalling "**Global**" memories (GMEMs) and Dynamic memories (DMEMs), but as can be seen in the menu, the user can also use the Load menu to recall DVEs, Stores, User/Engineer/Panel and I/O Configs.



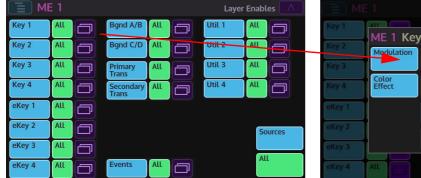
For this example, a "**Global**" or GMEM will be loaded. Make sure that **{GLOBAL}** is selected, then touch the "**Project**" number in the menu. Key in the project number using the number pad or use the rotary control parameter. Next touch the "Memory" number and again, use the number pad or rotary parameter.

If the project and memory numbers are valid, the **{Load}** button will light up green and the GMEM can be loaded.

			Save	Load A					Save	ad
ME	PROJECT	MEMORY	ME DVE	MISC User Override Enables	ME	PROJECT	MEMORY	ME 1	DVE MISC 1 User	Override Enables
DVE	50	6 Next	2 2	Config I/O Enables	DVE	50	6 Next		2 Config	Merge Enables
STORE			3 3	Config	STORE				3 Config	
USER	2	3 Cancel	4 4	Hold Inputs	USER		3 Cancel	4	4	Hold Inputs
ENG	4 5	6 🔶			ENG	4 5	6 🕂			
1/0					I/O					
PANEL	7 8	9	Store		PANEL	8		Store		
GLOBAL	0	Load	Contents	Enables	GLOBAL	0	Load	Content	ts	Enables

When the GMEM was saved, the user would have included M/Es, DVEs, Stores and Configs. In the menu above, the user selected saved functions can be clearly seen as they are lit light blue, so, when the GMEM is loaded, all of the selected functions will be included. Before loading the GMEM, the user can choose to enable/disable functions. Further functions can also be enabled/disabled by touching the **{Enables}** button, notice that the M/E, DVE and Misc buttons have now turned dark blue, meaning that they are now menu link buttons and have sub menus.

With the **{Enables}** button selected, touching the **{ME1}** menu link button will display all the enables and sub enables, in this case for the selected M/E1.





Back in the Load main menu, if the user touches the **{Contents}** menu link button, the menu displays all top level features that have been saved in the GMEM. once again, they are highlighted in light blue.

				GM	EM Content	ts 🔨						GMI	EM Conten	ts 🔨
Hard GMEM							Hard	GMEM						
ME 1	ME 2	ME 3	ME 4				ME 1		ME 2	ME 3	ME 4	ME 5	ME 6	
DVE 1	DVE 2	DVE 3	DVE 4				DVE		DVE 2	DVE 3	DVE 4	DVE 5	DVE 6	
STORE 1	STORE 2	STORE 3	STORE 4	STORE 5			STO	RE 1	STORE 2	STORE 3		STORE 5		
STORE 6	STORE 7	STORE 8	STORE 9	STORE 10			STO	RE 6	STORE 7	STORE 8	STORE 9	STORE 10		
	STORE 12	STORE 13	STORE 14	STORE 15			STO		STORE 12	STORE 13	STORE 14	STORE 15		
				STORE 29			STO							
USER	1/0					Enables	USE	R	I/O	ENG				Enable
ME	7			Ν	4E SnapSho	ot 🔼		ME	1			M	IE SnapSho	t 🔼
Key 1	eKe	y 1			Util 1		Key		ME 1 Ke		Rand A/	1E SnapShot		
Key 2	eKe				Util 2		Key	2	Modulation	Transition	Mix Wip			
Key 3	eKe		Trans		Util 3		Key	_	Color	Crosspoint	t Mask	Output		
Key 4	eKe		Secondar Trans		Util 4		Key	4	Effect			Config		
Events				50 / 6			Ever			Resize	Border			
			Name Description							Keyer				
			Date / Time		28 15:33:53 2	2016					Date / Time			
			S/W Version	n 7.6 Releas	e 5						S/W Versio	n 7.6 Release	5	

Touching the **{Enables}** button will turn the M/E, DVE and Config buttons into menu link buttons. Touching one of the menu link buttons will open a sub enables menu and also display a further sub enables menu link button.

# **ME - Transitions**

# **Overview**

This section of the manual will describe the Key and Background Transition functions. The Transition menu is accessed using the MAV-GUI and the GUI.

# **Transition Controls**

The two main types of transition that will be described in this section of the manual, these are:

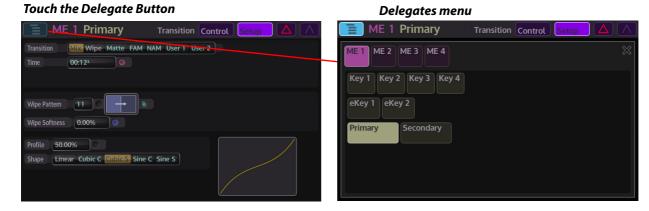
- Background Transitions
- Key Transitions

Note: When the system has gone through the startup sequence, each of the transition T-bars need to be calibrated by moving the T-bars from end stop to end stop position.



# **Transition Delegates**

The user is able to easily select what they want to transition i.e. Background or Key by touching the top-bar area of the transition menu, this will display the "Delegates" menu. Select the function required by touching one of the listed delegates.



# **Setting Basic Transitions**

Independent transitions can be set for the Background and for each of the Key Layers.



ME 1 Primary				Trans	sition <mark>C</mark>	ontrol	Setup 🚺
Next Priority			M	ix ser 1	Mix User 2	Mix	Wipe
2 3	Key1	Key2	Key3	Key4	eKey1	eKey2	eKey3 eKey4
4	On	On	On	On	On	On	On On
Local							
In Trans Priority Bgnd							
Link Levels		Bgno DVE1	1	Bgnd DVE2		Cut	Auto
Time 01:00°		Reve	erse	Flip Flo	p		

# **Basic Background Transitions**

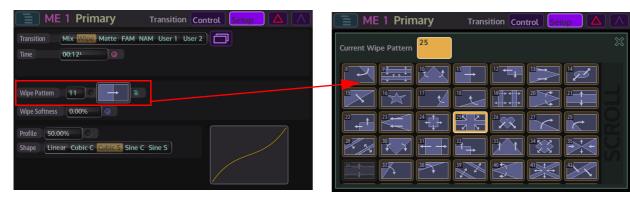
Press the **[BGND]** button on the control surface and it will light up (white in the default state), move the T-bar from end to end and notice that a transition is made between the selected crosspoint sources on the background A/B or C/D bus for that M/E bank.

#### **Basic Transition with a Wipe**

Press the **[WIPE]** button on the MAV-Trans area of the control surface, or the **{WIPE}** button in the menu.



Next touch the **{Transition Setup}** button to go to the and the **Transition** menu will appear on the MAV-GUI screen. The type of transition wipe required can be selected using the "Wipe Pattern" rotary control, notice that the minipic to the side of the parameter displays the wipe patterns. The user can also use the menu expand button to open the wipe pattern menu. The user can select the required wipe pattern by touching the pattern in the menu.



# **Basic Key Transition**

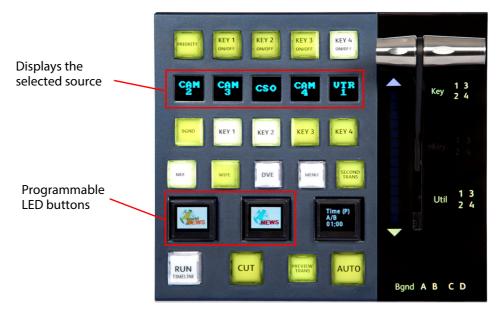


Select the Key or Keys on the MAV-Trans or in the menu, press the **{Transition Setup}** button to go into the **Transition** menu, then touch the "**Delegates**" button. Select the Key or Keys required for the transition, and then touch the menu outside the delegate area to go back to the **Transition** menu. Touch the transition - **{Mix}** button and move the T-bar from end stop to end stop. Notice that the Key layer will now transition over the A/B or C/D background.



If a Wipe transition is required, touch the **{Wipe}** button in the transition menu, The type of transition wipe required can be selected using the "**Wipe Pattern**" parameter, use the color associated rotary control to scroll through the wipe patterns, or touch the menu expand button and select a wipe pattern from the menu.

# **Transition Control Button Functions**



#### PRIORITY

Enables a priority transition. Also enables the Key control pad to set/indicate the next priority.

#### KEY 1 to KEY 4 ON/OFF

The four Key On/Off buttons are used to cut a Key layer on or off, the affected Key layers are 1 to 4 from left to right. The lamps within the buttons have three states; Off, White or Red, these indicate the following situations:

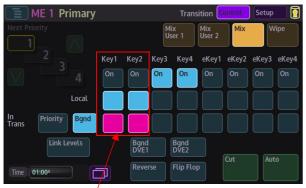
- Off The Key layer is off.
- White The Key layer is on but not contributing to the program or M/E output.
- Red The Key layer is on and contributing to the program or M/E output.

By pressing one of these buttons the following will happen:

Press once and the Key layer is on but will only contribute to the programme or M/E output if set to contribute.

Press once again and the Key layer is turned off.

If part way through a transition, pressing one of buttons removes the layer from the transition process.



Before a Key Wipe Transition



After the transition - Key Layers are On

# BGND, KEY1 to 4

Sets the BGND to be On/Off, when selecting Key layers 1 - 4 to be on-screen. it also selects the Key layer(s) for the next transition. Any number may be active at any one time. Pressing any one of these buttons will clear all others. Holding one button down and then pressing any others will make all of those selected active.

When **KEY 1 to 4** is used with the **{Local}** button (MAV-GUI Transition Control menu above), they enable the use of a Key layers' own transition (Each Key layer can have its own Wipe and Mix transitions). With the **"Local"** buttons turned on for the selected Keys, the Key buttons on the MAV-Trans module will turn a pink color, also on the MAV-GUI menu, when the transition is made the Key On/Off buttons for the selected Key layers will also be lit. Any or all of these buttons can be selected as required. The transition for the selected layer(s) is started by pressing the Auto button (see below). This facility allows one or more of the Key layers to be transitioned, using a different transition for each layer, at the same time as the background transition.

# ΜΙΧ

Selects Mix as the main transition.

# WIPE

Selects *Wipe* as the main transition.

#### DVE

This is a future feature

# MENU

This is a future feature

#### **SECOND TRANS**

This is for the secondary transition, allowing the user to transition between C/D backgrounds (if the system has an Extreme M/E and the resources are setup).

#### **RUN TIMELINE**

This will allow a timeline to run in a transition

# CUT

An immediate "Cut" between the Background or Key sources causing bus swap.

# **PREVIEW TRANS**

Allows the next transition to be previewed on the preview monitor without affecting the program output.

#### AUTO

Starts an automatic pre-timed transition, using whatever transition types and times have been selected for the layers included in the transition. The transition time for each layer can be different as can any time offsets.

#### TIME

Allows the time for an auto transition to be set from the number pad and the rotary control.

#### T-Bar

Performs a manual transition using whatever transition types have been selected for the layers included in the transition.

#### **Transition Menus**

The menus below display the two main types of transition that will be discussed in this section of the manual; **Background** and **Key** transitions, there are some small differences between the two menus, but they both have basically the same functionality and parameter controls.

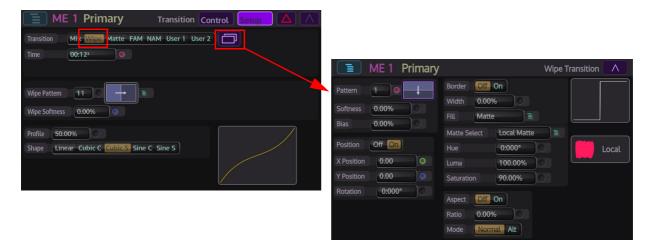
<b>ME 1 Primary</b> Transition Control Setup	
Transition Mix Wipe Matte FAM NAM User 1 User 2	
Time 00:12 <sup>1</sup>	
	Transition Control Setup A
Wipe Pattern 11	Transition Mix Wipe Matte Clip
Wipe Softness 0.00%	Time 01;00
Profile 50.00%	Time Offset 00;00
Shape Linear Cubic C Cubic S Sine C Sine S	Wipe Pattern 1 0
	Wipe Softness 0.00%
	Profile 50.00%
	Shape Linear Cubic C Cubic S Sine C Sine S

When selecting the type of transition, i.e Mix, Wipe, Matte, FAM, NAM or User 1/2, the selected transition may have sub menus, accessed by touching the "menu expander button". Allowing the user greater control.

E 1 Primary	Transition Control Setup	$\Delta$
Transition Mix Wipe Matte FAM NA	M User 1 User 2	Menu Expander button

In the diagram below, the user has entered the "Wipe" sub-menu, notice that the user now has a lot more control parameters, and there are even more sub menus; Position, Border and Aspect.

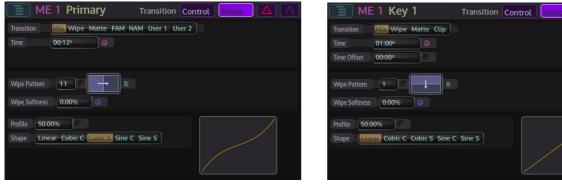
To access the sub-menus, touch the blue menu expander button to open a new menu that will only display the parameters for the selected function.



It is important to understand how to use the menus, it allows the user to quickly get to the parameter they require.

#### **Transition Mix Controls**

When Mix is selected, only the Time, Profile and Shape parameters will have an affect on a mix transition.



**Background Mix Transition** 

**Key Mix Transition** 

Time - Allows the time for a mix transition to be set, using the rotary control or number pad.

Wipe Pattern - selects wipe patterns 1 to 67

Wipe Softness - this softens the leading edge of the wipe

**Profile** - This parameter control will adjust the mix transition profile. Adjusting the profile will make the transition speed up or slowdown at a specific time in the transition period. Set to 50% as a default.

#### Shape:

Linear - constant transition, no change in transition acceleration

**Cubic C and Sin C** - these profiles are similar to each other, the default transition will have a fast acceleration at the start and slowdown towards the end.

**Cubic S and Sin S** - these profiles are also similar to each other, the default transition will accelerate at the start slow down towards the mid point and accelerate again.

# **Transition Wipe Controls**

This menu allows the user to set wipe patterns for transitions between Backgrounds or Keys.



All of the parameters in this menu will have an effect on a wipe transition. As mentioned earlier, touching the menu link button will open a sub-menu with more parameter controls.

**Time** - Allows the time for an auto transition to be set from the number pad and the rotary control.

**Wipe Pattern** - Scrolls through the available wipe patterns (wipe pattens are displayed in the "Transition" menu on the GUI), or touch the menu link button to display the "Current Wipe Pattern menu. Use the scroll bar on the right to scroll through the wipe patterns, then touch a wipe pattern to select.

Wipe Softness - This softens the leading edge or edges of the wipe pattern

**Profile** - This parameter control will adjust the wipe transition profile. Adjusting the profile will make the transition speed up or slowdown at a specific time in the transition period. Set to 50% as a default.

Shape:

Linear - constant transition, no change in transition acceleration

**Cubic C and Sin C** - these profiles are similar to each other, the default transition will have a fast acceleration at the start and slowdown towards the end.

**Cubic S and Sin S** - these profiles are also similar to each other, the default transition will accelerate at the start slow down towards the mid point and accelerate again.

# Position

The Wipe Transition menu allows the user to adjust the position the wipe transition starts at or finishes at, allows a border to be added to the wipe and allows the aspect of the wipe pattern to be changed.

	ME 1 Primary	1	Wipe Transition 🔨	🔳 ME 1	Primary		Wipe Transition
Pattern Softness Bias Position X Position	1 • • • • • • • • • • • • • • • • • • •	Border Off On Width 0.00% Fill Matte = Matte Select Local Matte Hue 0:000°	E Local	Pattern 1 Softness 0.00% Blas 0.00% Position Off C X Position 0.00		Border Off On Width 0.00% Fill Matte = Matte Select Local Matte Hue 0.000° Luma 100.00%	
Y Position Rotation	0.00 0:000°	Saturation 90.00% Aspect Off On Ratio 0.00% Mode Normal Att		Y Position 0.00 Rotation 0:00		Saturation 90.00% Aspect Off On Ratio 0.00% Mode Normal Alt	0

Touching the menu expander button or touching the "**Position**" menu link button will open the menu up and allow the user to move the start position of a wipe using the **X/Y Position** parameter or **Rotation** to move the wipe pattern start point, clockwise or anti clockwise.

# Border

This menu will add a border on or around a wipe pattern.

🔳 ME 1 Primary		Wipe Transition 🔨	🔳 ME 1	Primary		Wipe	e Transition
Pattern 1	Border Off On Width 0.00%		Current Fill Type	Matte			*
Softness0.00%Bias0.00%	Fill Matte		Matte	Util Bus 1	Jtil Bus 2 Ma	atte (U3) Mat	tte (U4)
Position Off On	Hue 0:000°	Local					
X Position0.00Y Position0.00	Luma         100.00%           Saturation         90.00%						
Rotation 0:000°	Aspect Off On						
	Ratio0.00%ModeNormalAlt						
🔳 ME 1 Primary		Wipe Transition 🔨	<b>E</b> ME 1	Primary		Wipe	e Transition 🛛 🔨
ME 1   Primary     Pattern   1	Border Off On	Wipe Transition A	Current Matte Sel		te	Wipe	e Transition 🔨
	Border Off On Width 0.00%				te White	Wipe	
Pattern 1 Softness 0.00%	Border Off On Width 0.00%		Current Matte Sel	ect Local Matt	White Blue	Red	Yellow
Pattern 1 4 Softness 0.00% 6 Blas 0.00% 6 Position Off On X Position 0.00	Border Off On Width 0.00% Fill Matte = Matte Select Local Matte Hue 0.000° Luma 100.00%		Current Matte Sel	ect Local Matt Black Cyan Dark Red	White	Red	Yellow
Pattern 1 4 Softness 0.00% Blas 0.00% Position Off On	Border Off On Width 0.00% Fill Matte = Matte Select Local Matte Hue 0:000°		Current Matte Sel	ect Local Matt	White Blue	Red	Yellow

Set the T-bar to a half transition position, then turn the **Wipe Border - On**. Notice that a border has now been added around the edge of the wipe pattern.

Adjusting the Width parameter will adjust the width of the border. Then either touch the menu expand button or touch the menu link button to display the full wipe border menu.

The color of the border can be adjusted in the Local Matte setting using the **Hue**, **Luma** or **Saturation** parameters, as the parameters are adjusted, notice that the colored swatch. Selecting a **Matte** color from the list of preset mattes.

The border can also be filled using a source from one of the 2 or 4 available **Util buses**.

#### Aspect

**Aspect Ratio control** - adjusts the aspect ratio horizontally/vertically of some wipe patterns (refer to the Wipe Menu on the Soft MLC GUI, the Aspect Ratio parameter will only change the aspect of wipes with the type of adjustment circled in Red, shown left).

ME 1 Primary	Wipe Transition 🔨
Pattern 1 Softness 0.00%	Border Off On Width 0.00%
Position Off On	Matte Select Local Matte
X Position0.00Y Position0.00	Luma 100.00%
Rotation 0:000°	Aspect Off On Ratio 0.00% O Mode Normal Alt

#### **Transition Matte**

The **Matte Mix Transition** menu changes the type of mix fading between two sources in a transition. Touch the Matte button and the touch the Transition menu link button to enter the Matte Mix Transition menu.

<b>ME 1 Primary</b> Transition Control Setup	ME 1 Primary Matte Mix Transition 💥
Transition Mix Wipe Matter FAM NAM User 1 User 2	Profile 0.00%
Time 00:12 <sup>1</sup>	Fill Level 100.00%
	Bias 0.00%
Wipe Pattern 25	Width 0.00%
Wipe Softness 0.00%	Fill Type Matte
Profile 50.00%	Matte Select Local Matte
Shape Linear Cubic C Cubics Sine C Sine S	Hue 0:000° Local
	Luma 100.00%
	Saturation 90.00%

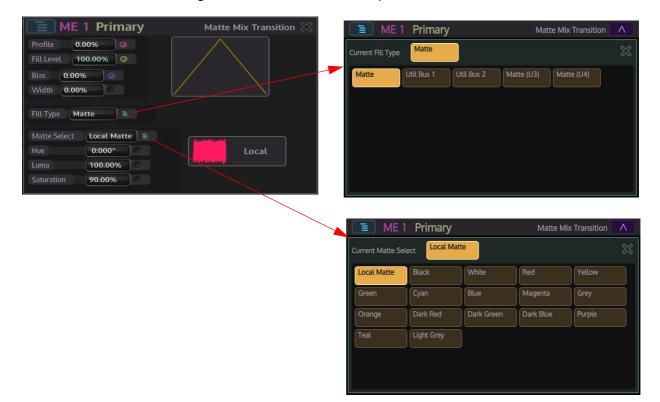
**Profile** - This is where the output passes through the matte mix color between the two transition sources. This menu sets the amount of Matte Fill in the transition,

Fill - This is the amount of matte added to the transition, 100% being the maximum amount.

**Bias** - this will adjust the matte mix position from either more matte at the start of the mix transition, or more at the finish as the two sources are being transitioned.

Width - This adjusts the width of the matte fill in a transition

The color of the matte mix can be adjusted in the Local Matte setting using the **Hue**, **Luma** or **Saturation** parameters, as the parameters are adjusted, notice that the colored swatch. Selecting a **Matte** color from the list of preset mattes.



#### **Transition FAM/NAM**

FAM - Full-Additive Mix profile, this is where the luminance parts of each source (example - background A and B) are added together so that at the mid-point through the transition, the luminance of both sources are at 100%.

After the mid-point of the transition Background B becomes the dominant source and the luminance of Background A goes to 0%.

**NAM** - This is where the brighter parts of either source are more prominent than the darker parts during the transition. Thus the brighter parts of the fading out source are apparent for longer than the darker parts. A normal mix will fade out equally across all brightness levels. The NAM profile control changes the shape of the profile curve where 100% equals maximum amplitude, which produces full Non-Additive Mix, 0.00% produces a normal mix so no NAM and -100% highlights the dark areas in the mix transition.



## **Transition User 1/2 Mix**

To select which type of mix will be used in the transition.

{User 1} or {User 2} in the menu as shown below.

E 1 Primary	Transition Control Setup
Transition Mix Wipe Matte FAM	NAM User 1 User 2
Time 00:12 <sup>1</sup>	
Wipe Pattern 25 S S S S S S S S S S S S S S S S S S	
Profile 50.00%	C Sine S

**Matte Mix Profile** - This is where the output passes through the matte mix color between the two transition sources. This menu sets the amount of matte Fill in the transition.



**NAM Profile** - This is where the brighter parts of either source are more prominent than the darker parts during the transition. Thus the brighter parts of the fading out source are apparent for longer than the darker parts. A normal mix will fade out equally across all brightness levels. The NAM profile control changes the shape of the profile curve where 100% equals maximum amplitude, which produces full Non-Additive Mix, 0.00% produces a normal mix so no NAM and -100% highlights the dark areas in the mix transition.

**FAM Profile** - Full-Additive Mix profile, this is where the luminance parts of each source (example - background A and B) are added together so that at the mid-point through the transition, the luminance of both sources are at 100%.

After the mid-point of the transition Background B becomes the dominant source and the luminance of Background A goes to 0%.

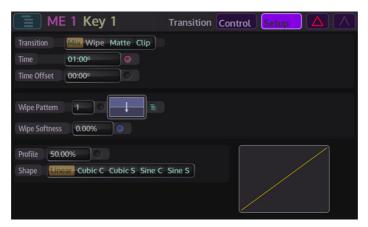
# **Key Transitions**

The Key Transition menu link button opens the **Transition - Key** menus. The menus are used to set a transition for a Key layer transitioned onto a background, or a transition between 2 Key layers. The main Transition menu has common parameters for each of the 4 transition options: **Mix**, **Wipe**, **Matte** and **Clip**. Touching the "**Transition**" blue menu link button when one of the options is selected, will open sub-menus which allow the user to have greater control over the Key transition.



## **Key Transition - Mix**

When Mix is selected, only the Time, Profile and Shape parameters will have an affect on a mix transition.



**Time** - Allows the time for an auto transition to be set from the number pad and the rotary control.

**Wipe Pattern** - Scrolls through the available wipe patterns (wipe pattens are displayed in the "Transition" menu on the GUI).

Wipe Softness - This softens the leading edge or edged of the wipe pattern

**Time Offset** - This allows the user to offset the time (ahead or behind) away from the set transition time, as used in an Auto Trans.

**Profile** - This parameter control will adjust the wipe transition profile. Adjusting the profile will make the transition speed up or slowdown at a specific time in the transition period. Set to 50% as a default.

Shape

Linear - constant transition, no change in transition acceleration

**Cubic C and Sin C** - these profiles are similar to each other, the default transition will have a fast acceleration at the start and slowdown towards the end.

**Cubic S and Sin S** - these profiles are also similar to each other, the default transition will accelerate at the start slow down towards the mid point and accelerate again.

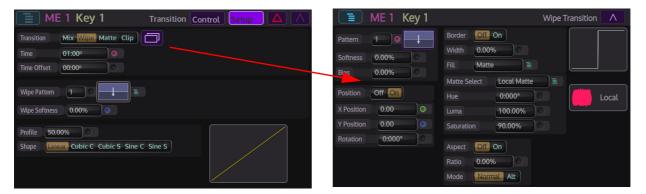
**Key Transition - Wipe** 

Select Wipe and then press the Transition menu link button.



**Pattern** - Scrolls through the available wipe patterns (wipe pattens are displayed in the "Transition" menu on the GUI).

Softness - This softens the leading edge or edges of the wipe pattern.



#### Position

The Wipe Transition menu allows the user to adjust the position the wipe transition starts at or finishes at, allows a border to be added to the wipe and allows the aspect of the wipe pattern to be changed. The parameters allow the user to move the start position of a wipe using the **X/Y Position** parameter or rotate the wipe pattern start point, clockwise or anti clockwise.



#### Border

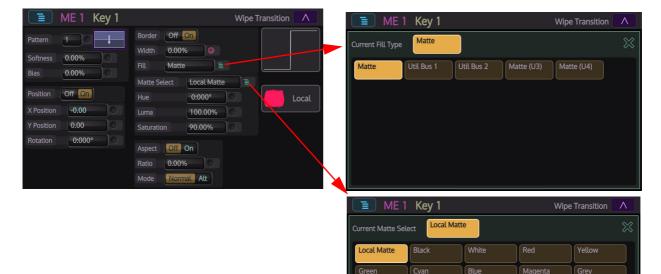
This menu will add a border on or around a wipe pattern.

Set the T-bar to a half transition position, then turn the **Wipe Border - On**. Notice that a border has now been added around the edge of the wipe pattern.

Adjusting the Width parameter will adjust the width of the border. Then either touch the menu expand button or touch the menu link button to display the full wipe border menu.

The color of the border can be adjusted in the Local Matte setting using the **Hue**, **Luma** or **Saturation** parameters, as the parameters are adjusted, notice that the colored swatch. Selecting a **Matte** color from the list of preset mattes.

The border can also be filled using a source from one of the 2 Util buses.



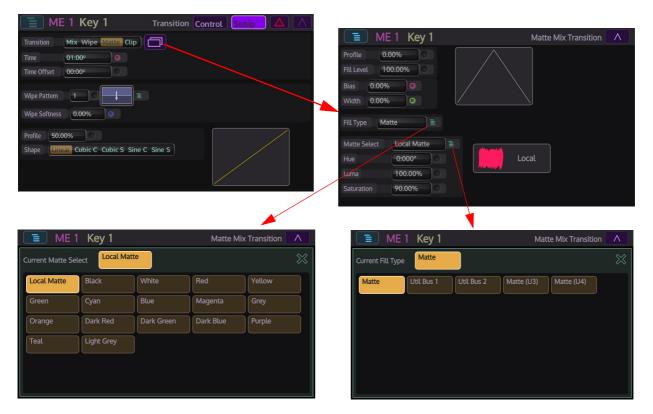
Border Off		
Width 0.00%		
Fill Matte	Ē	
Matte Select	Local Matte	
	-0:000°	Local
	100.00%	
	90.00%	
Aspect Off		
Ratio 0.00%		
	Fill Matte Matte Select Hue Luma Saturation Aspect Off	Fill     Matte       Matte Select     Local Matte       Hue     0:000°       Luma     100.00%       Saturation     90.00%

#### Aspect

**Aspect Ratio** and **Aspect Mode** - adjusts the aspect ratio horizontally/vertically of some wipe patterns (refer to the Wipe Menu on the GUI, the Aspect Ratio parameter will only change the aspect of wipes with the type of adjustment circled in Red, shown left).

## **Matte Transition**

The Transition - Matte menu changes the type of mix fading between two sources in a transition. Touch the Matte button and the touch the Transition menu link button to enter the Matte Mix Transition menu.



**Profile** - This is where the output passes through the matte mix color between the two transition sources. This menu sets the amount of Matte Fill in the transition,

**Fill Level** - This is the amount of matte added to the transition, 100% being the maximum amount.

**Bias** - this will adjust the matte mix position from either more matte at the start of the mix transition, or more at the finish as the two sources are being transitioned.

Width - This adjusts the width of the matte fill in a transition

The color of the matte mix can be adjusted in the Local Matte setting using the **Hue**, **Luma** or **Saturation** parameters, as the parameters are adjusted, notice that the colored swatch. Selecting a **Matte** color from the list of preset mattes.

ME - Transitions Key Transitions

# **ME - Keyer**

# **Keying Overview**

Note: More Keying features can be found in the Kahuna 9600/6400 User Manual, supplied with this system.

## **Keying Theory**

Keying is the process of inserting a specific part of one video signal (Key signal) into another video signal (background) to create a third signal. The Key signal has two jobs and may be one signal or two. It has to cut a hole into the background and Fill that hole with a picture, or a matte.

Where two signals are used one, the Key cut, cuts the hole in the background and the other, the Key Fill, Fills that hole. The Fill has to be shaped to match the hole.

Where one signal is used it both cuts and Fills the hole. This process of Keying with a single signal is known as a self Key or video Key.

There are three types of Keying available with Kahuna; they are Luma Keying, Linear Keying and Chroma Keying.

## **Linear Keying**

Linear Keying is used where the Key signal is already Keyed, i.e., the area outside the required video is at black level. It is also used where there are separate Key cut and Key Fill signals. The Key signal(s), (cut and Fill) are usually anti-aliased (soft edged) shaped signals created by a character generator or graphics system.

#### Luma Keying

Luma Keying is a Keying system that is typically used on sources that are not pre-Keyed, such as those from a camera. The Key cut signal is generated from the video signal using lift and gain controls. The portions of the signal that is lower in luminance than the lift level cut the hole in the Key layer.

The Key lift and gain levels are user adjustable.

The Fill may be the same source as the cut or from a different source, or matte generator. When only one source is used for both Key Fill and Key cut the Key is called a Self Key or a Video Key.

#### **Chroma Keying**

In chroma Keying the Key cut signal is derived from color rather than level. A particular color of a picture is Keyed away to the background leaving the other colors visible over the background. The transparent color is user selectable and may be a range of colors or a single color. There are various controls to reduce fringing and other artifacts from appearing in the composite picture.

## **SuperKey Layers**

Kahuna has 4 SuperKey layers per M/E. Their parameters are set-up using the SuperKey Control buttons for the applicable M/E. The required SuperKey layer is selected from the four buttons at the bottom of the button group, SuperKey 1 to SuperKey 4.

These buttons are mutually exclusive; they latch and illuminate to indicate which SuperKey layer is being worked on.

Each SuperKey layer is independent and may have a totally different set-up.

#### eKeys

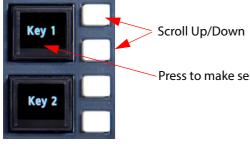
Kahuna has 8 Key layers per M/E made up of 4 SuperKey layers and 4 extra Key layers that are called "**eKeys**". Each M/E will have 2 permanent eKeys and 2 eKeys that are derived from Util buses, Background buses or SuperKeys that may not be required for a production from another M/E. This is done in the **User Config - eKey Config** menu, which will be explained later in this section.

# **Accessing SuperKeys and eKeys**

The Kahuna has the ability to have 12 Key layers which are 4 SuperKey and 4 eKeys and 4 Dual Tile Key layers derived from the 4 SuperKey layers (explained later in this section) on each M/E bank. Keys and eKeys are accessed via one of the delegate MAV modules (MAV-8Xpt-Del-OB/FS).



Selecting one of the Keys or eKeys is a simple process, use the Up/Down buttons next to the OLED button to scroll through the options and then press the OLED button to make the confirmation.

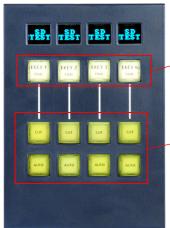


Press to make selection

Note: eKey Bus 1 to eKey Bus 4 are only available if the system has been setup correctly in the **MakeME<sup>TM</sup>** menu and **User Config - eKey Config** menus. Please read the "Connect and Configure" section of this manual and User Config - eKey Config section of the Kahuna 9600/6400 manual (Document 2 of 2).

# Selecting eKeys 1, 2, 3 and 4 on the Control Surface

There is an optional MAV-DSK module for Kahuna Maverik. When the eKeys have been setup as described on the previous page, eKeys can be selected using the MAV-DSK module.

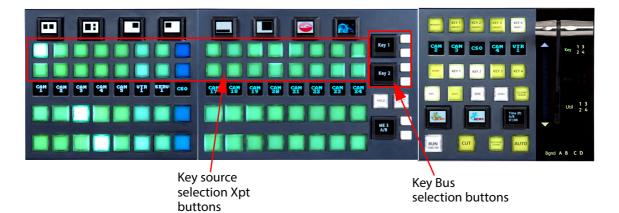


eKey selection buttons

eKey CUT and AUTO buttons

# Taking a Key Layer to an Output

This section of the manual will describe how to place a Key layer onto a source output. Keys 1 to 4 on an M/E are accessed using the control surface, described in the previous section; the Key Bus buttons on the control surface are used to select the required Key and the required source is selected using the Key Bus Crosspoint buttons.



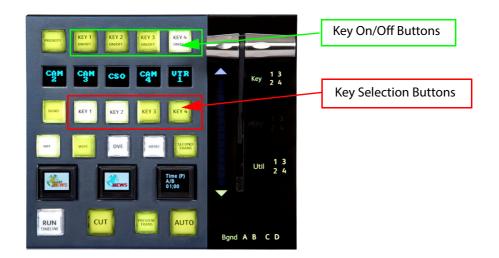
The Key Layers can then be cut to the source output using the Transition Control area of the control surface.

There are two ways to place a Key layer onto a monitor:

- The first method is using **Key Selection** buttons 1 to 4, the buttons will go Green when selected (buttons shown above).
- The second method is using the **Key On/Off** buttons shown at the top in the diagram. The buttons toggle On/Off when pressed. With no Key layer selected the buttons are unlit, when pressed the button will either light white or tallied red. The Key layer can now be seen on the monitor.

Note: White = off air, Red = tallied on air and contributing to the programme output.

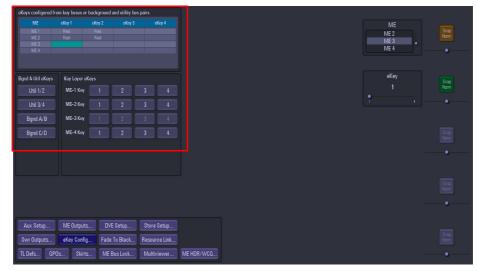
The color of the buttons may vary depending on the user defined button color scheme.



# Taking an eKey to an Output

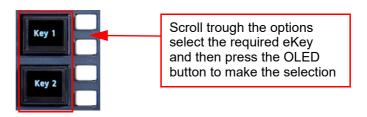
Note: Before setting up eKeys on an M/E output, make sure that the eKeys are allocated to the M/E in the MakeME menu.

The number of eKeys available to the user is also delegated in the User Config - eKey Config menu. An M/E will automatically have two "Real" eKeys (eKeys 1 and 2). The user will then have to allocate a Bus for eKeys 3 and 4 from the Bgnd and Util Buses listed on the left side of the menu.



Once the eKey configuration has been setup, the eKey setup menu is accessed by pressing the **[KEYER]** button on the GUI, toggle the required Key button in the Delegate area on the GUI so the button turns Orange and the eKey menu will appear. Select the required source using the Key Xpt buttons on the control surface.





Then to take the eKey to an output press either the **{Cut}**, **{Auto}** or **{On}** buttons in the menu. The eKey layer is now contributing the output.

# **Key Control**

Note: Key Control functions in the following Key Control menus can also be selected using the MAV-KEYER module (if purchased with the Maverik Control Surface).

Each switcher crosspoint is allocated two sources in the Crosspoint Mapping menu, one for use as a Fill signal and the other as a Key signal. Function buttons in this menu will determine how the Fill and Key sources are used for a particular Key.

To get to the Keyer menus on the MAV-GUI, touch the **{Keyer}** button in the "Top" menu, this will open the "**Keyer Control**" menu.

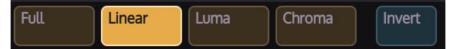


In the Keyer Control menu, touch the "Delegates" button will display the "Delegates" menu, in this menu the user can select the required M/E and the Key type.



## Selecting a Key Type Using the Key Control buttons

The type of Keying required is selected by touching one of the menu link buttons in the Key Control menu.



Full - The Fill is a full layer over the background hiding it completely.

Linear - Selects a linear Key.

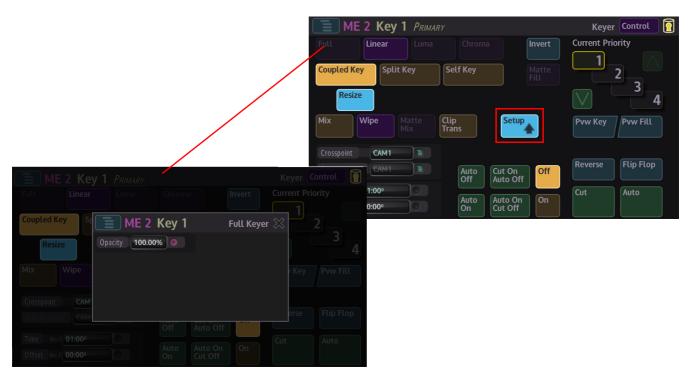
Luma- Selects a Luma Key.

Chroma - Selects chroma Key.

**Invert** - Inverts the Key signal so that the parts, which were Keyed off, become Keyed on and vice versa.

Parameter controls for; Full, Linear, Luma and Chroma are accessed by touching the **{Setup}** button. The button will turn light blue, and the functions that have control parameters will go dark/turn purple (depending on the function selected).

As an example, touch the **{Full}** button and a set of control parameters is displayed (as shown below.





Coupled Key - (Latching) Uses the Fill and Key sources allocated to the crosspoint.

Split Key - (Momentary) Allows the Fill and Key sources to be split across two different crosspoints. The Fill is selected on the Key bus in the normal manner. The Key source is that allocated to the crosspoint selected on the Key bus with the Split Key button pressed and held down.

**Self Key** - (Latching) In Coupled Key mode Self Key causes the Key, as well as the Fill, to be derived from the Fill source allocated to the crosspoint, also known as a Video Key. In Split Key mode Video Key causes the Key to be derived from the Fill source of the crosspoint used as the split away.

Key Priority (in the Control - Transition menu)

The "in front" / "behind" position of each of the four Key layers is decided in the Control -Transition menu. The priority of the layers is changed by the  $\{\Lambda\}$  {V} buttons, in conjunction with the **{1**} to **{4**} buttons. Numbers 1 to 4 in the menu depict the priority of the each Key layer. Select a Key by touching one of the **KEY1 - 4** buttons, then as the user presses the Up/Down buttons the numbers will change position, indicating that the selected Key priority has changed.



When a Key layer is "live to air", the Key priority number and the Key {**On**} button will be lit red.

# **Other Key Control Functions**



Mix - Selects a standard mix (also known as a dissolve or crossfade) as the Key transition.

Wipe - Selects a Wipe as the Key transition.

**Matte Mix** - Selects a Matte-mix where the source passes through the Matte color before reaching the selected signal.

**Clip Trans** - Allows the Key transition to be associated with a selected clip. The clip position is determined by the Transition Time.

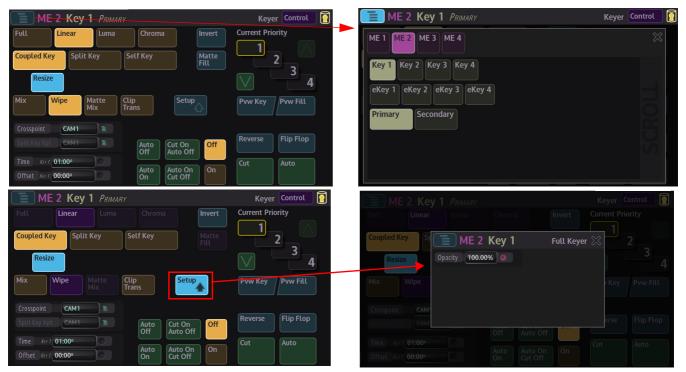
Resize - turns the Resize function On

Pvw Key/Pvw Fill - Previews the Key and Fill individually.

# **Keyer Setup**

To access the Keyer menus, in the **Home** menu, touch the **{Keyer }** button in the **Setup** column, or in the **Key Control** menu, press the **{Key Setup**} menu link button.

Touch the Delegates button to open the Delegates menu, where the M/E and Key can be selected before starting to use the setup parameters.



When using the Keyer menus, the first thing to decide is what type of Key is required, the Keyer main menu has the Key options:

Full - The Fill is a full layer over the background hiding it completely.

**Linear** - Selects a Linear Key. Linear Keying is used where the Key signal is already Keyed, i.e., the area outside the required video is at black level.

**Luma** - Selects a Luma Key. Luma Keying is a Keying system that is typically used on sources that are not pre-Keyed, such as those from a camera.

**Chroma** - Selects chroma Key. A particular color of a picture is Keyed away to the background leaving the other colors visible over the background.

## **Key Drop**

A simple explanation for Key Drop is that it allows the user to automatically switch off (drop) an active Key every time a new source is selected by cutting directly on the Program or Bgnd. Touch the **{Setup}** menu link tab at the top of the menu, then touch the **{Key Drop**} button to open the "Simple Key Drop" menu.

					etup								Key Dro	p Setup	
				Keyer Me	nus 🔀						Inhib	it All Cl	ear All	Advan	iced
ME 1				Key Control		ME 1	Key 1	Key 2	Key 3	Key 4	eKey 1	eKey 2	eKey 3	eKey 4	
ME 2				Key Drop		ME 2	Key 1	Key 2	Key 3	Key 4	eKey 1	eKey 2	eKey 3	eKey 4	
ME 3				Bus Color		ME 3	Key 1	Key 2	Key 3	Key 4					
ME 4				Border		ME 4	Key 1	Key 2	Key 3	Key 4					
				Masks											

In this top menu or "simple" menu, the user can select a Key, from the list of available M/Es (the selected Key will turn blue).

When that Key is selected on the Pgm or Bgnd A Bus, on the selected M/E, the next Xpt button selected on that Bus will drop the Key. Notice that the Key is now shown on the Preview or Bgnd B Bus. Using the T-bar or **{CUT}**/**{AUTO}** buttons, will place the Key back on the Program or Bgnd A Bus, then next Xpt button pressed will drop the Key again.

Inhibit All - when this is lit, no Key Drop functions will be active

Clear All - removes all Drop/Add settings from the Simple and Advanced modes

The "**Advanced**" menu (touch the **{Advanced}** button) provides a more powerful automatic control of Keyer on/off state which is dependent on the crosspoint selected on the Bgnd A Bus.

	PT 1						Ke	ey Drop	Setup	
Crosspoint	⊙ Nam	ne	Er	ables		Inhibit All	Clear A	ALL	Simple	
XPT 1	CAM	1								
XPT 2	CAM	2								
XPT 3	CAM									
XPT 4	CAM					<b>T</b>				
XPT 5	GFX1					Transitio	on			
ME 1	On Sel	ect / Res	elect							
ME 2	Add	Key 1	Key 2	Key 3	Key 4	eKey 1	eKey 2	eKey 3	eKey 4	
ME 3	Drop	Key 1	Key 2	Key 3	Key 4	eKey 1	eKey 2	eKey 3	eKey 4	
ME 4	On Des	select								
	Add	Key 1	Key 2	Key 3	Key 4	eKey 1	eKey 2	eKey 3	eKey 4	
	Drop	Key 1	Key 2	Key 3	Key 4	eKey 1	eKey 2	eKey 3	eKey 4	

This mode provides the user with the ability to have a Keyer active whenever a particular source is on-air by setting rules for every crosspoint and including automatic selection of the In Transition selection to ensure the Keyer state is controlled by the Transition control.

Note: Key Drop settings are stored in User Config files

By selecting a Keyer on an M/E, that Keyer will always turn off whenever a source is changed by directly cutting on the Program or Bgnd A Bus.

Note: If a Keyer has rules set in the Advanced mode, then this will be indicated by a Gold color on the Soft MLC GUI or a half lit button on the MAV-GUI.

The Inhibit All and Clear All functions for Key Drop can also be found on these menu pages. Each source can have rules set to Add or Drop a specific Keyer on each ME whenever that source is selected on the Program or Bgnd A Bus of that ME.

# **Transition**

By switching on this button, the selected ME will automatically set the In Transition states for each of the Keyers which have Add/Drop rules applied in the Advanced Mode, depending on which Crosspoints are selected on the Bgnd A and B Bus. The In Transition buttons will light in the Alert color to indicate that this In Transition state has automatically been set. The state of other Keyer and background In Transition states will not be changed. The automatically set states can be deselected by the user before the transition is made.

#### Example:

The advanced state is extremely useful for situations where the user wants a source always to have a Keyer active, for example a remote source which always has a "Graphic" bug included in the picture.

Select M/E1 in the menu table. If the remote source is Xpt 1 and the bug is set up on Key 1 on M/E1, the user would need to go into the Advanced menu and select Xpt1 as the crosspoint and ME1 in the enables.

<b>XPT 1</b>				Key Drop	Setup
Crosspoint 🕥 Nam		Enables	Inhibit Al	l Clear All	Simple
XPT 1 CAM		ME 1			
XPT 2 CAM2					
XPT 3 CAM					
XPT 4 CAM4			Transiti	00	
XPT 5 GFX1					
ME 1 On Sel	ect / Reselect				
ME 2 Add	Key 1 Key	2 Key 3	Key 4 eKey 1	eKey 2 eKey 3	eKey 4
ME 3 Drop	Key 1 Key	2 Key 3	Key 4 eKey 1	eKey 2 eKey 3	eKey 4
ME 4 On Des	select				
Add	Key 1 Key	2 Key 3	Key 4 eKey 1	eKey 2 eKey 3	eKey 4
Drop	Key 1 Key	2 Key 3	Key 4 eKey 1	eKey 2 eKey 3	eKey 4

Touch {Add} {Key1} in the "On Select/Reselect" control

Touch {Key1} in the On Deselect control

Touch {Transition} to light this control.

Every time the remote source is put on the output of ME1 the "Graphic" bug will be included the picture.

Note: Re-selecting a source which is already on the Program or Bgnd A/B Buses will reapply the appropriate In Transition rules. This could be useful if the rules are inadvertently changed, for instance, by adding another Key to the transition.

#### Linear and Luma Keyer

Touch **{Setup}** button, and then touch the **{Linear}** or **{Luma}** buttons. The Linear and Luma Keyer parameter control menus look similar. They each have independent sets of lift level, gain and opacity controls. The exception being the Shaping parameter in the Luma Keyer.



Lift - sets the Luma level at which the Key operates.

Gain - affects the sharpness of the lift point.

**Opacity** - controls how transparent the Key is.

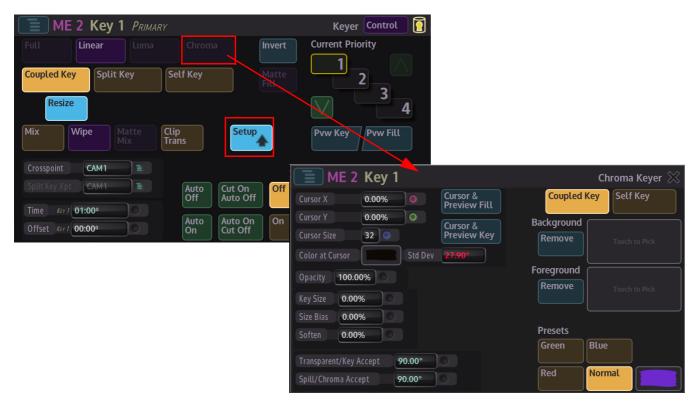
Shaping - stops dark edges appearing around a Keyed source (anti-aliasing).

When using sources that are not pre-Keyed, such as those from a camera, the Key cut signal is generated from the video signal using lift and gain controls. The portions of the signal that are greater in luminance than the lift level cut the hole in the background.

Note: When only one source is used for both Fill and Key, the Key is sometimes called a Self Key or a Video Key.

## Chroma Keyer

To get to the Chroma Keyer menus, again, touch the **{Setup}** button and then touch the **{Chroma}** button.



## **Chroma Keying Overview**

In chroma Keying the Key cut signal is derived from color rather than a level. A particular color of a picture is Keyed away to the background leaving the other colors visible over the background. The transparent color is user selectable and may be a range of colors or a single color. There are various controls to reduce fringing and other artifacts from appearing in the composite picture.

Kahuna has a high quality Chroma Keyer on each SuperKey and eKey of each M/E.

Chroma Keying can be used in both the Keying of graphics and live pictures. When Keying graphics, the set up of the chroma Keyer will be quick and straight forward, this is because the Keyed area is easier to control in a 2D environment.

Keying for a live or moving environments usually more involved and requires additional work as it is more difficult to control color and light.

#### **Achieving good results**

The main factor in setting up a good Chroma Key in a live environment is a well lit Key and subject. The Key (usually Blue or Green screen) should be highly saturated and even in tone. The lighting of the subject should highlight whilst aiming to limit the amount of Key color (sometimes resulting in 'spill') reflecting onto the subject. The subject should avoid like colors to the Key color to avoid break-up in the fill. In addition, appropriate and consistent camera setup will be important. The user should also ensure that the Chroma Key is set up for any camera movements and changes in picture.





Chroma Key source material

Note: When starting to setup a chroma Key, before making any adjustments, press the {Normal} button to normalize all the parameter controls. This is because the current default GMEM may be a user defined default GMEM, not a factory default GMEM.

Note: Setup the chroma Key on the preview (PVW) monitor so that if necessary, the color picker cursor can be displayed.

Before starting to chroma Key, ensure that the source material has been loaded into a **Store**, the store has been selected on the required **Key Bus**. Then in the **Key Control** menu, the following are selected:

The Key that has the source material,

The {Chroma} and {Self Key] are enabled (for normal Keying)

ME 2 Key 1 Primi	4RY		Keyer Control 🚺	<b>ME 2 Key 1</b>	C <mark>hroma Keyer 💥</mark>
Full Linear Luma	Chrom	ia Invert	Current Priority	Cursor X 0.00% Cursor & Preview Fill	Coupled Key Self Key
Coupled Key Split Key	Self Key	Matte		Cursor Y 0.00% Cursor &	Background
		Fill	2	Cursor Size 32 O Preview Key	Remove Touch to Pick
Resize			4	Color at Cursor Std Dev 27.90°	
Mix Wipe Matte	Clin	Cotur		Opacity <b>100.00%</b>	Foreground
Mix Wipe Matte	Clip Trans	Setup	Pvw Key Pvw Fill		Remove Touch to Pick
				Key Size 0.00%	
Crosspoint CAM1				Size Bias 0.00%	
Split Key Xpt CAM1	Auto	Cut On Off	Reverse Flip Flop	Soften 0.00%	Presets
Sparae and the second	Off	Auto Off			Green Blue
Time Key 1 01:00º			Cut Auto	Transparent/Key Accept 90.00°	
Offset Key 1 00:00°	Auto On	Auto On Cut Off		Spill/Chroma Accept 90.00°	Red Normal

The **Chroma Keyer** menu is designed to tackle the majority of chroma Key source material, most of the required adjustments to make a very good chroma Key can be made in this menu. The **Green**, **Blue and Preset** buttons are where the user should start to chroma Key. The presets will achieve a good chroma Key for the majority of good quality source material.

The Preset controls have been engineered around a number of different chroma Key material, the levels are then averaged out to give a good chroma Key across the whole range of material used.

Press the **{Green}** Presets button and the source material will be chroma Keyed over the selected background. It is as easy as that!

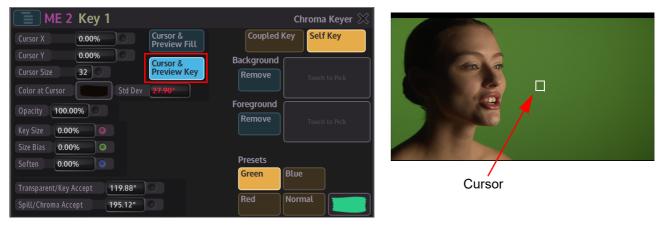
<b>ME 2 Key 1</b>	Chroma Keyer 💥	
Cursor X 0.00% Cursor & Preview Fill	Coupled Key Self Key	6
Cursor Y 0.00% Cursor &	Background	
Cursor Size 32 Preview Key	Remove Touch to Pick	
Color at Cursor Std Dev 27.90°		
Opacity <b>100.00%</b>	Foreground	
Key Size 0.00%	Remove Touch to Pick	
Size Bias 0.00%		
Soften 0.00%	Presets	
	Green	
Transparent/Key Accept <b>119.88°</b>	Red Normal	
Spill/Chroma Accept 195.12°	Red Normal	

If the subject being chroma Keyed has a hard edge (a hard dark/light edge) around it, adjust the **Key Size** parameter in a negative direction, which will shrink the **Key Size** horizontally in steps as shown in the menu below.

<b>ME 2</b> Key 1			Chroma Keyer 💥
Cursor X 0.00%	Cursor & Preview Fill	Coupled Ke	ey Self Key
Cursor Y 0.00%	Cursor &	Background	
Cursor Size 32	Preview Key	Remove	
Color at Cursor Std Dev	27.90°	Foreground	
Opacity 100.00%		Remove	
Key Size 0.00%			
Size Bias 0.00% •		Presets	
		Green	Blue
Transparent/Key Accept 119.88°		Red	Normal
Spill/Chroma Accept 195.12°			

If the Presets Green/ Blue did not achieve the desired result, there is a second method to setup the chroma Key using the background color picker.

With the source material on the PVW monitor, press the **{Cursor...}** button, this will bring the chroma picker cursor onto the PVW monitor.



A chroma Keyer will have a control to select the color, hue, needed to generate the Key, this is the **Background/Foreground Color Picker.** The color picker cursor allows the user to take samples of the Background and Foreground, the color picker is used by the chroma Keyer to set the Key and chroma acceptance angles.

Adjust the **Cursor X/Y** attacher and the cursor can be moved around the monitor using the joystick on the control surface, rotating the top of the joystick will increase/decrease the size of the cursor, allowing a greater or narrower sample area to be taken. Select a section of the green screen background that has an even color and press the **Background - {Touch to Pick}** large gray oblong button to take a background sample.

📄 ME 2	2 Key 1		Chro	ma Keyer 💥
Cursor X	0.00%	Cursor & Preview Fill	Coupled Key	Self Key
Cursor Y Cursor Size Color at Cursor	0.00%	Cursor & Preview Key 27.90°	Background Remove	ouch to Pick
Opacity 100.0 Key Size 0.00 Size Bias 0.00	0%		Foreground Remove	ouch to Pick
Soften 0.00			Presets Green Blue	
Transparent/Key Spill/Chroma Acc			Red Norma	

Press the **{Cursor...}** button to display the Key signal, if there is any background breaking through into the Key signal other than the subject being chroma Keyed then move the cursor over the affected area and press the **Background - {Touch to Pick}** button once again, the Key signal will have a clean background.

If the subject being Keyed has any breakthrough then a **Foreground Pick** will be needed. Move the cursor over the affected area and touch the **Foreground - {Touch to Pick**} button.

Press the **{Cursor...}** button once again to change from the Key signal to the chroma Key source over the background.

As with example 1, if the subject being chroma Keyed has a hard edge (a hard dark/light edge) around it, adjust the **Clean Edge - Key Size** parameter in a negative direction, which will shrink the **Key Size** horizontally in steps.

Only source material that is particularly difficult to chroma Key will need further parameter adjustments made on top of what has already been described.



**Chroma Key Menu Parameters** 

Now that a good chroma Key can be achieved, the chroma Key menu parameters have to described.

<b>E 2 Key 1</b>			Chroma Keyer 💢
Cursor X 0.00%	Cursor & Preview Fill	Coupled Key	Self Key
Cursor Y 0.00%	Cursor &	Background	
Cursor Size 32	Preview Key	Remove	
Color at Cursor Std Dev	27.90°		
Opacity <b>100.00%</b>		Foreground	
Key Size 0.00%		Remove	
Size Bias 0.00%			
Soften 0.00%		Presets	
Transparent/Key Accept 119.88°		Green	ue
Spill/Chroma Accept 195.12°		Red	ormal

**Background/Foreground (color picker)** - this sets the Hue, Saturation and Luminance automatically, Key and Chroma Acceptance angles will also be set. Allows the user to select areas of the background and foreground to remove any unwanted breakthrough. Pick Background and Foreground buttons:

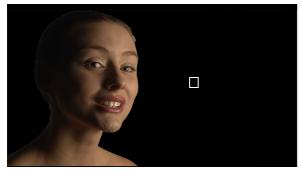
- Touch to Pick will add the selected area inside the cursor to the color picker
- Remove will remove one color pick at a time from the color pick display

#### **PVW Cursor**

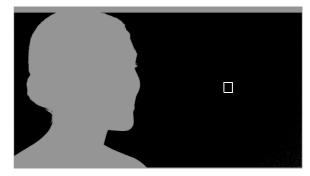
Selecting the PVW Cursor for the Key and Fill portions of the source is done by selecting the **Pvw Key/Pvw Fill** buttons in the **Keyer Control** menu. Then touch the **{Cursor...}** button.

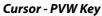
E 2 Key 1	Chroma Keyer 💥	ME 2 Key 1	Chroma Keyer 💥
Cursor X 0.00% Cursor & Preview Fill	Coupled Key Self Key	Cursor X 0.00% Cursor & Preview Fill	Coupled Key Self Key
Cursor Y 0.00% Cursor &	Background	Cursor Y 0.00%	Background
Cursor Size 32 Preview Key	Remove Touch to Pick	Cursor Size 32 Preview Key	Remove Touch to Pick
Color at Cursor Std Dev 27.90°		Color at Cursor Std Dev 27.90°	
Opacity 100.00%	Foreground Remove	Opacity 100.00%	Foreground Remove
Key Size 0.00%	Touch to Pick	Key Size 0.00%	Touch to Pick
Size Bias 0.00%		Size Bias 0.00%	
Soften 0.00%	Presets	Soften 0.00%	Presets
	Green Blue		Green Blue
Transparent/Key Accept 119.88°		Transparent/Key Accept 119.88°	
Spill/Chroma Accept 195.12°	Red Normal	Spill/Chroma Accept 195.12°	Red Normal

*Cursor (Fill)* - with the chroma Key source on a preview monitor, pressing this button will display the Fill portion of the chroma Key without the selected background. *Cursor (Key)* - with the chroma Key source on a preview monitor, pressing this button will display the Key portion of the chroma Key without the selected background.



**Cursor - PVW Fill** 





ME 2 Key 1	Chroma Keyer 💥
Cursor X 0.00% O Cursor Previe	
Cursor Y 0.00% Cursor	
Cursor Size 32 O Previe	W Key Remove Touch to Pick
Color at Cursor Std Dev 27.90°	Foreground
Opacity 100.00%	Remove Touch to Pick
Key Size 0.00%	
Soften 0.00%	Presets
Transparent/Key Accept 119.88°	Green
Spill/Chroma Accept 195.12°	Red Normal

Cursor Size - adjusts the size of the cursor

**Opacity** - this controls the opacity of the Key signal

ME 2 Key 1 Chroma Keyer S									
Cursor X 0.00%	Cursor & Preview Fill	Coupled K	Key Self Key						
Cursor Y 0.00%	Cursor &	Background							
Cursor Size 32	Preview Key	Remove							
Color at Cursor Std Dev	27.90°								
Opacity 100.00%		Foreground							
Key Size 0.00% O		Remove							
Size Bias 0.00%									
Soften 0.00% O		Presets							
		Green	Blue						
Transparent/Key Accept 119.88° Spill/Chroma Accept 195.12°		Red	Normal						

Key Size - will shrink or grow the Key edge horizontally left or right in steps

Size Bias - this adjusts which side of the Key edge is adjusted

*Soften* - applies a blur to the edge of the Key (which edge depends on the Size Bias adjustment).

The menus within this function allow the user to adjust the edge around the material that is being chroma Keyed.

<b>ME 2</b>	Key 1		(	Chroma Keyer 🔀
Cursor X	0.00%	Cursor & Preview Fill	Coupled Key	Self Key
Cursor Y	0.00%	Cursor &	Background	
Cursor Size	32	Preview Key	Remove	
Color at Cursor	Std Dev	27.90°		
Opacity <b>100.0</b>	0%		Foreground	
Key Size 0.00	%O			
Size Bias 0.00	%O			
Soften 0.00	%O		Presets Green Blu	10
Transparent/Key A	Accept <b>119.88°</b>	0	bicen	
Spill/Chroma Acc	ept <b>195.12°</b>	0	Red	rmal

**Transparent/Key Accept** - if opened wide enough allows foreground objects to become transparent. The lower the acceptance angle the less transparent the object being Keyed is. In this way Key Acceptance Angle is also a transparency control.

**Spill/Chroma Accept** - if the chroma acceptance angle is set narrow, say 60 degrees, the this will remove the backing color from an object being chroma Keyed, but the spill will remain on the foreground object. If the angle is increased to 200 degrees then spill on the foreground object is also removed. If too much angle is applied then the foreground object color is incorrect. In this way Chroma Acceptance Angle is also a spill control.

# **Bus Color**

The Bus Color function is used to color correct all sources on a Background, Key or Utility Bus no matter what crosspoint button is selected. The color correction menus; YUV, RGB and Bleed work in an identical manner to the Color Correction menus, the main difference is the **Curves** menu.

				Key Drop Setup	📃 ME 1 Key 1	Bus Color Setup	
				Keyer Menus 🔀	Color Correction Off On		
ME 1				Key Control	YUV Off On	Lift 0.00% 0	
ME 2				Key Drop	Brightness 0.00%	Gain 1.00 0	Normal
ME 3				Bus Color	Saturation 1.00 0	S-Gain 0.00% O	Preset
ME 4				Border	Bleed Off On		B & W Preset
				Masks	Red 100.00%	Curves Off On	Sepia Preset
					Green 100.00%	Type Posterize	Inverse Preset

**Preset Buttons** allow the user to quickly select commonly used preset color options for the crosspoint source, or quickly revert back to the original crosspoint source color levels.

**Normal** - is the original color levels of the crosspoint source; without any color correction adjustments.

**B** & W - sets the chroma saturation to zero removing the chroma content, making the signal black and white.

**Sepia** - sets the chroma saturation to zero removing the chroma content, then adds positive portions of Red and Green and a negative portion of Blue to make-up a sepia appearance.

Inverse - Inverts the video signal making the picture a negative of its correct colors.

# **Bus Color-YUV**

E 1 Key 1	Bus Color Setup	
Color Correction Off On	RGB Off On	
YUV Off On Brightness 0.00% O Contrast 1.00 O	Lift 0.00% 0 Gamma 1.00 0 Gain 1.00 0	Normal
Saturation 1.00	S-Center 50.00%	Preset B & W Preset
Red 100.00%	Curves off on	Sepia Preset
Green 100.00%	Type Posterize	Inverse Preset

Make sure that the YUV is turned On, then touch the attacher to select the parameters, the Brightness, Contrast and Saturation of the Xpt can be adjusted.

- Brightness default value is 0.00%, and the range is from -10% to 100%
- Contrast default value is 1.00, and the range is from -0 to 16
- Saturation default value is 1.00, and the range is from -0 to 16

**Bus Color- Bleed** 

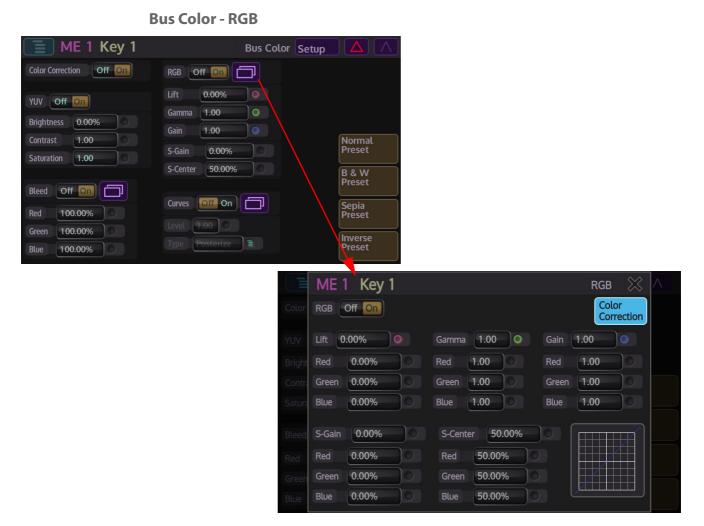
E 1 Key 1	Bus Color Setup	$\Delta$	📄 ME 1 Key 1	
Color Correction Off On	RGB Off On		Color E ME 1 Key 1	Bleed 💥
YUV Off-On	Lift 0.00% O		YUV Bleed Off On	Color Correction
Brightness 0.00%	Gain 1.00 O		Bright Red into Red 100.00%	Red into Blue 0.00%
Contrast 1.00		Normal Preset	Contra Green into Red 0.00%	Green into Blue 0.00%
Saturation 1.00			Satura Blue into Red 0.00%	Blue into Blue 100.00%
Bleed Off On		B & W Preset	Bleed Red into Green 0.00%	Hue Rotate 0:000°
Red 100.00%		Sepia Preset	Red Green into Green 100.00%	
Green 100.00% O	Level 1.00	Inverse	Green Blue into Green 0.00%	
Blue 100.00% O		Preset	Blue 100.00% 0	Preset

Color bleed is a situation where a single color will over power the other colors in the RGB signal. By using the bleed function the stronger color can be softened to make the color more natural, or adjusted to suit a specific need.

The initial menu has a default state where a single adjustment for each parameter menu is active; this will allow the adjustment of the main RGB bleed parameters:

- Red into Red
- Green into Green
- Blue into Blue

Touch one of the attacher to enable all the options in that menu, this will allow a detailed adjustment for each of the R, G and B bleed settings. The adjustments are measured on a - 100% to a +100% scale. Each parameter menu will adjust a single color, i.e. Red into Red, Green into Red and Blue into Red.



The initial menu is set to a default condition, which shows all five Master adjustment parameters highlighted by the Red active circles. This will give an adjustment of Master Lift, Gamma, Gain, S-Gain and S-Center. Each of these adjustments will alter all three elements of the RGB signal at the same time.

When one of the master parameters is altered, notice that the RGB curve profile changes in the graph situated center of the menu.

Lift - Red, Green, Blue and Master Lift parameters adjust the images Black Level, working on Black or shadow areas.

**Gamma** - parameters adjust the levels between dark/shadow and the mid tones, where the mid tones become brighter or darker; depending on the adjustment made.

**Gain** - parameters control the White level or highlights, where brighter colors become brighter or darker; depending on the adjustment made.

**S Gain and S Center** - the parameters adjust the gain mid tone levels of the S curve and the center point levels of the s curve.

Touching one of the attachers allows a more accurate adjustment to the RGB components where the:

# **Color Effects - Curves**

📃 ME 1 Key 1	Bus Color Setup		<b>E</b> ME 1 Key 1	E	Bus Color Se	tup
Color Correction Off On	RGB Off On		Cold ME 1 Key 1			Curves 🔀
YUV Off On Brightness 0.00% C Contrast 1.00 Saturation 1.00	Lift 0.00% Gamma 1.00 Gain 1.00 S-Gain 0.00% S-Center 50.00%	Normal Preset B & W	YUV     Curves     Off     Off       Brig     Level     1.00     Type       Con     Type     Posterize     Type       Sate     Steps     T			Color Correction
Bleed Off On		Preset	Blee Threshold 0.50 O	Posterize Preset	Sine Preset	Sine Ramp Preset
Red         100.00%         Image: Constraint of the second	Level 1.00 O	Sepia Preset Inverse	Red Phase 0:000°	Solarize Preset	Sawtooth Preset	Saw Ramp Preset
Blue 100.00%	Type Posterize	Preset	Blue 100.00%	Posterize	=	Preset

The Curves function is used to give an artistic type effect to the selected Bus. The user can select preset effects such as Solarize and Posterize, and then adjust them to give a user defined effect.

the **Level** parameter changes the level of effect on the selected Bus, from a normal looking source to an extreme manipulation effect with full effect.

The Type parameter as mentioned above selects the type of Curve effect.

**Steps** parameter is used to regulate the look of the color effect, the more steps there are in an effect, the less extreme the effect will appear.

**Threshold** is used to change the shadow and highlight values of the selected preset curve, **Frequency** determines the number repeated occurrences are applied to the effect. The final parameter is **Phase**, this adjusts the effect starting point within the Step cycle.

📄 ME 1 Key				$[ \land ]$	ME	1 Key 1		I	Bus Color	Setup	
Cole 📄 ME 1 K	ey 1		Curves 💥		Current Type	Sine					$\approx$
YUV Curves Off On		$\mathbb{N}$	Color Correction		Posterize	Solarize	Sine	Sawtooth	Sine Ramp	Saw Rar	mp
Brig Level 1.00		+++									
Contract Type Sine											
Salt Steps 1											
Blee Threshold 0.50	Posterize Preset	Sine Preset	Sine Ramp Preset								
Frequency 2.00 Hz	Solarize	Sawtooth	Saw Ramp								
Phase 0:000° C	Preset	Preset	Preset								
Blue 100.00%	Type		Preset								

# **Key Border**

Press the **{Border}** menu link button to expand the border menu.



The **Key Border** menu will add three different types of effect to a Key layer: **Border** - will add a border around a Key layer



Extrusion - will add an edge to a single side or two sides of a Key layer



#### Drop shadow - will add a shadow to the Key layer.



#### Border

To choose between Border Extrusion or Drop Shadow press the Type menu link button to call up the control parameters.

The border menu as stated earlier, will add a border to a Key layer, the border fill type is selected using the Fill Type parameter, the fill type can be either a Matte or one of the 2 Util Bus Crosspoints available depending on the type of system.

If Matte is selected for the border, use the Matte Selector parameter to select Local Matte or one of the 16 available Mattes, if the local Matte is selected the Hue, Luma and Saturation can be adjusted in this menu.

Parameter Controls - Key Border

Softness - makes the outside edge of the border softer, the default setting is 20%

**Opacity** - makes the border change from opaque to transparent softer, the default setting is 100%

Width - changes the width of the border, the default setting is 20%

Outline - When Filled the Keyed source is visible, when set to Outline only the Border is visible

#### **Setup Parameters**

📄 ME 1 Key 1	Keyer Border Setup	ME 2 Key 1 Keyer Border Setup	
Border Off On	_	Border Off On	
Mode Drop Down Add Frame Type Border Extrusion Drop Shadow		Mode Drop Down ME 2 Key 1 Border X	
Fill Type Matte Util Bus 1 Util Bus 2 Matte (L	J3) Matte (U4)	Fill Type Matte U Outline Off On	
Matte Select Blue		Matte Select Local Softness 20.00%	
Hue 0:072° •	Blue	Hue 0:07 Opacity 100.00% O	
Luma 100.00% O	under and a second s	Luma 100.0	
Saturation 90.00%		Saturation 90.00%	

These parameters are the generic for the three different Border Generator effects.

Border - turns the border On or Off

**Mode** - Drop Down Mode will apply a Border, Extrusion or Drop Shadow to a Key layer within 1 field by moving the Key source down by the width of the border. Add Frame will maintain the Key's position but will add a frame of delay to allow the Border, Extrusion or Drop Shadow to be generated.

The Fill Type parameters are the same for Border, Extrusion and Drop Shadow.

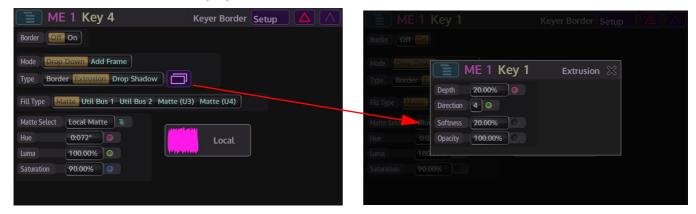
**Fill Type** - selects between Matte and Util Bus, which is used as the border, extrusion or shadow

**Matte Selector** - selects a color for the border, the user can select between Local Matte or Mattes 1 to 16

Hue, Luma Sat - adjusts the color of the Local Matte only

#### **Extrusion**

This option will add an extrusion to one side or two sides of a Key layer, and give the illusion that the Key layer has a thickness.



#### **Parameter Controls**

Depth - exaggerates the extrusion, the default setting is 20%

Direction - moves the extrusion around the edge of the Key layer, the default is set to the bottom edge of the Key layer.

Softness - makes the outside edge of the border softer, the default setting is 20%

**Opacity** - makes the border change from opaque to transparent softer, the default setting is 100%

## **Drop Shadow**

This option will add a shadow to the background of the Key layer.

📄 ME 1 Key 4	Keyer Border Setup	$\Delta$							
Border Off On									
Mode Drop Down Add Frame Type Border Extrusion Drop Shadow					4E 1 Ke	ey 1	Drop Shadov	• 🛛	
				X Position	20.00%				
Fill Type Matte Util Bus 1 Util Bus 2 Matte (U	J3) Matte (U4)		atte	Y Position	20.00%	•			
Matte Select Local Matte	-		Blu		20.00%	0			
Hue 0:072°	Local		-0:0		100.00%	0			
Luma 100.00%	<u></u> )		100						
Saturation 90.00%									

# **Parameter Controls**

X Position - moves the shadow horizontally, default setting is 20%

 ${\bf Y} \ {\bf Position}$  - moves the shadow vertically, default setting is 20%

Softness - makes the outside edge of the border softer, the default setting is 20%

**Opacity** - makes the border change from opaque to transparent softer, the default setting is 100%

#### **Keyer Masks**

Preset Masks allow the Key layer to be masked; they do this by using a pattern to Key through to the background layer. There are two Preset Mask options, both are identical in operation and both can be applied to a single Key layer. Box mask uses a mask shape to mask away the Key layer revealing the Background layer.

<b>E</b> ME 2 Key 1	Keyer Masks Setup
Overall Enable Off On	
Overall Invert Off On	
Mask Mode Preset Box	
Preset Mask 1 Off On Invert	
Preset Mask 2 Off On Invert	
Box Mask Off On Invert	
Util Mask 1 Off On Invert	
Util Mask 2 Off On Invert	

Use the On/Off buttons to enable each Preset mask

Invert - inverts the mask leaving the background visible within the preset mask pattern

#### Keyer Masks - Preset Mask 1/2



Pattern - scrolls through the available preset masks

Level - controls the amount of mask wipe

Position:

X Position - moves the center of certain masks in the horizontal direction

Y Position - moves the center of certain masks in the vertical direction

**Rotation** - Rotates certain masks, the rotation parameter displays the rotation in degrees, and the amount of rotations made.

Aspect Ratio - varies the aspect ratio of the mask

Softness - makes the edge of the mask soft

Mode - select between Exclusive and Inclusive, set to Exclusive unless using a chroma Key

Keyer Masks - Box Mask

📄 ME 1 K	Cev 1 Kever Masks Setup
Masks Off On	E ME 1 Key 1 Box Mask 💥
	Box Mask Off On
Mask Mode Preset	
Overall Invert Off	Top 0.00%
Preset Mask 1 Off	Bottom 0.00%
	Left 0.00%
Preset Mask 2 Off	Right 0.00%
Box Mask Off On	
Util Mask 1 Off Or	Softness 0.00%
Util Mask 2 Off Or	Invert No Yes

Box mask uses a mask shape to mask away the Key layer revealing the Background layer.

**Top, Bottom, Left, Right** - using the parameters, this function will mask each side of the Key layer individually, use the On/Off buttons shown in the parameters to switch the Mask On/Off.

Softness - this option softens the outside edge of the Mask.

Keyer Masks - Util 1/2

	E 1 K	ey 1	Keyer Ma	asks Setup		$\Delta$
Masks Off		ME 1 Key 1 Util	1	Util Mask	$\otimes$	
Mask Mode	Util Masl	Coff On				
Overall Invert	Source	Util 1 Util 2 Util 3 (n/a)	Jtil 4 (n/a)			
Preset Mask 1	Lift	0.00%				
Preset Mask 2		1.00				
Box Mask		Off On				
	Mode	Exclusive Inclusive				
Util Mask 2	Shaping	Off On				

The Util Masks use the Key source of the Util Bus Xpt that is setup in the Util Bus menu. Using the Key source of Util1 Xpt, a Util Mask will Key the fill source of Key1 over the background.

This acts like a Luma Key and is typically used on sources that are not pre-Keyed. Two Util Masks can be used on one Key layer.

On/Off - turns the Util Mask source On and Off

**Source** - selects the Util Bus from which the Key source of the Xpt will be used to create the mask.

Lift - sets the Luma level at which the Key operates

Gain - affects the sharpness of the clip point

Mode - selects between Inclusive and Exclusive

Shaping - stops dark edges appearing around a Key source (anti-aliasing)

		neyern	iacce i m					
		Matte Fil	is used as	s a fill for	the M	asks funct	ion.	
ME	2 Key 1	Primary			Ke	eyer Control		
Full				Invert		t Priority		
Coupled Key Resize		y Self K	ey	Matte Fill		1 2 3	4	
Mix	Wipe Mat Mix		Setu	<b>*</b>	Pvw K		u	
Crosspoint	CAM1	E				ME	2 Key 1	Keyer Matte 💥
Split Key Xpt	CAM1 01:00°	Au Of	f Auto Of		Revei Cut	Matte Fill Matte Select	Off On Local Matte	Local
Offset Key 1	00:00°	O Au Or	to Cut Off	n On		Hue Luma	0:000°	
						Saturation	90,00%	
Current Matte	Select Local	Matte				Saturation		
Local Matte	BLK	Wite	Red	Yel low	Gree	eeen		
Cyan	Blue	Mag enta	Grey	Ora nge	Darl	c Red		
DarkGreeeee n	DarkBlue	Pur ple	Teal	LiteGrey				

**Keyer Matte Fill** 

The Hue, Luma and Saturation parameters are used to adjust the "Local Matte". The user can also select a preset color from a menu containing a list of preset mattes by using the list selector, as shown above. ME - Keyer Keyer Setup

## **ME - Keyer Resize**

**Overview** 

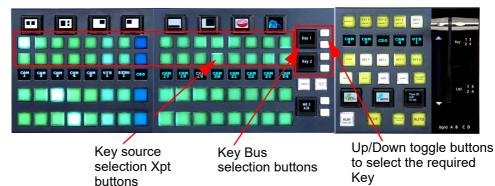
Note: More Resize features can be found in the Kahuna 9600/6400 User Manual, supplied with this system.

The Resize function allows the user to manipulate Key layers using the Kahuna Resize Engines. The user is able to resize the Key layer using Zoom, move position of the Key layer using the X/Y parameters, add borders or crop edges. These are just some of the many functions within Resize.

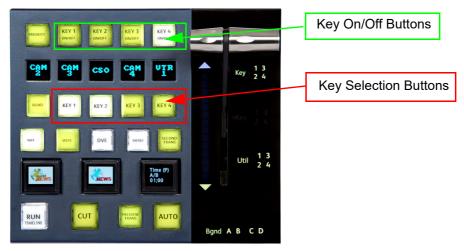
Note: Before describing how to use the Resize functions, the user will need to add a Key layer onto a background. Note: The mainframe should have also had the inputs, outputs, M/Es, crosspoints and stores setup.

## Taking a Key Layer to an Output

This section of the manual will describe how to place a Key layer onto a background source. Keys 1 to 4 on an M/E are accessed using the control surface, described in the previous section; the Key Bus buttons on the control surface are used to select the required Key and the required source is selected using the Key Bus Crosspoint buttons.



The Key Layers can then be cut to the source output using the Transition Control area of the control surface.



There are two ways to place a Key layer onto a monitor:

- The first method is using **Key Selection** buttons 1 to 4, the buttons will go Green when selected (buttons shown above).
- The second method is using the **Key On/Off** buttons shown at the top in the diagram. The buttons toggle On/Off when pressed. With no Key layer selected the buttons are unlit, when pressed the button will either light white or tallied red. The Key layer can now be seen on the monitor.

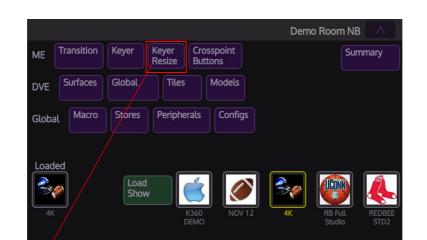
Note: White = off air, Red = tallied on air and contributing to the programme output.

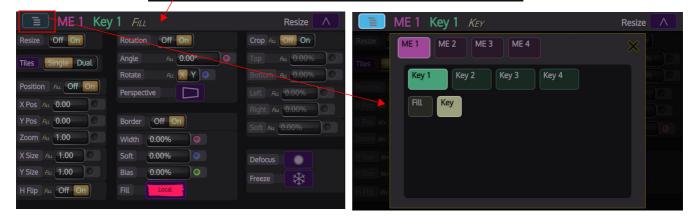
The color of the buttons may vary depending on the user defined button color scheme.

Note: If the selected Key Layer is full size over a Pgm bus background, the tally lamp on the Pgm bus will not be lit, once the user has used the "Zoom" parameter to make the Key layer smaller the tally lamp on the Pgm bus will light up again.

In the ME Main menu, press the Resize button on the MAV-GUI which will open the top level **Resize** control menus, the controls determine the method used to re-size the image.

Touching the top bar of the menu will display the "Delegates" menu, in this menu the user can select the required M/E and the Key.

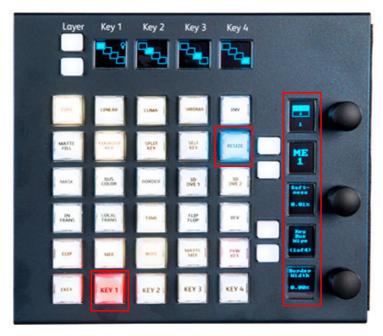




## **Key Control MAV Module**

Before describing the parameter controls in the Keyer menus on the MAV-GUI, it is worth mentioning the optional Key Control MAV module.

Note: Setting the "Menu Tracking" parameter to "Yes" in the Panel Config -GUI Preferences menu, will allow the MAV-GUI menus to jump to the relevant menu when some button functions are pressed on the Key Control MAVmodule.



If the purchased Maverik control surface has a Key Control MAV module, the user is able to access some of the Keyer function like Resize, Full, Linear, Luma and Chroma Key functions selection from the control surface.

To select the **Resize X Pos, Y Pos** and **Zoom** functions, select the Key (**[Key1] - [Key4]**) buttons at the bottom of the module, then press the **[RESIZE]** button. Notice that the mnemonic displays running vertically down the right side of the module display the resize parameters, they can be adjusted using the rotary controls associated with them.

Selecting a Type of Key Using Key Control

The type of Keying to be used is selected by the top row of buttons in the Key Control group.



FULL - The Fill is a full layer over the background hiding it completely.

LIN - Selects a linear Key.

LUM - Selects a Luma Key.

CHROM - Selects chroma Key.

**INV** - Inverts the Key signal so that the parts, which were Keyed off, become Keyed on and vice versa.



**MATTE FILL** - Causes the Fill to be the Key Matte regardless of whether in Coupled Key, Split Key or Self Key.

COUPLED Key - Uses the Fill and Key sources allocated to the crosspoint.

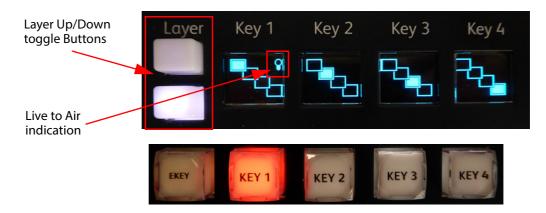
**SPLIT Key** - By selecting a Key (1 - 4) then holding down the **[SPLIT Key]** button, the two Key bus selection buttons will display for example "**Key 1 Fill**" on the top Key bus button and "**Key 1 Key**" on the bottom, the user is also able to see which source crosspoint buttons are selected for the Key/Fill sources, and change the sources if required.

**SELF Key** - In Coupled Key mode Self Key causes the Key, as well as the Fill, to be derived from the Fill source allocated to the crosspoint, also known as a Video Key. In Split Key mode Video Key causes the Key to be derived from the Fill source of the crosspoint used as the split away.

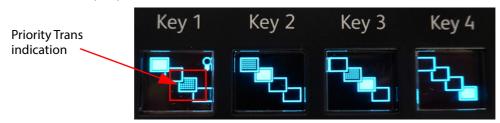
**RESIZE** - Selects the resize options X/Y and Zoom position of the selected Key. Stepping Up/Down through the bottom two toggle buttons next to the rotary controls, will display Key Resize menu (2 of 2), where the user is able to use the X/Y Size and H-Flip parameters.

### **Key Priority**

The Key layer priority "in front" / "behind" position of each of the four Key layers is displayed by the Key Priority mnemonic displays above the Key Control buttons. The priority of the layers is changed by the Layer Up/Down toggle buttons next to the mnemonic displays, in conjunction with the Key 1 to Key 4 buttons. The Key layers are displayed as a solid square, if a Key layer is "live to air" a light bulb symbol will be displayed in the top right corner if the mnemonic display.



When the **[PRIORITY] Transition Control** button is **On**, the **Key Control Priority** symbols in the mnemonic displays will display the next Key transition priority and will shown as a "**Box Grid**" instead of a solid box. The Up/Down toggle buttons move the selected "Priority Transition" Key layer up or down one level per press.



#### **Other Key Control Functions**

Note: Setting the "Menu Tracking" parameter to "Yes" in the Panel Config -GUI Preferences menu will allow the MAV-GUI menus to jump to the relevant menu when some button functions are pressed on the Key Control MAVmodule.



**MASK** - Enables the Box and Wipe Mask facility. The parameters for the mask are set in the Mask menus which are entered via the top level Keyer menu.

**BUS COLOR** - Enables the Bus Color Correction which is set-up in the Bus Color menus. Pressing the [**BUS COLOR**] button displays parameters in the mnemonic displays next to the rotary controls. Stepping Up/Down through the bottom two toggle buttons next to the rotary controls, will display Bus Color menus; 2 of 3 and 3 of 3.

**BORDER** - Selects the Key border facility allowing Border, Extrusion and Drop Shadow to be accessed. Pressing the [**BORDER**] button displays parameters in the mnemonic displays next to the rotary controls

3D DVE1 and 3D DVE2 - Future Feature.



IN TRANS - This button takes the selected Key layer in or out of a transition toggling the state on each press. It is just like using the in/out of transition Key buttons for the Key layers on the Transition Control MAV module. Instead of a dedicated Key for each Key layer as in the Transition Control area, for the Keyer section, the user can select the Key and then press [IN TRANS] button to place the Key layer it in/out of transition.

**LOCAL TRANS** - Tells the selected Key layer to come out of the main transitions and can be set to make a separate and independent transition instead. For instance, if every Key and background was set-up to make a mix transition, the user is able to select one Key layer to perform a wipe instead by making it a **[LOCAL TRANS]** and selecting a **[WIPE]**. Now everything mixes during the transition except for the Key layer that was selected as the **[LOCAL TRANS]** which is now performing a wipe transition.

**TIME** - Sets the duration of the auto Key transition. Pressing the **[TIME]** button displays parameters in the mnemonic displays next to the rotary controls, which include Trans Time and Trans off-set.

FLIP-FLOP - If [FLIP-FLOP] is selected the start point alternates.

**REV** - If [REV] is selected the start point is reversed.



**CLIP** - Allows the Key transition to be associated with a selected ClipStore when creating a "Clip Transition". Altering the clip position relative to the transition point, is determined by the **Transition Time** in the [**TIME**] buttons parameters.

MIX - Selects a standard mix (also known as a dissolve or crossfade) as the Key transition.

**WIPE** - Selects a Wipe as the Key transition. Wipe parameters are displayed in the mnemonic displays next to the rotary controls. The top parameter selects the type of wipe pattern required.

**MATTE MIX** - Selects a Matte-mix where the source passes through the Matte color before reaching the selected signal.

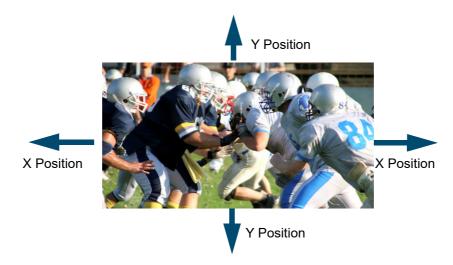
**PVW Key** Previews the **Key** and **Fill** layers individually. Press the button once it will turn pink and display the Key portion of the Key layer, press it a second time and it will light a slightly brighter pink color and display the Fill portion of the Key layer, press it a third time to turn it off.



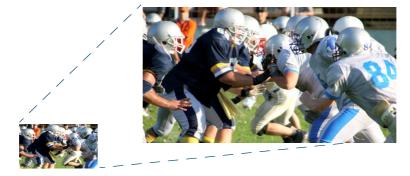
**EKey** - Press and hold and select on of the **[Key 1]** - **[Key4]** buttons, selects eKey 1 - 4 (if available). **Key1 to 4** - Selects the SuperKey layer that will be affected by the Key Control buttons **Keyer Setup- Resize Position** 

<b>ME 1 Key 1</b> A	ĪLL	Resize
Resize Off On	Rotation Off On	Crop Ful Off On
Tiles Single Dual	Angle Fill 0.00°	Top Fu 0.00%
Position Ful Off On	Perspective	Left Fu 0.00%
X Pos Fill 0.00		Right Fu 0.00%
Y Pos Fill 0.00	Border Off On	Soft Fu 0.00%
Zoom Fill 1.00	Width 0.00%	
X Size Fill 1.00	Soft 0.00%	Defocus Fu Off On
Y Size Fu 1.00	Bias 0.00%	Freeze
H Flip Ful Off On	Fill	Key Resize Ganging

**X/Y Position** - Parameters are used to move the position of the Key layer around the monitor screen as shown below.



**Zoom** - Parameter is used to zoom the Key layer in and out.



ME 1 Key 1 A	ĨLL	Resize 🔨
Resize Off On	Rotation Off On	Crop Fill Off On
Tiles Single Dual	Angle Fill <b>0.00°</b>	Top Fu 0.00%
Position Fill Off On	Perspective	Left Fu 0.00%
X Pos Fill 0.00		Right Fu 0.00%
Y Pos Fill 0.00	Border Off On	Soft Fu 0.00%
Zoom Fill 1.00	Width 0.00%	
X Size Fill 1.00	Soft 0.00%	Defocus Ful Off On
Y Size Ful 1.00	Bias 0.00%	Freeze
H Flip Fax Off On	Fill	Key Resize Ganging

X/Y Size - Parameter is used to increase or decrease (stretch) the width or height of the Key layer.





Horizontal Flip - as the function suggests, will horizontally flip the source on the Key layer.

**Resize Rotation** 

These parameters affect the Key and Fill portions of the Key layer (depending on what is selected in the Delegates menu) and allow the user to have even more control over a SuperKey layer. The parameters will rotate a Key layer on an X/Y axis, change the angle, adjust perspective and move the vanishing point of the Key layer.

🔳 ME 1 Key	1 FILL	Resize 🔨	E ME 1 Key 1 Fill Resize
Resize Off On	Rotation Off On	Crop Fut Off On	Resize Off On Rotation Off On Crop Fut Off On
Tiles Single Dual	Angle Fill 0.00°	Top         Fut         0.00%         O           Bottom         Fut         0.00%         O	Tites ME 1 Key 1 Fill Resize Rotation Perspective X -
Position Fit Off On X Pos Fit 0.00	Perspective	Left Fu 0.00%	Position Perspective 2.50 X Pos Au Variable Paint Concent
Y Pos Fill 0.00	Border Off On	Soft Ful 0.00%	Vanishing Point Title Screen X Position 0.00
X Size Fill 1.00	Width         0.00%         0           Soft         0.00%         0	Defocus	Zoom A: Y Position 0.00
Y Size Fill 1.00	Bias 0.00%	Freeze	Y Size Fa 1.00 Freeze
H Flip Fut Off On	Fill		H Flip Fau Off On

Some examples of the 2D DVE effects on a Key layer below:

Angle - this adjusts the movement of the Key layer in a positive or negative way on an X or Y axis

Rotate - this selects the X or Y axis for the angle adjustment

**Perspective** - touch the **Perspective** icon to open the "**Resize Perspective Rotation**" menu, this will move the perspective point on the Key layer



Angle Rotate Y (positive)



Angle Rotate X (positive)



Angle Rotate X (negative)



**Vanishing Point** - in **Tile** mode, the vanishing point is placed on the center of the Key layer, so the dimensions of the Key layer will always be the same where ever it is placed in the viewing area. Selecting **Screen** will give a more true 3D DVE effect and will naturally distort the Key layer as it is moved around the viewing area.

**Position X/Y** - this affects the sheering of the Key layer, by giving the effect of moving the camera position.

#### **Keyer - Resize Border**

This function allows the user to apply a border and effects around a Key layer.

🔳 ME 2 Key	1 FILL	Resize 🔨		MF2 K	ey 1 Fill	Resize /
Resize Off On	Rotation Off On	Crop Fill Off On				
iles Single Dual	Angle Fill 0.00°	Тор Fu 0.00%	Tiles	ME 2 K	ev 1	Resize Border Fill 🛛 💥
osition Fill Off On	Rotate Fu XY	Bottom Fill 0.00%		Fill Mode	Matte Util Bus 1 Util Bus 2	2 Util Bus 3 Util Bus 4
Pos Fill 0.00	Perspective	Left <i>Fu</i> 0.00%	X Pos Fil	Matte Select	Local Matte	Local
Pos Fill 0.00	Border Off On	Soft Ful 0.00%	Y Pes		0:000°	
om <i>Fill</i> 1.00	Width 0.00%		Zoom Fil		100.00%	
Size Fill 1.00	Soft 0.00%	Defocus	X Size P		90.00%	
Size Fill 1.00	Bias 0.00%	Freeze	Y Size Fu			
Flip Fill Off On	Fill Local	ATX	H Flip Fu			

Touch the Matte Select

Border On/Off - Switches the Border On or Off

Width - Adjusts the overall width of the border

Softness - Softens the outside edges of the border

**Bias** - Adjusts the horizontal and vertical bias of the border on rectangular borders. This parameter is set at 0%, adjusting the parameter in a positive direction adjusts the bias on the left and right sides, adjust from 0% in a negative direction and the border bias top and bottom is adjusted.



**Original Key Layer** 

**Border Applied** 



**Changed Border Fill** 



Border Width Adjusted



**Negative Bias** 



**Positive Bias** 

**Fill Mode** - this gives the user the choice of using a matte as a border fill, or to use source from one of available the 4 Util Buses.



The **Matte Selector** and **Hue**, **Luma** and **Sat** parameters are used to adjust the color of the border around a Key layer when the option is selected in the Border Fill parameter. The user is able to select one of 16 preset Mattes, or create a user defined color for the border using the Hue, Luma and Sat parameters.

	ME 2 Ke		R	esize 🔨	Matte Select			$\sim$
				ff On		Local Matte	Black	∞
Tiles	ME 2 Key	/ 1	Resize Border Fill		Current	White	Red	
Position	Fill Mode 🛛 🔛	atte Util Bus 1 Util Bus 2	Util Bus 3 Util Bus 4			Yellow	Green	6
X Pos Fie	Matte Select	Local Matte	Local	10		Cyan	Blue	
Y Pos na		0:000°	···· ·····					
Zoom Fa		100.00%				Magenta	Grey	S I
X Size		90.00%				Orange	Dark Red	
Y Size				*				
H Flip A				34r )	H Füp Fill On	Fill	Locat	

Keyer Setup - Resize Crop

As the menu suggests, the parameters allow the user to add a crop to a Key layer.

🔳 ME 1 Key	1 FILL	Resize 🔨	🔳 ME 1 Key	1 FILL	Resize 🔨
Resize Off On	Rotation Off On	Crop Fill Off On	Resize Off On	Rotation Off On	Crop Fill Off On
Tiles Single Dual	Angle Fut 0.00°	Top Fill 0.00%	Tiles Single Dual	Angle Fill 0.00°	Top Fill 0.00%
	Rotate Fill X Y	Bottom Fill 0.00%		Rotate Fill 🔀 Y	Bottom Fill 0.00%
Position Ful Off On	Perspective	Left Fill 0.00%	Position Ful Off On	Perspective	Left Fill 0.00%
X Pos Fill 0.00		Right Fill 0.00%	X Pos Fill 0.00		Right Fu 0.00%
Y Pos Fill 0.00	Border Off On	Soft Fill 0.00%	Y Pos File 0.00	Border Off On	Soft Fut 0.00%
Zoom Fill 1.00	Width 0.00%		Zoom Fill 1.00	Width 0.00%	
X Size Fill 1.00	Soft 0.00%	Defocus	X Size Fill 1.00	Soft 0.00%	Defocus
Y Size Fill 1.00	Bias 0.00%	Freeze	Y Size Fill 1.00	Bias 0.00%	Freeze
H Flip Fill Off On	Fill	ATA	H Flip Fill Off On	Fill	ALL ALL

**Cropping On/Off** - Switches the crop facility On or Off, press the On/Off buttons in the parameter control area of the menu.

Top, Bottom, Left and Right - Crops the Fill edges Softness - Softens the outside edges of the crop



Original Key Layer



Left Crop



Right Crop

Bottom Crop



Top Crop



**Resize - Defocus** 

This will add a user defined defocus adjustment to a Key layer.

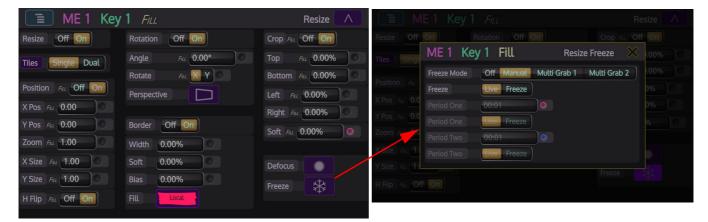
🔳 ME 1 Key	<b>1</b> FILL	Resize 🔨	ME 1 Key 1 Fill	Resize
Resize Off On	Rotation Off On	Crop Fue Off On	Resize Off On Rotation Off On	
Tiles Single Dual	Angle Fitt 0.00°	Top Fill 0.00%	Tiles Single Dual Angle Fat 0.00°	Top Fill 0.00%
	Rotate Fill Y	Bottom Fill 0.00%	Position Fac O ME 1 Key 1 Fill Resize Defo	
Position Fill Off On	Perspective	Left Fill 0.00%	X Pos Par 0.00 Defocus Off On	
X Pos Fill 0.00		Right Fill 0.00%	Y Pos A Level 0.00	
Y Pos Fill 0.00	Border Off On	Soft Fill 0.00%	Zoom <i>Fa</i> 1.00 Bias 0.00 O	
Zoom Fill 1.00	Width 0.00%		X Size Fu 1.00	
X Size Fill 1.00	Soft 0.00%	Defocus	Y Size Ful 1.00	
Y Size Fill 1.00	Bias 0.00%		H Flip Fac Off On	
H Flip Fill Off On	Fill	Freeze		

**Level** - This adds the amount of defocus to a Key layer, where 0.00 is no defocus and 100.00 is full defocus.

Bias - This will move the defocus to the left or right of center.

**Resize - Freeze** 

This function is used to freeze a video source that has been applied to a Key Layer.



Freeze Mode - turns freeze mode On/Off and selects between the following actions:

Freeze - selects between Live (video playing) or Freeze (video frozen)

Manual - this allows the user to manually freeze the video source using the {Live} {Freeze} buttons

**Multi Grab 1** - in this mode a freeze of a pre-determined duration can be applied, this will freeze the video source for the set period of frames or time, whilst the video is still playing.

**Multigrab 2** - this will set a second pre determined duration and will freeze the video after Multi Grab 1 has finished its freeze.

**Period One** - at the next Field 1,2 or Frame as determined, the live video will be frozen for the specified duration. The rotary parameter control for Period will set the duration of the freeze.

Period Two -- this determines the duration of the second period of the freeze.

**Resize - Dual Tile** 

This function allows the user to take an existing SuperKey layer and create 2 Tiles (Key Layers) that can be for example; independently resized (Zoom), moved along the XY axis, and cropped.

The parameter controls in the Dual Tile menus such as Position, Crop, Border, Defocus and Freeze, work exactly the same as described in the main Keyer Resize menus.

Note: The following examples will describe the parameters for Tile One, the parameters for Tile Two work in exactly the same way.



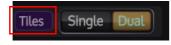
To use this function, bring a SuperKey layer onto a monitor (for this example M/E2 Key 1) and use the Resize controls to Zoom down the Key layer.



M/E2 Key 1Layer Over a background

Turn On "**Dual**" in the Resize menu, at first only 1 tile can be seen, the tile is full screen over the background, use the "**Zoom**" parameter to zoom down the tile. The two tiles will be separated in the next menu

Press the {Tiles} menu link button to open the "Resize Dual Tile" menu.



🔳 ME 2 Key 1		Resize Dual Tile
Tile One BNC A1	Тор	
Opacity 100.00%	Crop Off On	Defocus Off On
X Pos 0.00	Border Off On Local	Freeze
Y Pos 0.00 ○ Zoom 1.00 ○ ↓↔	Rotation Off On	Horz Flip Off On
Tile Two BNC A1	Тор	
Opacity 100.00%	Crop Off On	Defocus Off On
X Pos 0.00	Border Off On Local	Freeze
Y Pos 0.00 Zoom 1.00 ↓↔	Rotation Off On	Horz Flip Off On

By default **Tile 1** is on top and will obscure **Tile 2**, touch the **X/Y Pos** and **Zoom** parameters and use the attachers to separate and position the Tiles.

By default, both of the tiles will have the same source applied them. To change the source, In the **Resize Dual Tile** menu (see below), touch the menu expand button at the end of the Tile One/Tile Two parameter and a crosspoint list will appear. Touch one of the Xpt buttons to select the source.

E ME 2 Key 1		Resize Dual Tile	Tile One Xpt				$\approx$
Tile One BNC A1	Тор		-	BNC A1	BNC A2	BNC A3	$\sim$
Opacity 100.00%	Crop Off On	Defocus Off On	Current	BNC A4	BNC A5	BNC A6	
X Pos 0.00	Border Off On Local	Freeze 💥	BNC A1	BNC A7	BNC A8	BNC A9	5
Y Pos 0.00 ○ Zoom 1.00 ○ ↓↔	Rotation Off On	Horz Flip Off On		BNC A10	BNC A11	BNC A12	R (
Tile Two BNC A1	Тор			BNC B1	BNC B2	BNC B3	S
Opacity 100.00%	Crop Off On	Defocus Off On		BNC B4	BNC B5	BNC B6	
X Pos 0.00	Border Off On Local	Freeze					
Y Pos 0.00 Zoom 1.00 0 ↓↔	Rotation Off On	Horz Flip Off On	Zoom 1.00	O ↓↔	ation Off On	Horz FL	ip Off On

The two tiles are now separated and have different sources.





**Opacity** - controls the transparency of the Tile.

**X/Y Position** - Parameters are used to move the position of the Key layer around the monitor screen as shown below.

Zoom - Parameter is used to zoom the Key layer in and out.

**Resize Dual Tile Crop** 

#### As the menu suggests, the parameters allow the user to add a crop to one of the Dual Tiles.

<b>E</b> ME 2 Key 1	Resize Dual Tile	E ME 2 Key 1 Resize Dual Tile
Tile One BNC A1 E Top		
Opacity 100.00% Crop Off On	Defocus Off On	Opacity 100.0 ME 2 Key 1 Resize Dual Tile Crop 🗙
X Pos 0.00 Border Off On Local	Freeze	X Pos Off On
Y Pos 0.00 Rotation Off On	Horz Flip Off On	Y Pos 0.00 Top 0.00% O
		Zoom 1.00 Bottom 0.00% 0
Tile Two BNC A1 Top		Tile Two BN Left 0.00%
Opacity 100.00% Crop Off On	Defocus Off On	Opacity 100.0 Right 0.00%
X Pos 0.00 Border Off On Local	Freeze	X Pos 0.00 Soft 0.00% Hard Crop
Y Pos 0.00 Rotation Off On	Horz Flip Off On	Y Pos 0.00 Rotation Off On Horz Flip Off On
Zoom 1.00 \$		Zoom 1.00 0 (+++++++++++++++++++++++++++++++++

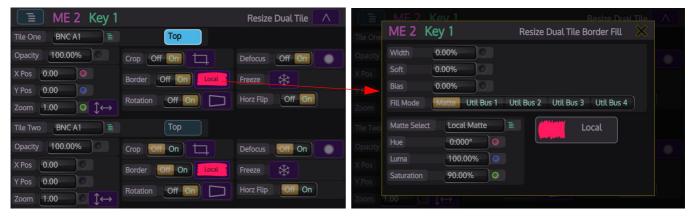
**Crop On/Off** - Switches the crop facility On or Off, press the On/Off buttons in the parameter control area of the menu.

Top, Bottom, Left and Right - Crops the Fill edges

Softness - Softens the outside edges of the crop

#### **Resize Dual Tile Border Fill**

This function allows the user to apply a border and effects around a Dual Tile.



Border On/Off - Switches the Border On or Off

Border Width - Adjusts the overall width of the border

Border Softness - Softens the outside edges of the border

**Border Bias** - Adjusts the horizontal and vertical bias of the border on rectangular borders. This parameter is set at 0%, adjusting the parameter in a positive direction adjusts the bias on the left and right sides, adjust from 0% in a negative direction and the border bias top and bottom is adjusted.

**Border Fill** - Selects source for the border fill from a Matte selected using the Matte Selector parameters, Util 1/Util 2 or Matte (U1/U2) if the Util buses are being used for eKeys.



**Original Key Layer** 

**Border Applied** 



Changed Border Fill



Border Width Adjusted

**Negative Bias** 

**Positive Bias** 

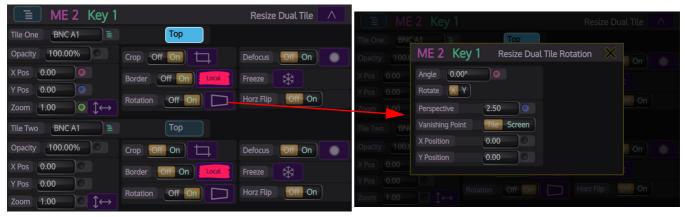
The Matte Selector and Hue, Luma and Sat parameters are used to adjust the color of the border around a Tile when the option is selected in the Border Fill parameter. The user is able to select one of 16 preset Mattes, or create a user defined color for the border using the Hue, Luma and Sat parameters.

Matte Selector - Selects the preset Mattes 1 to 16 or a Local Matte that allows the user to create a their own border color.

Matte Hue, Luma and Sat - These parameters allow the user to adjusts the Hue, Luma and Saturation levels of the Local Matte, the user is able to create their own unique border color around a Key layer.

**Resize Dual Tile Rotation** 

The parameters will rotate a Key layer on an X/Y axis, change the angle, adjust perspective and move the vanishing point of the Key layer.



Some examples of the 2D DVE effects on a Key layer below:



Angle Rotate X (positive)



Angle Rotate X (negative)



Angle - this adjusts the movement of the Key layer in a positive or negative way on an X or Y axis

**Rotate** - this selects the X or Y axis for the angle adjustment

**Perspective** - touch the **Perspective** icon to open the "**Resize Perspective Rotation**" menu, this will move the perspective point on the Key layer

**Vanishing Point** - in **Tile** mode, the vanishing point is placed on the center of the Key layer, so the dimensions of the Key layer will always be the same where ever it is placed in the viewing area. Selecting **Screen** will give a more true 3D DVE effect and will naturally distort the Key layer as it is moved around the viewing area.

**Position X/Y** - this affects the sheering of the Key layer, by giving the effect of moving the camera position.

#### Angle Rotate Y (positive)



**Resize Dual Tile Defocus** 

This will add a user defined defocus to a Tile.

🔳 ME 2 Key 1		Resize Dual Tile	E ME	2 Key	1		Resize Dual	Tile 🔷
Tile One BNC A1	Тор				То			
Opacity 100.00%	Crop Off On T	efocus Off On						On
X Pos 0.00	Border Off On Local Fr	eeze		ME 2	Key 1 Resi	ize Dual Tile De	focus 🔀	
Y Pos 0.00 ○ Zoom 1.00 ○ ()↔	Rotation Off On He	orz Flip Off On		Defocus	Off On			f On
Tile Two BNC A1	Тор			Level Bias	0.00			
Opacity 100.00%	Crop Off On T	efocus Off On						On
X Pos 0.00	Border Off On Local Fr	eeze						
Y Pos 0.00 Zoom 1.00 ↓↔	Rotation Off On D	orz Flip Off On	Y Pos 0.00 Zoom 1.00	]0 ]0[\$←	Rotation Of	f On	Horz Flip Of	On

**Level** - This adds the amount of defocus to a Tile, where 0.00 is no defocus and 100.00 is full defocus. **Bias** - This will move the defocus to the left or right of center. **Resize Dual Tile Freeze** 

This function is used to freeze a video source that has been applied to a Tile.

<b>E</b> ME 2 Key 1		Resize Dual Tile	E M	E 2 Key 1		Resize Dual Tile
Tile One BNC A1	Тор		Tile One B	NC A1	Тор	an an a
Opacity 100.00%	Crop Off On	Defocus Off On	Opacity 10	ME 2 Key	1 Resize Dual Tile	Freeze 🗙 👩
X Pos 0.00	Border Off On Local	Freeze 💥	X Pos	Freeze Mode	Off Manual Multi Grab 1	Multi Grab 2
Y Pos 0.00		Horz Flip Off On	Y Pos 0.00		Live Freeze	On
Zoom 1.00 ○ ↓↔	Rotation Off On		Zoom 1.00	Period One	00:001	
Tile Two BNC A1	Тор		Tile Two B	Period One	Live Freeze	
Opacity 100.00%	Crop Off On	Defocus Off On	Opacity 10	Period Two	00:001	On
X Pos 0.00			X Pos 0.00	Period Two	Live Freeze	
Y Pos 0.00	Border Off On Local	Freeze	Y Pos 0.00			*
Zoom 1.00 ○ ↓↔	Rotation Off On	Horz Flip Off On	Zoom 1.00		Rotation Off On	Horz Flip Off On

Freeze Mode - turns freeze mode On/Off and selects between the following actions:

Freeze - selects between Live (video playing) or Freeze (video frozen)

Manual - this allows the user to manually freeze the video source using the {Live} {Freeze} buttons

**Multi Grab 1** - in this mode a freeze of a pre-determined duration can be applied, this will freeze the video source for the set period of frames or time, whilst the video is still playing.

**Multigrab 2** - this will set a second pre determined duration and will freeze the video after Multi Grab 1 has finished its freeze.

**Period One** - at the next Field 1, 2 or Frame as determined, the live video will be frozen for the specified duration

Period Two -- this determines the duration of the second period of the freeze

<b>E</b> ME 2 Key 1		Resize Dual Tile 🛛 🔨
Tile One BNC A1	Тор	
Opacity 100.00%	Crop Off On	Defocus Off On
X Pos 0.00 •	Border Off On Local	Freeze 💥
Y Pos 0.00 ○ Zoom 1.00 ○ ↓↔	Rotation Off On	Horz Flip Off On
Tile Two BNC A1	Тор	
Opacity 100.00%	Crop Off On	Defocus Off On
X Pos 0.00	Border Off On Local	Freeze 💥
Y Pos 0.00 0 Zoom 1.00 0 ↓↔	Rotation Off On	Horz Flip Off On

**Resize Dual Tile - Horizontal Flip** 

Horiz Flip - as the function suggests, will horizontally flip the source on the Tile.

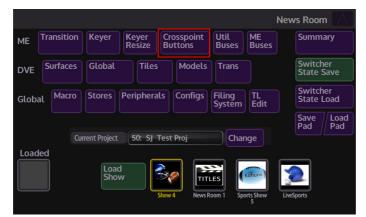
Kahuna Maverik User Manual ME - Keyer Resize Key Control MAV Module

## **ME - Crosspoint Buttons**

## **Crosspoint Control**

Note: A full explanation of Crosspoint mapping features, are in the Kahuna 9600/6400 User Manual, supplied with this system.

The Crosspoint Buttons menu on the MAV-GUI allows the user to see the setup of the of the crosspoint buttons for the Primary/Secondary Background Buses, Key and eKey Buses and Util Buses. Crosspoints and Buses can be selected by simply touching the required button in the menu.



	ME 2         KEY         BGND         A/B         Crosspoint Buttons         A								
1	1							8	
2									
3									
4									
А	BNC A1	BNC A2	BNC A3	BNC A4	BNC A5	BNC A6	BNC A7	BNC A8	
В									



	≣) M	<mark>Е 2</mark> еКе	EY BGND	Crosspo				
2								
3								
4								
	BNC A1	BNC A2	BNC A3	BNC A4	BNC A5	BNC A6	BNC A7	BNC A8
A	DINC AT	DINC AZ	BINC A3	DINC A4	BINC A5	DINC A6	DINC A7	BINC A8
В								

	<b>ME 2</b> Key BGND A/B <b>17-24</b> Crosspoint Buttons									
1	17	18	19	20	21	22	23	24		
2										
3										
4										
A	STOR5	STOR7	STOR9	BNC B12	DVE 1	ME1 Op1	Shift	LOCK		
в										

In the opening Crosspoint Buttons menu, touch the top bar to open the Delegates menu.

Use the delegates menu to select the required Crosspoint Buttons, Key Bus, eKey Bus, Util Bus or Background Bus.

In the menu below, the top bar displays the crosspoint buttons layout. From the menu layout, the user can see what is currently selected on the M/E, the number of available Key Buses, the Background Bus and the sources on each crosspoint.



The menu can also be used to select sources, a sort of soft selection for the crosspoints.



## **Using the Utility Bus Menus**

Kahuna has up to 4 Util Buses per M/E, which equals up to 24 Util Buses in a full 6M/E Kahuna mainframe. Util Buses are used as Borders, Backgrounds and Masks etc.

	E1 Util 4			Ut	il Buses 🔨	E ME1	Util 4			Util I	Buses 🔨
Util Bus		Crosspoint		Source		Delemente					
Bus	🔍 Lock 🗢	Number	Lock O	Source	Usage	Delegate					$\approx$
ME1 Util 1		XPT 1		CAM 1							
ME1 Util 2		XPT 1		CAM 1		ME1 Util 1	ME1 Util 2	ME1 Util 3	ME1 Util 4	MF2 Util 1	
ME1 Util 3		XPT 1		CAM 1	eKey	THE TOUCH	INET OUC 2	INET OUL 5	THE FORCH	THEE OTHER	
ME1 Util 4		XPT 1		CAM 1	eKey						
ME2 Util 1		XPT 1		CAM 1		ME2 Util 2	ME2 Util 3	ME2 Util 4	ME3 Util 1	ME3 Util 2	
ME2 Util 2		XPT 1		CAM 1							
ME2 Util 3 ME2 Util 4		XPT 1 XPT 1		CAM 1 CAM 1							
ME2 Util 4 ME3 Util 1		XPT 1		CAM 1 CAM 1		ME3 Util 3	ME3 Util 4	ME4 Util 1	ME4 Util 2	ME4 Util 3	
ME3 Util 2		XPT 1		CAM 1							
MES OUL 2						ME4 Util 4					
						ME4 UUL 4					
				Lock All	Lock All						
				Buses	Crosspoints						

The menu above displays a system with 4M/Es (M/E1 to M/E4), the user can select the M/E by touching the M/E row in the table (if there are more M/Es than displayed in the table, use a finger to slide the table upwards), or use the {Delegate} button to open the M/E list then touch an M/E to select.

The parameter controls associated with the menu are used to set the sources for the Utility Buses (Bus and Number parameters).

The table in the menu displays the crosspoint and the source currently selected on the Util Buses.

Crosspoint Lock is used to lock crosspoints on selected utility buses so that the crosspoints and sources cannot be changed. Lock All will lock all crosspoints.

Utility Buses are selected on the Control Surface using the white scroll Up/Down buttons. Scroll down to the required Util and then press the OLED button to select.



Sources can then be selected using the crosspoint buttons.

# **DVE - Surfaces**

## **Introduction to DVE**

The Kahuna mainframes can support up to 5 DVE cards that will offer the user a range of visual effects suitable for use in either 1080p, HD or SD formats.

Each DVE card has 4 independent DVEs which have tiles freely assigned to them. The DVE card generates four tiles, each tile has two surfaces, the surfaces are fed by a range of sources; Stores, Mattes, Washes, Util Buses, M/E Outputs and Input sources to the mainframe etc. The sources are assigned to the surfaces of the tiles within the menu structure which will be discussed later in this section.

The DVE models available are all created using these tiles, however, certain models may not utilize all 4 tiles, the DVE models when selected will automatically assign the correct number of tiles to the selected model, as long as the user has assigned enough tiles to the delegated DVE.

The DVE is designed to work in three modes, Source based, Bus based and DVE Aux based.

In Source based mode the DVE appears as a source to the switcher. In Bus based mode the DVE sources are selected using the Xpt buttons. The Bus based DVE function is selected using the **{Bgnd DVE1}** and **{Bgnd DVE2}** buttons in the ME Transition (Control) menu.



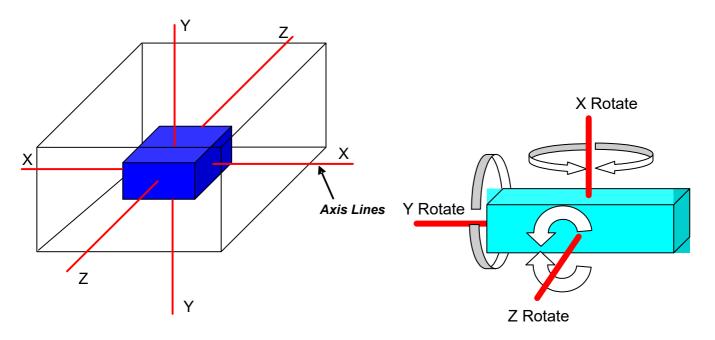
These can be differentiated between, by the point at which the DVE enters the switcher.

Source based DVE transforms will be applied by the switcher before any Key adjustments are added, whereas Bus based mode will mean the DVE will apply its transforms after any Key adjustments have taken place.

## **Understanding How DVE Models Move**

### X, Y, Z Axis and X, Y, Z Rotate

The DVE model or Tile uses three axis to move around, X (horizontal), Y (vertical) and Z (depth) as shown below. The positioning of a DVE Model or Tile can also be altered by adjusting X, Y, Z Rotate.

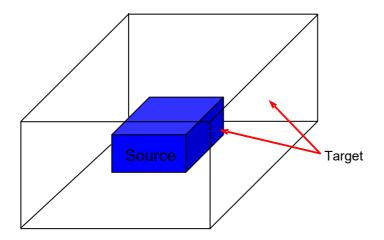


**Source and Target Adjustment** 

It is also worth noting that when moving a DVE model or Tile, the model will always move around a central point in space.

To understand this the parameters options are broken down into types of adjustment - Source and Target.

**Main Transform - Target** (global) - DVE Model or Tile PLUS the whole surrounding area. **Pre Transform - Source** (local) - which is just the DVE Model or Tile etc.

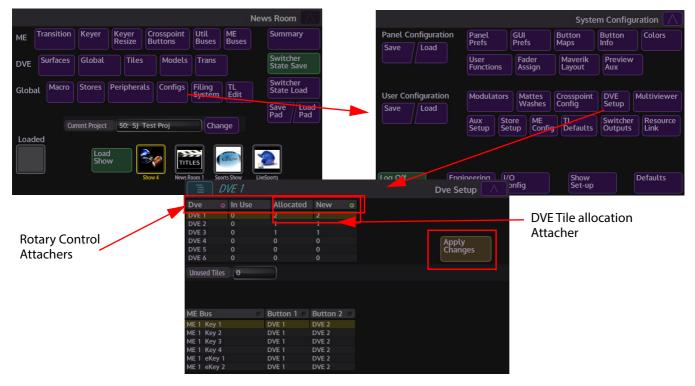


## **Important Information between Logical Switchers**

Note: Prior to Login: DVE Channel Assignment between Logical Switchers (Switcher Config - DVE menu) has to be setup before using the following information. The "Switcher Config - DVEs" chapter can found in the "Connect" chapter, section 8.4.4 -DVEs.

## **Assigning Tiles to DVE Channels**

Once the DVE channels have been assigned to logical switchers, the next thing to do is to assign DVE tiles to the DVE channels, this will determine the number of models and tiles that can used in a single DVE channel. There a 4 DVE tiles that can be spread across 4 DVE channels. To do this the user has to log back into the logical switcher on the MAV-GUI, then in the **"Main"** menu press the **{Configs}** button to enter the **"System Configuration"** menu. In the System Configuration menu, press the **{DVE Setup}** button.



The DVE Setup menu allows the user (as mentioned above) to allocate DVE tiles to DVE channels. To do this, touch the required DVE channel in the menu and a brown bar will move to the selected DVE channel (defaults to DVE 1), then touch the attacher and the top two rotary controls on the MAV-GUI will be attached, the top rotary control will scroll though the DVE channels and the middle control will adjust the number of DVE tiles allocated to the selected channel.

#### Finally, press {Apply Changes}.

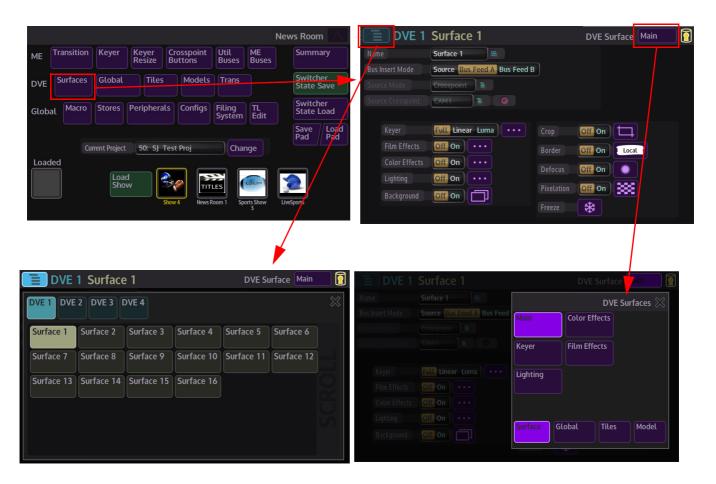
Any unused DVE Tiles will be displayed in the "Unused Tiles" window.

## **DVE Surfaces**

One of the primary function for the DVE Surfaces menu is to setup Sources for the Tile Surface and is a good place to start setting up before using DVE Tiles or Models.

Tiles have 2 surfaces a **Front Surface** and a **Back Surface**, Tiles are also used to create the DVE Models such as Slab Model and Page Turn Model etc. So any adjustment made in any of the DVE Surface menus will have an effect on the DVE model or tile being used.

For example if a Slab Model is being used, 3 Tiles that make up the sides of the slab are visible at any one time, any adjustments to the surfaces of the tiles in these menus will affect the slab. The other function of the DVE Surface menu is to setup effects for the tile surfaces such as Color Effects, Keyer, Film Effects and Lighting.



Touching the blue menu link button in the top bar (shown in diagram top right) allows access to the main DVE Surface effects menus; Keyer, Film Effects, Color Effects and Lighting. The menus can also be accessed by touching the menu link button in the Main DVE Surface menu. Touching the Delegate button allows the user to select the surface that the DVE surface effects will be applied to.

#### **Setting Up Surface Sources**

In a **Source** based DVE the user allocates sources for the DVE tile surfaces using the **Source Mode** and **Source Crosspoint** parameters as shown above. Remembering that the DVE tiles have 2 surfaces (front and back), this will mean that if all 4 tiles are being used, up to 8 surfaces may need different sources.

#### **Using Source Mode:**

Use the **Delegate** button to open the Surface selection menu, select the required surface. Use the **Bus Insert Mode** parameter to select **Source**, use the **Source Mode** parameter to select Crosspoint or DVE Aux 1 to 16.

Then us the **Source Crosspoint** parameter to select the source for the selected surface.



#### Using Bus Feed A/B:

To create DVE transition effects in **Bus Insert Mode**, on the MAV-GUI, in the Transition Control menu, touch the **{Bgnd DVE1}** button to turn it on (lit blue). Then select between **Bus Feed A** or **Bus Feed B**. **Source Mode** allows a single source to feed the tile surface. **Bus Feed A** or **Feed B** will allow the user to select sources across the Bgnd A/B buses to be used in a transition.



Note: Make sure that the correct M/E is selected in the "Delegates" menu.

#### **DVE Surface Effects - Keyer**

This menu sets up the Keyed source for a DVE surface. This menu allows a Key adjustment to be applied to a single surface. to get to the DVE Surface - Keyer menu, either press the menu link button at the top of the menu and select "Keyer" or press the {Keyer} menu link button (shown bottom left).

DVE 1	Surface 1	DVE	Surfa <mark>:e Main</mark>		DVE	1 Surface	e 1	DVE	Surface Ke	yer 🔨
Name	Surface 1			ſ	Full	ar Luma			Name Surfac	ce 1
Bus Insert Mode Source Mode	Source Bus Feed A Bus Feed B				Coupled Key	Split Key	Self Key	Invert	Matte	Local
Source Crosspoint				s	plit Key Source	CAM 1				
Keyer	Full Linear Luma	Crop Off Or				100.00%		Luma Keyer		
Film Effects	Off On ···	Border Off Or	Local						0.00%	
Color Effects	Off On	Defocus Off Or				0.00%		Gain	1.00	
Lighting	Off On					1.00		Opacity	100.00%	
Background	Off On	Pixelation Off Or				100.00%		Over Range	Off On	
		Freeze			Over Range	Off On		Shaping	Off On	

{Full} - the Fill is a full layer over the Background hiding it completely

{Linear} - linear Key (a pre cut Key)

{Luma} - Luminance Key (no pre-Keying has been applied to the fill)

**Split Key Source** - this is the source used for the Keyer output. Use the Option List button to select the Split Key Source.

{Coupled} - Sets the Key source as that selected on the bus crosspoint

**{Split Key}** - Allows the fill and cut signals to be separated. The fill signal is selected as normal. To split the cut signal, press this button and select the cut signal on the Key crosspoint bus. With this button pressed the bus displays the cut source and with it released the fill source is displayed.

{Self Key} - Sets the Key cut source as that selected on the Key i.e., a Luma self Key.

{Invert} - Inverts the Keying signal

{Matte} - Sets Matte for the selected Key layer as that layers fill.

DVE 1		DVE		
Full Linear	Luma		Name Surface 1	1000- 1000- 1000-
DVE 1 SU	urface 1		Keyer Matte Fill	$\approx$
Matte Select	Local Matte 📃			
Sp Hue	0:000°	L	_ocal	
Luma	100.00%			
Saturation	90.00%			
Opacity				
Over Range				

**Linear and Luma Parameters** 

Selected Surface - the selected surface that will have the Keyed source added

Lift - sets the Luma level at which the Key operates.

Gain - affects the sharpness of the lift point.

**Opacity** - controls how transparent the Key is.

Shaping - stops dark edges appearing around a Keyed source (anti-aliasing).

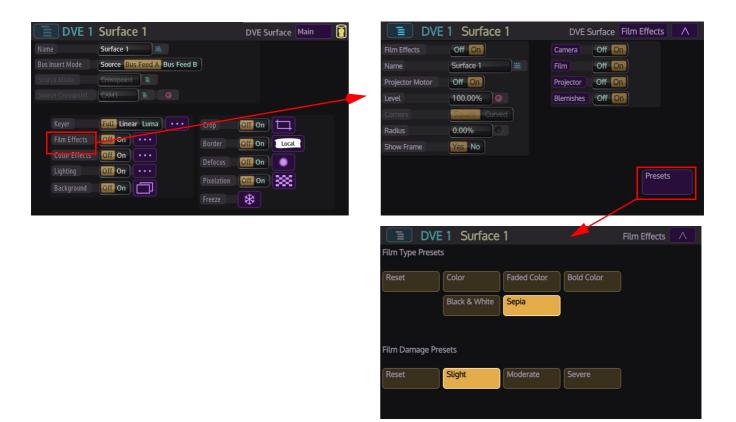
When using sources that are not pre-Keyed, such as those from a camera, the Key cut signal is generated from the video signal using lift and gain controls. The portions of the signal that are greater in luminance than the lift level cut the hole in the background.

## **DVE Surface Effects - Film Effects**

Film Effects is a DVE Tile or Model surface effect that allows DVE surfaces to have different types of "Film Effects" applied to them. Film effects would be used for example to make a new piece of video footage look old and damaged.

Film Effects can be used on any of the 3D DVE Effects models, such as Tiles, Slab and Sphere etc. Effects such as a Faded Color, Sepia and Black and White, all with different types of Film Damage, Blemishes, Scratches, Dirt, Hair, Projector and Camera Damage.

To get to the Film Effects menus, press the {Film Effects} menu link button or press the menu link button at the top of the menu and select {Film Effects}.



To use Film Effects, make sure that the chosen DVE model is setup, then press the **{Film Effects...}** menu link button (shown above), the DVE Surface Film Effects (Summary) menu will then appear, in this menu press the Film Effects **{On}** button and preset default film effect should then be seen on the DVE surface.



**DVE Tile with Default Sepia Effect applied** 



**Projector Motor** - this parameter needs to set to On, it will allow the Camera, Projector, Film and Blemishes parameters to be used.

**Level** - the film effect level is adjusted using the **Level** parameter control, this will adjust the amount of film effect added to a surface, so at 0% the surface will be displayed normally with no effect visible, at 100% which is the default value the surface will have the full film effect added, as shown below.



Reference DVE Tile set at 0% Level



Sepia DVE Tile set at 100% Level

**Corners and Radius** - Curved corners can be added to a DVE tile using the parameters in the above menu. Change the corners of the tile by touching the {Curved} button, then adjust the "Radius" of the corner.



DVE Tile with Corners added

#### Presets

The user is able to quickly select the type of film effect to add to the DVE surface using the Film Type Presets buttons, this will apply the type of color effect needed, as shown below:











**Faded Color Preset** 



**Black & White Preset** 



**Sepia Preset** 



**Bold Color Preset** 

#### Film Effects - Camera

This menu allows the user to include Camera distortion effects to a DVE surface. The first set of controls and parameters in this menu turn the film effects menu On/Off and also enable the "primary" effect which is the Projector Motor.

Film Effects       Off On         Film Effects       Off On         Name       Surface 1         Film Off On       Film Off On         Film Off On       Film Off On         Projector Motor       Off On         Projector Motor       Off On         Blemishes       Off On         Blemishes       Off On	a 💥
Level 100.00%  Projector Off On  Projector Off On  Level 100.00%	
Corners     Strung     Curved     Blemishes     Off     On     J     Frame Rate     60.00%       Radius     0.00%     Shake     30.00%     Image: Curved     Image	
Show Frame No Yes Focus 80.00%	
Presets Film Buckle 5.00%	

**Film Effects - Camera** - this control give the effect of film footage taken by an 8mm hand held Cine camera.

Flicker - this randomly varies the brightness (exposure) of each frame

**Frame Rate** - this simulates slower frame-rate film, at 100% the effect causes the film to run at current standard (i.e. no effect). 0% causes the film rate to run slowly.

**Shake** - this simulates camera shake and randomly drifts the contents of the tile in an X and Y direction without actually moving the tile.

Focus - this simulates adjustment of the lens focus on the camera

**Film Buckle** - this simulates film buckling in the camera mechanism, causing loss of focus and the film having extra jumping effect.

DVE	1 Surface 1	l	DVE Surface Film Effect	s [	DVE 1	Surfac	e 1		Film Effects - Film 💥
Film Effects Name	Off On Surface 1	Camera	Off On		Film Effects - Film	Off On		Tint Color	315°
Projector Motor	Surface 1		off on		Monochrome	Off On		Tint Variation	1.00%
Level	100.00%		off on		Exposure	-10.00%		Tint Level	50.00%
Corners	Square Curved		off on		Saturation	1.00	0	Level Variation	0.00%
Radius Show Frame	0.00%				Contrast	1.00		Noise Level	0 1 2 3 4 5 6 7 8
Show traile	No Yes				Bleached Frames Perf Damage	5.00% 5.00%		Colored Noise	No Yes
			Presets		Feir Damage	5.00%			

### Film Effects - Film



Film Effects - Film - Switches on/off the 'film' contribution to the film effects.

Monochrome - discards any color in the surface film or picture

Exposure - Brightens or darkens the film or picture

Saturation - Increases or decreases the amount of color in the surface film or picture

Contrast - or decreases the amount of contrast in the surface film or picture

Bleached Frames - Randomly drifts in and out a washed-out look to the surface film or picture

**Perf Damage** - Simulates occasional frames that are still in motion in the camera/projection during exposure, as if their sprocket holes (perforations) are damaged.

**Tint Color** - Sets a color for tinting the film, when adjusting the parameter, this will make the surface film or picture look more Red or Blue or Green.

Tint Variation - this will adjust how much the selected color will vary randomly

Tint Level - Controls how much tint is added to the surface film or picture.

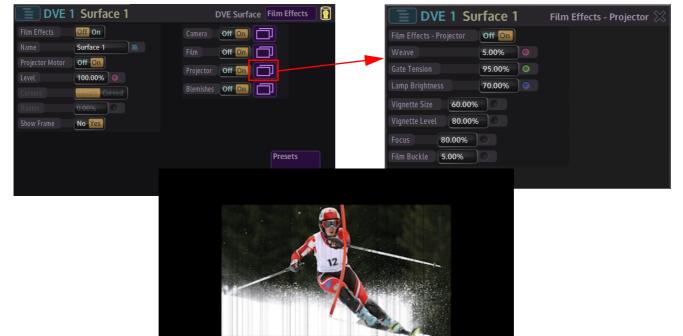
Level Variation - Sets how the tint level will randomly vary

Noise Level - Adds a film-like "white noise" to the picture

Colored Noise - this adjusts the amount of colored noise there is in the noise level.

## Film Effects - Projector

This menu will allow the user to add physical film damage effects to a DVE surface.



Film Effects Projector - this turns the Projector contribution of the film effect On/Off

**Weave** - this simulates film weaving from side-to-side in the gate of the projector, this actually moves the DVE tile around, and locks the picture to the tile.

**Gate Tension** - this controls the tension of the film gate in the projector and can be used to cause a vertical jump. 100% means the film is properly clamped in the gate. 0% is a loose gate where each frame has stopped in a slightly different place.

**Lamp Brightness** - this controls the brightness of the lamp. 100% shows the picture at the correct brightness, as the parameter is adjusted towards 0% the picture on the tile will dim.

**Vignette Size** - this controls how far into the frame the light fall-off begins, when simulating dark edges/corners of the picture due to a poor lens.

Vignette Level - this controls how dark the corners/edges of the film will become.

Focus - this simulates adjustment of the lens focus on the camera

**Film Buckle** - this simulates film buckling in the camera mechanism, causing loss of focus and the film having extra jumping effect.

m Effects Off On	Camera Off On	Film Effects - Blemishes Off On	Hairiness 20.009	60
me Surface 1	Film Off On	Scratch Damage 10.00%	Hair Length 50.009	6-0
jector Motor Off On	Projector Off On	Scratch Focus 10.00%	Hair Curve 40.009	60
rel 100.00%	Blemishes Off On	Moving Scratches 0 1 2 3 4	Hair Wavy 60.009	60
dius 0.00%		Scratch On Negative Print	Hair Thickness Fine	hick
ow Frame No Yes		Dustiness 20.00%		20.00%
		Dirt Focus 30.00%	Dirt Size	20.00%
	Presets	Dirt On Negative Print	Coarse Scratch Damage	0.00%
	Tresees		Coarse Dustiness	0.00%

#### Film Effects - Blemishes

Film Effects - Blemishes - this turns the blemishes contribution to the film effects On/Off

**Scratch Damage** - Sets how badly scratched the film is (on average). Actual scratch level will wander randomly around when setting the parameter level.

Scratch Focus - this controls the opacity of the scratches.

**Moving Scratches** - Up to 4 'special' scratches can be added. These persist for a random number of seconds and will move around randomly.

**Scratch On** - Scratches can be present either on the original Negative (dark scratches) or on the Print (white scratches).

Dustiness - The dust level will wander randomly about this level.

Dirt Focus - Controls the opacity of the dirt level on the DVE surface.

**Dirt On** - Dirt can be present on the tile, either on the original Negative (white blobs) or on the Print (dark blobs).

Hairiness - will add simulated random hairs to the film effect

Hair Length - lengthens and shortens the hairs

Hair Curve - curls the hair around in a circle

Hair Wavy - simulates wavy hair on the film effect

Hair Thickness - changes the hair from Fine to Thick

Dirtiness - The dirt level will wander randomly about this level.

Dirt Size - increases the size of the dust particles.

**Coarse Scratch Damage**- extreme version of Scratch Damage, this is able to be smoothly transitioned in or out. 100% is gives near-total coverage of Scratch levels.

**Coarse Dustiness** - extreme version of Dustiness, this is able to be smoothly transitioned in or out. 100% is gives near-total coverage of Dust levels.

## **DVE Surface Effects - Color Effects**

This allows the user to adjust the color of the selected DVE tile or model, there are a range of adjustments and effects that can be applied.

The main color adjustment parameters are the same color effects that are used in the Color Correction menus throughout Kahuna.

DVE 1 Surface 1	DVE Surface Main		VE 1	Surface	1	DVE Surface	Color Effects	$\land$
Name Surface 1		Color Correctio	on C	Off On	RGB Off On			
Bus Insert Mode Source Bus Feed A Bus Feed B Source Mode Crosspoint E Source Crosspoint CAM1 E		YUV Off O	n 0.00%		Lift 0.00% Gamma 1.00			
Keyer Foll Linear Luma	Off On Local	Contrast Saturation Bleed Off	1.00		Gain         1.00           S-Gain         0.00%           S-Center         50.00		Norma Preset B & W Preset	
Lighting Off On ··· Pixelation	₩ on ● ₩ on ● *	Red         100.0           Green         100.0           Blue         100.0	00%) ( 00%) (		Curves Off Or Level 1.00 Type Posterize		Sepia Preset Inverse Preset	e

To start using the Color Effects, press the **{On}** button for all the color effects parameters, then press the **Color Effects** menu link button.

The color correction part of the menu allows the user to change the color balance on each individual DVE surface, there are 5 types of control, YUV, RGB, Bleed and Preset.

#### **DVE Surfaces - YUV**

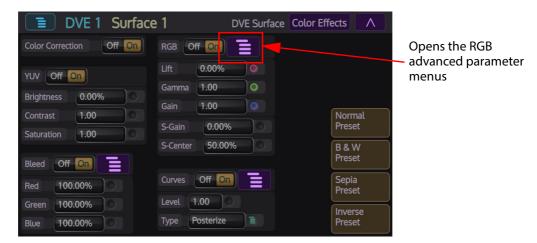
Press the **{YUV...}** menu expand button, or touch the menu link button to open the YUV color effects parameters.

DVE 1 Surface	2 DVE Surface Color Eff	fects A
Color Correction Off On	RGB Off On	
YUV Off On	Lift 0.00%	
Brightness 0.00%	Gamma 1.00	
Contrast 1.00	Gain 1.00 0	Normal Preset
Saturation 1.00	S-Gain 0.00%	B & W
Bleed Off On		Preset
Red 100.00%	Curves Off On	Sepia Preset
Green 100.00%	Level 1.00	Inverse
Blue 100.00%	Type Posterize	Preset

Brightness default value is 0.00%, and the range is from -10% to 100% Contrast default value is 1.00, and the range is from -0 to 16 Saturation default value is 1.00, and the range is from -0 to 16

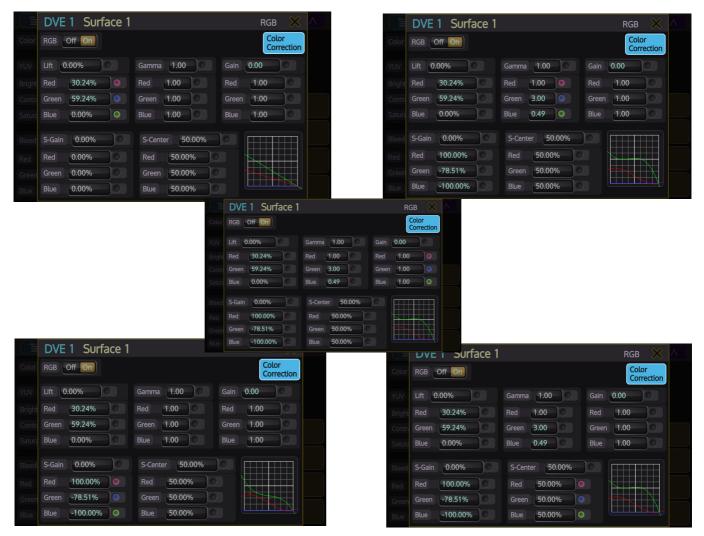
#### **DVE Surface - RGB**

Press the {RGB...} menu link button.



The initial menu is set to a default condition, which shows all five Master adjustment parameters highlighted by the Red active circles. This will give an adjustment of Master Lift, Gamma, Gain, S-Gain and S-Center. Each of these adjustments will alter all three elements of the RGB signal at the same time.

Touching the menu link button to open the advanced RGB parameter menus, these allow a more accurate adjustment to the RGB components.



#### **DVE Surface - Bleed**

Color bleed is a situation where a single color will over power the other colors in the RGB signal. By using the bleed function the stronger color can be softened to make the color output more natural, or adjusted to suit a specific need.

DVE 1 Surface	e 1 DVE Surface Colo	or Effects		
Color Correction Off On	RGB Off On	Color	DVE 1 Surface 1	Bleed 🔀
YUV Off On	Lift 0.00%	YUV	Bleed Off On	Color Correction
Brightness 0.00%	Gamma 1.00	Bright	Red into Red 100.00%	Red into Blue 0.00%
Contrast 1.00	Gain 1.00	Normal	Green into Red 0.00%	Green into Blue 0.00%
Saturation 1.00	S-Gain 0.00%	Preset	Blue into Red 0.00%	Blue into Blue 100.00%
Bleed Off On	S-Center 50.00%	B & W Preset Bleed	Red into Green 0.00%	Hue Rotate 0:000°
Red 100.00%	Curves Off On	Sepia Preset	Green into Green 100.00%	
Green 100.00%		Green	Blue into Green 0.00%	
Blue 100.00%	Type Posterize	Inverse Preset Blue		

Again make sure the Source Correction is turned on.

The initial menu has a default state where a single adjustment for each parameter menu is active; this will allow the adjustment of the main RGB bleed parameters:

- Red into Red
- Green into Green
- Blue into Blue

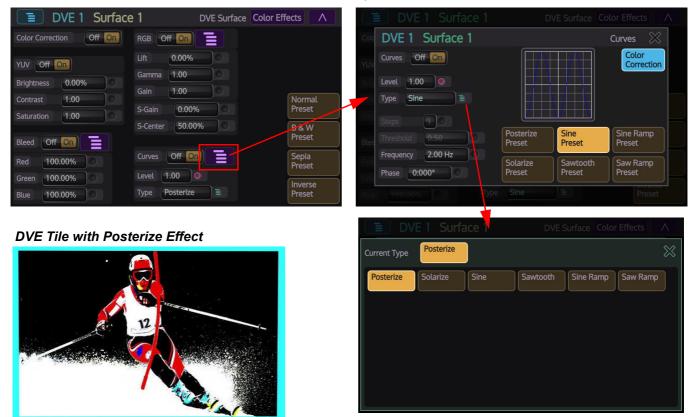
Touch the menu link button (shown in the diagram above) to enable all the options in that menu, this will allow a detailed adjustment for each of the R, G and B bleed settings. The adjustments are measured on a -100% to a +100% scale. Each parameter menu will adjust a single color, i.e. red into red, green into red and blue into red.



#### **DVE Surface - Curves**

This function is used to add artistic type effects to a DVE surface such as Solarize and Posterize, and also allows the user to setup user defined effects.

To use Curves the option has to be turned On in the DVE Surfaces main menu as shown below, then enter the Color Effects menu and press the Curves menu link button.



The user can select from 6 Preset Curve options or use the Type parameter to select from a list of options. To use the Curves choose the type of effect required, once selected, the user can then manipulate the effect using the parameter controls.

**Level** - changes the level of effect on the selected surface, from a normal looking still/clip to an extreme manipulation effect.

**Type** - as mentioned above selects the type of effect.

Steps - the more steps there are in an effect, the less extreme the effect.

Threshold - adjusts the light and dark portions of the source

**Frequency** - only works with certain functions, and determines how often the Steps are applied to the effect

Phase - adjusts the effect starting point within the Step cycle.

#### Sine Effect





#### **DVE Color Effects - Presets**

Presets allow the user to quickly select commonly used preset color options for the crosspoint source, or quickly revert back to the original crosspoint source color levels.



**Normal** - is the original color levels of the DVE source; without any color correction adjustments.

**B** & **W** - sets the chroma saturation to zero removing the chroma content, making the signal black and white.

**Sepia** - sets the chroma saturation to zero removing the chroma content, then adds positive portions of Red and Green and a negative portion of Blue to make-up a sepia appearance.

Inverse - Inverts the video signal making the picture a negative of its correct colors.

If the **Normal** preset option is selected, then all color correction controls are Grayed out preventing any adjustments. This is to make sure that the original DVE source can be recalled.

If **B&W**, **Sepia** and **Inverse** are selected, the preset levels can all be color corrected.

#### **DVE Surface Effects - Lighting**

The **DVE Surface Lighting** option adds a light source on a **"Per-Surface"** basis. It provides a source of Light or Shade, which can be directed permanently at a surface or directed into a 3D space through which a surface can pass.

Lighting can be used on DVE Models and on DVE Tiles. A DVE Tile will be used as an example in explaining the Lighting menus.

Name Surface 1	
	Lighting Off On Shading 0.00%
Bus Insert Mode Source Bus Feed A Bus Feed B	Intensity Least 1 100.00% O Diffuse Level Least 1 40.00%
Source Mode Crosspoint	Light Type Lear I Round Bar Width Lear I 25.00%
	Bar Rotation Light / 0:000° O Softness Light / 20.00%
Keyer Full Linear Luma	Invert Light I Normal Inverted Flashlight Light Off On
Film Effects     Off On     •••     Border     Off On     Loca       Color Effects     Off On     •••     Defocus     Off On	Specular Level Lever 1 90.00%
Lighting Off On Pixelation Off On Background Off On Freeze	Position & Direction Glint Level 1 Off On Ambient Level Level Level 1 0.00%

In the DVE Surfaces, main menu, touch the {Lighting} menu link button to enter the Lighting menu.

<b>DVE 1 Surface 1</b> LIGHT 1	DVE Surface Lighting	g A
Lighting Off On	Shading 0.00	%
Intensity LIGHT 1 100.00%	Diffuse Level LIGHT 1 40.00%	
Light Type LIGHT 1 Round Bar	Width LIGHT 1 25.00%	
Bar Rotation Light 1 0:000°	Softness Light 1 20.00%	
Invert LIGHT 1 Normal Inverted	Flashlight LIGHT 1 Off On	
	Specular Level LIGHT 1 90.00%	
Light Follow Tile	Shine LIGHT 1 75.00%	
Position & Direction	Glint LIGHT 1 Off Or	
Light Follow Tile	Ambient Level LIGHT 1 0.00%	

Lighting - this turns the Lighting function On/Off

**Intensity** - controls the overall lighting effect. 100% is the default setting, as the parameter is wound down to 0% the light source starts to disappear.

Light Type - this changes the type of light source, select either Round or Bar light source.

Bar Rotation - this will rotate a bar light around 360 degrees

**Invert** - will invert the source on the tile making the tile intensely white with just the surface showing where the light source was.

**Light Follow Tile** - switches the "Follow" function On/Off, the light will follow a tile if the tiles position is changed

Shading - this allows areas of the tile that are not illuminated to be darkened

Diffuse Level - will change the intensity of the diffused light

**Width** - will change the width of the diffused light. Try turning the Softness parameter down to 0%, this will display the outer edge of the diffused light. Then adjusting the width towards 100% will move the outer edge beyond the limits of the monitor.

**Softness** - will change the softness of the diffused light from the outer edge inwards, 0% will display a hard edge.



The picture above is the default light setting, the light source is in the center of the picture shown on a DVE Tile.

<b>DVE 1 Surface 1</b> LIGHT 1	DVE Surface Lighting
Lighting Off On	Shading 0.00%
Intensity LIGHT / 100.00%	Diffuse Level LIGHT 1 40.00%
Light Type Light 1 Round Bar	Width LIGHT 1 25.00%
Bar Rotation LIGHT 7 0:000°	Softness Light 1 20.00%
Invert Light 1 Normal Inverted	Flashlight Light 1 Off On
	Specular Level LIGHT 1 90.00%
Light Follow Tile	Shine Light 1 75.00%
Position & Direction	Glint Light 1 Off On
Light Follow Tile	Ambient Level LIGHT 1 0.00%

Flashlight - as the name depicts, this will simulate a flashlight light source

Specular Level and Shine - these control the glossy or specular element of the lighting.

Shine - controls the size of specular highlights created, 100% being a high gloss surface.

**Glint** - adds a specular highlight that flashes across a tile, an example would be to swinging a flashlight across a surface in the dark.

Ambient Level - this controls the 'room' lighting, flooding the whole tile with light.

#### **Position and Direction**



**Position X,Y,Z** - sets the location of the light source around the DVE Surface coordinates **Direction X,Y,Z** - sets the vector direction that the light is pointing in.

#### **Light Follow Tile**

		Surface 1 LIGHT		
Intensi	DVE 1 S	urface 1 Light 1	Follow Tile	$\approx$
Light T	Tile Number	1 2 3 4 🔾		
Bar Ro	Hit Point X	0.00%		
Invert	Hit Point Y	0.00%		
	Azimuth	-0:000°		
Light F	Elevation	-0:000°		
Light F	Distance	0.50		
Positio				

Tile Number - selects the tile

**Hit Point X, Hit Point Y** - specifies where the 'line of sight' of the light will hit the tile. 100% represents the width of a tile.

**Azimuth & Elevation** - this is the angle that the light hits the tile. Elevation is how 'upright' this angle is and azimuth is the 'around' direction.

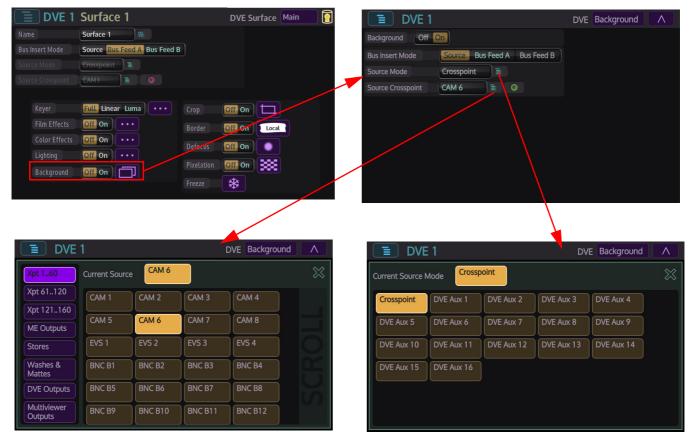
**Distance** - how far, along the 'line of sight' direction, is the light away from the tile.

#### **DVE Surface - Background**

In the **DVE Surface** main menu, touch the blue **{Background}** menu link button to open the **DVE Background** menu.

This menu allows the user to apply a background behind the DVE Tile or Model without the need for using a Key Layer.

With the Background parameter turned On, use the Bus Insert mode to select between Source based or Bus Feed A/B as the background. When the Source Mode parameter is set to Crosspoint, use the Source Crosspoint parameter to select the source for the background, alternatively, use the menu expander to display the crosspoint sources (as shown below).





DVE Page Turn Model with DVE Aux feeding the background

#### **DVE Surface - Crop**

Note: All of the following DVE Surface effects parameters are applied to a DVE Tile or Models surface. Select the required surface using the "Delegates" button.

In the DVE Surface main menu, touch the symbol next to the **{Crop}** button. Then turn the **Crop On/Off** parameter to **On**, then press the Crop menu link button.

DVE 1	Surface 1	DVE Surface Main	DV	
Name	Surface 1		Name	DVE 1 Surface 1 Crop 💥
Bus Insert Mode	Source Bus Feed A Bus Feed B		Bus Insert Mode	e Crop Off On
Source Mode	Crosspoint		Source Mode	Softness 0.00%
Source Crosspoint	CAM1 🖹 🔘		Source Creation	Тор 0.00% О
				Bottom 0.00%
Keyer		Off On 🗖	Keyer Surr	Left 0.00%
Film Effects	Off On Border	Off On Local	Film Effects	ts Right 0.00%
Color Effects	Off On ••• Defocus	Off On	Color Effect	Corners Square Curved
Lighting	Off On ··· Pixelation	Off On	Lighting	Radius Follow Border
Background	Off On			Radius 40.00%
		*	Background	

Softness - softens the leading edge of the crop

**Top, Bottom, Left, Right** - selects the edge of the surface that will be cropped, the crop feature also allows the DVE Crop parameters to be adjusted negatively (Under Crop) allowing the edge of the DVE tile to be expanded outwards. Under cropping will reveal repeated pixels and lines from the edges of the picture.

Corners - this selects between Square corners and Curved corners option.

**Radius Follow Border** - when set to Yes, the radius of the crop will follow any adjustments made to the radius of the Border.

**Radius** - this will adjust the radius of the curve in the corners of the crop independently of the border, when the Corners parameter is set to Curve 0% will have a very slight radius curve in the corner, 100% will have the most exaggerated radius.

#### **DVE Surface - Border**

In the DVE Main menu, touch the Border **{Local}** menu link button. In this menu borders can be applied to surfaces and the edges of surfaces can be cropped, borders are selected from predefined Mattes and user defined Local Mattes.





DVE Tile with Corners on the Border and Crop

DVE Tile with Border



DVE Tile with Soft outside Edge Border



D D	DVE 1	Surface 1	Border	$\approx$	n A
Name	Border	Off On			
Bus Insert Mode	Width	1.50%			
Source Mode	Softness	0.00%			
Source Crosspoir	Bias	0.00%			
Keyer Sunsa		quare Curved			д
Film Effects	Radius	0.00%			Local
Color Effect	Matte Select	Local Matte	Local		
Lighting .	Hue	-0:000°			
		100.00%			
Background		0.00%			

Border - On/Off selection for the border option, turned On/Off by the touch button.

#### Width - border width

Softness - softness of the edge of the border

Bias - used to move the softness from inside edge through to the outside edge of the border. Corners - this selects between Square corners and Curved corners option.

Radius - (only works when "Curved" corners is selected) this will adjust the radius of a curve in the corners of the boarder, when the Corners parameter is set to Curve 0% will have a very slight radius curve in the corner, 100% will have the most exaggerated radius.

**Matte Select** - selects one of available Mattes or a Local Matte, which can be adjusted by the parameters in this menu.

Hue - sets the actual Matte color, the rotary control operates a 360 degree color wheel where:

0 = Red

60 =Yellow

120 = Green

180 = Cyan

#### 240 = Blue

300 = Magenta

**Luma** - sets the Luminance or brightness control that affects the selected Matte Hue, the parameter adjusts from 0 to 100% where 0% is no luminance or Black and 100% is maximum brightness.

**Sat** - The saturation control affects the selected Matte Hue, the parameter adjusts from 0 to 100% where 0% is no saturation or no color i.e. only shades of Gray and 100% is fully saturated or maximum color.Crop Control Parameters.

#### **DVE 1 Surface 1** DVE Surface Main 2 Surface 1 Source Bus Feed A Bus Feed B **DVE 1** Surface 1 Defocus Off On Level 0.00 Full Linear Luma Off On 0 0.00 Bias Off On 0.00% Off On Local Profile Off On Shape Linear Cubic C Cubic S Sine C Sine S Off On • Off On Off On Off On \*

#### **DVE Surface - Defocus**

Defocus - On/Off selection for the Defocus option.

Level - applies and adjusts the amount of Defocus to a source, 100% is maximum Defocus

**Bias** - once the source has been defocused, this parameter applies the defocus on a horizontal or vertical axis, 0% sets the defocus evenly across the source, -100% sets the defocus to "streak" horizontally across the source, +100% sets the defocus to "streak" vertically on the source.

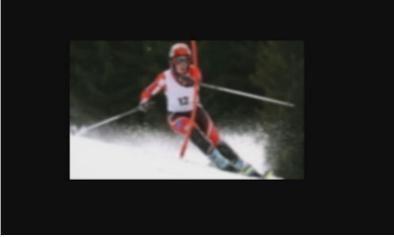
**Profile** - This modifies the non-linearity of the Defocus Amount control. The curve profile can only be used to change the Cubic S/Sin S and Cubic Curve/Sin Curve profiles, which are selected using the Shape parameter control. The Linear profile cannot be adjusted.

**Shape** - selecting one of the Shape options will depict the type of profile curve; this will alter the defocus rate. The shapes include:

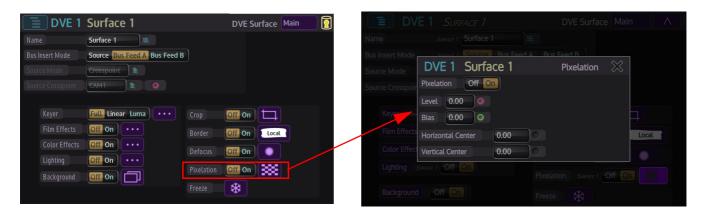
Linear - defocuses at an even rate

**Cubic C and Sin C** - these profiles are similar to each other, the default defocus transition will have a fast acceleration at the start and slowdown towards the end.

**Cubic Curve and Sin Curve** - these profiles are also similar to each other, these will accelerate at the start slow down towards the mid point and accelerate again.



Surface with Defocus applied



#### **DVE Surface - Pixelation**

**DVE Surface** - use the Delegate button to open the DVE surface list, then select a surface that pixelation will be applied to.

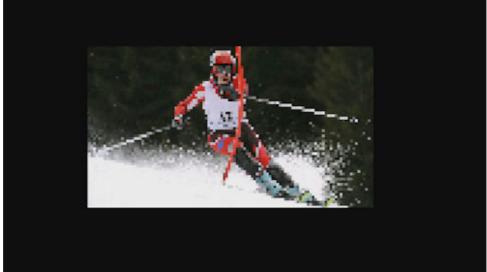
Pixellation - On/Off

Level - The level of pixelation applied to a source

Bias - Adjusts the aspect ratio of the pixels

Horizontal Center - Changes the pixelation center on the x-axis

Vertical Center - Changes the pixelation center on the y-axis



Surface with Pixelation applied

### **DVE Surface - Freeze**

This function is used to freeze a video source that has been applied to a DVE tile or model.

DVE 1	Surface 1		DVE Surface Main							$\wedge$
Name	Surface 1									
Bus Insert Mode	Source Bus Feed A Bus Feed B				DVE 1	Surface 1		Freeze	$\otimes$	
Source Mode	Crosspoint				Freeze Mode	Off Manual	Multi Grab 1	Multi Grab 2		
Source Crosspoint						Live Freeze				
Keyer	Full Linear Luma	Crop	Off On	Keyer		00;01				
Film Effects	Off On ···		Off On Local	Film Effe		Live Freeze	0		.ocal	
Color Effects Lighting	Off On •••		Off On			Live Freeze			•	
Background	Off On	Pixelation	Off On				Pixelation	SURFACE 1 Off	On	
		Freeze	*	Backgro	und Off	On	Freeze	**		

Freeze Mode - turns freeze mode On/Off and selects between the following actions:

**Manual** - this allows the user to manually freeze the video source using the **{Live} {Freeze}** buttons.

**Multi Grab 1** - in this mode a freeze of a pre-determined duration can be applied, this will freeze the video source for the set period of frames or time, whilst the video is still playing.

**Multigrab 2** - this will set a second pre determined duration and will freeze the video after Multi Grab 1 has finished its freeze.

Freeze - selects between Live (video playing) or Freeze (video frozen)

**Period One** - at the next Field 1,2 or Frame as determined, the live video will be frozen for the specified duration

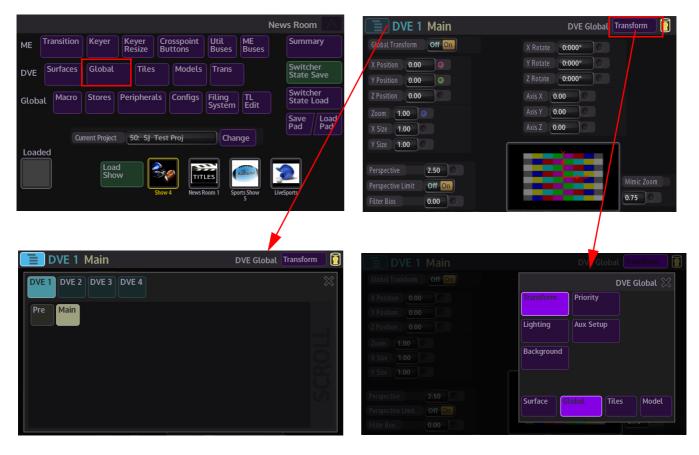
Period Two -- this determines the duration of the second period of the freeze

# DVE - Global

## **DVE Global Menus**

The DVE Global menu is used to size, position and manipulate multiple DVE tiles all at the same time within the Main (global) and Pre (local) settings, add lighting effects to multiple tiles all at the same time, set the layer priority and tile intersection for multiple tiles being viewed and setup the background behind DVE tiles or models. Sources for DVE Aux buses are also set within the Global menu.

This menu allows a Source and Target transform to be applied to a DVE Tiles or DVE model.



The "Global Menus" shown bottom right, allows access to all the main Global setup menus. The bottom row of buttons; Surface, Global, Tiles and Model, are links to the main DVE menus accessed from the home menu.

## **DVE Global - Transform**

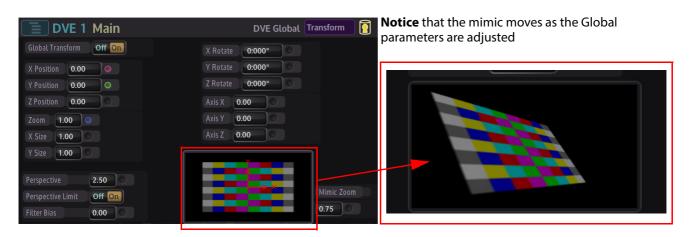
Global Transform is used to size, position and manipulate multiple DVE tiles all at the same time within the Main (global) and Pre (local) settings

DVE 1 Main	DVE Global Transform
Global Transform Off On	X Rotate 0:000°
X Position 0.00	Y Rotate 0:000°
Y Position 0.00	Z Rotate 0:000°
Z Position 0.00	Axis X 0.00
Zoom 1.00	Axis Y 0.00
X Size 1.00	Axis Z 0.00
Y Size 1.00	
Description (2.50)	
Perspective 2.50	Mimic Zoom
Perspective Limit Off On Filter Bias 0.00	0.75

**Main** - (global) moves the model around as determined by the parameter controls in the attachers.

Pre - (local) moves the model around as determined by the parameter controls in the attachers.

Note: The parameter controls for both Main and Pre are exactly the same, the difference being the way they move the DVE Tile or Model around.



X, Y, Z Position - will move the position of the tile around the central point

Zoom - will zoom in on the model

X, Y Size - will change the physical shape of the tile horizontally or vertically

**Perspective** - perspective will alter the center point of the tile, to give the impression of distance.

X Rotate - rotates the tile such that the left or right sides turn into the screen

Y Rotate - rotates the top or bottom into the screen

Z Rotate - rotates the tile clockwise/counter-clockwise

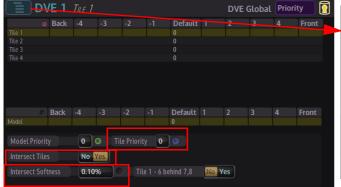
Axis X, Y, Z - moves the central axis point around

## **DVE Global - Tile Priority and Intersection of DVE Tiles**

DVE Tiles have a priority order set as a factory default. This menu allows the user to change the tile priority for each tile to a user defined state.

In the DVE Main menu, press the **{Priority}** button.

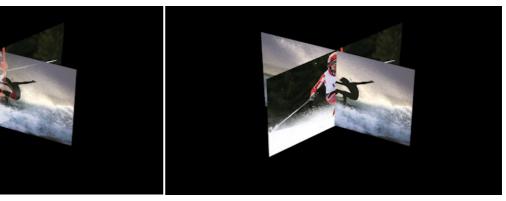
In the DVE Priority menu, touch the Tile parameter and use the rotary control to scroll to the required Tile, or touch the Delegate button and select the tile in the delegate menu. Use the "Tile Priority" parameter to change the priority as required.





DVE Tiles Intersecting with Intersect Softness at 50%





The Priority menu also allows "Intersection" of tiles, with the **Intersect Tiles** parameter set to "Yes" DVE intersection between tiles can now be achieved.

The **Intersect Softness** parameter will soften the edge where the two tiles intersect. Notice the difference between the intersecting edges on the top intersecting tiles and the bottom tiles, where the bottom two tiles Intersect Softness is set at 50%.

## **DVE Global - Lighting**

Global lighting will apply a lighting affect to all DVE Tiles at the same time or lighting to a selected Model.

This menu can add two individual light sources to the DVE Tiles or Models, Light 1 adds one light source and obviously Light 2 adds the second.

The two light sources can be moved completely independently of each other.

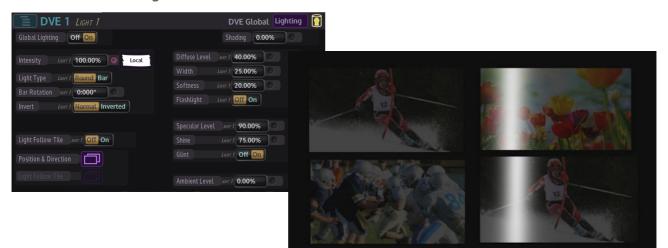
Note: To save repeating information, the information below will describe using Light 1 parameters to control the light source, light 2 has exactly the same controls

#### **Global Lighting Setup**

With DVE tiles setup, use the Delegate button to select Light 1 or Light 2, then use the parameter controls to setup and adjust the light source.

DVE 1 LICHT 1	DVE Global Lighting	DVE 1 DVE 2 DVE 3 DVE 4	$\approx$
Global Lighting Off On	Shading 0.00%		
Intensity Lear / 100.00% Local / Light Type Lear / Round Bar Bar Rotation Sear / 0:000° Invert Lear / Normal Inverted	Diffuse Level         ser 1         40.00%           Width         Level         25.00%           Softness         Level         20.00%           Flashlight         Level         0ff. On	Light 1 Light 2	
Light Follow Tile Sear 1 Off On Position & Direction	Specular Level         Jent J         90.00%         Image: Comparison of the system of the		
	Ambient Level Sourt 7 0.00%		

#### **Light Parameter Controls**



DVE Tiles 1 to 4 with Global Lighting applied (Bar Light Effect)

**Intensity** - controls the overall lighting effect. 100% is the default setting, as the parameter is wound down to 0% the light source starts to disappear.

Light Type - this changes the type of light source, select either Round or Bar light source.

Bar Rotation - this will rotate a bar light around 360 degrees

**Invert** - will invert the source on the tile making the tile intensely white with just the surface showing where the light source was.

Diffuse Level - will change the intensity of the diffused light

**Width** - will change the width of the diffused light. Try turning the Softness parameter down to 0%, this will display the outer edge of the diffused light. Then adjusting the width towards 100% will move the outer edge beyond the limits of the monitor.

**Softness** - will change the softness of the diffused light from the outer edge inwards, 0% will display a hard edge.

Flashlight - as the name depicts, this will simulate a flashlight light source

Specular Level and Shine - these control the glossy or specular element of the lighting.

Shine - controls the size of specular highlights created, 100% being a high gloss surface.

DVE Global Lighting
Shading 0.00%
Diffuse Level LIGHT 1 40.00%
Width LIGHT 1 25.00%
Softness LIGHT 1 20.00%
Flashlight LIGHT 1 Off On
Specular Level LIGHT 1 90.00%
Shine LIGHT 1 75.00%
Glint LIGHT 1 Off On
Ambient Level LIGHT 1 0.00%

**Glint** mode adds a specular highlight that flashes across a tile, an example would be to swinging a flashlight across a surface in the dark.

Ambient Level - this controls the 'room' lighting, flooding the whole tile with light.



#### Light Follow Tile - switches the "Follow" function On/Off

These parameters allow the user to move the light source for individual tiles. The menu also allows the user to specify where on a tile the light will hit, at what angle and from what distance. The light 'Location and Orientation' is then automatically setup by the software.

DVE 1 LIGHT 1 DVE Global Lighting **N** Global Lighting Off On Shading 0.00% LIGHT 1 40.00% LIGHT 7 100.00% O Local **DVE 1 Light 1** Position & Direction LIGHT 1 25.00% 0.00 Light Type Light 1 Round Bar 20.00% 0.00 Bar Rotation LIGHT 1 0:000° Off On 0.50 LIGHT 1 Normal Inverted 0.00 0.00 Specular Level John 7 90.00% -1.00 Light Follow Tile IGHT 1 Off On LIGHT 1 75.00% LIGHT 1 Off On 7 Ambient Level IGHT 1 0.00%

**Position X,Y,Z** - sets the location of the light source around the DVE Surface coordinates



<b>DVE 1</b> LIGHT 1	DVE Global Lighting		
Global Lighting Off On	Shading 0.00%		
Intensity Lent I 100.00% Cocal	Diffuse Level         Jent 1         40.00%           Width         Lent 1         25.00%         0	Tile Number 2 3 4	Follow Tile 💥
Bar Rotation Court 1 0:000°	Softness     Light 1     20.00%       Flashlight     Light 1     Off On	Hit Point X         0.00%         Itit Point Y         Itit Point Y         0.00%         Itit Point Y         Itit Point Y	
	Specular Level Jacket 7 90.00%	Azimuth 0:000° Elevation 0:000°	
Light Follow Tile Lent 7 Off On	Shine Light 7 75.00%	Distance 0.50	
Light Follow Tile	Ambient Level Lent 1 0.00%		

Tile Number - selects the tile

**Hit Point X, Hit Point Y** - specifies where the 'line of sight' of the light will hit the tile. 100% represents the width of a tile.

**Azimuth & Elevation** - this is the angle that the light hits the tile. Elevation is how 'upright' this angle is and azimuth is the 'around' direction.

**Distance** - how far, along the 'line of sight' direction, is the light away from the tile.

## **DVE Global - Aux Setup**

The user also has the choice of using a **DVE Aux Bus** as a source for a tile surface. Use the **DVE Aux Bus** parameter to select Aux 1 - 16 and then use the **DVE Aux Setup** menu to select the source for the tile surface.

DVE	1 Dve Aux 1		DVE Global Aux Setup					
DVE Aux	Crosspoint		Locks Panel	) File	Macro	Timelinco		
Dve Aux 1	GFX1							
Dve Aux 2	CAM1							
Dve Aux 3	CAM1							
Dve Aux 4	CAM1							
Dve Aux 5	CAM1							
Dve Aux 6	CAM1							
Dve Aux 7	CAM1							
Dve Aux 8	CAM1							
Dve Aux 9	CAM1							
Dve Aux 10	CAM1							
Panel Lock	File Lock Macro L	ock Timeline Lock	e					
			2472 Factor					

Use the **DVE Aux** parameter to select a DVE Aux, then select a Source for the DVE Aux using the **Aux Crosspoint** parameter, this allows the user to select a source from Xpts, Mattes, Washes M/E outputs, DVE outputs or Stores.

## **DVE Global - Background**

This menu allows the user to apply a background behind the DVE Tile or Model without the need for using a Key Layer.

**DVE Background Selection** 

With the Background parameter turned On, use the Bus Insert mode to select between Source based or Bus Feed A/B as the background. Then use the Source Mode parameter to select Crosspoint or DVE Aux 1 to 16 as the background behind the DVE model or Tile.

DVE 1	DVE Global	Backg	round									
Background Off On			C		Crosspoi	nt						$\approx$
Bus Insert Mode Source Bus Feed A Bus Feed B			Current Source	моае								
Source Mode Crosspoint			Crosspoint	DVE Aux	1 DVI	E Aux 2	DVE Au	< 3 D\	/E Aux 4	DVE A	lux 5	
Source Crosspoint CAM1			DVE Aux 6	DVE Aux	7 DVI	E Aux 8	DVE Au	< 9 D\	/E Aux 10	DVE A	Ux 11	
			DVE Aux 12	DVE Aux	13 DVI	E Aux 14	DVE Au	< 15 D\	/E Aux 10	3		
			Xpt 160		Current	Source	CAM1					$\approx$
			Xpt 61120		CAM1	CAM2	CAM3	CAM4	GFX1	GFX2	GFX3	
			Xpt 121160		GFX4	STOR1	STOR2	STOR3	STOR4	STOR5	MF1	
			ME Outputs									
			Stores		ME4	BNC B4	BNC B5	BNC B6	BNC B7	BNC B8	BNC B9	Q
			Mattes & Washes		BNC B10	BNC B11	BNC B12	BNC C1	BNC C2	BNC C3	BNC C4	B
			DVE Outputs		BNC C5	BNC C6	BNC C7	BNC C8	BNC C9	BNC C10	BNC C11	S
			Multiviewer		BNC	BNC	BNC	BNC	BNC	BNC	BNC	

If Crosspoint is selected as the source, then the Source Crosspoint parameter is used to select the source for the background, which can be Xpts, Mattes and Washes, M/E outputs, Stores etc.



DVE Page Turn Model with DVE Aux feeding the background

# DVE - Tiles

## **DVE Tile Menu**

This menu allows the user to select, move and manipulate a DVE tile. Use the Delegate menu to select the required DVE channel and tile, the selected DVE channel and Tile this will be displayed in the title bar area in the DVE Tile main menu. When selected, back in the DVE Main menu, press the **{Tile Active}** button, or any changes being attempted to the tile will not be applied.



There are two options when working in the **DVE Tile** menu, "**Pre**" and "**Main**". To select these options press the "**Delegate**" button at the top of the menu.

**Pre Transform (Source)** menu, which moves the selected Tile "Locally" around its own central point, the tile can be moved away from the Main Transform (Target) central point but will always move around its own axis, again, think of it as the Earth being the tile, spinning around its own axis but can be moved away from the Sun, by the parameter controls.

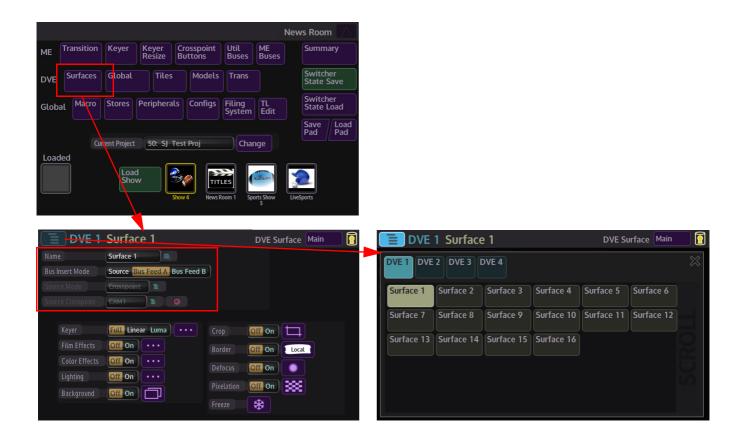
**Main Transform (Target)** menu, which moves the selected Tile "Globally" around a central point, the tile can be moved away from the central point but will always move around that point, think of it as the Earth being the Tile moving around the Sun, the tile can be moved away but will always move around the central point in space by the parameter controls.

After making the selection between Pre and Main, the user can now start to move and position the selected tile.

## How to Allocate Sources to Tile Surfaces

Before adjusting the DVE Tile parameters, it is important to know how to set the source information for each of the Tile Surfaces, tiles have 2 surfaces a **Front Surface** and a **Back Surface** and the DVE Surfaces menu is where the sources are set up for each tile surface. Allocation of the surfaces to the tiles will be explained later in the DVE Model - Tile menu.

Note: The full explanation of the DVE Surface menu will follow later in this section.



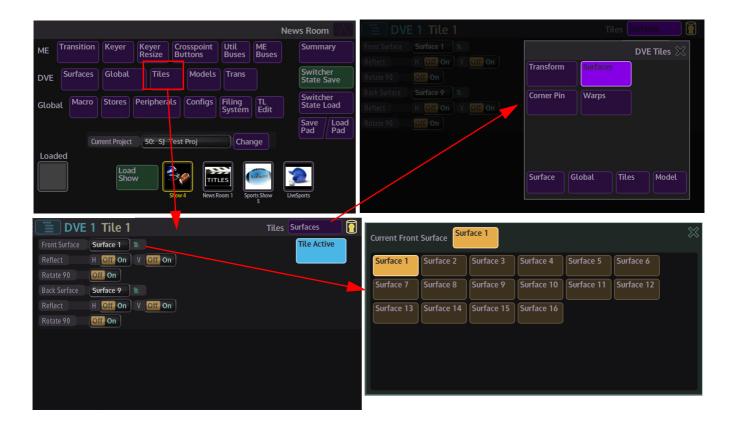
In the Main menu, touch the **{Surfaces}** button to open the DVE Surface menu. In this menu the user can select what mode they wish the DVE to work in i.e. Source or Bus based, for this instance, Source based DVE will be selected and the next few paragraphs will describe how to set sources for surfaces which are used for the DVE Tiles and Models.

In Source based DVE mode, the user allocates sources for the DVE tile surfaces, use the "Bus Insert Mode parameter to select "Source", then set the "**Source Mode**" parameter to "**Crosspoint**". Touch the **Delegate** button to open the DVE and Surface delegation menu and select which DVE and which Surface is required. Then use the "**Source Crosspoint**" parameter to select the source for the selected surface.

There are 16 surfaces that will require sources assigned to them, it is advisable to setup all the surfaces with sources before proceeding with setting up DVE Tiles or Models.

#### How to Allocate Surfaces to DVE Tiles

After setting up the tile surfaces, the next step is to allocate the surfaces to the DVE tiles. In the **Home Main** menu, touch the **{Tiles}** button to open the tile menu, then touch the menu link button at the top of the menu and touch the **{Surfaces}** button.



In the "**Tile Surfaces**" menu, use the **Front Surface** and **Back Surface** option list buttons to open the Surface list, then select which surface is to be used for the front and back of the selected tile.

Note: To select a different tile, press the "Delegate" button in the "Tile Surfaces" menu, then select from the list of available tiles. Note: Make sure that the "Tile Active" button (in the Tile Surfaces menu), is enabled for each tile that surfaces assigned to it.

**Front/Back H/V Reflect** - the source on the front and/or back of the surface may be reflected in the horizontal or vertical direction, this maybe useful when rotating a tile to have the front and rear source in the same orientation.

Rotate - this will rotate the surface by 90°

## **Using the DVE Tiles Menus**

#### **Position and Size**

The parameter controls for positioning and sizing the tile are the same for Pre and Main when selected.



X, Y, Z Position - will move the position of the tile around the center of the axis

Zoom - will zoom the Tile up or down

X, Y Size - will change the physical shape of the tile horizontally or vertically

#### **Rotation and Axis**

Again, the parameter controls for rotation and axis control of the tile are the same for Pre and Main when selected.

DVE 1 TILE 1 MAIN	Tiles Transform A	DVE 1 TILE 1 MAIN	Tiles Transform A
Tile Transform Off On	X Rotate 0:064° O Tile Active	Tile Transform Off On	X Rotate 0:000° Tile Active
X Position 0.00	Y Rotate 0:018°	X Position 0.00	Y Rotate 0:000°
Y Position 0.00	Z Rotate 0:000°	Y Position 0.00	Z Rotate 0:000°
Z Position 0.00	Axis X 0.00	Z Position 0.00	Axis X 0.00
Zoom 1.00 0	Axis Y 0.00	Zoom 1.00	Axis Y 0.00
X Size 1.00	Axis Z 0.00	X Size 1.00	Axis Z 0.00
Y Size 1.00		Y Size 1.00	
Tile Ganging 1 2 3 4 5 6 7 8	Mimic Zoom	Tile Ganging 1 2 3 4 5 6 7 8	Mimic Zoom

X Rotate - rotates the tile such that the left and right sides turn into the screen

Y Rotate - rotates the top and bottom into the screen

Z Rotate - rotates the tile clockwise/counter-clockwise

Axis X, Y, Z - moves the central axis point around

Tile Mimic bottom of the menu will mimic the adjustments made. Notice that when the X, Y and Z Rotate parameters are adjusted, the tile will move around a central point in space.

#### Tiles Corner Pin

This part of the menu allows the user to change each corner of the tile, the corners can be moved independently of each other to distort the tile into any four sided shape.

DVE		Surfaces	DVE 1 Tile 1	Tiles Corner Pin A
Front Surface		DVE Tiles 💥	Tile Corner Pin Off On	Tile Active
Reflect	Transform Surfaces		Top Left X 0.00% O Y 0.00% O	
Rotate 90			Top Right X 0.00% Y 0.00%	
Back Surface	Corner Pin Warps			
Reflect			Bottom Left X 0.00% O Y 0.00%	
Rotate 90			Bottom Right X 0.00% Y 0.00%	
			Perspective Off On	
	Surface Global Ti	les Model		

#### **Tile Corner Pin Parameters**

**Top Left/Top Right X/Y** - will pull the tile corners out or push them in; depending on which way the parameters are adjusted.

**Bottom Left/Bottom Right X/Y** - will pull the tile corners out or push them in; depending on which way the parameters are adjusted.

**Perspective Off/On** - Perspective will alter the center point of the tile, to give the impression of distance.



#### Example of Corner Pinning on 2 Tiles

## Warp

The Tile Warp menu allows the user to apply various enhanced effects to individual tiles.

To use the Warp functions, in the **Tile Transform** menu, touch the **{Warps}** button, then touch the **"Delegate"** button to select the required tile, finally, turn the **Tile Warp On.** 

Touch the green button to select the warp effect, then either use the menu expander button to open up the parameter controls for the warp effect or touch the menu link button to go to the warp effect parameter menu.

DVE 1 Tile 1	Tiles Warps	DVE 1 Tile 1	Linear Warp 🚺
Tile Warp Off On	Tile Active	Type Position Density Independent	
Linear Linear		Shape None Curve Roll Sine Square Saw Tooth Triangle	
Ripples Ripples		Amplitude 2.50%	
Swirl Swirl		Angle 0:045° • Frequency 10.00% •	
Melt Melt		Phase 0:000°	
Multi Tile		Center X 0.00	
Shatter Shatter		Center Y 0.00	
Flag Wave Flag		Reflect No Yes Repeat No Yes	
Wave Wave			

There are 7warp effects to choose from; Linear, Ripples, Swirl, Melt, Multi Tile, Shatter and Flag Wave.

#### Linear

This effect allow linear lines of warping effects to be applied to a DVE tile.

DVE 1 Tile 1	Linear Warp 🛐
Type Position Density Independent	
Shape None Curve Roll Sine Square Saw Tooth Triangle	
Amplitude 2.50%	
Angle 0:045°	
Frequency 10.00%	
Phase 0:000°	
Center X 0.00	
Center Y 0.00	
Reflect No Yes	
Repeat No Yes	

**Type** - selects between the three states of Warp, Position, Density and Independent. They all have a similar effect on a tile, it is down to the user's discretion which one to use to create the desired effect on a tile.

**Position** - moves the DVE Tile pixels in the direction of the angle, according to the Shape pattern chosen

**Density** - stretches or squashes the width of each DVE Tile pixel perpendicular to the angle, in accordance with the Shape pattern chosen.

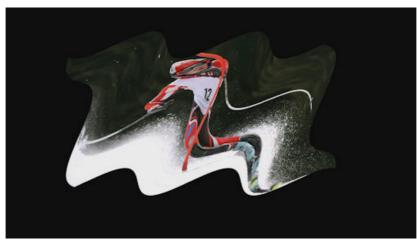
**Independent** - this allows the user to have individual control over both the Horizontal and Vertical Warp settings of each tile these attachers control the Shape, Amplitude and Phase of the Warp.

**Shape** - determines the shape of the edge of the Warp effect in Position mode, (eg. Sine = sine curve cycle) and the shape of pixel-width spread in Density mode.

**Amplitude** - controls the intensity of the 'Shape cycle', the larger the amplitude the more dramatic the warp

Angle - decides what rotation is applied to the effect

Frequency - determines how often the warp is applied to the tile



Example of Position Warp as a Sine shape



Phase - adjusts the warp starting point within the 'Shape cycle'

Center X - determines the center of the warp, on the X-axis

Center Y - determines the center of the warp, on the Y-axis

Reflect - when set to Yes applies a warp to the entire tile, when set to No will warp one half of the tile

**Repeat** - when set to Yes the warp pattern is repeated throughout the tile, when set to No the warp pattern will appear only once.



Independent Vertical Warp in Square Shape setting

**Independent Horizontal/Independent Vertical** - (these parameters will only work when the "**Type**" parameter is set to Independent) these are a secondary adjustment to the linear warp. They allow the user to have individual control over both the Horizontal and Vertical Warp settings of each tile these attachers control the Shape, Amplitude and Phase of the Warp.

DVE 1	Tile 1 Independent 💥
Horizontal Shape	None Curve Roll Sine Square Saw Tooth Triangle
Horizontal Amplitude	0.00%
Horizontal Phase	0:000°
Vertical Shape	None Curve Roll Sine Square Saw Tooth Triangle
Vertical Amplitude	0.00%
Vertical Phase	0:000°

#### **Ripples**

This adds a Ripple effect to a tile.



**Amplitude** - controls the intensity of the 'Shape cycle', the larger the amplitude the more dramatic the Ripple

Frequency - determines how often the Ripple is applied to the tile

Phase - adjusts the warp starting point within the 'Shape cycle'

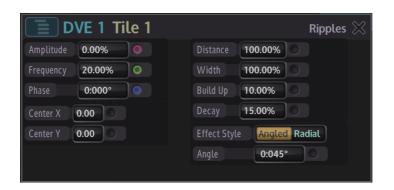
X Center - moves the Ripple center left or right

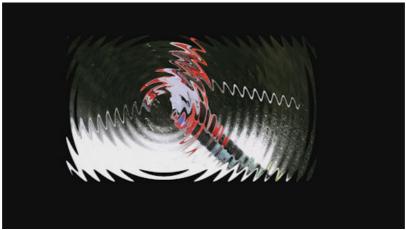
Y Center - moves the Ripple center up or down



Ripples Warp with Amplitude and Frequency turned up

Distance - sets how far the Ripples spread outwards from its center
Width - sets the width between the Ripples
Build Up - applies a softness between the outside ripple and the rest of tile
Decay - applies a softness from the center of the ripple outwards
Effect Style - selects between Angled and Radial effects
Angle - decides what rotation, if any, is applied to the Ripple.





Ripple Warp with X Center adjustment

Swirl

This adds a Swirl effect to a tile.



- Level controls the amount of swirl
- Distance sets how far the Swirl spreads outwards from its center
- X Center moves the center of the swirl right or left
- Y Center moves the center of the swirl up or down
- Style changes the style of the swirl from a twist to a swirl





## Melt

The warp Melt option gives the effect that the DVE tile is melting.

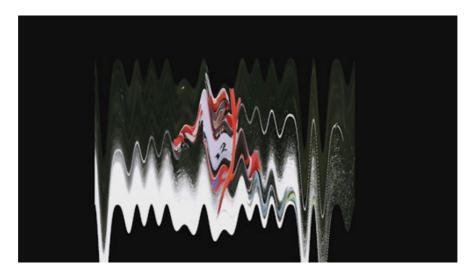


Level - sets the amount of Melt applied to the Tile

Distance - sets how far the Melt spreads away from the top of the tile

**Depth** - sets the depth for the bottom of the U shape between each melted segment.

**Slope** - determines whether the Melt will hold a straight line from the top of the screen or if it will gradually slope down the screen from the left as the percentage of the parameter is increased.



### **Multi Tile**

This menu allows a selection of multiple tile DVE effects to be displayed.

DVE 1 Tile 1	Tiles Warps 🚺				
Tile Warp Off On	Tile Active	DVE 1 1	Tile 1		Multi Tile 🔀
Linear		Mode	Row Column Grid		
Ripples Ripples		Tiles	1 2 3 4 5 6 7 8		
		Reflected Horizontal Separation	No Yes		
Swirt Swirt	_	Vertical Separation	0.00%		
Melt Melt				Limit Repeats	No Yes
Multi Tile Multi Tile				Horizontal Repeats	13 O
Shatter Shatter		Vanishing Point Vanishing Point Wrap	Clip Wrap Normal Reflected	Vertical Repeats	13 0
		Valiasing Point VVrap	remat nenected		Off On
Flag Wave					

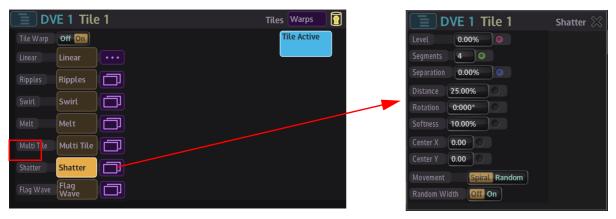
Mode - The multi tile modes as listed below:
Row - Tiles 1 - 8
Column - Tiles 1 - 8
Grid - Tiles 1, 2, 4, 6 - 2X3, 6 - 3X2, 8 - 2X4, 8 - 4X2
Horizontal Separation - spreads spaces horizontally in between the selected multi tile pattern
Vertical Separation - spreads spaces vertically in between the selected multi tile pattern
Limit Repeats - this will limit the number of repeats
Horiz Repeats - his will repeat tiles from 2 times up to 14 times horizontally.
Vert Repeats - this will repeat tiles from 2 times up to 14 times vertically
Auto Crop - will automatically crop to make sure multi tiles fit within the tile space
Vanishing Point - will add a reflected view of the multi tile setup



DVE Multi Tile with 13 Horiz/Vert tiles

#### Shatter

The Shatter option, as the name suggests, gives the effect that the DVE tile being shattered like a pane of glass.



**Level** - controls the level of the shatter from no shatter to entirely shattered into the predetermined number of segments and to the pre-determined distance

Segments - selects the amount of pieces the Shatter splits into

Separation - widens the gap between the segments

Distance - sets how far the Shatter spread outwards from its center

Rotation - adjusts the direction of rotation of the Shatter as it spreads outwards

Softness - adjusts the softness of the edges of the shattered pieces.

#### **Default Shatter Effect**



Shatter Effect with X Center adjustment



X Center - moves the Shatter center left or right
Y Center - moves the Shatter center up or down
Movement - draws segments from the center, in a non concentric pattern
Random Width - each segment of the shatter is a different size.

#### **Flag Wave**

Flag Wave is a multi tile Warp effect that simulates a flag waving in the wind. Once the Warp function is turned On, press the **{Active}** button then Flag Wave will start at a preset level.

DV	E 1 Tile	e 1	Tiles Warps	DVE	1 Tile	e 1			Flag	Wave 🔀
Tile Warp	Off On		Tile Active	Effect Depth	100.00%		Wind Machine A		70.00%	
		•••		Effect Angle	0:045°		Wind Machine A		25.00%	
Linear	Linear								-0:050°	
Ripples	Ripples			Wind Mac	chine Circu	lar		Wind Speed	50.00%	
Swirl	Swirl				100.00%				0:000°	
Swirt	Swirt				50.00%					
Melt	Melt			Wind Speed	-50.00%		Wind Machine B		60.00%	
Mule: Tile					0:000°				20.00%	
Multi Tile	Multi Tile			Position X	-0.75				0:025°	
Shatter	Shatter				0.00			Wind Speed	60.00%	
<b>EI</b> 111	Flag							Phase	0:000°	
Flag Wave	Wave									

**Effect Depth** parameter is a coarse "frequency" adjustment, 0% will stop the flag wave motion, and 100% is at maximum level.

The menu above shows that the Flag wave warp is On and that it is affecting Tile 8, the Effect Depth and Effect Angle are both coarse adjustments, the Effect Depth is the same adjustment as explained in the previous menu.

Effect Angle - adjusts the angle at which the wind hits the tile

Wind Machine Circular creates a curved edge to the Wind Ripple effect as it passes over the tile.

**Amplitude** - controls the intensity of the 'circular shape cycle', the larger the amplitude the more dramatic the wind ripple

Frequency - determines how often the wind ripple is applied to the tile

**Wind Speed** - this adjusts the wind speed and wind direction, the preset level is left to right at 50%, if the parameter is changed to +100% the wind direction is from right to left at maximum speed

Phase - adjusts the warp starting point within the 'circular shape cycle'

**Position X and Position Y** - this moves the center point at which the circular wind ripples start

**Wind Machine A** and **Wind Machine B** provide the same Wind Ripple effect, but can be adjusted allow wind ripples to hit the tile from different directions, the only difference between, the adjustment they provide and the Wind Machine Circular is the Angle adjustment.

**Amplitude** - controls the intensity of the 'circular shape cycle', the larger the amplitude the more dramatic the wind ripple

Frequency - determines how often the wind ripple is applied to the tile

Angle - this changes the angle at which the wind ripples strike the tile

**Wind Speed** - this adjusts the wind speed and wind direction, the preset level is left to right at 50%, if the parameter is changed to +100% the wind direction is from right to left at maximum speed

Phase - adjusts the warp starting point within the 'circular shape cycle'



DVE - Tiles Warp

## **DVE - Models**

#### **DVE Model Menu**

As the name suggests, the **DVE Model** menu is where the user selects and sets up DVE models, there are two main areas within this menu, one is the DVE model selection and the other is the Model Transform menu.

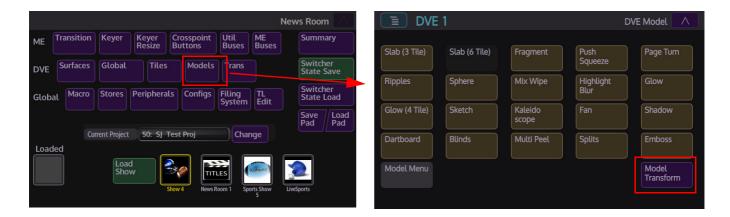
To select a model, simply touch the required model button and then press the **{Model Menu}** button to use the models parameter controls.

To size, position and rotate the model, press the **{Model Transform}** button.

**DVE Model Transform (Pre and Main)** 

Note: The parameters in this section are used to manipulate the selected DVE model

The DVE Model Transform menu allows the user to control the Size, Position and Rotation for the selected DVE model. The parameters are exactly the same for every DVE model In the **DVE Main** menu



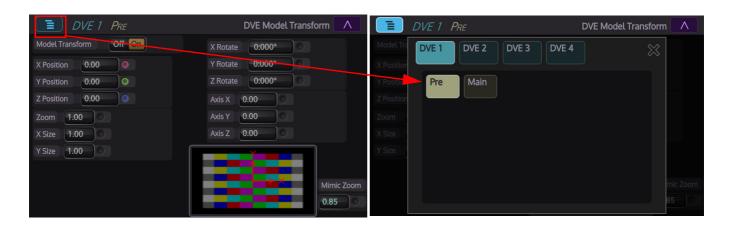
Touch the **{Model Transform}** button, then in the DVE Model menu, then touch the Delegate button to select the "**Pre or Main**" option for controlling the selected DVE model

**Pre Transform (source)** menu, will move the selected model "Locally" around its own central point, the tile can be moved away from the Main Transform (Target) central point but will always move around its own axis, again, think of it as the Earth being the tile, spinning around its own axis but can be moved away from the Sun, by the parameter controls.

X, Y, Z Position - will move the position of the slab around the center of the axis

Zoom - will zoom the slab up or down

- X, Y Size will change the physical shape of the slab horizontally or vertically
- X Rotate rotates the slab such that the left and right sides turn into the screen
- Y Rotate rotates the top and bottom into the screen
- Z Rotate rotates the tile clockwise/counter-clockwise



Axis X, Y, Z - moves the central axis point around

DVE 1 MAIN	DVE Model Transform	DVE 1 MAIN	DVE Model Transform
Model Transform Off On	X Rotate 0:000°	Model Tra DVE 1 DVE 2 DVE 3 DVE	4 💥
X Position 0.00	Y Rotate 0:000°	X Position	
Y Position 0.00	Z Rotate 0:000°	Y Position Pre Main	
Z Position 0.00	Axis X 0.00	Z Position	
Zoom 1.00	Axis Y 0.00	Zoom	
X Size 1.00	Axis Z 0.00	X Size	
Y Size 1.00		Y Size	
	Mimic Zoom		
	0.88		690

**Main Transform (Target)** menu, which moves the selected Tile "Globally" around a central point, the tile can be moved away from the central point but will always move around that point, think of it as the Earth being the Tile moving around the Sun, the tile can be moved away but will always move around the central point in space by the parameter controls.

X, Y, Z Position - will move the position of the slab around the center of the axis

Zoom - will zoom the slab up or down

X, Y Size - will change the physical shape of the slab horizontally or vertically

X Rotate - rotates the slab such that the left and right sides turn into the screen

Y Rotate - rotates the top and bottom into the screen

Z Rotate - rotates the tile clockwise/counter-clockwise

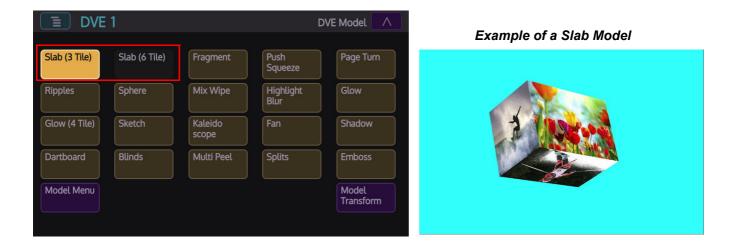
Axis X, Y, Z - moves the central axis point around

#### **DVE Slab Model**

The Slab Model is made up of 3 or 6 Tiles (6 tiles if there are 2 DVE cards in the switcher mainframe), which make up the front 3 visible sides. When the user wants to create a slab, the first thing to make sure of is that the selected DVE has enough tiles allocated to it. As can be seen in the menu below, DVE 1 has 4 Tiles allocated, when the user presses the **{Slab (3 Tile)}** button, the software will automatically assign 3 tiles (Tiles 2, 3 and 4 in the menu below) to the model.

Note: Notice that in the menu below there is a Slab (6Tile) this model has the same setup and parameter controls as the 3 Tile Slab with the exception that when the slab is exploded using the Gap parameter, the inner sides of the three hidden tiles can be seen

Note: To change the DVE models Size, Position and Rotation, please see the DVE Model Transform (Pre and Main) section of this manual.



Press the {Slab (3/6 Tile)} button to enter the parameter controls menu for the Slab Model.

	DVE 1	Slab (3 Tile) 🔨	DVE 1 MAIN	DVE Model Transform
Depth	0.25		Model Transform Off On	X Rotate 0:000°
Gap	0.00		X Position 0.00	Y Rotate 0:000°
Gap From	Front Middle		Y Position 0.00	Z Rotate 0:000°
Rotation	Middle Front		Z Position 0.00	Axis X 0.00
			Zoom 1.00	Axis Y 0.00
			X Size 1.00	Axis Z 0.00
		Surfaces	Y Size 1.00	
				Mimic Zoom

The **Slab** (**3 Tile**) main menu is used to adjust the look of the slab model, which will be explained in detail on the next page.

To move the slab around in the monitor space, in the **Model** main menu press the "**Model Transform**" menu button (shown above right), this will allow the size, position and rotation of the slab "**Main**" and "**Pre**" transform to be achieved.

#### **Slab Adjustment**

The **Depth** adjustment will adjust the slab from being a thin sliver to a wide slab. The **Gap** adjustment as shown below moves the 3 tiles away from each other. **Mimic Zoom** - will zoom the mimic in the menu in or out.



Example of a Slab Model with Gap Adjustment



#### Slab - Surface

	VE 1	S	ilab Model Surfaces						
Front Surface	Surface 1	Back Surface	Surface 2						
Reflect	H Off On V Off On	Reflect	H Off On V Of	f On					
Rotate 90	Off On	Rotate 90	Off On						
Top Surface	Surface 3	Bottom Surface	Surface 4	DV	'E 1		Sla	b Model Surfaces	s
Reflect	H Off On V Off On	Reflect	H Off On V	Current Front S	Surface Surfa	ce 1			$\approx$
Rotate 90	Off On	Rotate 90	Off On	Surface 1	Surface 2	Surface 3	Surface 4	Surface 5	
Left Surface	Surface 5	Right Surface	Surface 6	Surface 6	Surface 7	Surface 8	Surface 9	Surface 10	
Reflect	H Off On V Off On	Reflect	H Off On V C	Surface 11	Surface 12	Surface 13	Surface 14	Surface 15	
Rotate 90	Off On	Rotate 90	Off On	Surface 16					

Front Surface/Back Top/Bottom Right/Left Surface - determines the surface of the selected Tile.

**Front/Back H/V Reflect** - the source on the front and/or back of the surface may be reflected in the horizontal or vertical direction, this maybe useful when rotating a tile to have the front and rear source in the same orientation.

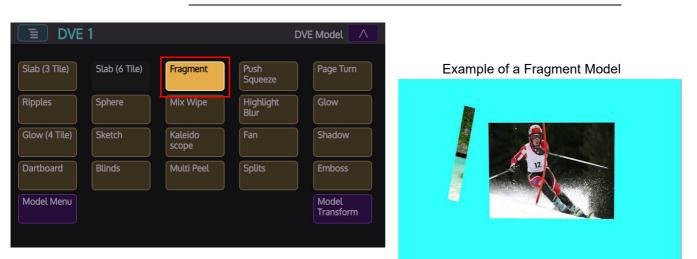
Rotate - this will rotate the surface by 90°

Note: The Reflects and Rotates are based on the original Picture Content (i.e. even after a 90 Rotate the H Reflect will reflect in the original plane of the picture)

#### **DVE Fragment Model**

The Fragment Model is made up of 2 Tiles. When the user wants to use Fragment, the first thing to make sure of is that the selected DVE has enough tiles allocated to it. When the user presses the **{Fragment}** button, the software will automatically assign 2 tiles (Tiles 1 and 2) to the model.

Note: To change the DVE models Size, Position and Rotation, please see the DVE Model Transform (Pre and Main) section of this manual.



Touch the **{Fragment}** button to enter the parameter controls menu for the Fragment Model. The parameters highlighted in the menu below control the fragmentation of the DVE Tile.

DVE 1     Fragment							
Level	0.00	X Rotate	0:000°				
Fragments	10 🔾	Y Rotate	-0:000°				
Edge	Left Top Right Bottom	Z Rotate	-0:000°				
Distance	1.00	Axis X	0.00				
Angle	0:000°	Axis Y	0.00				
Final Size	1.00	Axis Z	0.00				
Front Surface	Surface 1						
Back Surface	Surface 2						

#### What does Fragment do?

As the fragments start to fly off the tile, the main tile will be the front surface of Tile 1 and the fragment flying off will be the front surface of Tile 1.

The tile or the fragment can be X Rotated to reveal the back of the tile, the back surface is the front surface of Tile 2 and the fragment flying off is the back surface of Tile 2.

#### **Fragment Adjustment**

**Level** - determines the where the fragment is in a transition, i.e. 0% is the start of the fragment, 50% is half way through the fragment and 100% the source is no longer visible.

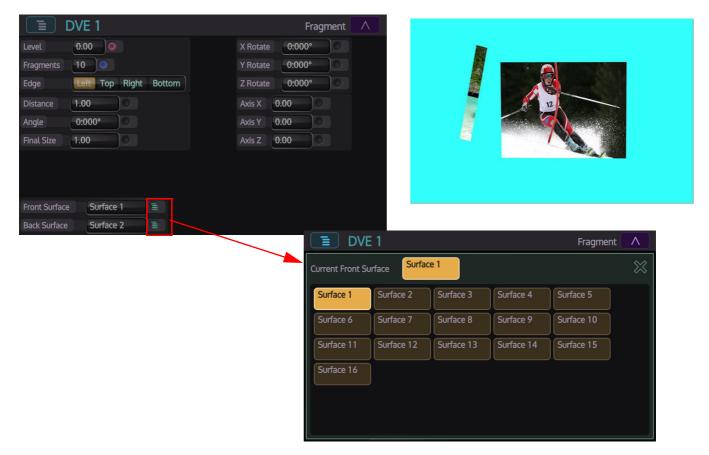
Fragments - sets the number of slices into which the surface will be fragmented

Edge - selects the edge, (top, bottom, left or right) from which the slice will occur

**Distance** - determines how far the slice will fly across the screen before it vanishes and a new slice starts

Angle - the angle at which the fragmented section will travel as it disappears.

**Final Fragment Size** - determines the size of the fragment before it disappears and another fragment starts



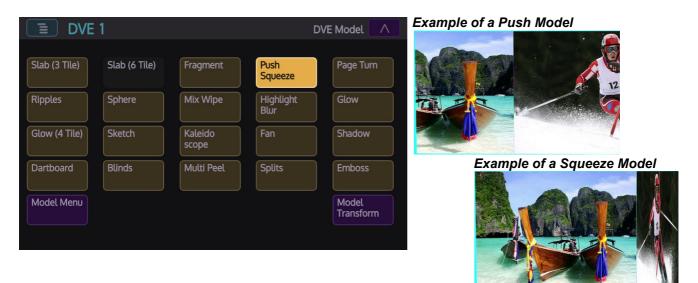
**X,Y,Z Rotate** - determine the angle and direction a fragmented section will travel in as it is torn away

**Surfaces** - the surfaces menu allows the user to select the surfaces for the front and rear of the selected tile.

#### **DVE Push/Squeeze Model**

The Push/Squeeze Model is made up of 2 Tiles. When the user wants to use push/squeeze, the first thing to make sure of is that the selected DVE has enough tiles allocated to it. The software will automatically assign 2 tiles (Tiles 3 and 4) to the model.

Note: To change the DVE models Size, Position and Rotation, please see the DVE Model Transform (Pre and Main) section of this manual.



Touch the **{Push Squeeze}** button to enter the parameter controls menu for the Push/Squeeze Model.

DVE	1		Push Squeeze
Position 0.00	•		
Mode Squee	eze Push		
Direction Horiz	ontal Vertical		
Overlap 0.00			
Front Surface A	Surface 1	Ē	
Front Surface B	Surface 2	Ē	
Back Surface A	Surface 3	Ē	
Back Surface B	Surface 4	Ē	

What does Push/Squeeze do?

The main tile will be the front surface of Tile 3 and as the push starts from left to right, the back surface of Tile 3 will push the front surface of Tile 3 away.

When the tile is X Rotated to reveal the back of the tile, the main tile will be the front surface of Tile 4 and as the squeeze starts from left to right, the back surface of Tile 4 will squeeze the front surface of Tile 4 away.

Push Squeeze Adjustment

**Position** - determines the position (amount) of push or squeeze applied to a tile. **Mode - Push/Squeeze**, switches between the Push and Squeeze models **Direction** - determines whether the push or squeeze happens from left to right (horizontal) or

top to bottom (vertical).

**Overlap**- will change the overlap between the two surfaces.





DVE Model Push/Squeeze - Surface

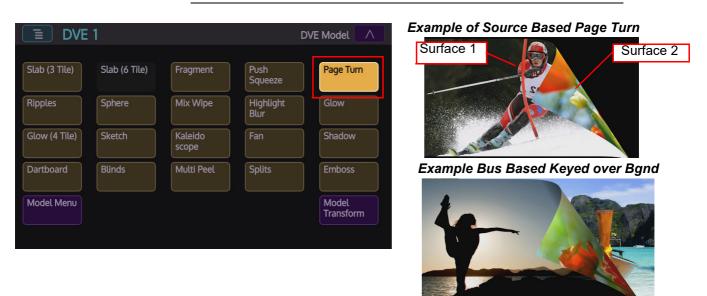
DVE 1 Push Squeeze 0.00 Positio e Push DVE 1 Mode Push Squeeze  $\wedge$ tal Vertical Ho Surface 1 0.00 Surface 1 Surface 6 Surface 7 Surface 8 Surface 9 Surface 10 Surface 1 Surface 2 Surface 16 Back Surface A Surface 3 Surface 4

Front Surface A/B /Back A/B Surface - determines the surface of the selected Tile.

#### **DVE Page Turn Model**

The Page Turn Model as the name suggests simulates a page being turned over in a book, the model is made up of 2 surfaces, one surface being the front, the other being the back of the page being turned over. When the user presses the **{Page Turn}** button, the software will automatically assign 2 tiles (Tiles 3 and 4) to the model.

Note: To change the DVE models Size, Position and Rotation, please see the DVE Model Transform (Pre and Main) section of this manual.



Touch the **{Page Turn}** button to enter the parameter controls menu for the Page Turn Model.

#### What does Page Turn do?

The front surface of the page is Tile 3 and as the **Position** parameter is adjusted, by default the page will start to turn over from the top right corner. As the page starts to turn the rear of the page; Tile 4 will be reveled.





#### **Page Turn Adjustment**

Position - controls the level of the Turn. 0% = no turn, 100% = fully turned
Rotation - changes the angle from which the Page Turn starts
Radius - changes the tightness of the turn in the page
Position Range - changes the point at which the Page Turn fully completes

Highlight, Inner Shadow and Outer Shadow

To help distinguish between the three different types of lighting please refer to the diagram on the next page.

Note: The parameter adjustments for Highlight, Inner Shadow and Outer Shadow are exactly the same.



Touch the menu link buttons to select Highlight/Inner Shadow/Outer Shadow sub menus. 1. **Highlight** - light hitting the curve of the page turn.

	DVE 1		Page Turn	$\land$		DVE	1					Page Turn	
Position	0.00	Highlight	Off On			0.00		DVE 1		Highlight	$\times$	Off On	
Rotation	-0:015°	Inner Shadow	Off On		Rotation	-0:0			80.00%			Off On	
Radius	0.10	Outer Shadow			Radius	0.10		Width	50.00%			Off On	
Position Rar	nge 1.00	Outer Shadow	Off On		Position Ra		1.0	Softness					
								Position	50.00%				
								Matte Selec	t Local M	atte			
					Front Surfa	ace	Surfa		0:000°				
Front Surfac	te Surface 1				Reflect		н О		100.009	60			
Reflect	H Off On V Off On				Back Surfa				0.00%				
Back Surface	e Surface 1												
Reflect	H Off On V Off On				Reflect		но	ff On V	Off On				

Intensity - intensity of the light/shadow source

Width - adjusts the width of the light/shadow source

Softness - adjusts the softness of the edge of the light/shadow

**Position** - adjusts the angle where the light/shadow source fall on the page turn.

**Matte Select** - allows the user to select the color of the highlight from a user defined matte to one of the 16 available mattes.

**Hue, Luma and Saturation** - allows the user to adjust the color of the highlight when the Local Matte is selected.

2. Inner Shadow - shadow falling from the inside curve of the page turn.

3. Outer Shadow - shadow falling from the outside of the curve onto the background source

		DV	/E 1				Page Turn 🔨
		Position 0.00	0	DVE 1	Inner Shadow	$\times$	Off On
		Rotation -0:0	015°	Intensity 80.00	0%		Off On
		Radius 0.1	0	Width 40.00	9%		off On 🗧
		Position Range	1.0	Softness 40.00	0%		
			_	Position 50.00	%		
				Matte Select	Local Matte		
DVE 1	Page Turn 🛛 🔨	Front Surface	Surfa	Hue	0:000°		
Position 0.00	Highlight Off On	Reflect			0.00%		
Rotation -0:015°	Inner Shadow Off On	Back Surface	Surfa	Saturation	0.00%		
Radius 0.10	Outer Shadow Off On	Reflect	но	ff On V Off C	Dn		
Position Range 1.00			VE 1				Page Turn 🔥
		Position 0.0	0	DVE 1	Outer Shadow	$\times$	Off On
Front Surface Surface 1		Rotation -0:0	015°	Intensity 60.00	0%		Off On
Reflect H Off On V Off On		Radius 0.1	0	Width 50.00	0%		off On
Back Surface Surface 1		Position Range	1.0	Softness 50.00	0%O		
Reflect H Off On V Off On				Position 45.00	%		
				Matte Select	Local Matte 📄 🗎		
		Front Surface	Surfa	Hue	0:000°		
		Reflect			0.00%		
		Back Surface	Surfa	Saturation	0.00%		
		Reflect		Off On V Off C			

## Page Turn- Surface

	DVE 1	Page Turn 🔨	age Turn 🔨 🔳 DVE 1 Pa								
Position	0.00		Off On Current Front Surface Surface 1								
Rotation	-0:015°	Inner Shadow	Off On	Content		lace				$\approx$	
Radius	0.10	Outer Shadow	Off On	Surface	e 1	Surface 2	Surface 3	Surface 4	Surface 5		
Position Rai	nge 1.00 O			Surface	e 6	Surface 7	Surface 8	Surface 9	Surface 10		
				Surface		Surface 12	Surface 13	Surface 14	Surface 15		
Front Surfac	ce Surface 1		Surface	e 16							
Reflect	H Off On V Off On										
Back Surfac	e Surface 1 🔳										
Reflect	H Off On V Off On										

Front Surface/Back Surface - determines the surface of the selected Tile.

**Front/Back H/V Reflect** - the source on the front and/or back of the surface may be reflected in the horizontal or vertical direction, this maybe useful when rotating a tile to have the front and rear source in the same orientation.

#### **Ripples**

The Ripples Model as the name suggests simulates ripples on a pond, the model is made up of 4 surfaces, Front A/B and Back A/B. When the user presses the **{Page Turn}** button, the software will automatically assign 2 tiles (Tiles 1 and 2) to the model..

Note: To change the DVE models Size, Position and Rotation, please see the DVE Model Transform (Pre and Main) section of this manual.





**Ripples Front Surface A/B** 



**Ripples Back Surface A/B** 

	OVE	1					5+675	F	Ripples	$\wedge$
Level 0.00	%	0		Softness	50.00%	0	Lighti	ng	Off On	
Amplitude	nplitude 30.00%		Center X	0.00		Intens		50.00%		
Frequency	50.00	%		Center Y	0.00		Softn	ess	25.00%	-0
Phase	0:00	)°	0	Width	15.00%	0				
				Build Up	10.00%					
				Decay	15.00%					
Front Surface		Surfac	ce 1	Ē						
Front Surface		Surfac	ce 2			Effect S	Style	Angl	ed Radial	
Back Surface		Surfac	ce 3			Angle		0:04	5° 0	
Back Surface		Surfac	ce 4							

Level - applies the Ripple effect to a tile.

**Amplitude** - controls the intensity of the 'Shape cycle', the larger the amplitude the more dramatic the Ripple

Frequency - determines how often the Ripple is applied to the tile

Phase - adjusts the warp starting point within the 'Shape cycle'

**Softness** - adds a soft edge to the ripple effect, starting from the inside and working its way out as softness is adjusted.

DVE 1					Ripples	$\wedge$	
Level 0.00%	Softness	50.00%		Lighting	Off On		
Amplitude 30.00%	Center X	0.00		Intensity	50.00%	0	
Frequency 50.00%	Center Y	0.00		Softness	25.00%	0	
Phase 0:000° O	Width	15.00%					
	Build Up	10.00%					
	Decay	15.00%					
Front Surface A Surface 1	Ē						
Front Surface B Surface 2	E		Effect Style	e Ang	ngled Radial		
Back Surface A Surface 3	E		Angle	0:04	045°		
Back Surface B Surface 4	E						

X Center - moves the Ripple center left or right

Y Center - moves the Ripple center up or down

**Width** - sets the width between the Ripples, as width is adjusted up, the parameter will add more ripples, or take the ripples away completely if set to 0%.

Build Up - applies a softness between the outside ripple and the rest of tile

Decay - applies a softness from the center of the ripple outwards

#### Effects Style:

Radial - keeps a constant radial affect to the ripples

Angled - allows the angle of shadow across the ripples to be adjusted

Angle - with Effects Style set to "Angled", this adjusts the angle that the ripples enter the tile.



Ripples with Width parameter turned up

## Surface parameters

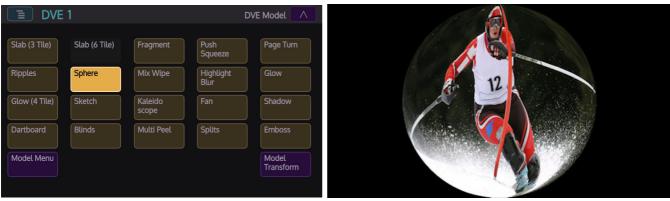
	DVE 1					Ripples A	DV	E 1			Ripples	<u>م</u>
Level 0.00	0%			50.00%	Lighting	Off On	Current Front S		face 1			\$
Amplitude	30.00%	0	Center X	0.00		50.00%	Content Hont S					
	50.00%		Center Y	0.00		25.00%	Surface 1	Surface 2	Surface 3	Surface 4	Surface 5	
Phase	0:000°	0	Width	15.00%			Surface 6	Surface 7	Surface 8	Surface 9	Surface 10	
			Build Up	10.00%								
			Decay	15.00%			Surface 11	Surface 12	Surface 13	Surface 14	Surface 15	
Front Surface	e A Sur	face 1					Surface 16					
Front Surface	e B Sur	face 2	) 1	Effe	t Style An	gled Radial						
Back Surface	A Sur	face 3		Ang	e 0:0	045°						
Back Surface	B Sur	face 4										

**Front Surface A/B** - selects the front surface A and B **Back Surface A/B** - selects the rear surface A and B.

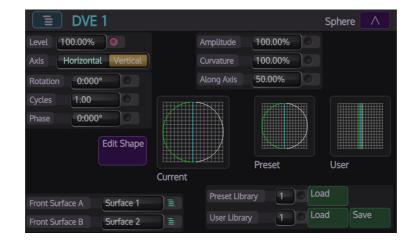
#### Sphere Model

This DVE option allows the user to create a Sphere from a DVE Tile. The Sphere Model as the name suggests simulates a sphere who's shape can be manipulated, the model is made up of 2 surfaces, one surface being the front, the other being the back. When the user wants to use the sphere model. When the user presses the **{Sphere}** button, the software will automatically assign 2 tiles (Tiles 3 and 4) to the model. Touch the **{Sphere}** button to start using the sphere menus.

Note: To change the DVE models Size, Position and Rotation, please see the DVE Model Transform (Pre and Main) section of this manual.



Default Sphere DVE Model



#### **Sphere Parameters**

**Level** - gradually makes a DVE Surface change from its original shape into a spherical shape. Default setting is at 100%. if the user adjusts the parameter towards 200%, the sphere will squash down to nothing.

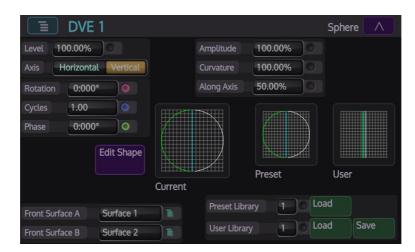
Axis - displays the Sphere horizontally or vertically

Rotation - rotates the Sphere on its axis

Cycles - produces more than 1 Sphere from one source

Phase - will move the Sphere/Spheres along a horizontal/vertical axis

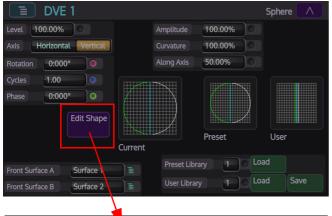
**Amplitude** - adjusts the radius of the Sphere, 0% amplitude = cylindrical 100% amplitude = fully spherical

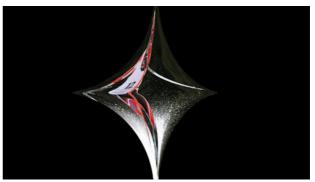


**Curvature** - adjusts the bulge that is given to the spheres surface **Along Axis** - length of curvature along the set axis

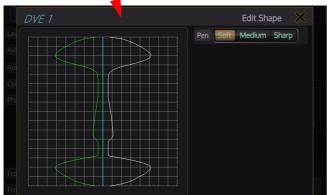
#### **Edit Shape**

The Sphere can be shaped to the user's preference using the "Edit Shape" menu. Press the **{Edit Shape...}** menu link button to enter the menu below





DVE Sphere Preset diamond shape





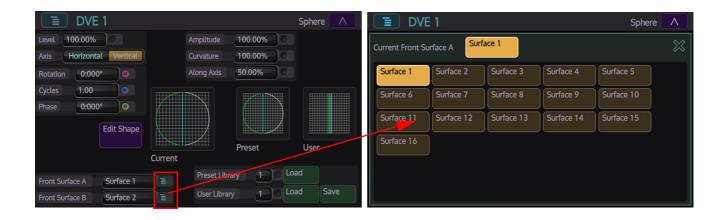
Preset wine glass shape

The shapes can be chosen from a **Preset Library** or designed using the Edit Shape graph. Running a finger over one side of the graph will create a shape that mirrors itself.

**Preset Library** - the library has 14 preset shapes to select from. Use the **Preset Library** parameter to select one of the shapes, (the shape is displayed in the small graph in the **Preset Library** area of the menu) and then press the **{Grab from Library}** button, the shape will now be displayed in the large graph area in the menu and the DVE surface will take on the selected shape.

**User Library** - designs created by the user can be stored in this library for use at a later date. Create a shape and then press the **{Save to Library}** button. The user defined shapes can be recalled by using the **User Library** parameter, the shape is displayed in the small graph, press the **{Grab from Library**} button and the DVE surface will take on the selected shape.

**Pen** - this depicts the type of indentation that will be made to the original Sphere. Soft will produce a rounded edged indent and Sharp will produce a pointed edge



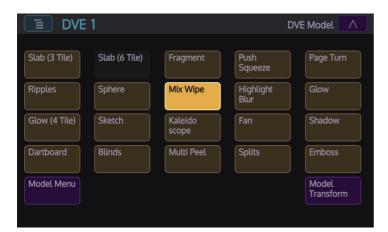
**Surfaces Parameters** 

Front Surface A/B - selects the surface A and B.

#### **Mix/Wipe Model**

This DVE option will provide a Mix or Wipe option between two DVE Tile; Front or Rear surfaces.

Note: To change the DVE models Size, Position and Rotation, please see the DVE Model Transform (Pre and Main) section of this manual.





DVE Tile with Wipe



DVE Tile with Mix



#### **Mix/Wipe Parameters**

Type - selects between Mix or Wipe Level - transition level of Mix or Wipe Rotation - depicts the angle at which the Mix or Wipe starts Softness - adjusts the softness of the wipe edge

# Image: DVE 1 Mix Wipe Image: DVE 1 Mix Wipe Mix Wipe

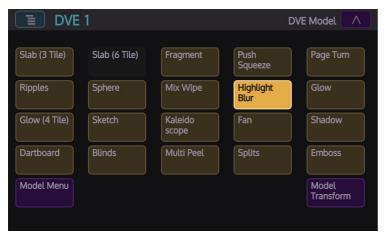
**Surface Parameters** 

**Front Surface A/B** - selects the source for surface A and B. **Back Surface A/B** - selects the source for surface A and B.

# **Highlight Blur Model**

Highlight Blur adjusts and blurs the Luma content of a DVE Tile surface.

Note: To change the DVE models Size, Position and Rotation, please see the DVE Model Transform (Pre and Main) section of this manual





DVE Tile with Defocus and Bias and Outer Highlight adjustments

#### **Highlight Blur Parameters**

DVI	E 1			Highl	ight Bl	ur 📝	
Opacity 100.0 Defocus 0.50 Bias 0.00		Outer H Type Lift Gain Matte	Video Matte		deo N	Off Aatte	On
Front Surface	Surface 1						
Back Surface	Surface 2						

Opacity - sets the opacity level of luminance

**Defocus** - adjusts the amount of defocus applied to the source **Bias** - this changes the horizontal and vertical blur bias

DV	′E 1		Highlight	: Blur 🔨			
Opacity100.0Defocus0.50Bias0.00	•	Outer Highlight Type Video Matte Lift 0.00% Gain 1.00 Matte Local	Inner Highlight Type Video Lift 0.00% Gain 1.00 Matte Lo	Matte			
				DVE 1			
Front Surface			0				
Front Surface Back Surface			D	efocus DVE 1	Outer Highli		Off On
			D	efocus			
			D	as <b>DVE 1</b>		Highlight Matte	
			D	as DVE 1 Matte Select	Local Matte	Highlight Matte	
			D	as DVE 1 Matte Select Hue	Local Matte	Highlight Matte	
			D	efocus as Matte Select Hue Luma	Local Matte 0:000° 100.00%	Highlight Matte	
			D	efocus as Matte Select Hue Luma	Local Matte 0:000° 100.00%	Highlight Matte	
			B	efocus as Matte Select Hue Luma	Local Matte 0:000° 100.00% 0.00% O	Highlight Matte	

Outer and Inner Highlight

**Type** - will select between luminance of the source or luminance of a Matte added to the luminance of the source

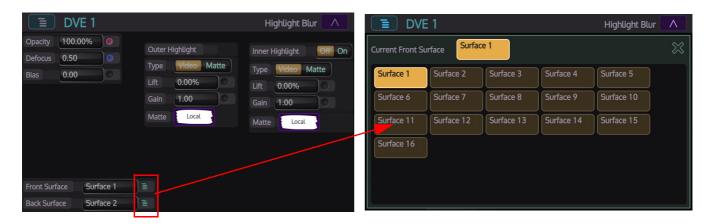
Lift - makes an overall Luma adjustment to the entire image

Gain - sets the amplitude of the luminance signal

**Matte Select** - allows the user to select the color of the Inner/Outer highlight from a user defined matte to one of the 16 available mattes.

**Hue, Luma and Saturation** - allows the user to adjust the color of the Inner/Outer highlight when the Local Matte is selected.

Surface Parameters

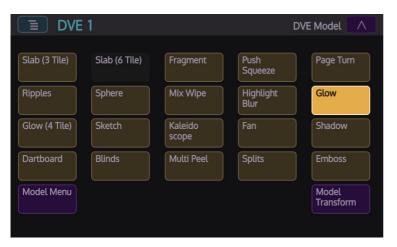


**Front Surface** - selects the source for the tile front surface. **Back Surface** - selects the source for the tile back surface.

#### DVE Model - Glow and Glow (4 Tile)

The Glow model works in a similar fashion to the Highlight Blur Model, but the Glow adjustments can be used to draw out the dark and light areas of a DVE surface, for instance to accentuate the soft atmosphere of candlelight.

Note: To change the DVE models Size, Position and Rotation, please see the DVE Model Transform (Pre and Main) section of this manual.





DVE Surface with Default 3 Tile Glow



DVE Surface with Inner Bias and Gain adjusted



#### **Glow Parameters**

Opacity - sets the opacity level of luminance

#### DVE 1 Glow 100.00% Off On Video Ma Video Ma 0.75 0.25 0.00 0.00 15.00% 15.00% 5.00 5.00 Local Off On Color Effects Surface 1 Surface 2 DVE 1 Highlight Matte Local Matte 0:000° 100.00% Luma 0 0.00%

# **Outer and Inner Highlight**

**Type** - will select between luminance of the source or luminance of a Matte added to the luminance of the source

Defocus - adjusts the amount of defocus applied to the source

Bias - this changes the horizontal and vertical glow bias

Lift - sets the Luma level of the source

Gain - affects the sharpness of the source

**Matte Select** - allows the user to select the color of the Inner/Outer highlight from a user defined matte to one of the 16 available mattes.

**Hue, Luma and Saturation** - allows the user to adjust the color of the Inner/Outer highlight when the Local Matte is selected.

#### **Color Corrector**

This allows the user to adjust the color of the Glow Effect, there are a range of adjustments and effects that can be applied.

The color correction part of the menu allows the user to change the color balance on the DVE surface.

Before using the color corrector, make sure that YUV and RGB are turned On.

	VE 1		Color Effects
Color Effects	Off On	RGB Off On	
YUV Off O	n	Lift 0.00%	
Brightness	0.00%		
Contrast	1.00	Gain 1.00	Normal
Saturation	0.00 0	S-Gain 0.00%	Preset
		S-Center 50.00%	B & W Preset
			Sepia Preset
			Inverse Preset

**DVE Model - Glow Color Correction - YUV** 

Touch the YUV attachers and adjust the Brightness, Contrast and Saturation can be adjusted.

Brightness - default value is 0.00%, and the range is from -10% to 100%

Contrast - default value is 1.00%, and the range is from -0% to 16%

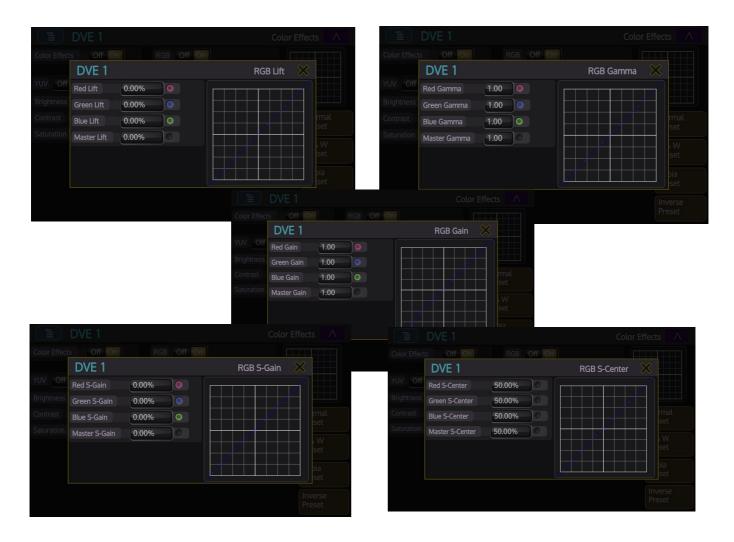
Saturation - default value is 1.00%, and the range is from -0% to 16%

There are also Preset color correction controls, which add a preset color level when selected. The YUV color correction parameters do not work if the Preset is set to Normal **DVE Model - Glow Color Correction - RGB** 

The main menu is set to a default condition, which shows all five Master adjustment parameters which can be selected in groups by touching one of them, notice that the attaches light up the same color as the rotary controls on the MAV-GUI. This will give an adjustment of Master Lift, Gamma, Gain, S-Gain and S-Center.



Touching a menu link button next to the attacher will open each of the RGB color effects menus.



### **Surface Parameters**

DVE 1				Glow	$\land$	DVE	E 1			Glov	w A
Opacity 100.00%	Outer Hig	hlight	Inner High	hlight Of	f On	Current Front Su	Surface	ce 1			$\approx$
		Video Matte	Туре	Video Ma	atte	Current Front St	Unace				$\sim$
	Defocus	0.75	Defocus	0.25		Surface 1	Surface 2	Surface 3	Surface 4	Surface 5	
		0.00		0.00		Surface 6	Surface 7	Surface 8	Surface 9	Surface 10	
		15.00%	Lift	15.00%							
		5.00		5.00	0	Surface 11	Surface 12	Surface 13	Surface 14	Surface 15	
		Local		Local		Surface 16	<u> </u>				
			Color Effe	ects Off	On						
Front Surface Surface 1											
Back Surface Surface 2											

Front Surface - selects the source for the tile front surface. Back Surface - selects the source for the tile back surface.

# **Glow (4 Tile) Surfaces**

The main functions of this menu work exactly the same as the Glow model, but this menu introduces an "Outer Fill" option (which incorporates the 4th Tile)

DVE 1			Glo	w (4 Tile) 🔷		VE 1		Glov	v (4 Tile) Model	Surfaces 🔨
Opacity 100.00%	Outer Hig	hlight	Inner High	nlight Off On	Background (Fr		Surface 1			
	Туре	Video Matte		Video Matte	Background (Ba	ack)	Surface 2			
	Defocus	0.75	Defocus	0.25	Outer Fill (From	t)	Surface 1			
		0.00		0.00	Outer Fill (Back		Surface 2			
	Lift	15.00%	Lift	15.00%	Outer Highlight		Surface 1			
		5.00		5.00	Outer Highlight		Surface 2			
		Local	Matte	Local	Inner Highlight		Surface 1			
Outer Fill					Inner Highlight		Surface 2	1		
Defocus 0.50				Surfaces			Ļ			
Bias 0.00							/			
Color Effects Off On					DV	E 1		Glow (4 Tile	e) Model Surfaces	
					Current Backgro	ound (Front)	Surface 1			$\approx$
					Surface 1	Surface 2	Surface 3	Surface 4	Surface 5	
					Surface 6	Surface 7	Surface 8	Surface 9	Surface 10	
					Surface 11	Surface 12	Surface 13	Surface 14	Surface 15	
					Surface 16					

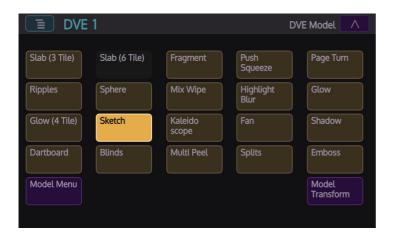
Background, Outer Fill, Outer Highlight and Inner Highlight

These parameters allow the user to change the sources for all 4 tiles in this Glow model.

#### **DVE Model - Sketch**

This DVE surface model changes a surface source to make it look as if it has been drawn with a pen or a pencil.

Note: To change the DVE models Size, Position and Rotation, please see the DVE Model Transform (Pre and Main) section of this manual.



#### **Original DVE Source**



DVE Source with Sketch Turned On



Touch the {Sketch} button to reveal all the main adjustment parameters.

DVE 1 Sketch									
Effect Level 100.0	0%	Defocus	Off On						
Line Width 25.00	%	Level	0.05						
Line Bias 0.00%	,0		0.00						
Lift 0.00%		Background	Matte Video Local						
Softness 4.00		Colour Effects	Off On						
Line Color Local									
Lines from (Front)	Surface 1								
Lines from (Back)	Surface 9								
Background (Front)	Surface 1								
Background (Back)	Surface 9								

The **Effect Level** is set at 100% so the surface source will have the full sketch effect added to it. With the parameter set at 0% the source will look normal.

Line Width - widens and narrows the Pen/Pencil line that the surface is drawn with.

**Line Bias** - changes the black level of the line to make the lines look thicker or almost disappear.

Lift - sets the Luma level -100% maximum brightness, +100% changes the surface to black

Softness - adjusts the softness of the line

Line Color - this changes the color of the Sketch line

	OVE 1				s	ketch 🔨		DVE 1				Sketo
ffect Level	100.00	%		Defocus	Off On		Effect Level					
Line Width Line Bias	25.00%			Level Bias	0.05		Line Width Line Bias	DVE 1			Line Color	$\times$
Lift	0.00%			Background	Matte Video	Local	Lift	Matte Select	Local Matte			
Softness	4.00	0		Colour Effects	Off On		Softness	Hue Luma	0:000°		Local	
Line Color	Local						Lin-color		0.00%	0	Contractor of the second se	
Lines from (Fr	ont)	Surface 1	Ì				Lines from (					
Lines from (Ba	ack)	Surface 9					Lines from (					
Background (F	Front)	Surface 1					Background					
Background (I	Back)	Surface 9	Ē				Background					

**Defocus** - turns the focus adjustment On/Off in conjunction with the Bias and Level parameters.

Level- sets the amount of defocus to the source

Bias - this changes the focus bias from the sketch lines to the background



#### **Background:**

**Matte Select** - selects one of available Mattes or a Local Matte, which can be adjusted by the parameters in this menu. The Matte Hue, Luma and Sat parameters will only work when the Matte Select parameter is set to Local Matte.

**Hue** - adjusts the Hue of the Local Matte color. With the Luma and Sat parameters set to 100%, rotating the Matte Hue wheel will set the Hue to the following:

0 = Red, 60 = Magenta, 120 = Blue, 180 = Cyan, 240 = Green, 300 = Yellow Or can be adjusted as required.

**Luma** - sets the Luminance or brightness control that affects the selected Matte Hue, the parameter adjusts from 0 to 100% where 0% is no luminance or Black and 100% is maximum brightness.

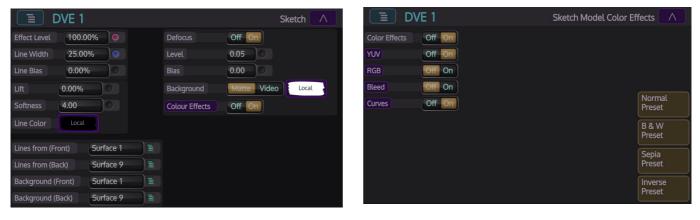
**Sat** - The saturation control affects the selected Matte Hue, the parameter adjusts from 0 to 100% where 0% is no saturation or no color i.e. only shades of Gray and 100% is fully saturated or maximum color.Crop Control Parameters

Background - will select between a Matte or video source for the background color of the surface.

# **Color Effects**

This allows the user to adjust the color of the selected DVE model, there are a range of adjustments and effects that can be applied.

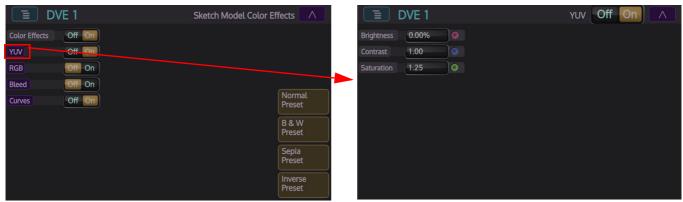
The main color adjustment parameters are the same color effects that are used in the Color Correction menus throughout Kahuna.



The color correction part of the menu allows the user to change the color balance of the DVE surface, there are 4 types of control, YUV, RGB, Bleed and P

#### **DVE Model - YUV**

Press the **YUV** menu link button to enter the **YUV** menu. Adjusting the Brightness, Contrast and Saturation can be adjusted.



- Brightness default value is 0.00%, and the range is from -10% to 100%
- Contrast default value is 1.00%, and the range is from -0% to 16%
- Saturation default value is 1.00%, and the range is from -0% to 16%

As each of the above are adjusted notice that the parameters in the YUV Control menu turn Orange and the percentage of adjustment is shown.

# DVE Model - RGB

Press the {RGB} menu link button to enter the DVE Model - Sketch RGB	menu.
--	-------

DVE 1	Sketch Model Color Effects	DVE 1	RGB Off On
Color Effects Off On		Lift 0.00%	
YUV Cff On		Gamma 1.00	
RGB Off On		Gain 1.00 O	
Bleed Off On		S-Gain 0.00%	
Curves Off On	Normal   Preset	S-Center 50.00%	
	B & W Preset		
	Sepia Preset		
	Inverse Preset		

The initial menu is set to a default condition, which shows all five Master adjustment parameters. This will give an adjustment of Lift, Gamma, Gain, S-Gain and S-Center. Each of these adjustments will alter all three elements of the RGB signal at the same time. When one of the master parameters is altered, notice that the RGB curve profile changes in the graph situated center of the menu.

Touching one of the menu link buttons allows a more accurate adjustment to the RGB components where the:

**Lift** - parameters adjust the images Black Level, working on Black or shadow areas. Gamma - parameters adjust the levels between dark/shadow and the mid tones, where the mid tones become brighter or darker; depending on the adjustment made.

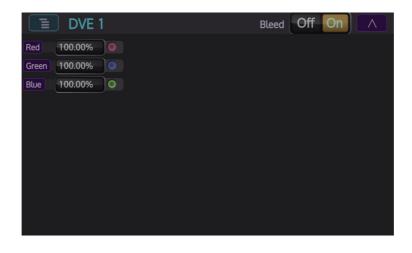
**Gain** - parameters control the White Level or highlights, where brighter colors become brighter or darker; depending on the adjustment made.

**S Gain and S Center** - the parameters adjust the gain mid tone levels of the S curve and the center point levels of the s curve.

DVE 1	RGB Off On	DVE 1	RGB Off On 🔨
Red Lift 0.00%		Red Gain 1.00	
Green Lift 0.00%		Green Gain 1.00	
Blue Lift 0.00%		Blue Gain 1.00	
Master Lift 0.00%		Master Gain 1.00	
	DVE 1	RGB Off On	
	Red Gamma 1.00		
	Green Gamma 1.00		
	Blue Gamma 1.00 O		
	Master Gamma 1.00		
DVE 1			
Red S-Gain 0.00%		DVE 1	RGB Off On
Green S-Gain 0.00%		Red S-Center 50.00%	
Blue S-Gain 0.00%		Green S-Center 50.00%	
Master S-Gain 0.00%		Blue S-Center 50.00%	
Master S-Gain 0.00%		Master S-Center 50.00%	

#### **DVE Model - Bleed**

Color bleed is a situation where a single color will over power the other colors an RGB signal. By using the bleed function the stronger color can be softened to make the color output more natural, or adjusted to suit a specific need.



The initial menu has a default state where a single adjustment for each parameter menu is active; this will allow the adjustment of the main RGB bleed parameters:

- Red into Red
- Green into Green
- Blue into Blue

DVE	1	Bleed Of	f On A	DVE	1	Bleed	Off On	
Red into Red	100.00%			Red into Blue	0.00%			
Green into Red	0.00%			Green into Blue	0.00%			
Blue into Red	0.00%			Blue into Blue	100.00%			
				Hue Rotate	0:000°			
		DVE 1		Bleed Off	On A			
		Red into Green	0.00%					
			100.00%					
			0.00%					

The adjustments are measured on a -100% to a +100% scale. Each parameter menu will adjust a single color, i.e. red into red, green into red and blue into red. These changes are also reflected graphically in the RGB bar graphs above the parameter sets.

#### **DVE Model - Curves**

This function is used to add artistic type effects to a DVE surface such as Solarize and Posterize, and also allows the user to setup user defined effects.

To use Curves the option has to be turned On in the DVE Surfaces main menu as shown below, then enter the Color Effects menu and press the Curves menu link button.

	OVE 1	Curves Off	On ^
Level	1.00		
Туре	Posterize		
Steps	1 2 3 4 5 6 7 8		
Threshold	0.50		
Frequency	2.00 Hz		
Phase	0:000°	Posterize Preset	Solarize Preset
		Sine Preset	Sawtooth Preset
		Sine Ramp Preset	Saw Ramp Preset

The user can select from 6 Preset Curve options or use the Type parameter to select from a list of options. To use the Curves choose the type of effect required, once selected, the user can then manipulate the effect using the parameter controls.

**Level** - changes the level of effect on the selected surface, from a normal looking still/clip to an extreme manipulation effect.

Type - as mentioned above selects the type of effect.

Steps - the more steps there are in an effect, the less extreme the effect.

Threshold - adjusts the light and dark portions of the source

**Frequency** - only works with certain functions, and determines how often the Steps are applied to the effect

Phase - adjusts the effect starting point within the Step cycle

#### **DVE Model - Presets**

Presets allow the user to quickly select commonly used preset color options for the DVE source, or quickly revert back to the original DVE source color levels.

DV	E 1	Sketch Model Color E	ffects
Color Effects	Off On		
YUV	Off On		
RGB	Off On		
Bleed	Off On		
Curves	Off On		Normal Preset
			B & W Preset
			Sepia Preset
			Inverse Preset

**Normal** - is the original color levels of the DVE source; without any color correction adjustments.

**B** & W - sets the chroma saturation to zero removing the chroma content, making the signal black and white.

**Sepia** - sets the chroma saturation to zero removing the chroma content, then adds positive portions of Red and Green and a negative portion of Blue to make-up a sepia appearance.

**Inverse** - Inverts the video signal making the picture a negative of its correct colors.

If the **Normal** preset option is selected, then all color correction controls are Grayed out preventing any adjustments. This is to make sure that the original DVE source can be recalled.

If B&W, Sepia and Inverse are selected, the preset levels can all be color corrected.

	VE 1			Sk	etch 🔨		DVE	1			Sketc	h \Lambda
Effect Level	100.00%		Defocus	Off On		Current Lines from (Trant)						
Line Width	25.00%			0.05		Current Lines from (Front)						$\otimes$
Line Bias	0.00%			0.00			Surface 1	Surface 2	Surface 3	Surface 4	Surface 5	
Lift	0.00%			Matte Video	Local		Surface 6	Surface 7	Surface 8	Surface 9	Surface 10	
Softness	4.00		Colour Effects	Off On								
Line Color	Local						Surface 11	Surface 12	Surface 13	Surface 14	Surface 15	
Lines from (Fro	ont) Surface 1	Ē					Surface 16		,			
Lines from (Ba	ck) Surface 9	E										
Background (F	ront) Surface 1											
Background (B	ack) Surface 9	E										

**Surface Parameters** 

Lines from (Front) - selects the source for the Lines on the front surface.
Lines from (Back) - selects the source for the Lines on the back surface.
Background (Front) - selects the source for the background on the front surface.
Background (Back) - selects the source for the background on the back surface.

# **DVE Model - Kaleidoscope**

This DVE model displays a Kaleidoscope effect to a tile surface.

Note: To change the DVE models Size, Position and Rotation, please see the DVE Model Transform (Pre and Main) section of this manual.



#### **Original DVE Source**



DVE Source with Kaleidoscope Turned On

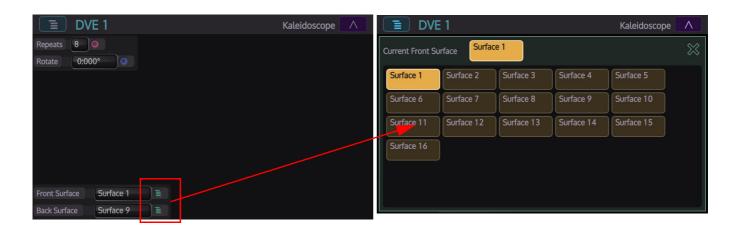


	DVI	E 1			Kaleidoscope	
Repeats	8 (					
Rotate	0:000	)°				
Frank Count		Curfore 1	Ē			
Front Surfa	ace	Surface 1				
Back Surfa	ice	Surface 9				

**Repeats** - determines the number of segments in the Kaleidoscope effect, minimum of 1, maximum of 50

Rotate - rotates the segments into each other

#### **Surface Parameters**

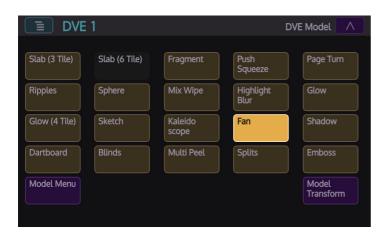


Front - selects the source for the front surface.Back - selects the source for the back surface.

# **DVE Model - Fan**

#### This DVE model is able to display a "Fan" effect to a DVE Surface

Note: To change the DVE models Size, Position and Rotation, please see the DVE Model Transform (Pre and Main) section of this manual.



#### Two examples of DVE Fan Model





	1			Fan 🔨
Level	0.00%	Center X	0.00	
Segments	8	Center Y	0.00	
Softness	0.00%			
Anti-Clockwise	No Yes			
Radial Slats	Off On			
Front Surface	Surface 1			
Back Surface	Surface 9			
Dack Surface				

**Level** - sets the open position of the Fan, i.e. how far the Fan has opened. The fan will open clockwise by default.

**Segments** - sets the number of segments in the Fan, minimum 2 segments, maximum 32 segments.

Softness - sets the softness of the edges of the Fan

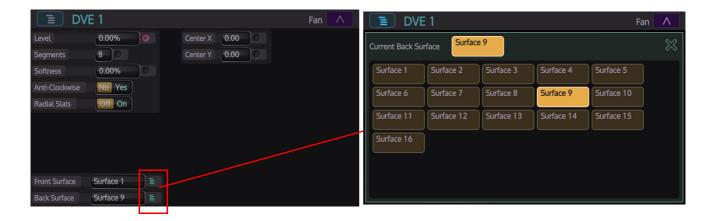
Counter Clockwise - causes the Fan to open Counter Clockwise

**Radial Slats** - give the effect that the tile is being rotated and causes the Fan to break up into sections and reveal the image or surface in the background



**X Center** - moves the center of the Fan along the X axis **Y Center** - moves the center of the Fan along the Y axis

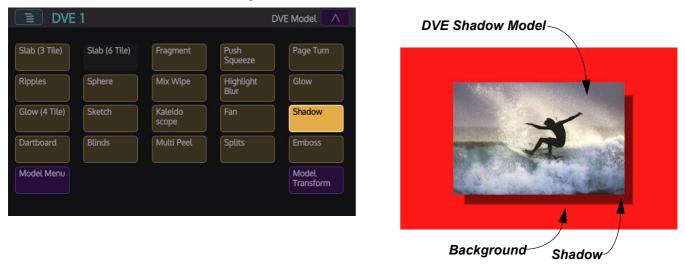
#### **Surface Parameters**



Front Surface - selects front surfaces 1 to 16 Back Surface - selects back surfaces 1 to 16

# **DVE Model - Shadow**

The Shadow model is used to generate either Drop Shadows or Cast Shadows from a DVE model onto a background source.



Note: To change the DVE models Size, Position and Rotation, please see the DVE Model Transform (Pre and Main) section of this manual.

DV	E 1		Shadow 🔨
Shadow Type	Drop Cast	Softness	20.00%
Show Object	Off On	Opacity	50.00%
Show	Shadow Wall	Shadow Warp From	Object Wall
Distance	5.00%	Shadow	Matte Video
Angle	-0:135°		
Zoom	1.00		
Cast From	Light1 Light2		
Surfaces	Tile Transform	Warps	

The 'Cast' shadow projects a shadow from the surface light via the object onto the wall. The 'Drop' shadow is much more like a drop shadow as shown in the picture example above. It makes a color-filled copy of the object

The first thing to consider is what kind of Shadow is required, for this example we will talk about Drop Shadow type.

Difference between Cast and Drop Shadow Type

**Drop Shadow Type** mode gives an illusion of a shadow, but is actually just a shifted copy of the tile filled with a matte color.

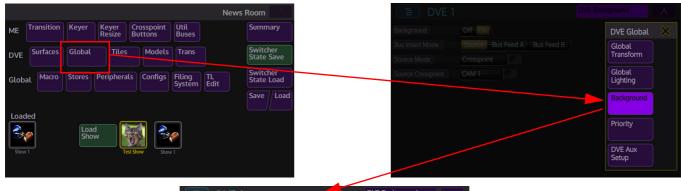
**Cast Shadow Type** the software projects a real shadow from the surface's light source, over the object onto the wall.

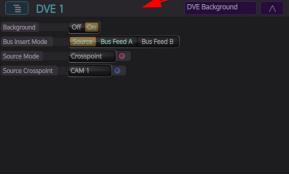
Note: The parameter adjustments made in the "Shadow" menu are either made to an object or the wall the shadow reflects onto.

#### **Using Shadow Model**

In the **DVE Global - Background** menu, select the background or "Wall" the shadow will be cast as described below onto.

This menu allows the user to apply a background behind the DVE Shadow Model without the need for using a Key Layer.





With the Background parameter turned On, use the **Bus Insert Mode** to select between Source based or Bus Feed A/B as the background. Then use the **Source Mode** parameter to select Crosspoint or DVE Aux 1 to 16 as the background behind the DVE Shadow model.

DV	E 1		Shadow 🔨
Shadow Type	Drop Cast	Softness	20.00%
Show Object	Off On	Opacity	50.00%
Show	Shadow Wall	Shadow Warp From	Object Wall
Distance	5.00%	Shadow	Matte Video
Angle	-0:135°		
Zoom	1.00		
Cast From	Light1 Light2		
Surfaces	Tile Transform	Warps	

Shadow Type - this selects between Drop and Cast shadow

**Show Object** - displays or removes the Object (DVE Model) that drops or casts the shadow

**Show** - displays the Wall that the DVE surface casts or drop the shadow on to, or the Shadow cast by the DVE surface.

**Distance** - this will move the shadow away from the object, the direction of movement depends on the angle of the shadow.

Angle - the angle that the shadow is cast onto the wall

**Zoom** - this will move the shadow closer to or away from the object, as the shadow moves away it will get smaller, as if moving the object away from the wall.

**Light Position From** - allows the user to choose whether the position of the Light or the Shade is used.

Softness - softens the outside edges of the shadow

**Opacity** - changes the shadow from being a solid form through to the shadow disappearing.

Shadow Warp From - this selects which surface the warp options can be applied to.



**Shadow** - selects either a Matte as a shadow or one of the DVE surfaces for the Video setting. The matte color is setup in this menu using the parameter controls listed below. The Video or DVE surfaces are set in the "Surface..." menu, accessed by pressing the {Surface...} button at the bottom of the menu.

- **Matte Select** selects one of available Mattes or a Local Matte, which can be adjusted by the parameters in this menu. The Matte Hue, Luma and Sat parameters will only work when the Matte Select parameter is set to Local Matte.
- **Matte Hue** adjusts the Hue of the Local Matte color. With the Luma and Sat parameters set to 100%, rotating the Matte Hue wheel will set the Hue to the following:
  - 0 = Red, 60 = Magenta, 120 = Blue, 180 = Cyan, 240 = Green, 300 = Yellow Or can be adjusted as required.
- **Matte Luma** sets the Luminance or brightness control that affects the selected Matte Hue, the parameter adjusts from 0 to 100% where 0% is no luminance or Black and 100% is maximum brightness.
- **Matte Sat** The saturation control affects the selected Matte Hue, the parameter adjusts from 0 to 100% where 0% is no saturation or no color i.e. only shades of Gray and 100% is fully saturated or maximum color.Crop Control Parameters.

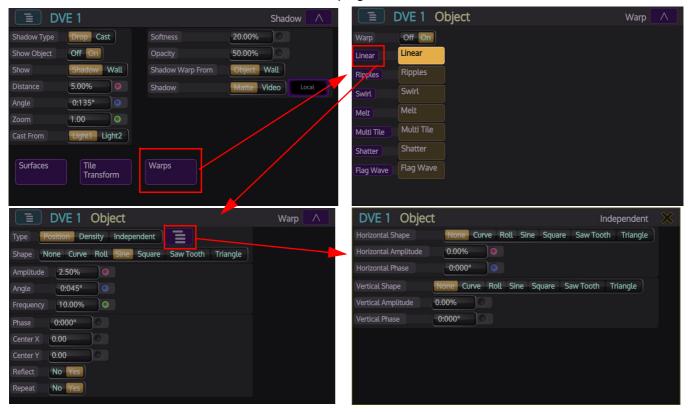
# Warp

The Warp menu allows the user to apply various effects to individual tiles.

To use the Warp functions touch the **Tile Selector** attacher then select "Object" if the DVE surface is to have the warp effects applied, or "Wall" is the warp effects are to affect the wall behind the DVE surface.

#### Linear

This effect allow linear lines of warping effects.



Main menu adjustments

**Type** - selects between the three states of Warp, Position, Density and Independent. They all have a similar effect on a tile, it is down to the user's discretion which one to use to create the desired effect on a tile.

- Position moves the DVE Tile pixels in the direction of the angle, according to the Shape pattern chosen
- **Density** stretches or squashes the width of each DVE Tile pixel perpendicular to the angle, in accordance with the Shape pattern chosen.
- Independent this allows the user to have individual control over both the Horizontal and Vertical Warp settings of each tile these attachers control the Shape, Amplitude and Phase of the Warp.Shape - determines the shape of the edge of the Warp effect in Position mode, (eg. Sine = sine curve cycle) and the shape of pixel-width spread in Density mode.

**Amplitude** - controls the intensity of the 'Shape cycle', the larger the amplitude the more dramatic the warp

Angle - decides what rotation is applied to the effect

Frequency - determines how often the warp is applied to the tile

Phase - adjusts the warp starting point within the 'Shape cycle'



Example of Position Warp as a Sine shape

Type - selects between the three states of Warp - Position, Density and Independent

Angle - decides what rotation, is applied to the effect

Frequency - determines how often the warp is applied to the tile

Center X - determines the center of the warp, on the X-axis

Center Y - determines the center of the warp, on the Y-axis

**Reflect** - when set to Yes applies a warp to the entire tile, when set to No will warp one half of the tile

**Repeat** - when set to Yes the warp pattern is repeated throughout the tile, when set to No the warp pattern will appear only once.

**Independent Horizontal/Independent Vertical** - (these parameters will only work when the "**Type**" parameter is set to Independent) these are a secondary adjustment to the linear warp. They allow the user to have individual control over both the Horizontal and Vertical Warp settings of each tile these attachers control the Shape, Amplitude and Phase of the Wall.

DVE - Models Warp

> **Ripples** This adds a Ripple effect to a tile.

	DVE 1 O	bject	Warp A		DVE 1	Object			R	ipples	$\land$
Warp	Off On			Amplitude	0.00%	•		100.00%			
Linear	Linear			Frequency	20.00%		Width	100.00%			
Ripples	Ripples			Phase	0:000°	0	Build Up	10.00%			
Swirt	Swirl			Center X	0.00		Decay	15.00%			
Melt	Melt			Center Y	0.00		Effect Style	Angled	Radial		
	Multi Tile						Angle	0:045°			
Multi Tile											
Shatter	Shatter										
Flag Wave	Flag Wave										

**Amplitude** - controls the intensity of the 'Shape cycle', the larger the amplitude the more dramatic the Ripple

Frequency - determines how often the Ripple is applied to the tile

X Center - moves the Ripple center left or right

Y Center - moves the Ripple center up or down

Distance - sets how far the Ripples spread outwards from its center

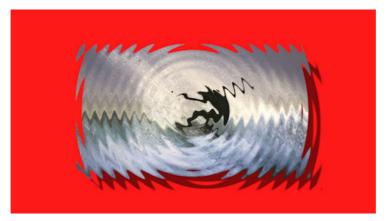
Width - sets the width between the Ripples

Build Up - applies a softness between the outside ripple and the rest of tile

**Decay** - applies a softness from the center of the ripple outwards

Effect Style - selects between Angled and Radial effects

Angle - decides what rotation, if any, is applied to the Ripple.



Ripples Warp with Amplitude and Frequency turned up

# Swirl

This adds a Swirl effect to a drop shadow object.

	DVE 1 C	Dbject	Warp A		DVE 1	Object	Swirl	
Warp	Off On			Level	0.00%			
Linear	Linear			Distance	100.00%			
Ripples	Ripples			Center X	0.00			
Swirl	Swirl			Center Y	0.00			
Melt	Melt			Style	Twist Sv	virl		
Multi Tile	Multi Tile							
Shatter	Shatter							
Flag Wave	Flag Wave							

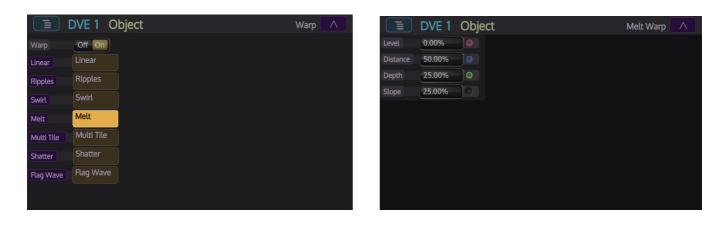
Level - controls the amount of swirl
Distance - sets how far the Swirl spreads outwards from its center
X Center - moves the center of the swirl right or left
Y Center - moves the center of the swirl up or down
Style - the user has 2 choices, Twist or Swirl effect



DVE Shadow with Swirl Warp Effect

Melt

The warp Melt option gives the effect that the DVE model is melting.



Level - sets the amount of Melt applied to the DVE model

Distance - sets how far the Melt spreads away from the top of the DVE model

Depth - sets the depth for the bottom of the U shape between each melted segment.

**Slope** - determines whether the Melt will hold a straight line from the top of the screen or if it will gradually slope down the screen from the left as the percentage of the parameter is increased.



DVE Shadow with Melt Warp Effect

# **Multi Tile**

This menu allows a selection of multiple tile DVE effects to be displayed.

	DVE 1 O	bject	Warp A	<b>DVE 1</b> (	Object	Mult	i Tile 🔨 🔨
Warp	Off On			Mode	Row Column Grid	Limit Repeats	No Yes
Linear	Linear			Tiles	2 3 4 5 6 7 8	Horizontal Repeats	13
Ripples	Ripples			Reflected	No Yes	Vertical Repeats	13 0
Swirl	Swirl			Horizontal Separation	0.00%	Auto Crop	Off On
	Melt			Vertical Separation	0.00%		
Melt	Multi Tile						
Multi Tile				Vanishing Point	Clip Wrap		
Shatter	Shatter			Vanishing Point Wrap	Normal Reflected		
Flag Wave	Flag Wave						
2							

**Mode** - The multi tile modes as listed below:

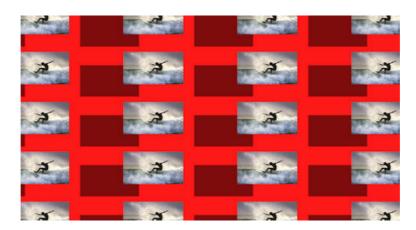
- **Row** Tiles 1 8
- Column Tiles 1 8
- Grid Tiles 1, 2, 4, 6 2X3, 6 3X2, 8 2X4, 8 4X2

Reflected - will add a reflected view of the multi tile setup

Horizontal Separation - spreads spaces horizontally in between the selected multi tile pattern
Vertical Separation - spreads spaces vertically in between the selected multi tile pattern
Vanishing Point - will add a reflected view of the multi tile setup

DVE 1	Object	Mult	i Tile 🔨
Mode	Row Column Grid	Limit Repeats	No Yes
Tiles	1 2 3 4 5 6 7 8	Horizontal Repeats	13
Reflected	No Yes	Vertical Repeats	13
Horizontal Separation	0.00%	Auto Crop	Off On
Vertical Separation	0.00%		
Vanishing Point	Clip Wrap		
Vanishing Point Wrap	Normal Reflected		

Horiz Repeats - his will repeat tiles from 2 times up to 14 times horizontally.Vert Repeats - this will repeat tiles from 2 times up to 14 times verticallyAuto Crop - will automatically crop to make sure multi tiles fit within the tile space



DVE Shadow Multi Tile with 13 Horiz/Vert tiles

# Shatter

The Shatter option, as the name suggests, gives the effect that the DVE model being shattered like a pane of glass.

	DVE 1	Dbject	Warp 🔨		DVE 1	Object	Shatter	
Warp	Off On			Level	0.00%	0		
Linear	Linear			Segments	4 0			
Ripples	Ripples			Separation	0.00%	0		
Swirl	Swirl			Distance	25.00%			
Melt	Melt			Rotation Softness	0:000°			
Multi Tile	Multi Tile			Center X	0.00			
Shatter	Shatter			Center X	0.00			
Flag Wave	Flag Wave			Movement		al Random		
				Random Wi		On		

**Level** - controls the level of the shatter from no shatter to entirely shattered into the predetermined number of segments and to the pre-determined distance

Distance - sets how far the Shatter spread outwards from its center

**Separation** - adjusts the distance between the segments

Rotation - adjusts the direction of rotation of the Shatter as it spreads outwards

Segments - selects the amount of pieces the Shatter splits into.



Shatter Effect with X Center adjustment

X Center - moves the Shatter center left or right
Y Center - moves the Shatter center up or down
Movement - draws segments from the center, in a non concentric pattern
Random Width - each segment of the shatter is a different size.
Softness - adjusts the softness of the edges of the shattered pieces

#### **Flag Wave**

Flag Wave is a multi tile Warp effect that simulates a flag waving in the wind. Once the Warp function is turned On, press the **{Active}** button then Flag Wave will start at a preset level.

	DVE 1 C	bject	Warp A		VE 1 Ob	oject		F	lag Wave	
Warp	Off On			Effect Depth	100.00%		Wind Machine A		70.00%	
Linear	Linear			Effect Angle	0:045°				25.00%	
Ripples	Ripples			1211021 1025-123					-0:050°	
Rippies				Wind Ma	chine Circular			Wind Speed	50.00%	
Swirl	Swirl			Amplitude	100.00%			Phase	0:000°	
Melt	Melt			Frequency	50.00%					
Multi Tile	Multi Tile			Wind Speed	-50.00%				60.00%	
Shatter	Shatter			Phase	0:000°		Wind Machine B		20.00%	
				Position X	-0.75			Angle	0:025°	
Flag Wave	Flag Wave			Position Y	0.00			Wind Speed	60.00%	
									0:000°	

**Effect Depth** parameter is a coarse "frequency" adjustment, 0% will stop the flag wave motion, and 100% is at maximum level.

Effect Angle - adjusts the angle at which the wind hits the tile

DVE 1 Object         Flag Wave						
Effect Depth 100.009	6	Wind Machine A	Amplitude	70.00%		
Effect Angle 0:045°			Frequency	e 70.00% 25.00% -0:050° ed 50.00% 0:000° e 60.00% 20.00% 0:025°		
					0	
Wind Machine Circu	ular		Wind Speed	70.00%       0         25.00%       0         -0:050°       0         50.00%       0         0:000°       0         60.00%       0         0:025°       0         60.00%       0		
Amplitude 100.00	0%		Phase	0:000°		
Frequency 50.009	%					
Wind Speed -50.00	%		Amplitude	60.00%		
Phase 0:000	• 0	Wind Machine B	Frequency	20.00%		
Position X -0.75			Angle	0:025°		
Position Y 0.00			Wind Speed	60.00%		
			Phase	0:000°		

**Wind Machine Circular** creates a curved edge to the Wind Ripple effect as it passes over the tile.

**Amplitude** - controls the intensity of the 'circular shape cycle', the larger the amplitude the more dramatic the wind ripple

Frequency - determines how often the wind ripple is applied to the tile

**Wind Speed** - this adjusts the wind speed and wind direction, the preset level is left to right at 50%, if the parameter is changed to +100% the wind direction is from right to left at maximum speed

Phase - adjusts the warp starting point within the 'circular shape cycle'

**Position X and Position Y** - this moves the center point at which the circular wind ripples start.

DVI	E 1 Object		Flag Wave			
Effect Depth	100.00%	Wind Machine A	Amplitude	70.00%	•	
Effect Angle	0:045°		Frequency	mplitude 70.00% requency 25.00% ngle -0:050° /ind Speed 50.00% hase 0:000° mplitude 60.00% requency 20.00% ngle 0:025°		
			Angle	-0:050°	0	
Wind Machine Circular			Wind Speed	50.00%		
Amplitude	100.00%		Phase	0:000°		
Frequency	50.00%					
Wind Speed	-50.00%		Amplitude	60.00%		
Phase	-0:000°	Wind Machine B	Frequency	20.00%		
Position X	-0.75		Angle	0:025°		
Position Y	0.00		Wind Speed	60.00%		
			Phase	0:000°		

**Wind Machine A** and **Wind Machine B** provide the same Wind Ripple effect, but can be adjusted allow wind ripples to hit the tile from different directions, the only difference between, the adjustment they provide and the Wind Machine Circular is the Angle adjustment.

**Amplitude** - controls the intensity of the 'circular shape cycle', the larger the amplitude the more dramatic the wind ripple

Frequency - determines how often the wind ripple is applied to the tile

Angle - this changes the angle at which the wind ripples strike the tile

**Wind Speed** - this adjusts the wind speed and wind direction, the preset level is left to right at 50%, if the parameter is changed to +100% the wind direction is from right to left at maximum speed

Phase - adjusts the warp starting point within the 'circular shape cycle'



DVE Shadow Model with Warp Flag Wave

#### **Surface Parameters**

DVI	E 1	Овјест	Shadow Model Surfaces		DVE	<b>1</b> <i>Овјест</i>		Shadow	Model Surfaces	Λ
Front Surface		Surface 1		Current S	Shadow (	(Front) Surfa	ace 2			$\approx$
Reflect		H Off On V Off On								
Rotate 90		Off On		Surface	e 1	Surface 2	Surface 3	Surface 4	Surface 5	
Back Surface		Surface 9		Surface	e 6	Surface 7	Surface 8	Surface 9	Surface 10	
Reflect		H Off On V Off On		Surface	. 11	Surface 12	Surface 13	Surface 14	Surface 15	
Rotate 90		Off On		SUITAC		SUITACE 12	SUNACE 15	SUNACE 14	SUITACE 15	
Shadow (Front)		Surface 2		Surface	e 16					
Shadow (Back)		Surface 10								

#### Object/Wall

Front Surface - selects the surface for the front of the object/wall

H Reflect - flips the Object horizontally

V Reflect - flips the Object vertically

Rotate 90 - rotates the object by 90 degrees clockwise

Back Surface - selects the surface for the back of the object/wall

H Reflect - flips the Wall horizontally

V Reflect - flips the Wall vertically

Rotate 90 - rotates the Wall by 90 degrees clockwise

Shadow

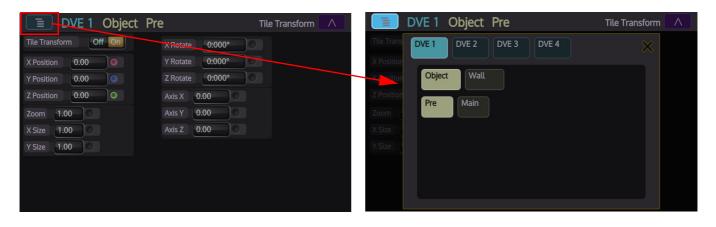
Front Surface - selects front surfaces 1 to 16

Back Surface - selects back surfaces 1 to 16

#### **Tile Transform**

This menu allows the user to move and manipulate a DVE tile. There are two options when working in the **DVE Tile** menu, "**Pre**" and "**Main**".

In the **DVE Main** menu, press the {**Tiles**} button to enter the **Tile Transform** menu, press the Delegate button to select the required tile.



**Pre Transform (Source)** menu, which moves the selected Tile "Locally" around its own central point, the tile can be moved away from the Main Transform (Target) central point but will

always move around its own axis, again, think of it as the Earth being the tile, spinning around its own axis but can be moved away from the Sun, by the parameter controls.

**Main Transform (Target)** menu, which moves the selected Tile "Globally" around a central point, the tile can be moved away from the central point but will always move around that point, think of it as the Earth being the Tile moving around the Sun, the tile can be moved away but will always move around the central point in space by the parameter controls.

After making the selection between Pre and Main, the user can now start to move and position the selected tile.

#### **Position & Size**

The parameter controls for size and position of the tile are the same for Pre and Main when selected.

<b>DVE 1</b> Object	Pre	Tile Transform
Tile Transform Off On	X Rotate 0:000°	0
X Position 0.00	Y Rotate 0:000°	0
Y Position 0.00	Z Rotate 0:000°	0
Z Position 0.00	Axis X 0.00	
Zoom 1.00	Axis Y 0.00	
X Size 1.00	Axis Z 0.00	
Y Size 1.00		

X, Y, Z Position - will move the position of the tile around the center of the axis

Zoom - will zoom the Tile up or down

X, Y Size - will change the physical shape of the tile horizontally or vertically

#### Rotation

Again, the parameter controls for rotation of the tile are the same for Pre and Main when selected.

DVE 1 Object	Pre	Tile Transform
Tile Transform Off On	X Rotate 0:000°	
X Position 0.00	Y Rotate 0:000°	
Y Position 0.00	Z Rotate 0:000°	0
Z Position 0.00	Axis X 0.00	
Zoom 1.00	Axis Y 0.00	
X Size 1.00	Axis Z 0.00	
Y Size 1.00		
	Axis Z 0.00	

X Rotate - rotates the tile such that the left and right sides turn into the screen

Y Rotate - rotates the top and bottom into the screen

Z Rotate - rotates the tile clockwise/counter-clockwise

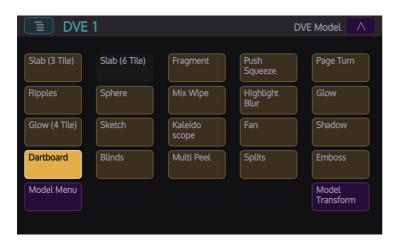
Axis X, Y, Z - moves the central axis point around

Tile Mimic top right will mimic the adjustments made in the Main Transform (Target) parameters below. Notice that when the parameters are adjusted, the tile will move around a central point in space.

## **DVE Model - Dartboard**

This DVE model displays a Dartboard effect.

Note: To change the DVE models Size, Position and Rotation, please see the DVE Model Transform (Pre and Main) section of this manual.



**DVE Dartboard Model - Rotate Style** 



**DVE Dartboard Model - Shatter Style** 



DVE 1 Dartboard								
Level	0.00%			Separation	0.00%			
Style	Shatt	er Rotate		Movement	Spiral Random			
Rings	8			Random Width	Off On			
Segments	8 0			Rotate	0:000°			
				Softness	0.00%			
Front Surface	e A	Surface 1	E					
Front Surface	e B	Surface 2	E					
Back Surface		Surface 9						
Back Surface	B	Surface 10	E					

**Level** - determines the prominence of the dartboard effect on a tile, 0% will display a normal tile, 50% will display half a dartboard effect from the outside of a tile inwards, 100% displays a full dartboard effect

Style - the Shatter style off sets the segments of the dartboard

**Rings** - determines the number of rings displayed in the dartboard effect minimum is 1 ring, maximum is15 rings

**Segments** - selects the number of segments in the dartboard, minimum 3, and maximum is 15 segments



**Separation** - determines the thickness of the segment lines and displays the surface of the second tile

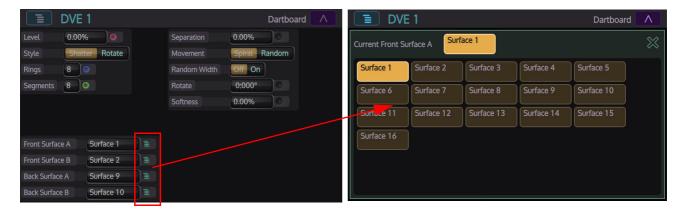
**Movement** - Spiral when rotated gives a spiral effect, Random makes the segments move in different directions when rotated

Random Width - sets the separation lines to different widths when rotated

Rotate - rotates the dartboard effect around in a circle

Softness - sets the softness of the edges of lines in the dartboard

Surface Parameters

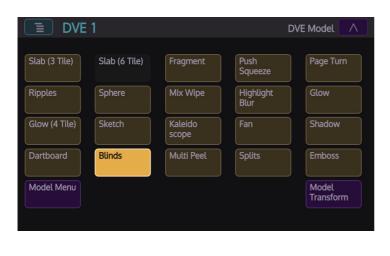


**Front Surface A/B** - selects the source for surface A and B **Back Surface A/B** - selects the source for surface A and B.

## **DVE Model - Blinds**

Blinds Model provides a "window blind" effect to a DVE tile.

Note: To change the DVE models Size, Position and Rotation, please see the DVE Model Transform (Pre and Main) section of this manual.



DVE Blind Model set to Slats Style



DVE Blind Model set to Grid Style





Level - this will give the effect of opening the blinds, revealing the background behind the tile.

**Style** - changes the blinds style from Slats to a Grid style, when this option has Grid selected, notice that the "Slats" parameter controls are Grayed out and cannot be used.

**Delay** - The delay parameter controls the time for each slat to open. i.e. If the delay is at 100% and 4 slats are selected then the level controls the opening of each slat individually. When the grid style is selected, the delay path works in the form of a spiral so each slat opens from the outside and spirals towards the middle.

Softness - adjusts the softness of the edges of the blinds

**Random Movement** - when set to On, this will allow random blind sections to move when adjusted.

DVE	1	Blinds 🔨
Level	0.00%	
Style	Slats Grid	Slats 8
		Angle 0:000°
Delay	0.00%	Pivot Position 0.00%
Softness	0.00%	
Random Movement	Off On	
Reverse Delay	Off On	Direction Normal X Only Y Only
		Segments X 8
		Segments Y 8
		Pivot Position X 0.00%
Front Surface S	urface 1	Pivot Position Y 0.00%
Back Surface S	urface 9	

Note: These parameters can only be used when the blinds style is set to "Slats"

**Reverse Delay** - this reverses the **Delay** function as described on the previous page.

Slats - determines the amount of slats in the blind

Angle - adjusts the angle of the blinds, this will rotate the slats

Pivot Position - adjusts the position at which the angle adjustment will rotate around

Note: These parameters will only work when the blind style is set to "Grid"

**Direction** - this parameter has 3 settings Normal, X Only and Y Only, this determines which direction the blinds are segmented into, i.e. if set to "Normal", the blinds will be broken up into a Grid, if "X Only" is selected, the blinds will be vertical.

Segments X, Y - will determine how many segments the blind will be broken up into.

**Pivot Position X, Y** - this will determine where the pivot point will be either vertically or horizontally.



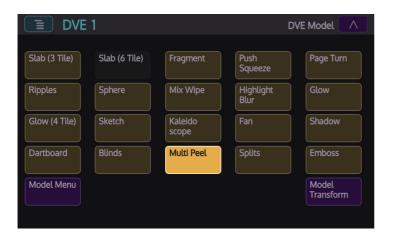
**Surface Parameters** 

Front Surface - selects the source for the front surface of the blind Back Surface - selects the source for the back surface of the blind

## **DVE Model - Multi Peel**

This DVE model is able to display a "peel back" effect to a tile.

Note: To change the DVE models Size, Position and Rotation, please see the DVE Model Transform (Pre and Main) section of this manual.



#### DVE Multi Peel model set to 4 peels



DVE Multi Peel set to 8 peels



	OVE 1		Multi Peel 🔨
Position 0	0.00%	Quadrant 1 Angle	Normal Alt
Peels	4	Quadrant 2 Angle	Normal Alt
Radius	10.00%	Quadrant 3 Angle	Normal Alt
Rotation	0:045°	Quadrant 4 Angle	Normal Alt
Softness	10.00%		
Position Rang	ge 1.00		
Random	Off On		
Front Surface	Surface 1		
FIONL SURACE	Sofface 1		
Back Surface	Surface 1		

**Position** - sets the position of the segments being peeled backwards, i.e. how far the segments have been peeled outwards

Radius - sets the distance the segments are allowed to peel outwards from the center

Rotation - sets the angle of the peel

Peels - sets the amount of segments being peeled, 4 is the minimum and 40 is the maximum

Position Range - moves the position of the start point of the peel on the tile

DVE 1		Multi Peel 🔨
Position 0.00%	Quadrant 1 Angle	Normal Alt
Peels 4	Quadrant 2 Angle	Normal Alt
Radius 10.00%	Quadrant 3 Angle	Normal Alt
Rotation 0:045°	Quadrant 4 Angle	Normal Alt
Softness 10.00%		
Position Range 1.00		
Random Off On		
Front Surface Surface 1		
Front Surface Surface 1		
Back Surface Surface 1		

Softness - sets the softness of the edges of the peel

**Random** - sets the peel edges to random states of peeling, i.e. one peel edge may be fully peeled back, and the peel edge next to it may only just be starting to peel back.

Note: The Quadrant Angle parameters will only work when the "Peels" parameter is set to 4 peels.

Quadrant 1, 2, 3, and4 Angle - alters the angle that the segments get peeled backwards, there are two settings, Normal and Alt. these are most noticeable as the peel is adjusted by the rotation.

DVE 1 Multi Peel DVE 1 Multi Peel Ξ 0.00% Normal Alt Position Surface 1 4 0 Normal Alt Surface 1 10.00% 0 mal Alt Radius ormal Alt 0.045° 10.00% 1.00 Off On Surface 16 Surface 1 Surface 1

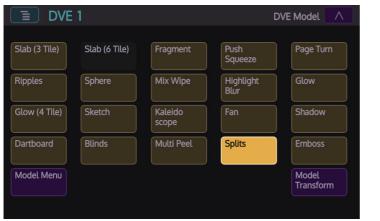
> Front Surface - selects the source for the front surface of the model Back Surface - selects the source for the back surface of the model

**Surface Parameters** 

## **DVE Model - Splits**

This function splits the tile into a number of parallel strips and pulls alternate strips of the tile apart along a pre-determined angle.

Note: To change the DVE models Size, Position and Rotation, please see the DVE Model Transform (Pre and Main) section of this manual.



DVE Splits every other segment moves away in a vertical direction (up or down)



	DVE 1				Splits	<b>^</b>
Position	0.00%	•				
Level	10.00%	0				
Rotate	0:000°	0				
Softness	0.00%	0				
Front Surfa	ice Surfa	ice 1				
Back Surfa	ce Surfa	ice 9				

**Position** - moves the two section of the tile apart, i.e., even strips in one direction and odd strips in the opposite direction.

Level - sets the number of strips.

Rotation - sets the direction of the strips.

Softness - softens the edges of each strip.

#### **Surface Parameters**

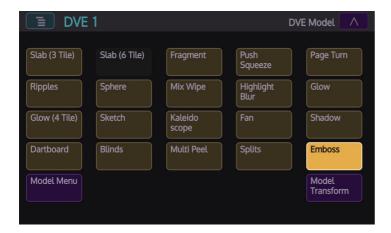


Front Surface - selects the source for the front surface of the model Back Surface - selects the source for the back surface of the model

## **DVE Model - Emboss**

Emboss gives the effect of pressing the source subject into the surface of the DVE tile, makes the source look like a raised design.

Note: To change the DVE models Size, Position and Rotation, please see the DVE Model Transform (Pre and Main) section of this manual.



## DVE Emboss gives the effect of a raised design





**Level** - sets the emboss level of the DVE model, 0% the DVE tile is normal, 100% is full embossing effect of the tile.

**Depth** - sets the depth of the emboss and enhance the effect of the raised lines.

Color - will turn On/Off any color that is in the source.

Follow Light - will raise the luminance level of the source

Enhanced - will enhance or sharpen the source.

#### **Surface Parameters**

	VE 1	Emboss A	DVE	Ξ1			Embos	s A
Level	100.00%		Current Front Su	urface Surfa	ce 1			$\approx$
Depth	75.00%							
Color	Off On		Surface 1	Surface 2	Surface 3	Surface 4	Surface 5	
Follow Light	Off On		Surface 6	Surface 7	Surface 8	Surface 9	Surface 10	
Enhanced	Off On		Suite 11	Surface 12	Surface 13	Surface 14	Surface 15	
			Surface 16					
Front Surface	Surface 1							
Back Surface	Surface 9							

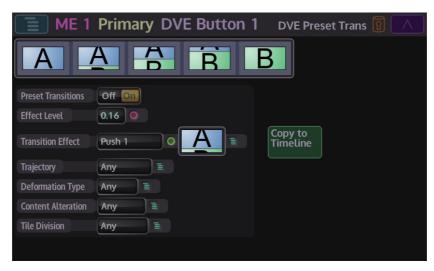
Front Surface - selects the source for the front surface of the model Back Surface - selects the source for the back surface of the model

# **DVE - Trans**

## **DVE Preset Transitions**

This menu gives the user an option to select from a list of preset DVE models to use in a transition.

The Transition Presets feature is a quick way of using a DVE transition on a background. The transition icons in the "Transition Effect" popup menu, illustrate the choices of transition available and the film strip icons (at the top) illustrate how the transition will take shape.



Presets Transitions - turns the option On/Off

**Effect Level** - turning this parameter control will start the current DVE Trans and run through to the transition finish

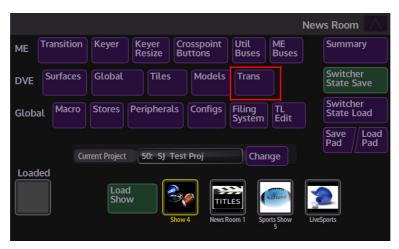
Transition Effect - selects a transition effect from the options in the menu.

Make sure that enough DVE channels have been allocated to DVE 1 in the **User Config - DVE Setup** menu.

To preview as a Background transition, select **[PVW TRANS]** in the in the **Transition Control** area on the Control Surface. Then touch the **{Transition}** button, then touch **{Bgnd DVE1}**, as shown below.



In the "Top" or "Home" menu, touch the **{Trans}** button in the DVE area of the menu. Then in the **DVE Preset Transitions** menu turn **{On}** the **"Preset Trans parameter"**.



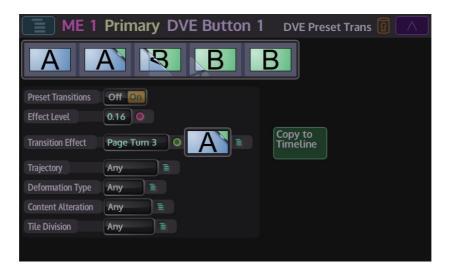
Use the "Transition Effect" parameter to scroll and select a transition, or touch the popup menu selector and select a transition from the list of effects.

Move the TBar from 0% through to 100%. When satisfied with the effect press Pvw Trans again in the Transition Control area, to switch it off and use the TBar or Auto Trans to complete the transition live to air.





DVE Preset Trans - Page Turn effect



#### **Parameter Controls**

Note: Not all the parameters below will work with all the preset DVE models, for example, Tile Division parameter will work with the Fragmentation model but not Page Turn.

**Copy to Timeline** - this will copy the current DVE Transition into a timeline that is being created.

**Trajectory** - selects the movement of the DVE Model whilst in a transition. Selecting one of the Trajectories automatically selects the available Transition Effect, for example; a Horizontal Trajectory is applied to a Push 1 type Transition Effect, a Diagonal Trajectory is applied to a Page Turn Transition Effect.

**Deformation Type** - selects the way the DVE Model is deformed. Selecting one of the Deformations automatically selects the available Transition Effect for example; Curl is applied to a Page Turn.

**Content Alteration** - changes the physical appearance of a DVE Model, such as Pixellate and Defocus.

**Tile Division** - sets the way a DVE Tile divides during a transition, example; Half, splits the tile in to two pieces, Quarter, splits the tile into four etc.

## **Global - Macros**

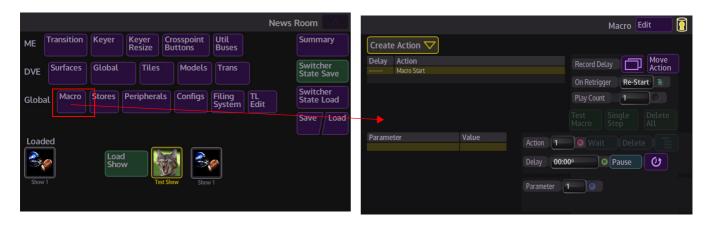
## **Overview**

Macros can be freely assigned to any button on the control surface and are one of the most versatile and widely use functions on a production switcher. When macros are assigned to the User Function buttons, they can have an associated "bitmap" added, which will be displayed on the OLED display on the buttons.

Kahuna macros are recorded in real time, this means that macros record functions behind buttons, rather than just the button press. This allows creation of simple multi button operations to complex effects and transitions, which include; Pbus, GPOs, DMEM, and GMEM loading, clip playing and VDCP.

## **Using Macros**

To get to the Macro menu, press the **{Macro}** button in the Home menu as shown below. The first menu to be displayed is the **Macro Edit** menu.



Macros are saved in **Filing System - Macros**, which in-turn are saved into Projects in the **Filing System** (*please read the Filing System section of the Kahuna 9600/6400 User Instruction Manual, the second manual supplied with this system*), button functions are assigned within the Panel Config. Although the macros themselves are run and activated in the mainframe the buttons are associated with the Panel Config.

As mentioned earlier, macros are recorded as a sequence of button presses in real time, which in turn are translated into a sequence of actions. The delay between these functions (button presses) can be tested and edited once the recording is completed. Once a macro is running if it is run a second time halfway through the macro run sequence, it will instantly start from the beginning.

Note: A Menu Operation is not recorded as a macro but any direct action within menus will be (e.g. a Pbus trigger).

		Macro	Edit				Macro	Edit		3	
Create / Delay / N	Macro Record	Locate Button Assign Joystick Soft GUI Control Virtual Keyboard Disable Tracking	4 5	vmp P 6 3	Create / Delay / Paramete	Modulator Assign Values GUI Lock	Locate Button Assign Joystick Soft GUI Control Virtual Keyboard	Dire 7 4 1 Currer 77	ect Menu 8 5 2 nt:	Jump 9 6 3	ve ion 2 te
				<b>Value</b> Auto Trans	Action 10 Delay 01:09 Parameter 1	Record Delay On Retrigger Re-Sr Play Count 1 Test Single Macro Step	Move Action tart				<u></u>

#### Macro Record Sequence

To start recording a macro, press the **"Star"** button on the MAV-GUI, and a dialog box will appear (shown in the diagram top left).

Touch the **{Macro Record}** button, the menu will go back to the Macro Edit menu, (touch the Star button again and the Macro Record button will have turned a red color), macro is ready to start recording (the Star button on the MAV-GUI will also turn pink). The macro recording and button delays will only be activated after the first function operation has been entered. Whilst recording a macro sequence, the Macro Record button will have a black circle next to the text in the button. Notice that the background of the menu has turned red. The background will remain red in every menu until the macro stops recording.

While recording a macro, the user is able to enter different menus, to gain access to any menurelated functions. Once the macro is completed press the **{Macro Record}** button again and this will end the macro record state, and the button will go back to its original; unlit state.

			Macro Edit
Create	e Action 🔽		
Delay	Action Macro Start		Record Delay Move
00:000	ME 1 Bgnd A Crosspoint		On Retrigger Re-Start 🔳
00:09 <sup>0</sup> 02:13 <sup>0</sup>	ME 1 Bgnd A Crosspoint ME 1 Primary Transition		Play Count 1
01:14 <sup>1</sup>	ME 1 Bgnd B Crosspoint		
00:11°	ME 1 Bgnd A Crosspoint		Test Single Delete
01:121	ME 1 Primary Transition		Macro Step All
Parame	ter	Value	Action 5 • Wait Delete
Fill Xpt		CAM4	
			Delay 01:141 O Pause 🕑
			Parameter 1
			Value CAM4

The button press sequence that was recorded in the macro is displayed in the Macro Actions table (shown above). In the **Macro - Edit** menu, press the **{Test Macro}** button to test the macro just recorded.

#### **Pausing a Macro During the Record Sequence**

A Macro can be paused at any point in the action sequence, once a record sequence has started, whilst a Macro is being recorded the **{Macro Record}** button is red, press and hold the **{Macro Record}** button and it will turn blue indicating that the recording sequence is Paused, at this point the Button Delay timer is also paused.

Press the **{Macro Record}** button once, the button will turn red and the record process will start once again.



Note: While a macro is paused, Kahuna can still run multiple other macros at the same time

Macro Edit 🕥 🕥 🚺	Macro Edit 🕥 🕥 💽
Create Action	Create Action 💙
Delay         Action         Record Delay         Move Action           02:13°         ME 1 Primary Transition         On Retrigger         Re-Start         Image: Control of	Delay     Action     Move       02:13°     ME     Macro Details     Ction       01:14'     ME     Macro Details     Image: Ction       00:11°     ME     Ripple Delay To     Start     End       01:12'     ME     Disable Button     Nol Yes     Use Delay
00:12° ME 1 Bgnd A Crosspoint 01:09 <sup>1</sup> ME 1 Primary Transition Test Macro Single Step Delete All	00:12° ME 01:09° ME Button Delay 00:00° O
Parameter     Value       Mode Auto     Auto Trans       Delay     01:091       Pause	Parameter     Use Delays     No Yes       Mode Auto     Main Editor Display Mode     Delay
Parameter 1 O Value No Action Auto Trans	Parameter 1 Value No Action Auto Trans

## **Macro Test and Edit**

Macr	o Edit		Macro Edit
Create Action 🔽		Create Action 🔽	
Mode Auto Trans	Record Delay Move Action On Retrigger Re-Start Play Count 1 Test Single Delete Macro Step All 10 Wait Delete 01:091 Pause C r 1 No Action Auto Trans	Delay         Action           Macro Start         00:00°           ME 1         Bgnd A Crosspoint           00:09°         ME 1           ME 1         Bgnd A Crosspoint           00:19°         ME 1           ME 1         Bgnd B Crosspoint           00:11°         ME 1           ME 1         Bgnd B Crosspoint           00:11°         ME 1           ME 1         Bgnd A Crosspoint           00:11°         ME 1           01:12!         ME 1           Parameter         Value           Fill Xpt         CAM4	Record Delay Move Action On Retrigger Re-Start Play Count 1 Test Macro Single Delete Action 5 Wait Detete Delay 01:14 <sup>1</sup> Pause O Parameter 1 Value CAM4

#### **Test Macro**

Once a macro has been recorded, to test and edit the actions, press the Global - **{Macro}** button in the Home menu to enter the **Macro - Edit** menu. If a macro has just been recorded, the functions/actions that have just been recorded are displayed in the **Actions** table. To replay/test a macro, press the **{Test Macro}** button (the button will turn yellow whilst the macro is running). Press the **{Use Delays}** to replay the macro back in real time.

#### **Pause Macro**

A macro action sequence can be paused at any selected point, there are two ways to do this; either use the **Action** parameter to select a specific point in the action sequence and press **{Pause}**, or press the **{Test Macro}** button to run the macro sequence and then press **{Pause}**, at the required point. The next time the **Test Macro** is run, the macro will pause when it reaches the chosen point, the Test Macro button will flash indicating that the macro is paused. Touch the **{Test Macro}** button again to make the macro carry on running.

			Macro Edit 🚺 🕥 🚺 🛐
Create	e Action 🔽		
Delay	Action		Record Delay Move
Pause Pause Pause Pause 01:03 <sup>1</sup> Pause Pause	ME 2 Primary Transition ME 2 Bgnd A Crosspoint ME 2 Primary Transition		On Retrigger Re-Start
Parame Mode Auto		Value Auto Trans	Action 15 Q Wait Delete
			Delay 01:081 O Pause 🕑
			Parameter 1 O Value No Action Auto Trans

#### Wait

**Wait** function will make the macro pause until the file operation is complete. 'Wait' can only be turned on for file operations. Waiting macros which get a re-trigger will behave exactly as if they were paused (i.e. they will stop waiting).

#### Delete

This will delete a selected action out of the macro sequence.

#### Macro Details - (RippleDelay To)

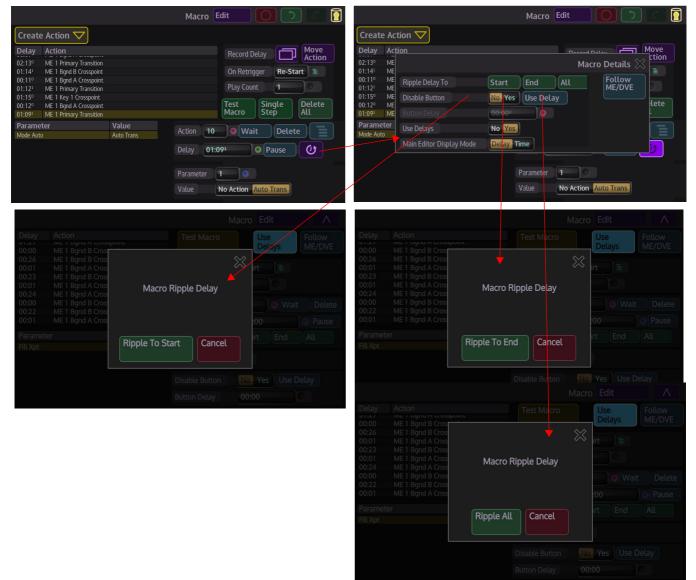
Allows an **Action Delay** that has been set, to be "Rippled" through all Actions in the table from that point onwards.

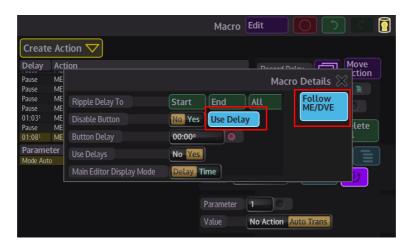
Pressing the {Ripple Delay} button will pop up a Macro Ripple Delay dialog box.

**Ripple To Start** button will ripple the current delay value to all previous Actions up as far as the first Action in the table

Ripple To End button will ripple a delay from current action to all Actions until the last action

**Ripple All** button will set all Actions to current delay, and Cancel will cancel the Ripple delay request.





## Other Buttons and Parameter Controls in the Macro Edit menu

Use Delays - this function turns the real-time button press delays On or Off.

**Follow ME/DVE** - this function will overwrite the M/E upon which the macro had been saved, and instead will assign itself to the ME that is selected in the Dynamic Mix Effect area. This means that a macro that mixes Key 2 on, that had been saved using M/E2 Key 2, can be used on M/E4 Key 2 as long as M/E4 is selected in the Dynamic Mix Effect area of that M/E.



Where the Macro is attached has a bearing on where it will run also. Should a User Function Page be called up on all the User Function Pads on a 4M/E system then the macro will run on each adjacent M/E when the macro is pressed.

Create Action 💙	Macro Edit 🔵 ⊃ 🤇 🛐		Re-Start	Pause	Continue	Stop	*
Delay         Action           02:13°         ME 1 Primary Transition           01:14'         ME 1 Bgnd B Crosspoint           00:11°         ME 1 Bgnd A Crosspoint           01:12'         ME 1 Primary Transition           01:15°         ME 1 Primary Transition           01:12°         ME 1 Primary Transition           01:12°         ME 1 Rynd A Crosspoint           00:12°         ME 1 Bgnd A Crosspoint           00:12°         ME 1 Primary Transition           Parameter         Value	Record Delay Move Action On Retrigger Re-Start Play Count Test Single Delete All	Current Re-Start					CROLL
Mode Auto Auto Trans	Action 10 Wait Delete Delay 01:09 <sup>1</sup> Pause Parameter 1 Value No Action Auto Trans			В	utton Delay	00:00	S

**On Re-Trigger** - this will set the action after a Macro has been re-triggered, and selects between Re-Start, Pause, Ignore and Stop.

Action - displays the current Macro Action that the scroll bar is currently on

**Delay** - this can adjust the delay on a selected individual Macro Action, and is used to adjust the 00(time):01(frames) 1(fields) to the required delay.

Deleted - this will delete a selected Macro Action.

			Macro Edit 🚺 🕥 💽 🚺
Create	e Act	tion 🔽	
Delay	Acti	ion	Bacard Dalay Move
Pause Pause	ME		Macro Details 💥 📰
Pause Pause	ME ME	Ripple Delay To	Start End All Follow ME/DVE
01:03 <sup>1</sup> Pause	ME ME	Disable Button	No Yes Use Delay
01:08 <sup>1</sup>	ME	Button Delay	00:000
Parame Mode Aut		Use Delays	
		Main Editor Display Mode	Delay Time
			Parameter 1
			Value No Action Auto Trans

**Disable Button** - this option will disable a buttons original function and only allow the button to enable the macro that is assigned to it

**Use Delay** - this will allow a delay to be added to the Normal function of the button, so the macro will act and then the Normal function will take place.

Button Delay - this sets up the delay time for the button delay.

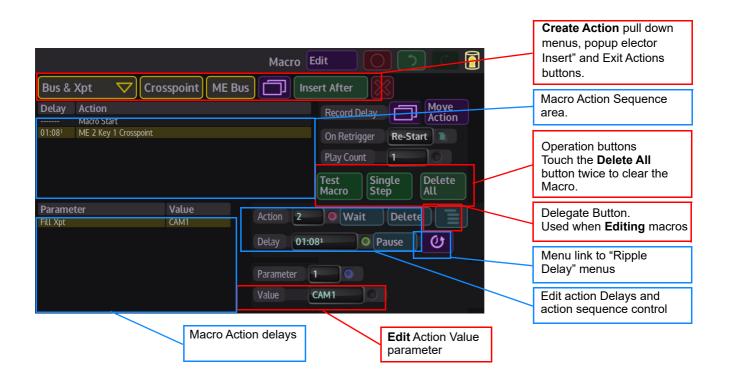
## **Offline Macro Editor**

The offline macro editor is a clear, simple and quick way to create new macros or edit existing macros whilst the production switcher control surface is being used to produce a show. The offline macro editor has an intuitive menu structure with all the elements at hand to build the most complicated macros, without having to go though other menus or having to record button presses on the control surface, all within one menu.

Once a macro has been created, the delay between the macro actions, pauses and ripple delay can be edited then tested.

#### **Offline Macro Edit Menu**

As mentioned above, the Macro Edit menu is the only menu that the user needs to use to create new macros or edit existing menus offline (while the control surface is being used). The diagram below highlights the main offline macro editor functions in red. These buttons will be explained in detail while working through the Macro functions.



#### Creating a Macro "Offline"

The following example will go through the steps of making an "**Offline**" macro for a simple animated transition.

Prior to creating the macro, the Key/Fill portions of the animated clip were coupled into Stores 9 and 10 and setup on the control surface.

Open the Macro Edit menu, then touch the "Create Action" drop down menu, the menu will go dark and 5 options will appear; Bus & Xpt, Store, Peripheral, Effects and Options. These will be the base for all offline macros.

Macro Edit

Create Action

Delay Action

On Retrigger

Parameter

Value

Action 1

Wait

Delay

Delay

Delay

Macro Parameter

Value

Action 1

Wait

Delay

Delay

Delay

Delay

Delay

Parameter

Macro Pause

Parameter

Parameter

Parameter

Value

Action 1

Wait

Delay

Delay

Parameter

Value

Action 1

Delay

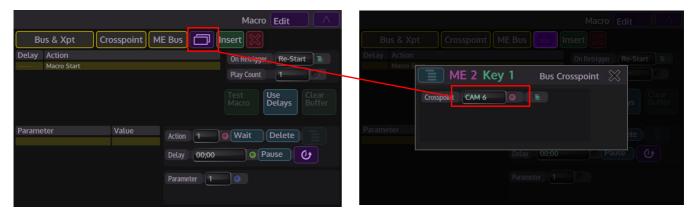
<t

**Step 1** - Change Xpt to a different background.

Select Bus & Xpt - Crosspoint - ME Bus, the menu will return to the Macro Edit main menu.

		Macro Edit					Macro	Edit	
Bus & Xpt	Crosspoint			Bus & Xpt	Crosspoint ME	Bus			
Delay Action Macro Start	Transition		t	Delay Action Macro Start	Aux	k Bus			
	Keyer								
	Color		Clear Buffer						
	Linking								
				Parameter					
			6.5						

Touch the "**popup selector**" use the parameter control to select the Xpt, and then press the "**Delegate**" button.



In the delegate menu, select the required M/E (M/E 2) and Bgnd (A) then touch the "X" button to close the delegate menu. For this example, the dialog box now shows that **M/E 2, Bgnd A** and Xpt **CAM 6** are selected. Touch the "X" button to go back to the main menu.

	Macro Edit	Macro Edit
ME 1 ME 2 ME 3 ME 4	$\approx$	Bus & Xpt     Crosspoint     ME Bus     Insert       Delay     Action     On Retrigger     Re-Start
Key 1       Key 2       Key 3       Key 4         eKey 1       eKey 2         Bgnd A       Bgnd B       Bgnd C       Bgnd D		Macro S ME 2 Bgnd A Bus Crosspoint X Crosspoint CAM 6 Parameter te Edit
Util 1 Util 2 Util 3 Util 4		Delay 00:00 Pause () Parameter 1

Finally, touch the **{Insert}** button to insert the macro action. The action can now be seen in the action list, with the macro information in the "Action" table below.

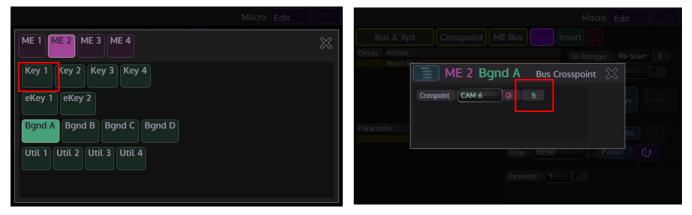
	Macro Edit		Macro Edit
Bus & Xpt Crosspoint M	E Bus 🗇 Insert 🔀	Bus & Xpt Crosspoint ME Bus	🗇 Insert 🔀
Delay Action Macro Start	On Retrigger Re-Start	Delay Action	On Retrigger Re-Start 🗉
	Play Count 1	00;00 ME 2 Bgnd A Crosspoint	Play Count 1
	Test Macro Use Delays Clear Buffer		Test Macro Use Delays Buffer
Parameter Value	Action 1 • Wait Delete	Parameter Value Fill Xpt XPT 6 Action	2 Wait Delete
	Delay 00;00 • Pause ()	Delay	00;00 • Pause 🕑
	Parameter 1	Parameter	10

**Step 2** - Select the Key that the animated clip will be displayed in and the Store that the clip is loaded into.

Again, select Bus & Xpt, then select Crosspoint and ME Bus. Touch the popup selector, then, in the menu, touch the "Delegate" button.

	Macro Edit		Macro Edit
Bus & Xpt Crosspoint M	E Bus 🗇 Insert 🔀	Bus & Xpt	
Delay Action	On Retrigger Re-Start 🗎	Delay Action	
Macro Start	Play Count 1	Macro	ME 2 Bgnd A 🛛 Bus Crosspoint 💥
	Test Macro Use Delays Clear Buffer	Cross	point CAM 6 C E Suffer
Parameter Value	Action 1 Q Wait Delete	Parameter	
	Delay 00;00 • Pause 🕑		Delay 00:00 Pause O
	Parameter 1		

In the Delegate menu, select the Key that the animation clip will be displayed on, then press the "X" button to leave the menu.



Touch the menu expand button at the end of the "Crosspoint" parameter (above) and in the menu, select "**Store**", this is the "**Key**" coupled store - for this example Store 9. Touch the "X" button to exit the menu.

					Macro	Edit								Ma	cro Ec	lit	
Xpt 160	Current (	Crosspoir	CAM	6			$\approx$										
							• •		_								
Xpt 61120	STOR	STOR 2	STOR 3	STOR 4	STOR 5	STOR 6				M	E 2 Ke	ey 1	Bus (	rosspoin			
Xpt 121160	GTOD	GTOD	GTOD	CTOD	GTOD	GTOD											
ME Outputs	STOR 7	STOR 8	STOR 9	STOR 10	STOR 11	STOR 12			Cro	osspoint	STOR9						
Stores	STOR 13	STOR 14	STOR 15	STOR 16	STOR 17	STOR 18											
Mattes & Washes	STOR 19	STOR 20														ete	
DVE Outputs																	
Multiviewer																	
Outputs																	

In the popup menu, M/E 2, Key 1 and STOR 9 have been selected. Touch the "X" button to exit the menu.

Then finally, back in the Macro Edit menu, touch the {Insert} button and the macro action is inserted into the action list.

This action will select the Key and the Store with the animated clip.

	Macro Edit		Macro Edit
Bus & Xpt Crosspoint ME Bus	Insert 🔀	Bus & Xpt Crosspoint ME Bus	Insert 🔀
Delay Action Macro Start D0,00 ME 2 Bgnd A Crosspoint	On Retrigger Re-Start	Delay Action Macro Start OCO ME 2 Dynd A Crosspoint OCO ME 2 Key 1 Crosspoint	On Retrigger Re-Start = Play Count 1 Test Use Clear Macro Delays Buffer
Parameter     Value     Action     2       Fill Xpt     XPT 6     Delay     00;00       Parameter     1	Wait     Delete       Pause     C+	Parameter     Value       Fill Xpt     STOR9       Delay     00:00       Parameter     1       Value     ST	Wait     Delete       Pause     Cy       OR9     O

**Step 3** - The next thing to do is to tell the selected Store to play. Select "**Store**" in the drop down menu, then select "**Control**", this allows the user to select the transport controls in the popup selector in the main menu.

Touch the Create Action drop down menu, select Store then Control.

		Macro Edit	Macro Edit
Bus & Xpt			Store Control
Store			Delay Action On Retrigger Re-Start
Peripheral	spoint spoint		00:00 ME 2 Bgnd A Crd Mode Play Count 1
Effects			Test Use Clear Macro Delays Buffer
Outputs			
Parameter Fill Xpt	Value STOR9		Parameter Value Action 3 Wait Detete Fill Xpt STOR9 Delay 00;00 Pause Of Parameter 1 Value STOR9

The Macro Edit menu will be displayed, then touch the popup selector and the **Store Control** menu will be displayed. Touch the **{Play}** button, when the macro action is triggered, this will play the animation clip.

				Macro Edit						
	Store Co	ntrol	nsert 🔀							
Delay	Action			On Retrigger Re-Star	t 🖹			On Retri	nger Re-Start	
	Macro Start ME 2 Bgnd A Crosspo	int		Play Count 1		Macro Sta ;00 ME 2 Bgn	KStore 10	Store Control	$\otimes$	
	ME 2 Key 1 Crosspoin				Clear Buffer	100 ME 2 Key			ays	
Parame		Value	Action 4	Wait Delete		rameter			lete	
Mode Pl	ayFwd	On								
			Delay 00;00	O Pause (	40					
			Parameter 1 Value No 2	Action Toggled			Paran Value			

Then finally, back in the Macro Edit menu, touch the **{Insert}** button and the macro action is inserted into the action list.

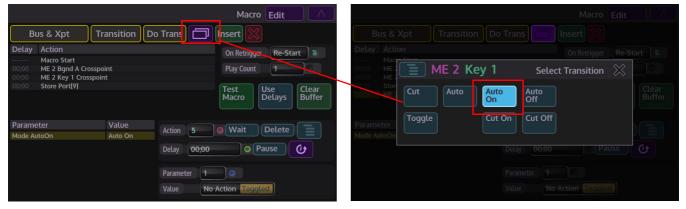
	Macro Edit	Macro Edit
Store Control	Insert 🔀	Store Control 🗇 Insert 🔀
Delay Action Macro Start 00:00 ME 2 Bgnd A Crosspoint 00:00 ME 2 Key 1 Crosspoint	On Retrigger Re-Start Play Count 1 Test Use Delays Clear Buffer	Delay     Action     On Retrigger     Re-Star       Macro Start     ME 2 Bgnd A Crosspoint     Play Count     1       00:00     ME 2 Key 1 Crosspoint     Test     Mester       00:00     Store Port[9]     Test     Delays
Parameter Value Mode PlayFwd On	Action 4 • Wait Delete	Parameter     Value     Action     4     Wait     Delete       Mode PlayFwd     On     Delay     00;00     Pause       Delay     00;00     Pause       Parameter     1     Value     No Action

Step 4 - This is the final step and will add the transition into the macro.

Touch the Create Action drop down menu, and then select **Bus & Xpt, Transition** and Do Trans.

		Macro Edit		Macro Edit
Bus & Xpt	Crosspoint		Bus & Xpt Transition Do Trans	
Delay Action 00;02 <sup>1</sup> ME 2 Bgnd A Cr	Transition		Delay Action Next	On Retrigger Re-Start 🗎
00;03° ME 2 Bgnd A Cro 00;02 <sup>1</sup> ME 2 Bgnd A Cro	Keyer		00;02 <sup>3</sup> ME 2 Bgnd A Crosspoint Setup	
	Color	Test Macro Delays Buffer	O0;00°         ME 2 Key 1 Transition           00;03°         ME 2 Bgnd A Crosspoint	Test Macro Delays Buffer
	Linking		00;04° ME 2 Bgnd A Crosspoint 00;02 <sup>1</sup> ME 2 Bgnd A Crosspoint	
			Parameter Value Action	
			Delay	
			Paramete	
			Value	No Action Auto Trans

In the Macro Edit menu, touch the popup selector and then in the popup menu touch the **{Auto On}** button.



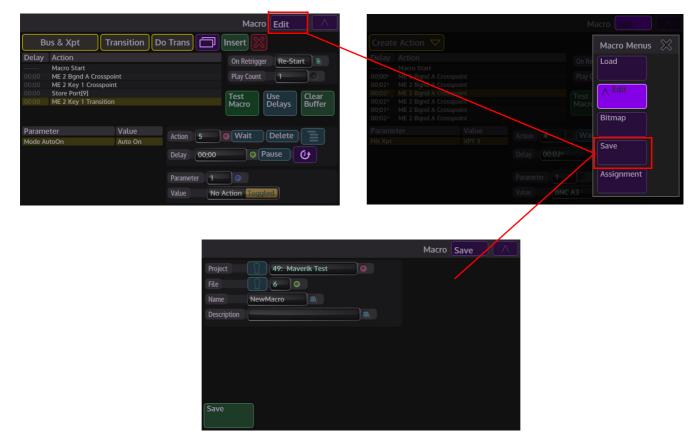
Then finally, back in the Macro Edit menu, touch the {Insert} button and the macro action is inserted into the action list.

	Macro Edit		Macro Edit
Bus & Xpt Transition Do Trans	Insert 🔀	Bus & Xpt Transition Do Trans	Insert 🔀
Delay         Action           Macro Start         00:00           ME 2 Bgnd A Crosspoint         00:00           00:00         ME 2 Key 1 Crosspoint           00:00         Store Port[9]	On Retrigger Re-Start Play Count Test Use Clear Macro Delays Clear Buffer	Delay     Action       Macro Start     Macro Start       0000     ME 2 Bgnd A Crosspoint       0010     ME 2 Key 1 Crosspoint       0010     ME 2 Key 1 Transition	On Retrigger Re-Start Play Count Test Use Clear Macro Delays Clear Buffer
Parameter Value Mode AutoOn Auto On Delay 00:00 Parameter 1 Value No	Wait Delete     Delete     Pause     Action Toggeted	Parameter     Value       Mode AutoOn     Auto On       Delay     00;00       Parameter     1       Value     No	Wait Delete     Pause     O

Macro delays can now be adjusted using the "**Delay**" parameter, the macro can be tested using the **{Test Macro}** button.

## Save the Macro

Remember to save the macro or the changes made will be lost, press the "Edit" menu link button at the top of the menu.



In the **Macro Save** menu, use the "Project" parameter controls to select the required project and then use the "File" parameter to select where the macro is going to be saved. The macro can be given a name and description, when finished, touch the **{Save}** button. Edit an existing Macro using the Using Value and Delegate Parameters

There are two ways to edit a macro, the first is to change the value of a recorded action, this means that the user can select an action in the recorded macro list and use the "**Value**" parameter to change the action of the macro.

For example, if a background crosspoint button was pressed as the macro action, the user can use the "Value" parameter to change the action to a different background crosspoint.

			Macro	Edit	$\ \ \land \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \$	
Create Action 🔽						
Delay Action			On Retrigger	Re-Start		
Macro Start			On Keungger	The-Start		
00;00° ME 2 Bgnd A Crosspoint			Play Count	1		
00;03º ME 2 Bgnd A Crosspo	oint					Delegate
00;01 <sup>1</sup> ME 2 Bgnd A Crosspoint			Test	Jse	lear	 
00;01 <sup>1</sup> ME 2 Bgnd A Crosspoint					Buffer	Button
00;02° ME 2 Bgnd A Crosspoint						
00;01 <sup>1</sup> ME 2 Bgnd A Crosspo	oint					
Parameter	Value			Dalata (		
Fill Xpt	XPT 4	Action 5	Wait	Delete		
		D.L. CODOLL				Value
		Delay 00;011		use 🕑	<b>7</b>	Parameter
						i arameter
		Parameter 1				 
		Value BNC	A4 O			

The second way is to use the **Delegate** menu and select a completely different action, i.e. change from selecting a background crosspoint to selecting an eKey within the selected action.

	Macro Edit	
ME 1 ME 2 ME 3 ME 4	×	
ME 1 ME 2 ME 3 ME 4 Key 1 Key 2 Key 3 Key 4 eKey 1 eKey 2 Bgnd A Bgnd B Bgnd C Bgnd D Util 1 Util 2 Util 3 Util 4		Delegate Menu
eKey 1 eKey 2		
Bgnd A Bgnd B Bgnd C Bgnd D		
Util 1 Util 2 Util 3 Util 4		

The "**Value**" parameter and the "**Delegate**" options can be used to change actions within any previously save macros in any project. This is done by simply selecting the Project and Macro and loading the macro within the "**Macro Load**" menu.

## **Macro Load**

The macro load menu will load a Macro into the active buffer, the macro can then be tested.

	Macro Load				Macro	Load
		File	Name	Description	Date/Tin	ne
	Macro Menus 🔀	0				
	Load	1	NewMacro			
	Luau	2	NewMacro		19 Nov '20	
		3	NewMacro			
		4	NewMacro		19 Nov '20	17:56
0: NewMacro 24: STARTPOINT	Bitmap	Description	0: NewMacro	Tes Sto Mar	p Sto	cate
	Save	Troject				
	Assignment	Cache Used Cache Project	3.92%	Apply	Comm	it Revert Load

In the "Macro Load" menu, the table displays the macro files saved to the current project.

Select a **Project** using the Project parameter control, then use the Macro File parameter to select the macro ready to load.

{Load} - will load the selected macro.

{**Test**} - will run the macro function.

{Stop Macro} - will stop the current selected macro from running.

{**Stop All**} - will stop all macros running.

**{Resume All}** - when a macro is running this button light Orange, if a macro has had a pause inserted, the macro will run until it reaches the pause and will stop, the Resume All Macros button will flash along with the **{Test}** button. Press the Resume All Macros button to start the macro running once again.

If a macro has a bitmap associated with it, this will be displayed in the Gray bitmap display next to the **{Load}** button.

**Cache Project** - parameter is used to select a project where all the macros will be pre-loaded i.e. cached (**Cache Used** is an indicator to show how much memory is used)

Apply - will apply any change to the Cache Project number.

Note: If it is updated as the parameter is changed many files would load/unload as each project was passed!

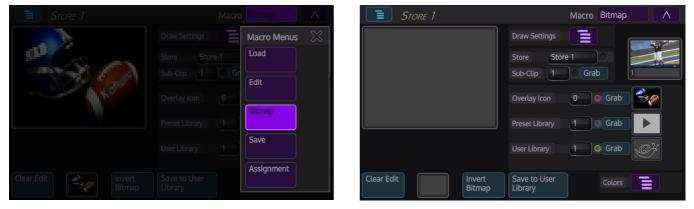
Cached macros can be used by **Timelines** or the Macro Protocol and will always be available so the timeline will be able to trigger them reliably.

The macro cache project is stored under user config with a new enable.

## Bitmap

If a macro is going to be assigned to a User Function Button (OLED Button), a bitmap picture can be generated to place on the button that will be associated with the recorded macro.

Touch the menu link button in the menu bar to display the list of Macro Menus, then touch the **{Bitmap}** button to open the **Macro Bitmap** main menu (as shown below) This will show a large gray square that represents the OLED User Function button.



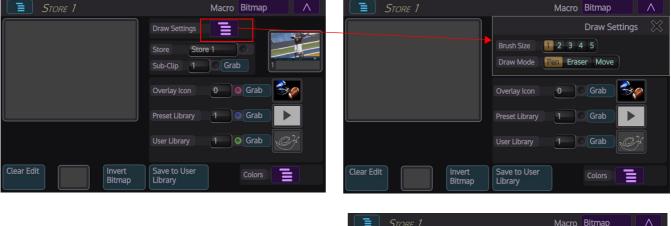
A bitmap from a pre-installed library can be selected using the **Preset Library** parameter. A mimic of the lcon will appear in the larger gray square to the left of the menu. Running through the library of bitmaps, a user defined library can also be created and selected in this way. Once the required icon is found, press the **{Grab}** action button and this will place the library icon on to the large gray square.



To create an icon, touch the Drawing Settings menu link button to open the Drawing Settings menu.

Select **Pen** from the **Draw Mode** parameter and the user can create their own icons by drawing in the large gray area. To delete any mistakes in the grid, select **Eraser** in the **Draw Mode** parameter and rub out the mistake in the grid. There are 5 different brush sizes to select from. Select "**Move**" in the drawing Settings menu and then touching the image that was just created, the user can move the image around the inside the box.

When happy with the icon press the **{Save to User Library}** button and the icon will be saved to the User Library.



Store 1	Macro Bitmap 🛛 🔨
	Draw Settings
$ \land \land $	Store Store 1
$( \cdot \cdot )$	Sub-Clip 1 Grab 1
$\square \square$	Overlay Icon 0 Grab
_	Preset Library 1 Grab
	User Library 1 O Grab
Clear Edit C2 Invert Bitmap	Save to User Library

Touching the **{Grab} Overlay Icon** will allow the user to select an icon from the icon library to save to the User Library and use as a bitmap for a user function button.

Touching the **{Grab} Preset Library** will allow the user to grab a bitmap to use for a user function button.

Touching the **{Grab} User Library** will allow the user to grab a user defined bitmap to use for a user function button.

When happy with the Bitmap in the display, move onto the {Save} menu.

## **Saving a Macro**

Once the macro has been created, configured and a bitmap has been chosen, the next step is to "**Save**" the macro.

Press the **{Save}** menu link button to enter the **Macro - Save** menu, then using the parameter controls, select a **Project** and a **File** where the macro is going to be saved.

The table at the top of the macro save menu, displays all the macro files saved to the current project.



A Name and Description of the macro can also be added by touching the Red attacher button twice, and entering the required name and description using the on-screen or USB Keyboard.

Finally, press **{Save}** and the macro will be saved to the Hard Disk along with any associated Bitmap, Store image or Icon image.

If the user then assigns the macro to a user function OLED button, the bitmap image from the grid is also assigned to the button.

Note: Up to 1000 macros can be saved in a single project.

## **Assigning Macros to buttons**

Press the **{Assignment}** menu link button, the **Macro Assignment** menu will then open, this menu has a parameters to select the Projects and Macro Files with associated Bitmap, Store image or Icon image.

	Macro Assignment			Macro Assignment
	Macro Menus 💥	Macro File Description Project	0: NewMacro	Button Assignment Attach Detach
	Edit Bitmap	GPI Macro on GPI		Latching Latching Detach
	G Save	Macro		GPI Assignment Show Attached Show All
	Assignment			GPI Attach GPI Detach

To attach a macro to a button on the control surface, first select a **Project** using the Current Project parameter and then select a **Macro File** within that project.

Press the Button Assignment **{Attach}** button and the button will light purple color. All the control surface buttons will now go out ready for the user to select a button; non OLED buttons with macros already assigned to them will light up.

Note: The same macro can be assigned to as many buttons as required.

Press the button on the control surface where the selected macro is going to be attached, the panel will return to the normal configuration and the macro will be attached to the button.

To detach a macro from a button on the control surface, press the **{Detach}** button, once again the button will light up. Non OLED buttons with macros already assigned to them will light up. Press the button you want to detach the macro from. The control surface will now return to its normal configuration. The **{Detach}** button in the menu will go out and the macro will no longer be associated with that button.

Note: The macro is not deleted the from the project, just removed from the button it was attached to.

To find out which macros are attached to buttons, use the Macro File parameter to select the required macro, then press the **{Locate}** button, any button on the panel with selected macro associated will light up.

#### **Quick Macro**

In the "Assign" menu, you can record a "Quick Macro" rather than using the normal {MACRO REC} button. The resultant macro is no different, but specifically does not 'Follow ME' and does not 'Use Delays'. More obviously, it facilitates the quick attachment of the macro onto a button without the need to manually save first.

When the macro recording is complete, touch and hold the **{QUICK MACRO}** button. The **'touch'** part will automatically save the macro into an unused slot in the **"Save**" table in the currently selected project, and clear the macro edit buffer.

The 'hold' part will put the panel into "Save & Button Attach" mode (if you are currently in the "Macro - Save" menu, the {Save & Button Attach} button is lit red). Whilst in this state the control surface buttons are lit white and display a pulsating effect. Prior to releasing the {QUICK MACRO} button, the target button for the macro attachment should be pressed and released. This will record the attachment and cancel the Button Attach mode. The {QUICK MACRO} button can now be released.

You can still pause during recording by holding down the **{MACRO REC}** button until it changes color. Recording is resumed when either button (regular or 'Quick') is pressed again.

Additional attachments (of the same macro) can be made by pressing and holding the **{QUICK MACRO}** button. This will trigger the attachment stage again.

#### Pausing a Macro Record Sequence

A Macro can be paused once a record sequence has started, whilst a Macro is being recorded the **{MACRO REC}** button is Red, press and hold the **{MACRO REC}** button and it will turn Orange indicating that it is Paused, at this point the Button Delay timer is also paused. Press the **{MACRO REC}** button once, the button will turn Red and the record process will start once again.

Note: While a macro is paused, Kahuna can still run multiple other macros at the same time.

#### **Appending more Macro Actions to a Macro Sequence**

Additional macro actions can be added to a previously recorded macro sequence, in the **{Edit...}** menu, move the highlight bar to the position above where the action is going to be inserted, and then press and hold the **{MACRO REC}** button. Again the button will turn Red and the record sequence will start, when finished press the **{MACRO REC}** button again to stop recording, and the macro sequence will be added below the highlight bar.

#### **GPI Attach**

This function allows an external device to control a saved macro. The GPI parameter control selects the GPI pin that the external device is connected to. The selected GPI pin and attached Macro on GPI are displayed in the GPI parameter area.

		Macro Assig	nment
Macro File	0: NewMacro	Button Assig	Inment
Description		Attach	Detach
Project	24: STARTPOINT		
GPI	10	Latching Attach	Latching Detach
Macro on GPI			
Q Quick Macro		Locate	
		GPI Assignm	ent
		Show Attached	Show All
		GPI Attach	GPI Detach

To attach a macro to a GPI pin, select the macro using the Macro File parameter, and then use the GPI parameter to select the required GPI pin, then use the Macro on GPI to been selected, press the **{Attach}** button to attach the external device to the macro. The table next to the Attach/Detach buttons displays the GPI pin and the attached macro.

To Detach a macro from a GPI, select the GPI/Macro in the table and then press the **{Detach}** button, this will detach the GPI pin from the external device.

Global - Macros Saving a Macro

# **Global - Stores**

### **Overview**

Stores are one of the most important functions within a Kahuna system, they are used as internal sources and are globally available throughout the system for Crosspoints, SuperKeys, eKeys, Util buses and Auxes etc. Stores are comprised of **Still** images or **Clips** of video and **Audio** files called **ClipTrax**. The Stills, Clips and Audio (ClipTrax - optional) can be either imported into the mainframe via the Filing System menu (*please read the Filing System section of the Kahuna 9600/6400 User Instruction Manual, the second manual supplied with this system*), or "grabbed" into the internal memory from any source connected to the 120 inputs to the Kahuna mainframe.

Stills, Clips and Audio are individual files that are saved into user defined Projects, up to 1000 stills and clip files can be saved into each project.

Stores are an option for the Kahuna mainframe and are usually purchased with an new system. The basic purchased option for stores is:

• 10 Store Outputs with 16 Gigabytes of memory; on 1 internal Control Card in the mainframe.

The maximum that can be purchased or upgraded to is:

• 20 Store Outputs with 64 GB of memory; split between 2 Control Cards.

This gives the user a maximum of approximately:

- 40 minutes of SD video storage
- 8 minutes of HD video storage
- 4 minutes of 1080p video storage
- Over 6 hours of Audio storage

Note: When loading video clips into stores, Kahuna will automatically allocate the correct amount of time (memory) to the store to allow the clip to play once loaded, up to the maximum amount of memory in the mainframe. User defined store memory allocation can also be configured, see User Config - Store Memory Allocation section of the manual (please read the Kahuna 9600/6400 User Instruction Manual, the second manual supplied with this system).

The amount of video storage available will also be affected by the type of video standard set by the user.

Before still images, video clips or audio can be imported into the Kahuna mainframe, the files have to be processed through a software application called **Kahuna Manager**; which converts the original file format into the Kahuna native.sws format.

Note: Kahuna Manager is a free software application. Please contact Grass Vally Customer Support for more information.

## ClipTrax<sup>TM</sup> - overview

A unique feature to Kahuna is that the Stores functionality is now capable of storing audio as well as video, the Audio Store function is known as "ClipTrax". The audio and video data in an individual store are kept in separate areas of memory and can be manipulated independently of each other (described later in this section).

ClipTrax can be used in several scenarios:

- Pre-rendered flying Key clips for transitions.
- Tied to DVE transitions
- · Audio accompaniment on a general background

Audio can be output to any of the up to 64 outputs as "Embedded Audio" this is setup in the **Eng Config - Output Setup** menu . The audio information is output as AES 8 channel audio with video, which is output as SDI.

The ancillary audio can also be passed via the Store functionality, which is the ClipTrax option, the embedded ClipTrax audio can then be passed to the mainframe outputs.

The audio or audio and video can be grabbed from an imported Clip, and then placed in one of the available Stores. Here the audio and video can be manipulated separately to build a clip or the audio can be combined with video in another Store to build a clip.

Audio can be imported using the Filing System Import/Export option from a memory device, and placing the imported audio into a Project.

If imported using a memory device, the file format must be a.WAV file with the following rules applied: 48kHz, 24 bit, that can contain up to 8 channels of audio.

The files can be can loaded or saved maintaining the Audio or Video in a Clip.

Ancillary Data software option must be loaded before audio can be output from the Kahuna mainframe. ClipTrax software option must be loaded before the audio store facility can be used.

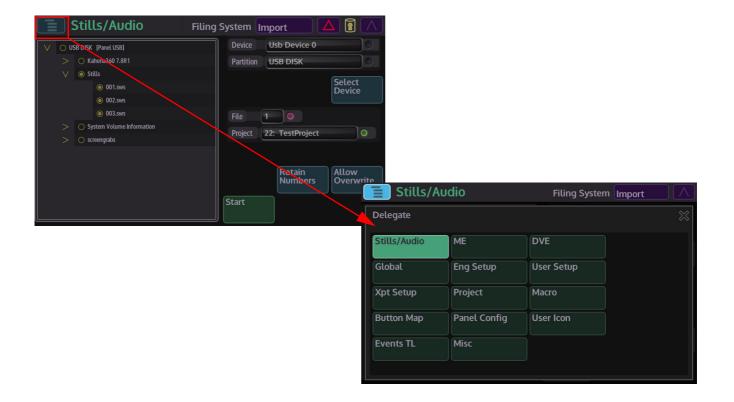
### **Importing Stills and Clips**

One of the uses of the **Filing System - Import** menu, as the name suggests are used to import Stills and Clips from a USB/eSATA memory device.

Filing System Projects DVE Global Still Macro Eng Project o Name Other Filing System factory clips factory clips 2 Import Export Status Export Status Logs Global IBC IP Manage Media 19 28 0 I/O Config Eng Config User Config Events T/L Defragment Default Lock Delete 949.963 GB Panel Config Macros **Button Maps** 453.383 GB Revert Project Commit Project 0 0 File Safe Commit Misc Revert Misc

Touch the **{Projects}** menu link button to open the Filing System options menu.

The Import and Export menus both work in the same way, where the user will select a Project or individual file to import or export, the menu displays a familiar folder structure which is easy to navigate and use. This will be explained in detail over the next few pages.



Importing Stills and Clips is very easy; where the user selects the memory device that the files are imported from, using the "**Device**" parameter. Touch the "**Delegate**" button and in the Delegate menu, select "**Stills/Audio**" (touch the "X" to go back to the Import menu).

Stills/Audio	Filing System Import	📃 Stills/A	Audio	Filing System	ו Import
USB DISK [Panel USB]     S	Device Usb Device 0	Delegate			
✓ ● Stills ● 001.sws	Select	Stills/Audio	ME	DVE	
<ul> <li>002.sws</li> <li>003.sws</li> </ul>	File 1 0	Global	Eng Setup	User Setup	
<ul> <li>System Volume Information</li> <li>screengrabs</li> </ul>		Xpt Setup	Project	Macro	
		Button Map	Panel Config	User Icon	
	Retain Numbers Overwrite	Events TL	Misc		
	Start				

Use the "**Project**" and "File" parameters to select the project and file number where the Stills/Clips are being imported into.

Select the **{Retain Numbers}** if wanting to keep the original file numbers. If this is not selected and there are files with the same number already existing in the Project/File with the same the imported files will be given new file numbers.

Touch the **{Allow Overwrite}** button and any imported files with the same number as existing files, the existing files in the Project/File will be overwritten.

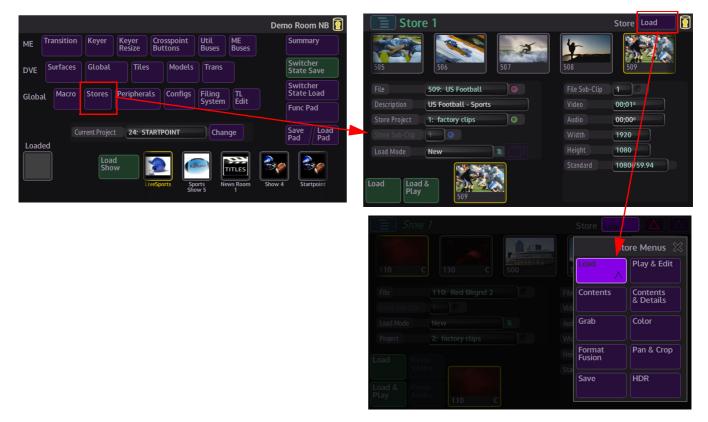
Finally, touch the **{Start}** button and the import process will begin.

An "Import Status" menu will be displayed showing the progress of the import process.

### **Store Load Menu**

The **Store Load** menu as the name suggests is where **Stills** and **Clips** are loaded into Stores. To get to the **Stores** menu, in the Home menu, press the **{Stores}** menu link button from the list of **Global** functions.

The first menu that will appear is the **Store - Load** menu.



To get to all of the other Stores function menus, press the menu link button in the top bar area of the menu and a list of Store menus will appear.

#### Store 1 Store Load 0 Scroll bar of Stills and Clips Use finger to scroll left/right Currently selected: 509: US Football 1 File (still/clip) US Football - Sports 00;010 Load Mode action 1: factory clips 00;00 Project Information about the 1920 currently selected 1080 New still or clip 1080i/59.94 Key and Fill Load & Play Information

Store Load Menu Information

The Store Load menu displays the stills and clips along the top of the menu, that are contained within the currently selected project, File and Project information, displays the Key and Fill information and details relating to the currently selected still or clip.

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#### **Using Store Load**

When the user imports Stills, Clips and Audio files into a Kahuna mainframe, they are all imported into Projects, to find the stills and clip files, use the **Project** parameter to scroll through the projects, notice that when scrolling through the list of projects, the stills, clips and audio file "mini pics" change to reflect what is in each project.

Note: Notice that there is a number in the bottom left corner of the minipic, this is the .sws number given to the still or clip when converting it in the Kahuna Manager software.



In the **Store Load** main menu, the Stills, Clips and Audio Clips are sequenced in numerical order. This number appears on the bottom left of the mini pic starting with 0 and ending at 999 depending on the number given to the still or clip in the Kahuna Manager software.



The minipic is generated from a still or the center frame of a Clip. The bottom right hand corner will display "C" if the image is a Clip.



A "K" in the bottom right corner indicates that the Still or Clip has a Key saved with it. The Key will be loaded into the Coupled Store (*see Store Coupling section of the Kahuna 9600/6400 User Instruction Manual, the second manual supplied with this system*). A "CK" identifies the clip as having a Key associated, and would be used when Keying over a background. A speaker in the top right corner signifies that the store contains audio content.

The two minipics at the bottom of the menu depict the currently selected Still, Clip, Audio file or Fill and Key portions of the file.



Notice in the diagram above that the Fill portion of the file is on the left and the Key portion is on the right.

The column on the right side of the menu displays the details of the currently selected still, clip or audio file. Touching the **Key Details (i)** button will display details if the currently selected clip has a Key (as shown below right).

File Sub-Clip	10
Video	02:20
Audio	00:00°
Width	1920
Height	1080
Standard	1080p/60 A

<b>Store</b>	e 1	Store Load
1	3 CK 101	Key Details 💥 📃
File	3: FORMAT FUSIO	Video 06;36
Description	Penguins - Landscape, Nature	Audio 00;00
Store Project	6: IBC 2015 News	Width 1920
Store Sub-Clip	1_0	Height 1080
Load Mode	New	Standard 1080p/59.94 A
Load Load Play	& #= #=	Standard 1080p/59.94 A

#### Loading a Still or Clip into a Store

Use the **Delegate menu** to select the Store that the Still, Clip or Audio file will load into, then swipe left/right, or use the "File" parameter to scroll through the minipics, then touch the required one, notice that there is a Yellow box around the selected minipic. Once the desired mini pic has selected, touch the **{Load}** button to load the image into the selected store. When loading a clip into a store, the Load button will light up green and stay lit until the clip is loaded. The process may take a few seconds depending on the size of the clip, especially if the clip is in a 1080p video format and a few seconds long.



When selecting a clip, scroll to the required clip and press {Load & Play} and the clip will load into the store and play for the duration of the clip.

If the original Fill store is an audio only file, and the user wants to keep the audio content as part of a new Still or Clip, by pressing the **{Keep Audio}** button the audio content will remain as part of the new Fill store. This could be used for example in a Clip Transition.

This option is the same when an audio file is loaded and the "Keep Video" function is used.

Note: This function will only work when the Load Mode parameter is set to Replace Sub-Clip (as described below) the Keep Video and Keep Audio buttons will be grayed out if Load Mode is on any other setting.

Load Mode Parameter

**New** - Allows the user to load new stills and clips into a store.

Note: Any stills or clips in the selected store will be over written.

**Append To Sub-Clip** - This will send a still or clip to the Sub-Clip folder of a selected store, each time a still or clip is selected by touching the miniclip or pressing **{Load}** the still or clip will be sent to selected store as a sub-clip. In the Append To Sub-Clip mode, if a different still or clip is loaded into sub-clips, the original still/clip will be over written.

Replace Sub-Clip - This will replace a still/clip in the selected Store Sub-Clip.

*Insert Before* - If a number of stills/clips have been loaded into the **Sub-Clip** folder, using the **Store Sub-Clip** parameter to move to a defined point within the sub-clip line-up, a still/clip can be instead before the selected still/clip in the sub-clip line-up.

*Insert At End* - Allows the user to insert a still/clip at the end of the Sub-Clip lineup, to the point at where the sub-clip folder is full.

### Sub-Clips

Sub-Clips is a function that allows up to 31 stills and clips to be loaded into a single store. This allows quick and easy access to stills and clips without having to load each store when it is needed.

<b>Store</b>	e 1	Store Load				Store Conte	nts 🔨 🔨
505	506 <b>507</b>	508 509	1 1/12	2 1/12	3	4	5
File Description	509: US Football •	File Sub-Clip 1 Video <b>00;01</b> º	6 1/3	7	8	9 4/31	10 1/9
Store Project Store Sub-Clip	1: factory clips	Audio 00;00° Width 1920					
Load Mode	New	Height 1080	11 1/9	12	13	14	15
Load Play	8. 509	Standard 1080i/59.94					

### **Creating Sub-Clips**

As mentioned earlier, Sub-Clips are multiple stills and clips that have been loaded into a single store. Sub-Clips are created in the **Store Load** menu, using the **Load Mode** parameter.

store 1	Store Load	<b>E</b> Store 1	St	ore Load
	508 509	Delegate		
505 506 507	508 509	Store 1 Store 2 Store 3	Store 4 Store 5 Store	
File 509: US Football	File Sub-Clip 1	Store 7 Store 8 Store 9	Store 10 Store 11 Store	12
Description US Football - Sports Store Project 1: factory clips	Video         00;01º           Audio         00;00º	Store 13 Store 14 Store 15	KStore 16 KStore 17 KStor	e 18
Store Sub-Clip 1	Width 1920	KStore 19 KStore 20		
Load Mode New	Height 1080			
Load & Play 509	Standard 1080i/59.94			
509	<b>E</b> Store 2	Store Load		
	Current Insert At End	*		
	New Append To Sub-Clip	Replace Sub-Clip		
	Insert Before Insert At End			

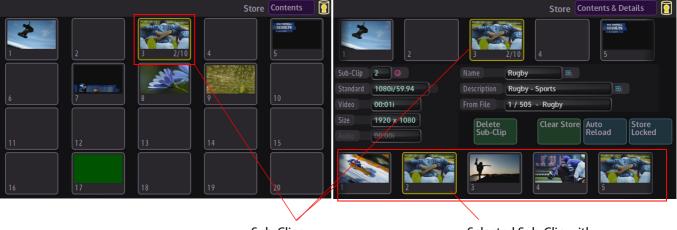
Use the **Project** parameter to select where the stills and clips that will fill the sub-clip store will come from.

Use the **Delegate** menu, select a store that will contain the sub-clips, then use the menu expander in the **Load Mode** parameter set to **"Append To Sub-Clip"** to start entering stills/clips.

Touch a minipic from the selected project and it will be added as the 1st sub-clip in the selected store, look at the **Store Sub-Clip** parameter and it will have "1" highlighted. Set the **Load Mode** parameter to "Insert At End" and then each minipic that is touched will load a still/clip into the store as a sub-clip.

Up to 31 stills/clips can be entered into sub-clips for each store, in the Store Contents menu, the store that contains the sub-clips will have the number of stills/clips loaded at the bottom right of the minipic (as shown above in the right hand side menu).

To see the Sub-Clips that were just loaded, enter the **Store - Contents** menu, the selected store that contains the sub-clips should have a yellow box around the store. Use the top rotary control to scroll through loaded the sub-clips.





Selected Sub-Clip with yellow box around it

Next, enter the **Contents & Details** menu, then using the **Sub-Clip** parameter to scroll through the list of sub-clips, information regarding the video standard, length of clip etc. is displayed in the left side of the menu.

The loaded sub-clips are displayed along the bottom of the menu, the user can use Sub-Clip parameter to scroll through them or use their finger to slide the list horizontally left/right to get to the desired sub-clip.

On the Maverik control surface, if the crosspoint that the store containing the sub-clips is selected, then what ever sub-clip is selected will be displayed on a monitor.

Delete Sub-Clip - will delete the selected sub-clip still/clip out of the store

Clear Store - will clear all sub-clips out of the selected store.

**Auto Reload** - when set to Yes this causes the still or clip to be automatically reloaded from the hard disk whenever the original file location is updated. If the store contains something that was grabbed rather than loaded, then this has no affect.

*Store Locked* - will lock the store down and not allow any sub-clips to be deleted from or any changes made to the selected store.

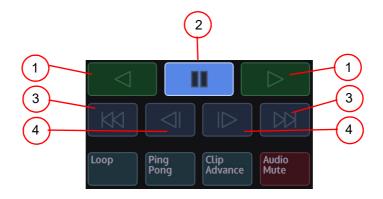
### **Store Play/Edit**

This menu allows the user to play or edit a selected clip.

Touch the menu link button in the menu bar to display the list of Store Menus, then touch the **{Play & Edit}** button to open the **Store Play/Edit** main menu (as shown below).



### **Transport Controls**



1. Play/Rev - plays a clip forwards and in reverse at standard speed

2. Stop - stops a clip

3. Frame Step - steps a clip forward and backward by one frame

4. Steps to Start or End - steps to the end or the start of the clip

Loop - will make the file loop from start to finish indefinitely.

*Ping- Pong* - will make the file run from start to finish then finish back to the start again constantly.

Clip Advance - will move the clip forward by 1 field

Audio Mute - will mute any audio that a clip may contain when playing a clip

#### **Parameter Controls**



Sub-Clips - this displays the number of sub-clips within the selected store.

Position - displays the current run time of the selected clip

**Play Rate** - this can be used increase or decrease the play rate of a clip. It has to be "Enabled" for this function to work. The default is set to "1.00" which is normal speed.

*Playback Mode* - The user has the option to play back Clips in **Field** or **Frame** mode, or **Field 1 Only** or **Field 2 Only** using the **Playback Mode** parameter control.

This feature can be used if a Clip is made from a sequence of individual Stills. If each Still is a Frame in duration the user can Play/Position the Still and in the Stop state, both fields (Full resolution) will be displayed. If the material is Field based then in Frame mode the user will risk seeing flickering images from two different fields.

**Loop Count** - this parameter selects how many times a clip is played back in a loop. When set to "0" the clip will pay until stopped, the parameter can then be adjusted from 1 to 100 loop counts.

*Audio Delay* - if the audio needs to start later than the video, the Audio Delay parameter can be adjusted.

When set to 0% (default) the audio and video will start at the same time, +100% the audio will start after the video finishes. -100% the video starts after the audio has finished.

*Trans Duration*- this parameter displays the current Transition Duration time, the user is able to use this information when setting up an audio/video clip to be used in a clip transition.

### **Using Edit Mode**



Press the **{Edit Mode}** button, then using the **Position** parameter control, the user can setup "in" and "out" points on the Audio/Video Clip.

Position the start point of the Clip as required and then press the **{Mark In Point}**. Touch the **Show Edit Points (i)** button and an **"Edit Points"** information dialog box will be displayed, the dialog box will display the frame number in the **In Point** box.

Next, position the Clip at the end point of the Clip and press the **{Mark Out point}**. Touch the **Show Edit Points (i)** button and the **"Edit Points"** dialog box will display the number in the **Out Point** box.

Press the **{Apply Edit}** button and the changes will be applied to the selected clip Come out of **Edit Mode** by pressing the **{Edit Mode}** button. When the **{Play}** button is pressed, the Clip will only Play, Loop or Ping-Pong, from the set In Point and set Out Point. This new Clip can now be saved.

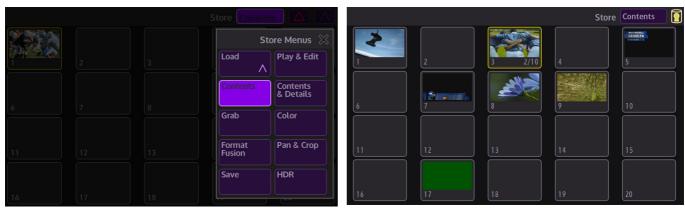
*Follows Fill* - If editing a clip that has an associated Key signal, Key Follows Fill is will also mark the selected In and Out Points for the Key signal in the coupled Key Store.

*Edit Audio* - this allows the user to edit and audio clip in the same way as editing a video clips as described above.

### **Store - Contents**

The Store - Contents menu shows a set of mini pics of stills and clips that are currently loaded into stores.

Touch the menu link button in the menu bar to display the list of **Store Menus**, then touch the **{Contents}** button to open the **Contents** main menu (as shown below).



Note: For Clips, the mini pic will show the center frame of the Clip.

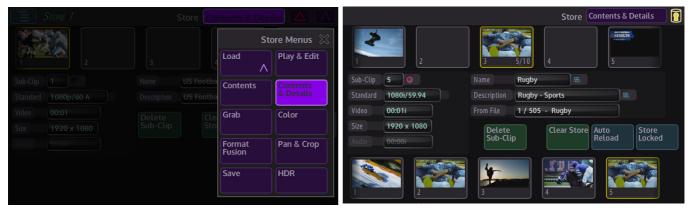
The menu is only used to display the stills, clips, audio files and sub-clips which have been loaded into each store.

If a store has sub-clips loaded, the top rotary control can be used to scroll through the subclips.

#### **Store - Contents & Details**

In the Store - Load menu, press the {Details...} button, this menu will show further information about a selected still or clip.

Touch the menu link button in the menu bar to display the list of **Store Menus**, then touch the {Contents & Details} button to open the Contents & Details main menu (as shown below).



**Sub-Clips** - If a store contains Sub-Clips, the bottom right of a minipic will display the number of stills/clips contained within the store and the Sub-Clips parameter will also display he number of stills/clips contained within the store.

Standard - displays the video standard of the selected clip

Video - displays the length of the selected clip

Size - displays the format size of the selected still or clip

Audio - displays the length of the selected audio file

**Name** - is the short name given to the selected still, clip or audio file. The name is user definable and can be changed using a USB Keyboard. Touch the Keyboard symbol and a cursor will flash in the Name box, enter a name and press the return Key on the Keyboard.

**Description** - is the full description given to the selected still, clip or audio file. The description is user definable and can be changed using a USB Keyboard. Touch the Keyboard symbol and a cursor will flash in the Description box, enter a name and press the return Key on the Keyboard.

Delete Sub-Clip - will delete a selected sub-clip from the selected store

Clear Store - will clear all contents for the selected store including all sub-clips

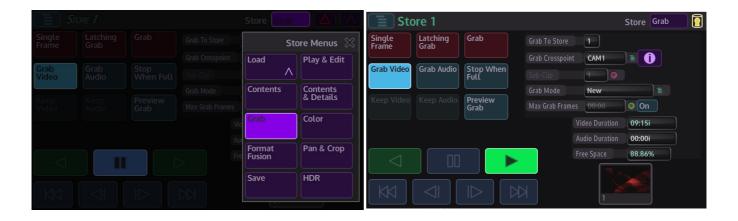
**Auto Reload** - when set to Yes this causes the still or clip to be automatically reloaded from the hard disk whenever the original file location is updated. If the store contains something that was grabbed rather than loaded, then this has no affect.

**Store Locked** - this will set a lock on the selected store in the **Store Contents** menu, the Store will display a padlock symbol top right corner of the mini pic (shown above). If the user tries to change the store once it is locked, a dialog box (shown below) will appear with options.

### Store - Grab

Another option to generate a Still or Clip is the **Store - Grab** option; this allows the user to grab images, video or audio clips from a Crosspoint, DVE Output, M/E Output, Matte/Wash or from another Store.

Touch the menu link button in the menu bar to display the list of **Store Menus**, then touch the **{Grab}** button to open the **Grab** main menu (as shown below).



#### **Taking a Grab**

This example is taking a grab using the most simple method. Using the **Grab Crosspoint** parameter (or pop-up selector), select the required still or video source that contains the images or video content, then using the **Grab To Store** parameter, select the Store into which the grabbed information will be placed and press the **{Grab Video}** button.

If the information that is grabbed is coupled with another store for a Key, the Grab function will grab the Key as defined in the crosspoint mapping into the coupled store.

The minipic at the bottom of the menu will display what is currently grabbed, which will be a still, or the center frame of a clip.

#### **Grab Options**

Single Frame - used to grab a single frame into the store on press.

**Latching Grab** - this will latch the grab function and allow the grabbing of Clips. This option is best used with the Stop When Full to end the grabbing once the Store is full i.e. once all the available frames in the Store have been used.

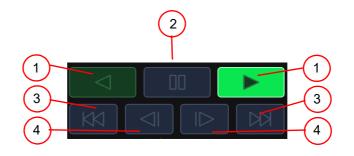
Latching Grab is best used for grabbing Video or Audio files. Pressing the **{Grab Video}** button, which turns the button green, then pressing latching grab for the required grab time will grab video only. Pressing the **{Grab Audio}** button, which turns the button green, then pressing latching grab for the required grab time will grab will Audio only. With the both buttons green, Video and Audio will be grabbed.

Note: This is part of the ClipTrax function, Grab Mode has to be set to "Replace Sub-Clip" for this function to work.

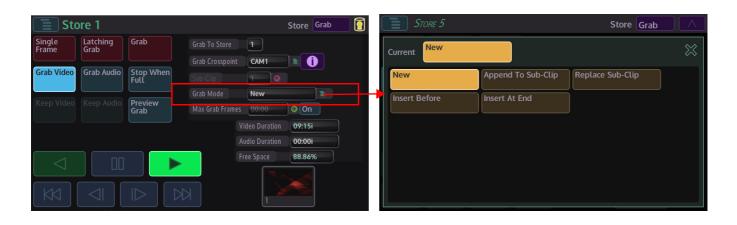
*Grab* - This will continue to grab while the button is pressed. This will also respect the Stop When Full.

**Preview Grab** - This will place a preview of the grabbed image or video into the minipic at the bottom of the screen.

### **Playback Transport Controls**



- 1. Play/Rev plays a clip forwards and in reverse at standard speed
- 2. Stop stops a clip
- 3. Frame Step steps a clip forward and backward by one frame
- 4. Steps to Start or End steps to the end or the start of the clip



**Grab Mode Parameter** 

Note: Any stills or clips in the selected store will be over written.

New - Allows the user to grab new stills and clips into a store.

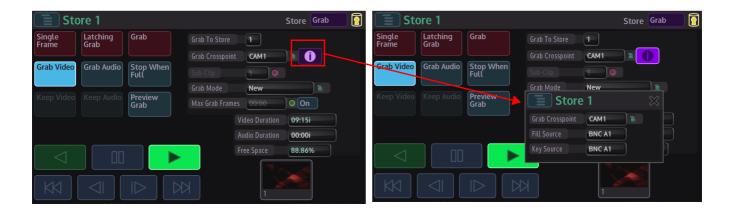
**Append To Sub-Clip** - This will send a grabbed still or clip to the Sub-Clip folder of a selected store, each time a still or clip is selected by touching the miniclip or pressing **{Load}** the still or clip will be sent to selected store as a sub-clip. In the Append To Sub-Clip mode, if a different still or clip is loaded into sub-clips, the original still/clip will be over written.

*Replace Sub-Clip* - This will replace a still/clip grab in the selected Store Sub-Clip.

*Insert Before* - If a number of stills/clips have been grabbed into the **Sub-Clip** folder, using the **Store Sub-Clip** parameter to move to a defined point within the sub-clip line-up, a still/clip can be inserted before the selected still/clip in the sub-clip line-up.

*Insert At End* - Allows the user to insert a grabbed still/clip at the end of the Sub-Clip lineup, to the point at where the sub-clip folder is full.

Touch the **Grab Crosspoint (i)** button, in the dialog box, the user is able to select the crosspoint, Key and Fill source information.



Grab Store - the Store the video/audio grab will be saved in.
Grab Crosspoint - displays the source the Video/Audio is taken from.
Video Duration - length of the video clip
Audio Duration - length of the audio clip
Free Space - the amount of memory left in the system



**Max Grab Frames** - when turned On (the **{On}** button is green), the user is able to set the maximum number of frame that a grab will take. Use the rotary parameter control to set the maximum number of frames.

#### Store - Color

The Store - Color menu, allows the user to change the color balance on each individual store or sub-clips, there are 4 types of control, YUV, RGB, Bleed and Preset.

Touch the menu link button in the menu bar to display the list of **Store Menus**, then touch the **{Color}** button to open the **Color** main menu (as shown below).

STORE 1		Store Color	$\Box[\Delta][\wedge]$	<b>Store 1</b>	Store Col	or
Color Correction	ıb-Clip 1 US Foo	Sto	ore Menus 🚿	Color Correction Off On	Sub-Clip 1 COL FB 4K	
YUV Off On		Load	Play & Edit	YUV Off On	RGB Off On	1
Brightness 0.00%	ift 0.00% O	Contents	Contents & Details	Brightness 0.00%	Lift 0.00%	
Contrast 1.00	Samma 1.00			Contrast 1.00	Gamma 1.00	Normal Preset
Saturation 1.00	Sain 1.00	Grab	Color	Saturation 1.00	Gain 1.00	
Bleed Off On	5-Gain 0.00%	Formet	Dan & Cron	Bleed Off On	S-Gain 0.00%	B & W Preset
		Format Fusion	Pan & Crop		S-Center 50.00%	Sepia
Red 100.00%		Save	HDR	Red 100.00%		Preset
Green 100.00%		Jave	HUK	Green 100.00%		Inverse
Blue 100.00%				Blue 100.00%		Preset

Switch the **Color Correction** On/Off button to On to turn on the color menus. The menu displays a minipic of the selected store/sub-clip and its name.

#### YUV

Switch the YUV On/Off button to On. By changing the parameters, the Brightness, Contrast and Saturation of the store/sub-clip can be adjusted



- Brightness default value is 0.00%, and the range is from -10% to 100%
- Contrast default value is 1.00%, and the range is from -0% to 16%
- Saturation default value is 1.00%, and the range is from -0% to 16%

As each of the above are adjusted notice that the parameters in the YUV Control menu turn Orange and the percentage of adjustment is shown.

#### RGB

In the main Store Color menu, high level adjustments of Lift, Gamma, Gain, S-Gain and S-Center adjustments can be made. By touching the menu expand menu link button, the full RGB menu is displayed.

<b>Store 7</b>	Store Color A	STORE 1	RGB 💥 🛆
Color Correction Off On	Sub-Clip 1 K360 BGD 2a	Color RGB Off On Sub-Clip 1 COL FB 4K	Color Correction
YUV Off On		YUY Lift 0.00% Gamma 1.00 Gain 1	.00
Brightness 0.00%	Lift 0.00%	Gr Red 0.00% Red 1.00 Red	1.00
Contrast 1.00	Gamma 1.00 O Normal	Contr Green 0.00% Green 1.00 Green	1.00
Saturation 1.00	Gain 1.00 O	Satura Blue 0.00% O Blue 1.00 O Blue	1.00
Bleed Off On	S-Gain 0.00% Preset	Bleed S-Gain 0.00% S-Center 50.00%	
Red 100.00% O	S-Center 50.00% Sepia Preset	Red 0.00% Red 50.00%	
Green 100.00%		Green Green 0.00% Green 50.00%	
Blue 100.00%	Inverse Preset	Blue 0.00% Blue 50.00%	

The initial menu is set to a default condition, which shows 3 Master adjustment parameters highlighted by the rotary control active circles. This will give an adjustment of Master Lift, Gamma, Gain and by touching the S-Gain and S-Center top level attachers, these can also be adjusted. Each of these adjustments will alter all three elements of the RGB signal at the same time.

When one of the master parameters is altered, notice that the RGB curve profile changes in the graph situated center of the menu.

	Store						RGB	$\approx$	$\wedge$
Color	RGB 0	Off On	Sub-Cli	ip 1	COL FB 4K		Colo	r ection	
YUV	Lift 0	.00%		Gamma	1.00		1.00		
Bright	Red	0.00%	0	Red	1.00	Red	1.00		
Contra	Green	0.00%	0	Green	1.00	Green	1.00		
Satura	Blue	0.00%	0	Blue	1.00	Blue	1.00		
Bleed	S-Gain	0.00%		S-Cente	er 50.00%			R	
Red	Red	0.00%		Red	50.00%				
Green	Green	0.00%		Green	50.00%				
Blue	Blue	0.00%	0	Blue	50.00%				

Touching one of the attachers allows a more accurate adjustment to the RGB components where the:

Lift - parameters adjust the images Black Level, working on Black or shadow areas.

**Gamma** - parameters adjust the levels between dark/shadow and the mid tones, where the mid tones become brighter or darker; depending on the adjustment made.

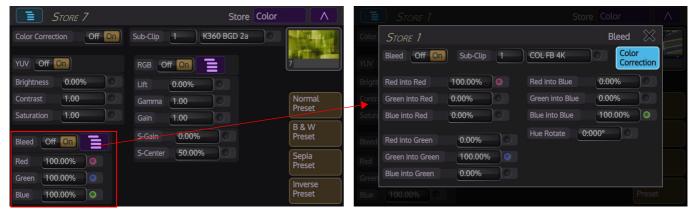
**Gain** - parameters control the White level or highlights, where brighter colors become brighter or darker; depending on the adjustment made.

**S-Gain and S-Center** - the parameters adjust the gain mid tone levels of the S curve and the center point levels of the s curve.

#### Bleed

Color bleed is a situation where a single color will over power the other colors in the RGB signal. By using the bleed function the stronger color can be softened to make the color output more natural, or adjusted to suit a specific need.

By touching the menu expand menu link button, the full Bleed menu is displayed.



The initial menu has a default state where a single adjustment for each parameter menu is active; this will allow the adjustment of the main RGB bleed parameters:

- Red into Red
- Green into Green
- Blue into Blue

Touch one of the attacher to enable all the options in that menu, this will allow a detailed adjustment for each of the R, G and B bleed settings. The adjustments are measured on a - 100% to a +100% scale. Each parameter menu will adjust a single color, i.e. red into red, green into red and blue into red. These changes are also reflected graphically in the RGB bar graphs above the parameter sets.

#### Presets

Presets allow the user to quickly select commonly used preset color options for the crosspoint source, or quickly revert back to the original store/sub-clip color levels.



**Normal** - is the original color levels of the store/sub-clip; without any color correction adjustments.

**B** & W - sets the chroma saturation to zero removing the chroma content, making the signal black and white.

**Sepia** - sets the chroma saturation to zero removing the chroma content, then adds positive portions of Red and Green and a negative portion of Blue to make-up a sepia appearance.

Inverse - Inverts the video signal making the picture a negative of its correct colors.

If the **Normal** preset option is selected, then all color correction controls are Grayed out preventing any adjustments. This is to make sure that the original store/sub-clip can be recalled.

If B&W, Sepia and Inverse are selected, the preset levels can all be color corrected.

### Store - FormatFusion<sup>TM</sup>

The FormatFusion<sup>TM</sup> controls allow the user to change the aspect of Still or Clip, this would be used for example if a portion of an HD Source or Clip needs to be cropped and stretched to fit a 16:9 format or an SD 4:3 source or Clip aspect has to change to fit a 16:9 output. Touch the menu link button in the menu bar to display the list of **Store Menus**, then touch the **{FormatFusion**} button to open the **FormatFusion** main menu (as shown below).

#### Interlace Source

A video signal is made up of 2 fields of picture per frame, the first field contains the odd lines of picture and the second field contains the even lines. Each time the Kahuna creates a new output picture an element of the previous and/or next field is used to fill the missing lines of picture.

Store 1 Store		$[\Delta]$	<b>E</b> Store 1	Store Format Fusion A
Sub-Clip 1	Sto	ore Menus 🚿	Sub-Clip 1	
Interlaced Source Automatic Video Pair Film Pair Single	Load	Play & Edit	Interlaced Source Automatic Video Pair Film Pair	Single Field
Field Dominance Normal Reversed	Contents	Contents	Field Dominance Normal Reversed	
Vertical Softness 0.00%		& Details	Vertical Softness 0.00%	
Crop Off On	Grab	Color	Crop Off On	
Тор О	Format	Pan & Crop	Top 0.00	
Bottom 0 Stretch to	Fusion		Bottom 0.00 Stretch to Fit	
Left 0 O Preserve Rinht 0 Aspect	Save	HDR	Left 0.00 Preserve Right 0.00 Aspect	
			Right 0.00 Aspect	

If the source being used contains a lot of movement, e.g. sports, the difference in picture from one field to the next will be more pronounced than if the source is a static shot e.g. studio discussion then the Interlaced Source parameter should be used to compensate for different source types.

<b>Store 1</b>		Store Forma	t Fusion 🛛 🔨
Sub-Clip 1			
Interlaced Source	utomatic 🛛 Video Pair 📑	ilm Pair Single Field	1
Field Dominance	ormal Reversed		
Vertical Softness 0.	00%		
Crop Off On			
Тор 0.00 О			
Bottom 0.00	Stretch to Fit		
Left 0.00	Preserve		
Right 0.00	Aspect		

The Interlaced Source has 4 parameter settings, these settings are listed below:

**Automatic** is the default setting for Interlaced Source it is the most suitable mode for live programme making. When creating the current field/frame, the automatic setting will use the current input field and a percentage of both the previous and next input fields. Typically used when the output of a camera is fed to the switcher as a continuous stream of footage.

**Video Pair** is used when creating the current field/frame, will use the current input field and a percentage of either the previous or next field to maintain 1-2 or 2-1 pairing. This could be used for pre-prepared material with cuts on known field boundaries to prevent possible subtle artifacts appearing at cut points.

**Film Pair** is used when creating the current field/frame, will directly combine the current input field and either the previous or next field. This mode should only be used if the fields are temporarily matched, e.g. PAL film based sources or some animation.

Single Field is used when creating the current field/frame, will only use the current input field.

Note: Field Dominance and Vertical Detail can only be used with selected Interlaced Source settings.

The **Field Dominance** control selects which field comes first. The **Normal** setting is the default field setting for the input standard, the **Reversed** setting should only be used to correct sources that have incorrect field order (swapped fields). Swapped fields will manifest as very jittery motion.

The **Vertical Softness** control, when in **Boost** mode will add some additional vertical sharpness to compensate for the vertical softening applied by interlaced cameras. This is intended to improve the quality of interlaced sources when up-converting.



The **Pan/Crop** adjustments allow the user to pan around the store/sub-clip to crop areas of the image that may need to be hidden from view. Adjustments can be made to the **Top**, **Bottom**, **Left** and **Right** of the image.

When the **Stretch To Fit** parameter is enabled the cropped picture content will stretched to fill the 16:9 area.

When the **Preserve Aspect** parameter is enabled, this will maintain the aspect ratio of the image e.g. For example, crop left and right the image will zoom vertically to compensate. If a source has become very distorted or stretched, this function will adjust the source outwards from the center in all directions creating a 'zoom in' effect.

Note: This may cause a very small amount of the source material around the edge of the source to be lost.

#### Store - Pan/Crop

This feature allows the user to manipulate the stills/clips that are assigned to one of the stores. There are two types of Pan/Crop available to use:

- Sub-Clip based.
- Framestore Based

In Framestore based Pan/Crop, the adjustment will pan or crop all stills/clips in the selected store and all sub-clips if the store is set to contain sub-clips.

In Sub-Clip based Pan/Crop, if the user selects an individual sub-clip in the sub-clip list, then using the Sub-Clip pan/crop parameters then only the selected sub-clip will have adjustments made to it.

Touch the menu link button in the menu bar to display the list of **Store Menus**, then touch the **{Pan & Crop}** button to open the **Pan & Crop** main menu (as shown below).

STORE 1	Sto	re Pan & Cro	$[\Delta][\Lambda]$	<b>Store 1</b>	Store Pan & Crop
	Store based (saved in Us	Sto	ore Menus 🚿	Sub-Clip based (saved in video file)	Store based (saved in User Config)
	Pan / Crop	Load	Play & Edit	Sub-Clip 1	Pan / Crop Off On 1
	Top 0.0 Bottom 0.0	Contents	Contents & Details	Pan / Crop Off On	Top 0.00%
	Left 0.005	Grab	Color	Top 0.00% O Bottom 0.00% O	Left 0.00%
	Right 0.009	Format Fusion	Pan & Crop	Left 0.00%	Right 0.00%
		Save	HDR	Right 0.00%	Horizontal Pan 0.00 Vertical Pan 0.00
				Horizontal Pan 0.00 Vertical Pan 0.00	

Both have exactly the same adjustments, it is useful to have set the store up on a crosspoint so the store can be displayed on a monitor to assist in cropping or panning.

<b>Store 1</b>	Store Pan & Crop
Sub-Clip based (saved in video file)	Store based (saved in User Config)
Sub-Clip 1	Pan / Crop Off On 1
Pan / Crop Off On Top 0.00% Bottom 0.00%	Top         0.00%           Bottom         0.00%           Left         0.00%           Right         0.00%
Right 0.00%	Horizontal Pan 0.00 Vertical Pan 0.00
Vertical Pan 0.00	

Make sure that the **Crop/Pan** function is turned ON, by touching the **{OFF/ON}** buttons in the Crop parameters.

Crop - adjustment range 0 to 100%, where 0% is full and 100% entirely cropped away.

Use the **Horizontal** and **Vertical** Pan parameters to move the still to the correct position. This function effectively moves the still around under the set cropped borders.

### Store - Save

As the menu suggests this is where stills and clips are saved into Files and Projects. Touch the menu link button in the menu bar to display the list of **Store Menus**, then touch the **{Save}** button to open the **Save** main menu (as shown below).

STORE 1			Sto	ore 1		Store	Save [
File 💿 Nan		×	File 🛛	Name	Description	Date/Time	
106	Sto	ore Menus  🎇	0				
107	Load	Play & Edit	1				
108	LOdu	Play & Eult	2				
109 —	$\land$		3				
110 Red			4				
Name	Contents	Contents & Details	Name		Red Bkgnd 4		
Description	Grab	Color	Description		Red Animated background 4		
Project	Grab		Store Project		24: STARTPOINT		
Store Sub-Clip	Format	Pan & Crop	Store Sub-Clip				
Save With Auto Play	Fusion		Save With Auto		No Yes	Red Bkgnd 4	
Locate Original	Save	HDR	Locate Origin			Save	Save & Clear

This menu will show a mini pic of the Store that is about to be saved (as shown above right).

Use the **Project** parameter to select the project. Select the file number using the control **File** parameter to select where the still or clip will be saved.

Determine if the file is going to be saved with Save With Auto Play - On or Off.

A name and description can be given to the file. Once the selections have been made, press the Gray Save button to save the file.

Using the **Store Sub-Clip** parameter, the user is able to select stills and clips within selected stores, as the **Sub-Clip** parameter is adjusted the individual stills and clips are displayed in the minipic.

### **Store HDR Setup**

Touch the **{Store}** button in the "Home" menu, then in the "Store **Load"** menu, touch the **{Load}** menu link button as shown below. In the popup menu for the Stores Menus, touch the **{HDR}** button to open the **Store - HDR** menu.

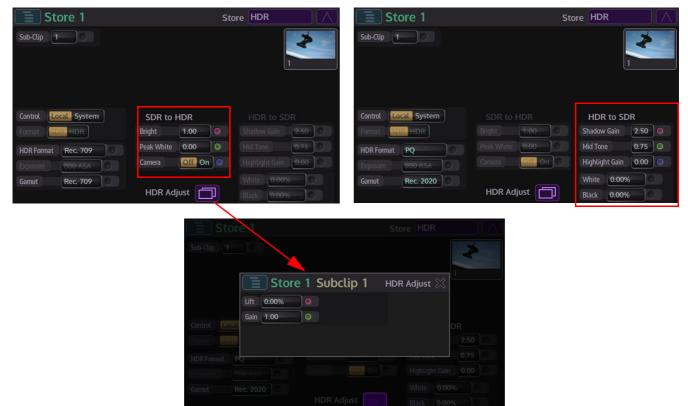
Use the Dialog popup menus to select a still or clip, or use the Sub-Clip parameter. The user then needs to tell the system what format the selected still is set to. This is done using the **HDR Format/Gamut** parameters.

**For example:** If the incoming source is a HDR source and the System Standard is set to one of the HDR settings (e.g. HDR Format = S-Log3, Wide Color Gamut = Rec. 2020) then the incoming source has to be set to the required standard using the Conversion "HDR Format" and the "Gamut" parameters.

STORE 1	Store	HDR		Store 1	Sto	re HDR
Sub-Clip 1		Sto Dad A	Play & Edit Contents & Details	Sub-Clip 1		<b>*</b>
HDR Format Rec. 709 C Gamut Rec. 709 C Lift 0.00% C	Bright 0.75 0	rab ormat usion	Color Pan & Crop	Control Local System		HDR to SDR
	HLG Adjust Gain 1.00	ave	HDR	Format FOR HDR	Bright   1.00     Peak White   0.00     Camera   0110	Shadow Gain   2.50     Mid Tone   0.75     Highlight Gain   0.00
				Gamut Rec. 709	HDR Adjust	White 0.00% OBlack 0.00%

Lift - will be the only other parameter that is adjustable.

This should normally be set to zero, however additional lift adjustment may be required to correct the apparent black level during conversions. This is particularly true for S-Log3 where the defined black level is not always adhered to in practice.



**HLG Gain** - When converting from PQ or Slog3 to HLG on an output the system will allow additional gain to be applied. This is to compensate for the extra range or stops that S-Log3 supports over HLG which would otherwise give dark pictures.

**Parameters** 

HDR Format - sets the HDR Format

**Exposure** - this is only relevant for Arri 'Log C' type curves.

Arri 'Log C' is actually a set of curves dependent on the cameras sensitivity (ASA) or 'Exposure Index' setting.

By setting the camera's Exposure Index on Kahuna the correct curve will be used and the Log C code values will always represent the same scene brightness levels even if different scenes are shot at different exposure indices.

Gamut - sets the required WCG

#### **SDR to HDR Parameters**

Kahuna uses a spatially constant transfer curve to convert SDR to HDR. In its simplest form this maps SDR brightness range 0-100nits to the bottom end of the HDR brightness range (nominally 0-1000nits). Kahuna allows control over the gain required to do this which changes the overall brightness of the HDR image. This is the 'SDR to HDR' - 'Bright' control. In addition some gentle peaking can be included to lift high luminance areas to enhance the highlights in the SDR image and make the HDR version look less 'flat'. This is the 'SDR to HDR' - 'Peak' control. A value of 0.0 gives a pure linear conversion and 1.0 gives maximum enhancement.

Brightness Gain - controls the HDR brightness

**White Peaking** - lifts high luminance areas to enhance the highlights in the SDR image and make the HDR version look less 'flat'.

**Camera** - All HDR conversion is done via a 'Linear Light' stage. This 'Linear Light' stage can either represent the real world light coming into the camera (the 'Scene' light) OR the light coming out of a display monitor (the 'Display' light).

'Camera Matching' mode 'On' will convert via 'Scene' light.

'Camera Matching' mode 'Off' will convert via 'Display' light.

If your source is coming directly from a camera then 'Camera' mode should be 'On'.

If your source is pre-packaged material from a server, such as adverts, 'Camera' mode should be 'Off'.

#### **HDR to SDR Parameters**

This conversion employs gain and soft clipping of the HDR version. HDR content is processed in two stages.

#### 1: White and Black Offset

The 'White' and 'Black' parameters define the amount of black levels or white levels that are to be hard clipped away and the resultant range stretched out. This will enhance contrast of the SDR image at the cost of crushing the blacks and or whites.

#### 2: Tone Mapping Curve

The remaining range of HDR brightness levels are then tone mapped into the SDR range. Two gains are defined one for the lower luminance levels, the 'Shadow Gain' and one for the peak luminance levels, the 'Highlight Gain'. The transition between these two gains is defined over a range called the 'Mid Tone Width'. This gives adjustable soft clipping; the 'Shadow Gain' should be used to control the overall SDR image 'brightness'. The 'Highlight Gain' and 'Mid Tone Width'

should be used to bring down the HDR highlights while retaining some detail within them if desired.

System HDR To SDR Shadow Gain - adjusts the Gain, Highlight Gain & Mid Tone

**System HDR To SDR Mid Tone Width** - defines the Luma region where a curve joins the two gains.

System HDR To SDR Highlight Gain- controls the gain at high Luma levels.

System HDR To SDR White Clip- sets White Hard Clip Level.

System HDR To SDR Black Clip- sets Black Hard Clip Level.

Global - Stores Store HDR Setup

### **Peripherals Overview and Setup**

Note: Before using any of the Peripheral menus on the MAV-GUI it is important to understand how the protocols are setup and assigned using the Eng Config - Protocols menus

### How to Setup a Protocols

The **"Engineering Config - Protocols"** menu is used to set parameters for bi-directional communication with external devices either by one of the RJ45 RS422 ports or selecting one of the IP protocol connections.

Protocols have to be setup in this menu before the Peripherals connections and functionality can be used.

There are 7 Protocol Types to choose from; Tally & UMD, Router, Playout, Editor, Camera, Audio, and Miscellaneous. Each protocol type has a number of available sub-protocols to choose from, that allows the user to connect to a large number of different types of external equipment.

Protocol Type						
Tally & UMD	Router	Playout	Editor	Camera	Audio	Miscellaneous
Tally	Pesa CPU Link P1 Router	Sony BVW-75 VTR	GVG 100	Shotoku Robotics	Calrec	User Definable Protocol
Kahuna Tally	Pesa CPU Link USP Router	Kahuna As BVW-75 VTR	Sony BVS/DVS	VISCA	Yamaha	IQDSK Keyer Control
GVG (Philips) MPK Tally	SW-P-08 Router	BVW-75 Timecode Request	Automation	GV LDK Camera	Ember+	Loopback Test
TSL UMD (Input Only)	As SW-P-08 Router (Xpt)	AMP IP	lgnite			RCS Interaction
TSL UMD (Output Only)	As SW-P-08 Router (Src)	VDCP	RollCall Control			4K Pan and Scan
TSL UMD IP (Output Only)	SW-P-02 Router	VDCP-Simple				RollCall Set Param
GVG (Philips) MPK UMD	As SW-P-02 Router	Odetics VDR Control				Sage EAS
	NVision NP0010- 02 Router	Kahuna As VDCP Video Desk				
	Philips ES Switch Router	EVS AVSP				
	GVG 7000 Native Router	P-Bus				
	Quartz T01 Router	NEXIO Native				
	UTAH Scientific RCP-1	Chyron Graphics				

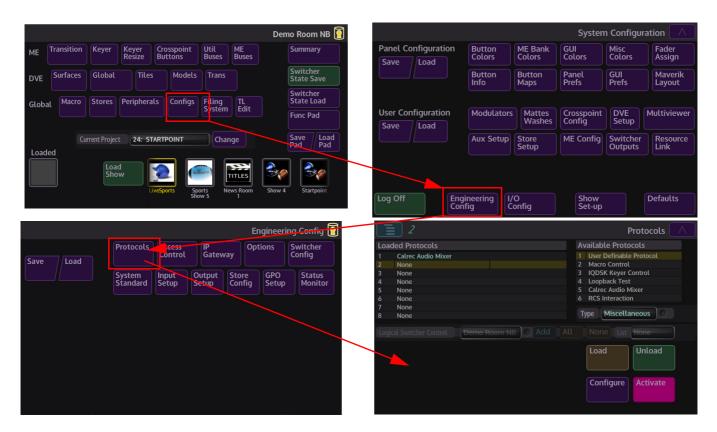
The Available Protocols in their Protocol Types are as follows:

Protocol Type					
Harris (Pass-Through)	LiveTouch				
NP0016-00	LiveTouch Minipic				
NP0017-00D Pc	ort				
NP0017-00D Device					
UTAH RCP-3					
UTAH RCP-3A					

#### **Protocol Setup**

The Protocols menu is used to set parameters for bi-directional communication with external devices either by one of the Serial ports or over IP.

Protocols have to be setup in this menu before the Peripherals functions can be used. To get to the Protocols menu, in the "**Home**" menu, touch the "**Global - Configs**" menu link button, then in the "**System Configuration**" main menu, touch the "**Engineering Config**" menu link button. Finally in the Engineering Config menu, touch the "Protocols" menu link button.



The next step is to setup the protocol ready to use the required Peripheral. The method for setting up a protocol is exactly the same for all protocols, which will be explained over the next couple of pages.

#### How to Setup a Protocol

3	Protocols 🚺
Loaded Protocols         1       User Definable Protocol         2       Catrec         3       None         4       None         5       None         6       None	Available Protocols         1       GVG100         2       Sony BVS/DVS         3       Automation         4       Ignite         5       RollCall Control         Type       Editor
7 None Logical Switcher Control Demo Room NB Add All	Type Editor
	Load
	Configure Activate

Use the **"Type"** parameter is used to scroll through the protocol sets to the required protocols. Then touch the **Available Protocols** parameter to select a protocol from the list, if there are more protocols, use a finger to scroll down/up the list of protocols. The number of protocols available to the user will depend on the protocol options purchased with the system. If the system has been configured as multiple switchers, select the required switcher using the "**Logical Switcher Control**" parameter to select the correct switcher.

Finally, touch the **{Load}** button.

Notice that the protocol has now been added to the "Loaded Protocols" table (below).

3	Protocols 🧕
Loaded Protocols	Available Protocols
1 User Definable Protocol	1 GVG100
2 Calrec	2 Sony BVS/DVS
3 Sony BVS/DVS	3 Automation
4 None	4 Ignite
5 None	5 RollCall Control
6 None	Type Editor
7 None	
Logical Switcher Control Demo Room NB Add All	None List All
Transport RS422 Port	
Serial Port 2	Load Unload
Baud Rate 38400 Data Bits 8 Stop Bits 1	
	Configure Activate
Parity Odd Port Type Slave	

The next step is to configure the protocol.

3	Protocols
Loaded Protocols	Available Protocols
1 User Definable Protocol	1 GVG100
2 Calrec	2 Sony BVS/DVS
3 Sony BVS/DVS	3 Automation
4 None	4 Ignite
5 None	5 RollCall Control
6 None	Type Editor
7 None	
Logical Switcher Control Demo Room NB Add All	None List All
Transport RS422 Port	
Control Downth 2	Load Unload
Serial Port 2	
Baud Rate 38400 Data Bits 8 Stop Bits 1	
	Configure Activate
Parity Odd Port Type Slave	

Touch the **{Configure}** menu link button to enter the **"Protocol Configure**" menu.

3			Drote	acols 🕅
Loaded Pro	3		Protocol Configure 🔀	
1 User D 2 Calrec		3		
3 Sony B 4 None	Protocol	Sony BVS/DVS		
5 None 6 None	Name			
7 None	Transport Type	RS422 Port		
Logical Swit	Serial Port 2	O Type Slave Master		
Transport	Baud Rate 38	3400 🗎		
Serial Port	Data Bits 5	6 7 8 Stop Bits 1 2		
Baud Rate	Parity No.	one Odd Even		
Parity			Apply	

The user is able to select the type of connection to the external equipment that is required, using the "**Transport Type**" parameter i.e Serial or IP.

If a specific setup is needed, the user is able to setup the protocol using the parameters in this menu, as shown above. When the parameters have been set correctly press the **{Apply}** button. The menu will now return to the main menu.

3	Protocols 🛐
Loaded Protocols	Available Protocols
1 User Definable Protocol	1 GVG100
2 Calrec	2 Sony BVS/DVS
3 Sony BVS/DVS	3 Automation
4 None	4 Ignite
5 None	5 RollCall Control
6 None	Type Editor
7 None	
Logical Switcher Control Demo Room NB Add All	None List All
Transport RS422 Port	
Serial Port 2	Load
Baud Rate 38400 Data Bits 8 Stop Bits 1	Configure
Parity Odd Port Type Slave	Configure

Once back in the Protocols menu, touch the **{Activate}** button.

When using one of the Peripherals, the user can see if the protocol has been setup because the top bar of the menu will have the "**Loaded Protocol**" number and the name of the protocol, i.e. "**AMP Ip**" as shown below.

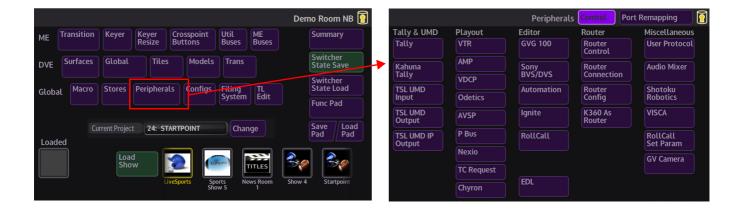
3: Sony	v BVS/DVS	Enable <u>[</u>
Editor O Switcher	Editor	
PP ME 1	Enable	
ME 1 ME 2		
ME 2 ME 3		
ME 3 ME 4		
ME 4 ME 4		
ME 5 ME 4		
Wipe Number Remap	None Sony SMPTE	
Crosspoint Offset	0	
Snapshot Recall	GMEM DMEM DVE MEM Auto	
Snapshot Project	0: Default	
Inhibit Crosspoint K	ev Control	

If the number and the protocol name are not there, the protocol has not been setup.

# **Peripherals Menu's**

The Peripherals menu is used to control various external equipment; such as VTR's, Routers, Under Monitor Displays etc.

Press the **{Peripherals}** button in the Global area in the Home menu to enter the Peripherals main menu.



# Tally & UMD

This menu allows the setup of a Tally serial port that is connected to an external devices. Tally protocol supports 128 Source IDs.

## Tally

					Source ID	os \Lambda
ID	Sou	Jrce				
	CAN	41				
	CAN	<i>I</i> 1				
	CAN	<i>I</i> I1				
4	CAN					
	CAN					
	CAN					
	CAN					
8	CAN					
	CAN					
10	CAN					
11	CAN					
12	CAN					
13	CAN					
14	CAN					
15	CAN					
16	CAN					
17	CAN				Appl	y Default
18	CAN				Sour	ce IDs
10	CA1	4.1				

ID - 1-84 are for BNC inputs and 85-128 are fixed, therefore greyed out.

**Source** - is the 120 BNC inputs, 84 Source IDs are not enough. So the users have to "choose" which 84 out of the 120 BNCs they want to tally.

Any BNC that has not been assigned, an ID will not be tallied.

Default Source IDs button will reset the mapping table to be one to one mapped, i.e. ID 1 is BNC 1, ID 2 is BNC 2 etc.

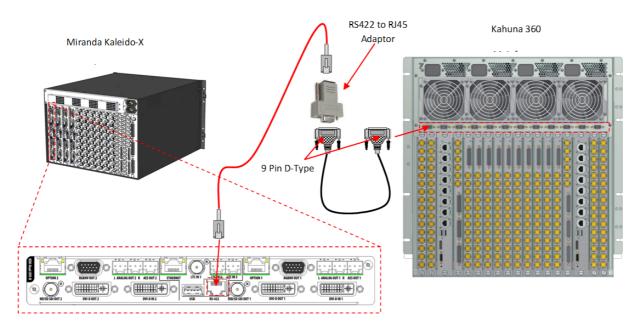
# **Practical Solutions for the Tally Protocol**

Using the Tally Protocol to control PGM/PVW Tally's on the Miranda Kaleido-X

Using the Tally Protocol and Tally Control Peripheral, Kahuna is able to communicate with the Miranda Kaleido-X multiviewer. This option allows the Kaleido-X multiviewer tallys to operate when the Programme/Preview buttons are pressed on the Kahuna Control Panel.

Kahuna and KaleidoX Physical setup

The Kahuna mainframe connects to the Kaleido-X Multiviewer via RS422 using one of the RS422 ports on the Kahuna and RS422 to RJ45 adaptor for the Kaleido-X as shown below.



The protocol will now need to be configures so that it is able to communicate with the Kaleido-X. (5)

**Using the Tally Control Peripheral** 

Press the **{Peripherals}** button in the Global area in the Home menu to enter the Peripherals main menu, then press the **{Tally}** menu link button.

		Peripherals	Control	Port Remapping
Tally & UMD	Playout	Editor	Router	Miscellaneous
Tally	VTR	GVG 100	Router Control	User Protocol
Kahuna Tally		Sony BVS/DVS	Router Connection	Audio Mixer
TSL UMD Input	Odetics	Automation	Router Config	Shotoku Robotics
TSL UMD Output	AVSP	Ignite	K360 As Router	VISCA
TSL UMD IP Output	P Bus	RollCall		RollCall Set Param
	Nexio			GV Camera
	TC Request			
	Chyron	EDL		

Press the Delegate button to select the RS422 Port and set the Extension Enable parameter to "On"

		Source IDs
ID	Source	
	CAM 1	
2	CAM 1	
3	CAM 1	
4	CAM 1	
	CAM 1	
6	CAM 1	
7	CAM 1	
8	CAM 1	
9	CAM 1	
10	CAM 1	
11	CAM 1	
12	CAM 1	
13	CAM 1	
14	CAM 1	
15	CAM 1	
16	CAM 1	
17	CAM 1	Apply Defau
18	CAM 1	Source IDs

In the Eng Config menu, save the protocol configuration for future use. The Kahuna is now setup and ready to communicate with the Kaleido-X.

#### Setup the Miranda Kaleido-X

This section of the document is where the Miranda Kaleido-X is setup to receive information and communicate with Kahuna.

Connecting a PC to the Kaleido-X

1. Connect a PC to the IP port of the Kaleido-X.

2. Open a web browser and type in the IP address of the Kaleido-X.

If the IP address is not known for the Kaleido-X, follow the bullet points below:

Open front door.

Connect a USB mouse to the Output card.

Connect a monitor (VGA or DVI) to the Kaleido-X.

Right click mouse.

Click "Show Dashboard"

The current layout, IP address and software version of the Kaleido-X will be displayed.

Note: If you directly connect the PC to the Kaleido-X, the PC will require a static IP address in the same subnet; but a different address value. For example: If the Kaleido-X address is 172.20.200.43 then set the PC to something like 172.20.200.42.

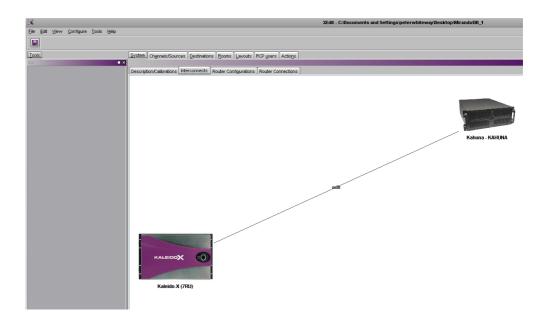
- 3. Install the requested Miranda applications and Open X-Edit.
- 4. Click on the Description/Calibration tab as shown below.

×	
<u>File Edit View Configure Tools Help</u>	
Tools	System Channels/Sources Destinations Rooms Layouts RCP users Actions
1998 🔳 🖬 🖬	
Equipment	Description/Calibrations Interconnects Router Configurations Router Connections
Kaleido-X (7RU) Kaleido-X (7RU) Kaleido-X (7RU) × 2 (with expansion) TSL External Router Encoda Kalypso Andromeda Serial to TCP/IP Dispatcher Router Controller (Pro-Bel SVI-P-08) Serial port test Router Controller (Network Compact) Router Controller (Network Compact) Kahuna	System System KAHUNA Kaleido-X (7RU) [172.31.230.43]

5.Drag "Kahuna" from the equipment tab and drop it into the system list; as show below.

×	
<u>File Edit ⊻iew Configure Tools Help</u>	
Tools	System Channels/Sources Destinations Rooms Layouts RCP users Actions
2222 🗖 🗙	
Equipment	Description/Calibrations Interconnects Router Configurations Router Connections
Kaleido-X (7RU) Kaleido-X (4RU) Kaleido-X (4RU) External Router Encoda Kalypso Andromeda Serial to TC/MP Dispatcher Router Controller (Pro-Bel SVV-P-08) Serial port test Router Controller (Network Compact) Router Controller (Network Compact) Katuna	System

6. Select the Interconnects tab. Drag the mouse from the Kaleido-X to the Kahuna until there is a blue link line between the pictures as shown below.



7. Double click on the Kahuna icon and adjust the Baud rate to 115200 and ensure the other serial settings match those on the Kahuna.

	Properties	
	KAHUNA	
	Boud rate     Data bits     Party     Preview Out     Program Out     Stop bits	115200 © 8 © NONE © 1 1 1 1 1 1
Kahuna - KAHUNA		

8.In the options above, set the Program Out parameter to correspond to the output set to Program on the Kahuna.

9. Then set the Preview Out to correspond to the output set to Preview on the Kahuna.

*Example:* If a Kahuna has BNC A1 set to PGM Tally and BNC A4 set to PVW then set the sliders to be Program Out = 1 and Preview Out = 4.

Note: Only outputs 1-48 can be selected for PGM and PVW.

10. Select the Properties tab on the right, then select the Multiviewer Output used; this is the output of the Kaleido-X that has or is going to be connected to the Monitor.

	Properties		
	KAHUNA ↔ Kaleido-X (7RU)		
	View fitters		
	Connection(s)		
	RS-422 Com Port	Output D	•
		Disconnected	
The summaries of the state of the second sec		Output D	
		Output A	
ALTERNATION AND AND A		Output B	
Kahuna - KAHUNA		Output C	
Ranuna - RAHUNA			

11. At this point it is advised that you save your Config, using the File>Save as option.

12. Select the Tools - System tab. Select the Text column in the channels area and then drag the input label for each Kahuna input from the Kahuna in the Tools tab on the right. Repeat for each input you want to display on the Kaleido-X from the Kahuna.

X							XEdit - C:\	Documents and Settings'y
jie Edit ⊻jew Configure Iools Help								
Tools	System Channels/So	urces Destin	ations Ro	oms Lavouts	RCP users Ac	tions		
				onio   Eufoaro		10 <u>1</u> 0		
System		-	Video	Audio	Text	Ala	rm	
	Channels/Sources	Source ID	video1	audio1	text1	alarm1	alarm2	timecode1
	Input A/Channel 01	1	A01	A01 Emb 1	1 - Input label	1 - Right tally	1 - Left tally	A01 Vid. TC
▼System	/input A/Channel 02	2	A02	A02 Emb 1	2 - input label	2 - Right tally	2 - Left tally	A02 Vid. TC
>KAHUNA	Input A/Channel 03	3	A03	A03 Emb 1	3 - Input label	3 - Right tally	3 - Left tally	A03 Vid. TC
🕨 🌺 Kaleido-X (7RU) [172.31.230.43]	/Input A/Channel 04	4	A04	A04 Emb 1	4 - Input label	4 - Right tally	4 - Left tally	A04 Vid. TC
Internal router (96x48)	Input A/Channel 05	5	A05	A05 Emb 1	InputA-video5			A05 Vid. TC
Free KX Router (96x80)		6	A06	A06 Emb 1	InputA-video6			A06 Vid. TC
	Input A/Channel 07	7	A07	A07 Emb 1	InputA-video7			A07 Vid. TC
	Input A/Channel 08	8	A08	A08 Emb 1	InputA-video8			A08 Vid. TC
	/Input A/Channel 09	9	A09	A09 Emb 1	InputA-video9			A09 Vid. TC
	Input A/Channel 10	10	A10	A10 Emb 1	InputA-video10			A10 Vid. TC
	Input A/Channel 11	11	A11	A11 Emb 1	InputA-video11			A11 Vid. TC
	/Input A/Channel 12	12	A12	A12 Emb 1	InputA-video12			A12 Vid. TC
	Input A/Channel 13	13	A13	A13 Emb 1	InputA-video13			A13 Vid. TC
	Input A/Channel 14	14	A14	A14 Emb 1	InputA-video14			A14 Vid. TC

13. Setting up Alarms, right click and add a level so there is Alarm 1 and Alarm 2. The alarms will trigger the UMD physical tally LED's when PGM/PVW are selected on the Kahuna control surface.

*							XEdit - C:	Documents and Sett
Elle Edit ⊻lew Configure Tools Help								
Tools	System Channels/Sc		antione TRe		RCP users A	ntione		
	System Criginicionae	urces i Desti		Joms   Eavours	s   RCP <u>U</u> sers   Al	Suolis	_	
System		-	Video	Audio	Text	Al	arm	
	Channels/Sources	Source ID	video1	audio1	text1	alarm1	alarm2	timecode1
	/input A/Channel 01	1	A01	A01 Emb 1	1 - Input label	1 - Right tally	1 - Left tally	A01 Vid. TC
▼System	A Input A/Channel 02	2	A02	A02 Emb 1	2 - Input label	2 - Right tally	2 - Left tally	A02 Vid. TC
▼KAHUNA	Input A/Channel 03	3	A03	A03 Emb 1	3 - Input label	3 - Right tally	3 - Left tally	A03 Vid. TC
i input 1	Input A/Channel 04	4	A04	A04 Emb 1	4 - Input label	4 - Right tally	4 - Left tally	A04 Vid. TC
Y-Input 2	Input A/Channel 05	5	A05	A05 Emb 1	InputA-video5			A05 Vid. TC
Preview Tally (left)	Input A/Channel 06	6	A06	A06 Emb 1	InputA-video6			A06 Vid. TC
Program Tally (right)	Input A/Channel 07	7	A07	A07 Emb 1	InputA-video7			A07 Vid. TC
▶-Input 3	Input A/Channel 08	8	A08	A08 Emb 1	InputA-video8			A08 Vid. TC
▶Input 4	Input A/Channel 09	9	A09	A09 Emb 1	InputA-video9			A09 Vid. TC
▶-Input 5	Jinput A/Channel 10	10	A10	A10 Emb 1	InputA-video10			A10 Vid. TC
▶Input 6	Input A/Channel 11	11	A11	A11 Emb 1	InputA-video11			A11 Vid. TC
▶Input 7	Input A/Channel 12	12	A12	A12 Emb 1	InputA-video12			A12 Vid. TC
▶Input 8	Input A/Channel 13	13	A13	A13 Emb 1	InputA-video13			A13 Vid. TC
Innit 9		1.4	814	814 Emb 1	InnutA viden14			A14 Via TC

14. For each input in the list, open and drag Preview Tally (Left) to Alarm 2 from the Kahuna source list in the Tools tab. Repeat for each input you want to display on the Kaleido-X from the Kahuna.

×							XEdit - C:V	Documents and Setting
<u>Fi</u> le <u>E</u> dit <u>V</u> iew <u>C</u> onfigure <u>T</u> ools <u>H</u> elp								
Tools	System Channels/So	urces Destin	ations Ro	oms Lavouts	RCP users Ad	tions		
				1= /	_	-		
System			Video	Audio	Text	Ala	rm	
	Channels/Sources	Source ID	video1	audio1	text1	alarm1	alarm2	timecode1
	Input A/Channel 01	1	A01	A01 Emb 1	1 - Input label	1 - Right tally	1 - Left tally	A01 Vid. TC
▼System	Input A/Channel 02	2	A02	A02 Emb 1	2 - Input label	2 - Right tall	2 - Left tally	A02 Vid. TC
T-KAHUNA 👖	Anput A/Channel 03	3	A03	A03 Emb 1	3 - Input label	3 - Right tally	3 - Left tally	A03 Vid. TC
▶Input 1	Input A/Channel 04	4	A04	A04 Emb 1	4 - Input label	4 - Right tally	4 - Left tally	A04 Vid. TC
T-Input 2	Input A/Channel 05	5	A05	A05 Emb 1	InputA-video5			A05 Vid. TC
Preview Tally (left)	Input A/Channel 06	6	A06	A06 Emb 1	InputA-video6			A06 Vid. TC
Program Tally (right)	Input A/Channel 07	7	A07	A07 Emb 1	InputA-video7			A07 Vid. TC
▶-Input 3	Anput A/Channel 08	8	A08	A08 Emb 1	InputA-video8			A08 Vid. TC
▶Input 4	Input A/Channel 09	9	A09	A09 Emb 1	InputA-video9			A09 Vid. TC
▶-Input 5	Input A/Channel 10	10	A10	A10 Emb 1	InputA-video10			A10 Vid. TC
▶Input 6	Input A/Channel 11	11	A11	A11 Emb 1	InputA-video11			A11 Vid. TC
▶Input 7	Input A/Channel 12	12	A12	A12 Emb 1	InputA-video12			A12 Vid. TC
▶-Input 8	Input A/Channel 13	13	A13	A13 Emb 1	InputA-video13			A13 Vid. TC
▶ -Inni t 9		1.4	814	A14 Emb 1	InnutA uidan14		1	A44 Via TC

15. For each input/source, open and drag Program Tally (Right) to Alarm 1 from the Kahuna source list in the Tools tab. Repeat for each input you want to display on the Kaleido-X from the Kahuna.

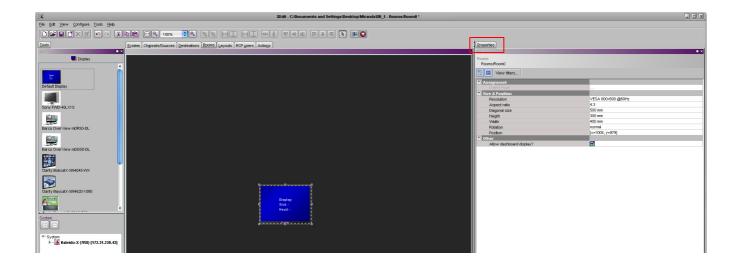
8							Acuit - Ca	Documents and Se
ile Edit View Configure Tools Help								
ools	System Channels/So							
2003 - E		arces   Desti	ianons   Ec	oums   Layouts	FIRCP Users   Au	nolis		
	·							
System	Channels/Sources		Video	Audio	Text	Ala	rm	
· · · · · · · · · · · · · · · · · · ·		Source ID	video1	audio1	text1	alarm1	alarm2	timecode1
	▼System	1	A01	A01 Emb 1	1 - Input la	1 - Right tally	1 - Left tally	A01 Vid. TC
TSystem	KAHUNA	2	A02	A02 Emb 1	2 - Input label	2 - Right tally	2 - Left tally	A02 Vid. TC
T-KAHUNA	Input A/Channel 03	3	A03	A03 Emb 1	3 - Input label	3 - Right tally	3 - Left tally	A03 Vid. TC
i⊧input 1	Input A/Channel 04	4	A04	A04 Emb 1	4 - Input label	4 - Right tally	4 - Left tally	A04 Vid. TC
*-input 2	Input A/Channel 05	5	A05	A05 Emb 1	InputA-video5			A05 Vid. TC
Preview Tally (left)	Input A/Channel 06	6	A06	A06 Emb 1	InputA-video6			A06 Vid. TC
	Input A/Channel 07	7	A07	A07 Emb 1	InputA-video7			A07 Vid. TC
▶Input 3	Input A/Channel 08	8	A08	A08 Emb 1	InputA-video8			A08 Vid. TC
i⊧Input 4	Input A/Channel 09	9	A09	A09 Emb 1	InputA-video9			A09 Vid. TC
▶input 5	Input A/Channel 10	10	A10	A10 Emb 1	InputA-video10			A10 Vid. TC
▶Input 6	Input A/Channel 11	11	A11	A11 Emb 1	InputA-video11			A11 Vid. TC
Finput 7	Input A/Channel 12	12	A12	A12 Emb 1	InputA-video12			A12 Vid. TC
▶Input 8	Input A/Channel 13	13	A13	A13 Emb 1	InputA-video13			A13 Vid. TC
▶Input 9	Input A/Channel 14	14	A14	A14 Emb 1	inputA-video14			A14 Vid. TC
i⊧ linput 10	Input A/Channel 15	15	A15	A15 Emb 1	InputA-video15			A15 Vid. TC
input 11	Input A/Channel 16	16	A16	A16 Emb 1	InputA-video16			A16 Vid. TC
▶-Input 12	Anput B/Channel 01	17	B01	B01 Emb 1	InputB-video1			B01 Vid. TC
▶ Input 13	/input B/Channel 02	18	B02	B02 Emb 1	InputB-video2			B02 Vid. TC
▶-Input 14		19	B03	B03 Emb 1	InputB-video3			B03 Vid. TC
▶input 15	Anput B/Channel 04	20	B04	B04 Emb 1	InputB-video4			B04 Vid. TC
			B05	B05 Emb 1	InputB-video5			B05 Vid. TC

16. At this point it is advised that you save your Config, using the File>Save as option.

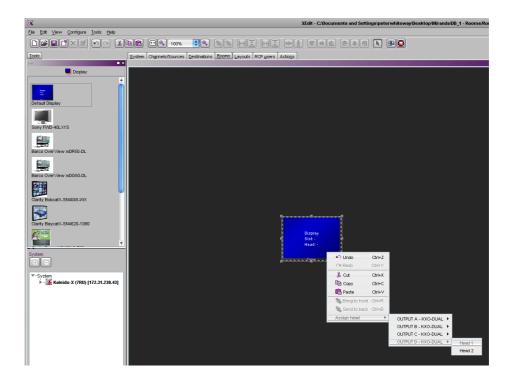
17. Select the Rooms tab and create a new room. For the example below Default Display is selected.

Note: A room is a visual grouping of displays that represent the physical displays positioned and sized as they are installed in an actual room. Multiple operators can share the same room. The grouping of display creates a large virtual monitor wall that operators see as a single large display. The room definition specifies display resolutions and sizes, as well as zones that are used to display full screen layouts.

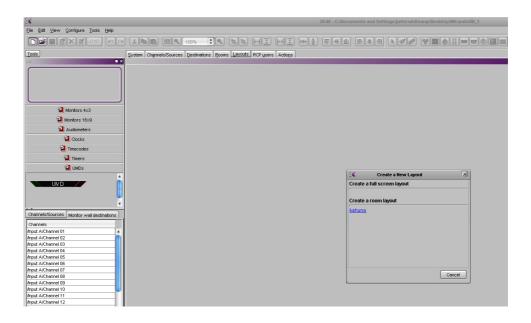
18. On the Properties tab setup the room properties (highlighted below).



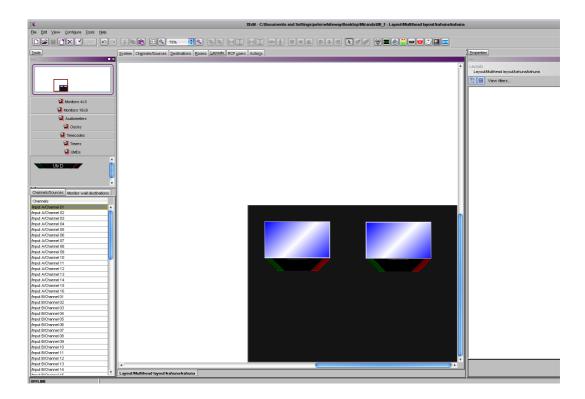
19. Right click the display and select the Kaleido-X output that is going to be connected to the monitor (shown below).



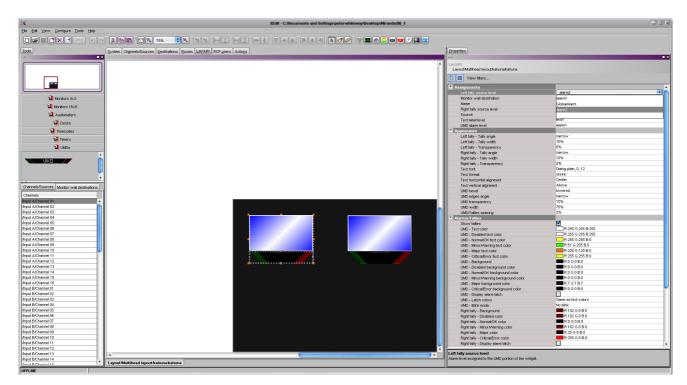
- 20. Save the room.
- 21. Select the Layouts tab and select new.
- 22. Select the room to be used for the layout.



23. Select the monitors and or UMD designs to be used. On the Properties tab select the input (channel) to feed the monitor and UMD.



24. Clicking on the monitor will bring up the monitor properties on the right, setup as desired.25. Clicking on the UMD section will bring up the UMD properties. Setup the UMD properties as desired. Ensure the UMD alarms are setup as Alarm 1 = right tally Alarm 2 = left tally.



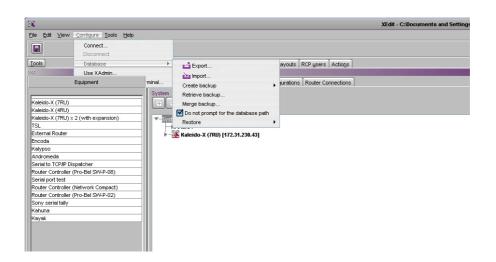
26. Save the setup once complete.

27. If the multiviewer is setup off line then select Configure - Database - Export to have the settings take effect on the multiviewer.

28. If you are online and make any changes, you must select Configure - Database - Import to save a local copy of the database to the PC.

Note: When off line. Selecting Export sends the database to the multiviewer from the PC. Selecting import, imports the database from the multiviewer to the PC.

Note: Be careful of the above otherwise you can export an empty database to the multiviewer loosing the saved setup.



#### **TSL UMD Input**

This protocol allows Kahuna to receive source names from external devices (for example a Router) **Eng Config - Input Setup** menu allows Kahuna to use the source names.

					Input	Names (	Overwrit	e    🕺
Source		Name	Overwrite Slot	e Details	UMD	Matrix	Level	Dest
Slot	Ē			0	Set			
UMD Address	0							

The protocol is setup in the **Eng Config - Protocols** menu, this will allow the Kahuna mainframe to communicate with the external device. Kahuna is able to receive source name information from the external device via the RS422/IP connection or the BNC, each source name is mapped to a UMD address.

From the menu above, assume a source called VTR87 is mapped to UMD address 87 and it is feeding Kahuna input 3, the name "VTR87" will overwrite the default name "BNC3"

	nput	A4		Inp	out Setup	Names		
Source o	Name		Description				Router	
Input A1	CAM 1						Yes	
Input A2	CAM 2						Yes	
Input A3	CAM 3						Yes	
Input A4	CAM 4						Yes	
Input A5	CAM 5						Yes	
Input A6	CAM 6						Yes	
Input A7	CAM 7						Yes	
Input A8	CAM 8						Yes	
Input A9	EVS 1						Yes	
Input A10	EVS 2						Yes	
Input A11	EVS 3						Yes	
Input A12	EVS 4						Yes	
Name		CAM 4						
Description			Course & Marst					
Router Over	write	No Yes O	Copy & Next					

Using the **Router Overwrite** parameter in the **Eng Config - Input Setup** menu, Kahuna is able to receive UMD information from any of the BNC inputs. This information will then be displayed in the input menu's and can also be used for the mnemonic displays on the control surface for selecting sources.

# **TSL UMD Output Only**

This peripheral is used to control and send information displayed in the Under Monitor Displays used in galleries and multiviewers.

Note: The Delegates menu will be empty until the protocol is setup and activated in the Eng Config - Protocols menu on the Soft MLC GUI.

	3: TSL UM	D (Output Only)	UMD Setup	📑 3: TSL UMD (Output Only) UMD Setup 📝
UMD Ad	Idress Output O	Iaiiy Input O Now Next		3: TSL UMD
				(Output Only)
			Background	
			Update	
	Off On Outp	ut Input		
			Refresh	
Display	ME2 OP1	Use BNC Na		

The protocol is connected to Kahuna by one of the serial ports.

Select the UMD address, then select the BNC output from the Kahuna mainframe, the user can then select if they wish to display the output name from the Kahuna system to be displayed on the under monitor display.

A tally is also displayed if the source to the under monitor display is on air.

# **TSL UMD IP Output Only**

This is basically the same peripheral and protocol as the one above except that the protocol connects to the TSL UMD equipment via IP.

The menus work in the same way, with the inclusion of the UMD text display area.

	2: 1	rsl um	id ip (	Output	Onl	y)	UMD Setup	$\land$	📑 2: TSL UMD IP (Output Only) имр Setup 🚺
#	Screen	Display	BNC		UMD				
‴ ●	o	Display	Output O	Input 🔍	Now	Text	Next		2: TSL UMD IP
						ME2 OP1			(Output Only)
Tally		Off On					Backgrou Update	und	
Tally	/ BNC	Output In	nput				Refresh	$ \longrightarrow $	
Use	BNC Name	No Yes							

## **TSL UMD IP Out Setup**

This is very similar to the TSL UMD Output, but is used on IP systems. The peripheral is used to control and send information displayed in the Under Monitor Displays used in galleries and Multiviewers.

	4: 1		UMI	) Setup	2						
#	Screen	Display	Output	Input	Swr	Xpt	UMD				
‴●	o	Display	Corbor	mpor O		лрс	Now	Text		Next	
1			A1					ME2 A/B PGM			
2			A1					ME2 A/B PGM			
3			A1					ME2 A/B PGM			
4			A1					ME2 A/B PGM			
5			A1					ME2 A/B PGM			
6			A1					ME2 A/B PGM			
7			A1					ME2 A/B PGM			
8			A1					ME2 A/B PGM			
9											
10											
11											
	bled	No Yes							Сору	& Next	
Tal Use	BNC Name	Output No Yes					Re	efresh	Backo Upda	pround te	

The protocol is connected to Kahuna over a network via IP Client or IP Server.

The menu has the ability to have Bus Tally as an Option for the A and B, Buses. thus allowing for the Automation XPT to always show the correct BNC name on Air (for example) when using the Automation XPT system.

This will also show the correct name when you override the Automaton from the panel by selecting XPTs manually.

Select the UMD address, then select the BNC output from the Kahuna mainframe, the user can then select if they wish to display the output name from the Kahuna system to be displayed on the under monitor display.

A tally is also displayed if the source to the under monitor display is on air.

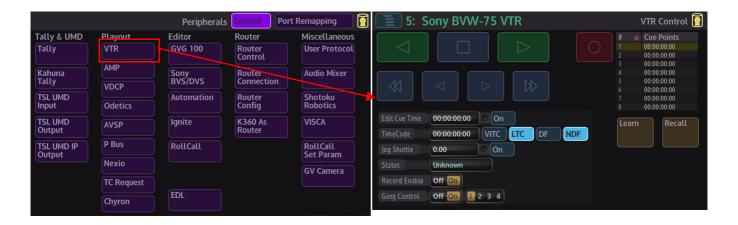
# Playout

# **VTR Control**

This menu will allow control of VTR's that are connected to one or more serial ports which were initially setup using the Port Protocols menu.

The selected device's output will be displayed on a monitor using one of the crosspoints, which was also setup during the setup and configuration process.

Press the {**VTR**} button in the Peripherals menu to open the VTR Control menu.



Select the device using the VTR Port Parameter, the status of the device will be displayed in the Status attacher. Use the standard controls to **Play, Fast Forward/Rewind, Cue** or **Record** the material on the device.

When in **Edit Mode** Cue points can be set up, which can be controlled directly from this menu or can be saved to a button on the panel as a macro.

When selecting **Edit Mode** the Edit Cue Point will stop and you can manually adjust the Timecode to reach a particular frame. Pressing Learn will record that as a Cue point and add it to the list. Turn off Edit Mode until you are ready to Recall this point.

To Recall a Cue point, select it in the list and press **Edit Mode** and press {Recall}. You will notice the VTR will now scroll to that Timecode and wait for further instruction.

Cue Register will scroll through your list of recorded Cue Points.

#### {VITC} - Vertical Interval Time Code

VITC assigns a specific time in hours, minutes, and seconds to each vertical blanking interval in a video recording, along with a frame number. The time code can be used to start a recording at a certain chronological time (such as 5:00:00 p.m.), or it can be used to keep a playback machine synchronized with a master time source. The former application might be used by a home television viewer, while the latter application would more likely be used by a broadcaster.

#### {LTC} - Longitudinal Time Code

LTC is recorded along the length of the tape in the form of a modulated audio signal. The signal may be recorded on a spare audio channel or, in the case of professional equipment, on an "address track" available for just this purpose.

{NDF} - Non-Drop-Frame Format

#### {DF} - Drop-Frame Format

The difference between the two is that with Drop-Frame format the frame address is periodically adjusted (once every minute) so that it exactly matches real time (at the 10 minute mark), while with Non-Drop-Frame format the frame address is never adjusted and gets progressively further away from real time.

Jog Shuttle using the Joystick

The Jog/Shuttle function of a BVW75 VTR can be assigned to the Joystick on the control panel. For each VTR Port this assignment can be Enabled in this menu.



This can be permanently assigned to the Joystick.

# AMP

AMP protocol is an IP Based control structure, it will support 4 channels (VTR1, VTR2, VTR3, & VTR4) in a single device, and also supports multiple devices over different IP Addresses.

Note: Name the device as required e.g. Server1, this name will appear wherever the user needs to select it.

Note: If the server is not on a local network, an IP Gateway will be required.

#### **Using AMP Control**

Kahuna can manage Folder (Bin) selection; set In and Out points, as well as the Standard VTR type commands. It is recommended that Macros and/or Clones are used to assign these controls to the main control surface.



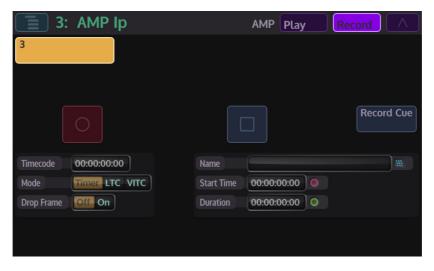
## **AMP Play**

The **Play** menu allows the user to set In/Out points for the currently selected VTR and clip, setting the In/Out points can be done either by using the VTR command buttons to position the clip then press the **{Mark In}** or **{Mark Out}** buttons, or by direct input using the In and Out parameter controls.

To assert the In/Out points, press the **{Load & Cue}** button. To make a Macro that will Cue a clip and assert In and Out points, set the Clip as described above, once happy with the Clip, including its **In/Out** points, press **[MACRO REC]** button on the GUI.

Next, press **{Load & Cue}** button, then press **[MACRO REC]** to stop recording the macro. The macro will now Load and Cue the selected Clip in the Macro main menu. View the macro and notice that it has stored the **Clip Name** and **In/Out Points**. **AMP Record** 

Kahuna can also be used to set-up the Record VTR (Channel).



The record VTR/channel is set on the K2 server. To set the **Clip Name**, and **Timecode** press the **{Record Cue}** button.

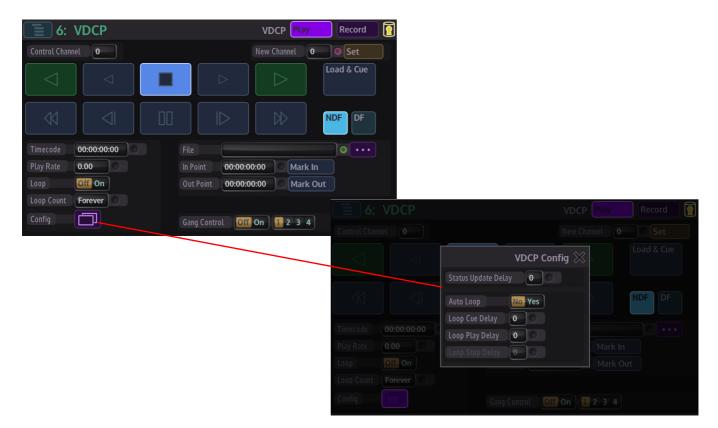
# VDCP

VDCP is a common protocol for video servers. Note that only some commands (which means also functions) are mandatory; many are optional. If optional commands are not implemented in the disk server, VDCP Simple should be selected instead.

A video server is a system that has hard disk storage for video, and one or more audio/video channel connected to it. A channel on a server can play or record or both. The number of channels on the server, and what capabilities they have, are server dependent.

## Playout

Press the {**VDCP Control...**} menu link button, this option is used to control video disk servers. Enter the Playout.



## **Parameter Controls**

**Control Channel-** selects the slot that was setup in the Protocols menu

New Channel - selects a channel on the server. Touch the {Set} button after selection is made.

Timecode - displays the runtime duration of the selected clip

File - selects a clip by name

Play Rate - will allow the user to speed up or slow down a clip and change the direction of play

In Point - displays the play out start position of the selected clip

Out Point - displays play out end position of the selected clip

{Mark In Point} - used to set a play out start point within a clip

{Mark Out Point} - used to set a play out end point within a clip

Loop - will set the loop function On/Off.

**Loop Count** - will loop the clip back to the start a user defined number of set times, or play the clip again forever.

{NDF} - Non-Drop-Frame format

{DF} - Drop-Frame format

The difference between the two is that with Drop-Frame format the frame address is periodically adjusted (once every minute) so that it exactly matches real time (at the 10 minute mark), while with Non-Drop-Frame format the frame address is never adjusted and gets progressively further away from real time.

6: VDCP		VDCP Play	Record
Control Channel 0		New Channel 0	Set
			Load & Cue
			NDF DF
Timecode 00:00:00:00	File		0
Play Rate 0.00	In Point 00:00:0	00:00 O Mark In	
Loop Off On	Out Point 00:00:0	00:00 O Mark Ou	rt
Loop Count Forever			
Config	Gang Control	On 1234	

# **VDCP Ganged Commands**

Ganged Commands - this allows for VDCP devices to be gang rolled or cued. Press the {Gang Commands} button, notice that a new option has appeared in the menu next to the Transport Control buttons, this option displays the available Gang VDCP Ports. There are 4 Gang Ports available.

**Transport Control** 

Play - will play a clip backwards and play forwards at standard speed

Slow - will play a clip backwards and forwards at slow motion speed

Stop - stops a clip

Fast reverse and fast forward

Pause a clip

Steps a clip forward and backward by one frame

# Record

This menu will allow video/audio material to be recorded to the video disk system. The user needs to give the new clip a name and record duration and then press the Record action button.

6: VDCP		VDCP Play Rec	ord
Control Channel 0		New Channel 0 S	et
		NDF	DF
Capacity 00:00:00:00	Name Length	Fixed 8 Variable	
	Name		
		00:00:00:00	
	Start Position	00:00:00:00	
	Timecode	00:00:00:00	

The new name can not duplicate any existing ones and all names are case sensitive.

Capacity - displays the server hard disk capacity

**Name Length** - variable in the File Name Length parameter allows names longer that 8 characters.

**Name** - put in the name of the clip that is going to be recorded Variable in the File Name Length parameter allows names longer that 8 characters)

**Duration** - displays the record duration.

Start Position - sets the start position timecode, for the start of the record process

Timecode - displays time code as the clip is being recorded

## **Transport Control**

Record - starts recording Stop - stops the recording process

#### **Odetics Control**

Odetics protocol is a serial based protocol, that will allow Kahuna to control external equipment such as disk servers.

#### **Using Odetics VDR Control**



### **Controls and Parameters**

Timecode - displays time code as the clip is being recorded

**Loop Count** - when a file is set to play, if the **{Loop}** button is touched, the **Loop Count** parameter can be set to play the file; Forever or from 1 time up to 100 times then stop.

**Mark In / Out Points** - the currently stored In and Out points for the currently loaded clip. Using the attachers and Snap/Normal buttons it is possible to scroll through the clip to reassign a new In or Out point.

{NDF} - Non-Drop-Frame format

{DF} - Drop-Frame format

The difference between the two is that with Drop-Frame format the frame address is periodically adjusted (once every minute) so that it exactly matches real time (at the 10 minute mark), while with Non-Drop-Frame format the frame address is never adjusted and gets progressively further away from real time.

**File** - touch the **{...}** menu link button and the menu below will be displayed. This table displays all available files external tape or equipment.

	Odeti	cs Files 🔨
Name	Number Of Files	0
	Free Space	00:00:00:00
		Refresh List
		Kenesii List

Number Of Files - total number of files in the File List

**Free Space** - displays the free space left on the external equipment disk **Refresh List** - refreshes the file list after file had been deleted or added.

#### **AVSP**

Advanced Video Server Protocol, It allows the running, recording and editing of clips from up to 6 channels with either EVS XT or EVS XT2.

The protocol is connected via a Serial Port, one serial port will support the use of 6 channels of EVS, either in Playback or Record modes.

#### Play

The box in the top middle will display the number of configured EVS channels and their relevant details, these channels are displayed as "Rec" or "Play".



Control Channel - which channel of EVS is being controlled.

**Transport Control** - generic play controls affecting the selected clip includes PLAY Fwd, PLAY Rev, Play <sup>1</sup>/<sub>2</sub> speed fwd, rev, Pause.

Note: It is advisable to {Pause} when the clip is needed again because Stop will stop the clip from running, and has essentially emptied the contents of that channel, it is then necessary to Load and Cue the next clip. This will set the new clip to the marked In point.

Loaded File - displays the loaded file selected from the "File List" in the "File" menu.

Timecode - current Timecode of loaded clip

Play Rate - controls the playback speed of the clip

**Loop** - when a file is set to play, if the **{Loop}** button is touched, the **Loop Count** parameter can be set to play the file; Forever or from 1 time up to 100 times then stop.

In Point/ Out Point - the currently stored In and Out points for the currently loaded clip. Using the rotary parameter controls and the {Mark In}, {Mark Out} and {Save In/Out} buttons, it is possible to scroll through the clip to re-assign a new In or Out point.

**Save In/Out** - saving the In and Out points will save to the server. Editing a clip and re-saving will overwrite the original In/Out points. The action will be validated then Save - this ensures that a clip will always start on field 0 when using Interlaced standards, it is a requirement of the EVS that a clip begin on field 0 and end on field 1.

Length - this is the full length of the of the selected file

File - this is a menu link button the "AVSP Files" menu.

					AVSP	Files
File List				Standard	525/59.94	4:3
ID		Name				
				Number Of Files	0	
				Free Size	00:00:00:0	0
						Refresh Server Data
File						
Start	00:00:00:00					
End	00:00:00:00					Refresh List
Length	00:00:00:00					

File - this is the currently selected file from the File List.

Start - this is the start time of the selected file

End - this is the end time of the file

Length - this is the full length of the of the selected file

# Server Info

Data regarding the server being used which includes:

Standard - this has to be set to the video standard being used by the server.

Number Of Files - the number of files in the selected File List

Free Size - the remaining Free Storage Space

**Refresh Server Data** - this button refreshes the information coming from the server. **Refresh List** - this button refreshes the file list after file had been deleted or added.

#### Record

Recording will create a stream of footage within the selected server, additional recordings are appended onto the end of the stream.

EVS AVSP	AVSP P	lay	Record	
Control Channel	Multi Channe	el		
			Create	e Clip
Timecode 00:00:00:00	Name			
	In Poi	nt 00	:00:00:00	
	Start	Time 00	:00:00:00	0
	End T	ime 00	:00:00:00	

Ensure the "Rec" channel(s) is selecting a video source that is running in the same video standard as the server, it may be useful to route this source and the record channel to a monitor, to be certain that pictures are actually being recorded. The EVS can be set to record from ME Opt's or directly from external sources.

## **Start Recording**

Select the correct "Rec" channel from the top section, then give the Clip a name (it is advisable to give the recorded clip a name as the EVS generates a random number that is not easily remembered), press the **{Rec}** button, record until satisfied, then Stop

Finally press {Create Clip} and the Clip will be saved to the server and appear in the Clip List

Now it is possible to go back to the Play menu and Edit the In and Out points of the newly recorded clip.

# P Bus

This menu allows the control of Peripheral Bus Interface products that can be connected to the serial ports on the Kahuna mainframe. The P Bus products have various external devices connected to them such as VTRs, cameras etc.

The P Bus boxes when "daisy chained" allow more than one device to be controlled through one of the serial ports on the Kahuna mainframe, this allows up to 24 P Bus products to be controlled.

## **P Bus Setup**

On the MAV-GUI, in the **"Home"** menu, touch the **{Peripherals}** menu link button, thin in the Peripherals menu touch the **{P Bus}** menu link button.

						PBus Set	ub 🗸	
Dev 0	Dev 1	Dev 2	Dev 3	Dev 4	Dev 5	Dev 6	Dev 7	
Dev 8	Dev 9	Dev 10	Dev 11	Dev 12	Dev 13	Dev 14	Dev 15	
Dev 16	Dev 17	Dev 18	Dev 19	Dev 20	Dev 21	Dev 22	Dev 23	
Register	Register 0 C Learn Recall							
0	1	2	3	4	5	6	7	
8	9	10	11	12	13	14	15	
Trigger Type Generic Trigger								

**Register** - is a store for the setup and position of the P Bus device, 4096 registers are available. For example, the start point on a VTR tape can be set in a register by selecting a register number at a certain point relating to the time code then pressing the **{Learn}** button. {Recall} will wind the tape back to the start point again which relates to the register point. **Trigger Type** - this is a selection of devices that are pre loaded on to the mainframe hard drive with the trigger functions setup ready to use, the trigger settings for each device are displayed in the Triggers matrix in the menu. Touch the popup selector to display the selection of pre-loaded devices (as shown below).

						PBus Set	tup 🔨	ſ	🔳 1: P-Bu	JS		PBus Se	tup 🔨
Dev 0	Dev 1	Dev 2	Dev 3	Dev 4	Dev 5	Dev 6	Dev 7	ſ	Current Tringer T	Generic	_		*
Dev 8	Dev 9	Dev 10	Dev 11	Dev 12	Dev 13	Dev 14	Dev 15		Current Trigger Ty	pe			$\sim$
Dev 16	Dev 17	Dev 18	Dev 19	Dev 20	Dev 21	Dev 22	Dev 23		Generic	Sony-VTR	GVG-VTR	Sony-EVS	
								-	GVG-EVS	Sony-Digicart	GVG-Digicart	Sony-Frost	
Register	0 0	Learn	Recall						GVG-Frost	Sony-2000CLO	GVG-2000CLO	Sony-2034CLM A	
0	1	2	3	4	5	6	7		GVG-2034CLM AV	Sony-2000CLS X	Sony-2034CLX	GVG-2034CLX	
8	9	10	11	12	13	14	15		Sony-2034CLO	GVG-2034CLO	Sony-2400VS	GVG-2400VS	
Trigger Typ	e Generic	D	Trig	ger					Sony-4000CLN	GVG-4000CLN	Sony-4000CLT	GVG-4000CLT	

# **Button Controls**

1	1: P-BUS     PBus Setup							
Dev 0	Dev 1	Dev 2	Dev 3	Dev 4	Dev 5	Dev 6	Dev 7	
Dev 8	Dev 9	Dev 10	Dev 11	Dev 12	Dev 13	Dev 14	Dev 15	
Dev 16	Dev 17	Dev 18	Dev 19	Dev 20	Dev 21	Dev 22	Dev 23	
Register	0	Learn	Recall					
Cue Up	Play	Slow Motion	Reverse Play	Stop or Still	5	Record	7	
8	9	10	11	12	13	14	15	
Trigger Type	Trigger Type Sony-VTR Trigger							

**Device Selection** - (Dev 0 to Dev 23) Touch one of the 24 available Device Selection buttons to control up to 24.

Learn - will learn an action from an external device and set the action to a register point

Recall - will recall the "Learned" action to the selected register point

**Trigger** - the Trigger facility allows the switcher to be used to control various functions of the connected device such as Play, Stop, Slo-Mo or Reverse Play.

## Nexio

Nexio Server is an Ingest and playback server supporting SD, HD and 1080p formats. Kahuna is able to communicate with Nexio via the AMP protocol over RS422 or IP Client transport types.

**Nexio Play Menu** 

The **Nexio Play** menu allows the user to select files in the playout File List, set In/Out points for the currently selected file, setting the In/Out points can be done either by using the VTR command buttons to position the clip then press the **{Mark In}** or **{Mark Out}** buttons, or by direct input using the In and Out parameter controls.

Once the protocol is activated, Kahuna will automatically download the file list from the Nexio server. Touching the title bar of the **File List** will sort the files by Server, by Name, or by Date. (By Server means it is in the order that the Nexio server sends to Kahuna).

**Control Channel** is the channel for the transport commands to the Nexio server (play, stop, pause etc.). The control channel will initially set to the highest channel number for the server (i.e. if it is a 4 channel server, it will set to 4 at start). If the user needs to change the control channel, change it before pressing **{Load & Cue}**.

The **Sync Channel** is the channel that follows the control channel i.e. if Sync Channel 1 is the Fill channel and Sync Channel 2 is Key channel, the user can set Control Channel for the transport commands to 1 and Sync Channel to 1&2, so the Key channel will always follow the Fill. channel.

If there is no need to edit the In/Out points, Kahuna will use the first/last frame of the clip as the In/Out points; if the user needs to trim the clip, set the In/Out points then press **{Load & Cue}**.



Touch the {File} menu link button to display the "Nexio Files" menu.

Note: It is recommended to setup the loop play parameters before doing a {Load & Cue}.

<b>=</b> 4:	<b>NEXIO</b> Nat	ive	Nexio Files
File List			
Start	00:00:00:00		
Duration	00:00:00:00		Refresh List
Record Date	1900/00/00		

Use the rotary parameter control to select a file in the **File List**. The "**Start**" window displays the start time of the file. The "**Duration**" window displays the full duration of the selected file. The "**Record Date**" window displays when the file was created. Now, go back into the "**Nexio Play**" menu.

7: NEXIO Native	Nexio Play Record
Loaded File	Timecode 00:00:00:00
Control Channel12345678	Sync Channel 1 2 3 4 5 6 7 8
	Image: Description of the second s
	I>     I>     I>     Eject
Play Rate 0.00	File
Loop Yes	In Point 00:00:00:00 Mark In
Loop Count Forever	Out Point 00:00:00 O Mark Out

Press the **{Load & Cue}** button and the file will show in the **"Loaded File"** window. Use the **In Point** and **Out Point** parameters to set the **Mark In/Out** points as required.

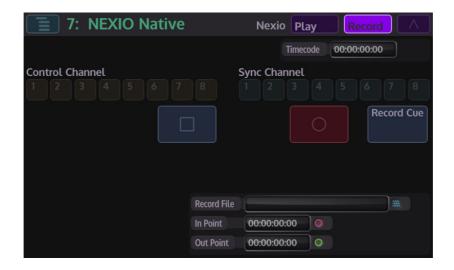
Select the transport command Control Channel, and then select the Sync and then press the Play button.

Play Rate - controls the playback speed of the clip

**Loop** - when a file is set to play, if the **{Loop}** button is touched, the **Loop Count** parameter can be set to play the file; Forever or from 1 time up to 100 times then stop.

**Nexio Record Menu** 

Select the correct **Control** and **Sync Channels**, then give the file a name for playout identification. Set the record **In Point** and **Out Point** and then press the **{Record Cue}** button.



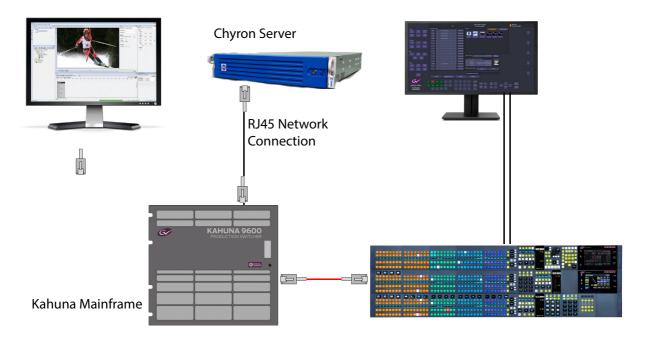
Once happy with the settings press the {Rec} button and recording will commence.

# **Chyron Control**

#### **Overview**

Kahuna is able to connect to Chyron graphics servers to load and play files. The Chyron system is also able to trigger a macro to run. Chyron has a dedicated protocol and control menu on Kahuna.

### Setup - Example of Kahuna connecting to a Chyron System



The Chyron server is connected to the Kahuna mainframe.

**Kahuna Setup** 

In the "Eng Config" menu, touch the **{Protocols...}** menu link button.

10	Protocols 🚺
Loaded Protocols	Available Protocols
9 VISCA	10 P-Bus
10 Chyron Graphics	11 NEXIO Native
11 None	12 Chyron Graphics
12 None	13 LiveTouch
13 None	14 LiveTouch Minipic
14 None	Type Playout
15 None	
Logical Switcher Control Demo Room NB Add All	None List All
Transport IP Client	
Server IP Address 10.162.0.1 / 16	Load
IP Port Number 3811 Channel 1	Configure Activate
Connection Status Pending	Configure Activate

Select "Playout" in the "Protocol Type" parameter, then in the "Available Protocols" table, touch to select "Chyron Graphics" and then touch the {Load} button.

Touch the **{Configure...}** button to display the "Protocol Config" menu.

The "IP Client" transport type is default as "IP Client" and cannot be changed. Change the "Settings" parameter to "User" so that the "IP Client Configuration" parameters can be set, so that Kahuna can communicate with the Chyron server. Enter the IP address of the server, and set the "IP Port Number on Server", then touch the **{Apply}** button. In the Protocols menu, touch the **{Activate}** button and the protocol is setup.

#### **Macro Control**

To allow Chyron to trigger a macro on Kahuna, the "Macro Control" protocol has to be setup on Kahuna.

11	Protocols 🧕
Loaded Protocols	Available Protocols
10 Chyron Graphics	1 User Definable Protocol
11 Macro Control	2 Macro Control
12 None	3 IQDSK Keyer Control
13 None	4 Loopback Test
14 None	5 RCS Interaction
15 None	Type Miscellaneous
16 None	Type Insectaneous
Logical Switcher Control Demo Room NB Add All	None List 1
Transport IP Server	
IP Port Number 50009	Load Unload
Connections	
	Configure Activate
	Configure Activate

In the "Protocol Type" parameter, select "Miscellaneous", and in the "Available Protocols" table select "Macro Control" and touch the **{load}** button.

Touch the **{Configure...}** menu link button and in the Configure menu, select "IP Server" and select the correct port number and touch the **{Apply}** button.

In the "Protocols" menu, touch the **{Activate}** button to activate the protocol.

## **Peripherals - Chyron Control**

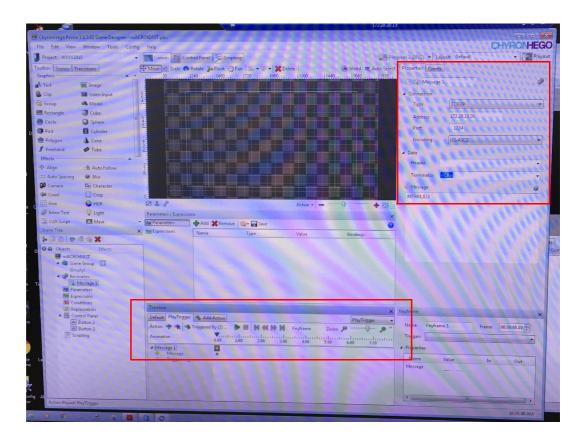
Touch the **{Peripherals}** menu button and then in the "Others" column, touch the **{Chyron Control...}** menu link button.

10: Chyron Graphics		Chyron Control 🚺
10		
Number Of Files <b>O</b> Refresh		
Scene List	ReCue	
		Mute
Load & Cue		

Once connected to the Chyron server, the "Scene List" will display the available clips/files that can be loaded and cued ready to play. Once the clip/file has played you can either select a different clip to load and cue ready to play or re-cue the last clip played. If there is embedded audio with the clip, the audio can be muted.

## **Chyron Triggering a Macro on Kahuna**

The Chyron User Interface can be set to trigger a Macro on Kahuna.



In the "Connection" area of the menu (above top right), enter the IP address of the Kahuna mainframe and the same "Port Number" as was set when setting up the Kahuna protocol menu. Then set the "Encoding" parameter to ASCII.

In the "Message" window, type "MTR01, (number of macro) i.e. 022. This will trigger macro 22 in the Kahuna mainframe.

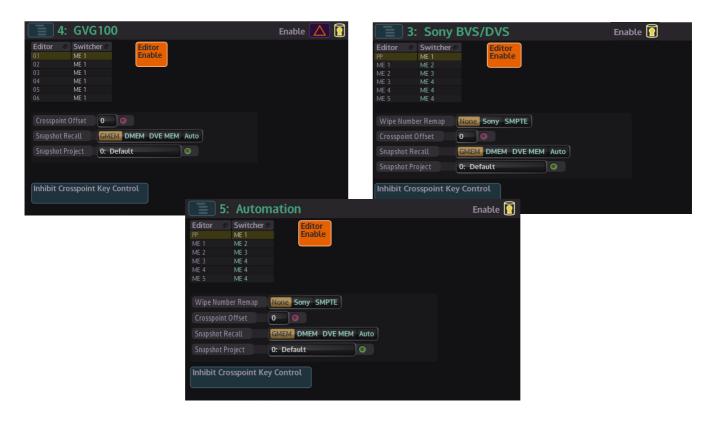
Note: Chyron will only Flash 1 or trigger the macro once on Kahuna and then cut the connection.

# **Editor**

#### GVG 100, Sony BVS/DVS and Automation

Each of the Peripherals options in this list allow external equipment software to control some functionality on Kahuna, such as the Crosspoint selection, DMEM's, GMEM's, Transition Control.

Note: The functions in the GVG 100, Sony BVS/DVS and the Automation peripherals all work in the same way, the difference is in the Protocol setup and what application they are being used for.



Note: For this example, the Sony BVS/DVS protocol will be explained.

Before using this protocol the required DMEM/GMEM's that are going to be used with the external equipment software should have been saved into the "Default" Project on the Kahuna mainframe. This will enable external equipment software to recall the required DMEM's and GMEM's.

Set the **Snapshot Project** parameter to "Default", this enables the external equipment software to recall the required DMEM's and GMEM's.

The **Snapshot Recal** parameter should be set to "Auto" allowing the external equipment software to recall DMEM's or GMEM's, but the user can also set the parameter to only allow DMEM's or GMEM's to be selected.

#### **Crosspoint selection**

Note: Sony BVS/DVS editor protocol directly drives linked M/E parameters for Bus Control and Transition Control.

3:	Sony	BVS/DVS	Enable <u>[</u>
Editor O	Switcher (	Editor	
	ME 1	Enable	
ME 1	ME 2		
ME 2	ME 3		
ME 3	ME 4		
ME 4	ME 4		
ME 5	ME 4		
Wipe Numbe	er Remap	None Sony SMPTE	
Crosspoint C	Offset	0 0	
Snapshot Re	call	GMEM DMEM DVE MEM Auto	
Snapshot Pro	oject	0: Default	
Inhibit Cros	sspoint Ke	y Control	

The "**Editor**" parameter can be offset with the "**Switcher**" parameter, so for example the "PP" (Program/Preview) can be set to any of the available Switcher MEs.

The 160 configurable crosspoints and 68 fixed crosspoints can be selected to the following buses for each M/E (PP, M/E1, M/E2, M/E3, M/E4, M/E5) in the User Config - Crosspoint Mapping menu.

- BKGD A
- BKGD B
- Key 1 FILL
- Key 1 Key
- Key 3 FILL
- Key 3 Key
- Key 4 FILL
- Key 4 Key
- Key 2 FILL
- Key 2 Key

Crosspoint selection for Auxes

160 Configurable crosspoints and 64 fixed crosspoints can be selected to be used with the Aux Buses.

# **Transition Control**



The following can be included in a transition:

- Transition mode can include background, Key1, Key2, Key3 and Key4 in the transition
- Transition Types includes MIX, WIPE, NAM and MATTE MIX
- Auto Transition Start
- Transition rate
- Transition Preview
- Transition Key On/Off

## **Key control**

	ME 2 Key 1	Keyer S	Setup 🔨	ME 2     Key 1     PRIMARY     Keyer Control
Keyer Resize Transition Bus Color	Foll Linear Luma Chroma Off On Mix Wipe Matte Clip Off On			Full     Linear     Luma     Chroma     Invert     Current Priority       Coupled Key     Split Key     Self Key     2     3       Resize     Keyer Setup     V     4
Border Masks Matte Fill	Off On Local Off On		Keyer Control	Mix Wipe Matte Clip Mix Prw Key Prw Fill
Matternit		Secondary Key On	Primary Key On	Time Ker / 01:00° Auto Off Cut On Off Reverse Flip Flop
		Secondary Key Pvw	Primary Key Pvw	Auto On Cut Auto On On Cut Off

The following can be selected to affect Key1, Key2, Key3 and Key 4 for each ME

# Matte Fill On/Off

- Key Source Select Auto (Coupled), Split and Self
- Mask Source Select Util Mask 1 & 2, Preset Mask 1 & 2
- Key Type Full, Linear, Luma and Chroma
- Key Edge Modify Border, Extrusion, Shadow and Outline
- Key Invert
- Key Mask
- Key Over (Layer) Key1 only

#### **Wipe Pattern Generator**

Up to 100 wipe patterns can be selected for transitions and these are mapped to the Mosart software using either the Kahuna, Sony or SMPTE numbering maps.

3: Sony	BVS/DVS	Enable <u>[</u>	<b>ME 2 K</b>	ey 1	Transition Control Setup	2
Editor         Switcher           PP         ME 1           ME 1         ME 2           ME 2         ME 3           ME 3         ME 4           ME 4         ME 4           ME 5         ME 4	Editor Enable		Transition   Mix     Time   01:00°     Time Offset   00:00°			
Wipe Number Remap	None Sony SMPTE		Wipe Pattern     1       Wipe Softness     0.00			
Snapshot Recall Snapshot Project	GMEM DMEM DVE MEM Auto 0: Default		Profile <b>50.00%</b> Shape Linear Cubi	ic C Cubic S Sine C Sine S		
Inhibit Crosspoint Ke	y Control					

Also included for control:

- Wipe Pairing (Multiplier On/Off)
- Wipe Direction Reverse, Flip Flop
- Wipe H Modulation (On/Off)
- Wipe V Modulation (On/Off)
- Wipe Positioner (On/Off)
- Wipe Aspect (On/Off)
- Wipe Border (On/Off)
- Wipe Split (On/Off)
- Wipe Softness (On/Off) (softness set to 50%)

# Snapshot

3:	Sony	BVS/DVS	Enable 🚺
Editor O	Switcher C	Editor	
PP	ME 1	Enable	
ME 1	ME 2		
ME 2	ME 3		
ME 3	ME 4		
ME 4	ME 4		
ME 5	ME 4		
Wipe Numb	er Remap	None Sony SMPTE	
Crosspoint C	Offset	0 0	
Snapshot Re	ecall	GMEM DMEM DVE MEM Auto	
Snapshot Pr	oject	0: Default	
Inhibit Cro	sspoint Key	/ Control	

**Snapshot Recall** - Loads a Kahuna DMEM or GMEM (1 ~ 255 in the Default Project) from specified Snapshot Project.

Snapshot Project - selects the project that contains the snapshot

### RollCall

This function allows external equipment running RollCall control software to control certain function on Kahuna.

Only one instance of the RollCall Control protocol can be loaded at any one time. This instance of the protocol is system wide, facilitating control of all the available switchers on the mainframe.

RollCall software will need to be installed onto a computer/laptop which is connected either directly to one of the network ports on the Kahuna mainframe or to a network switch that is connected to the Kahuna mainframe.



The "Yes/No" parameters allow the user to filter incoming RollCall messages to affect certain areas of Kahuna.

Touch the **{Editor Enable}** button to enable the protocol, then select which RollCall message is enabled.

The RollCall software is able to control the functions listed above, but with the crosspoint control, the RollCall software is able to control both internal crosspoints in the Kahuna mainframe and allow crosspoints to be controlled via an external control panel.

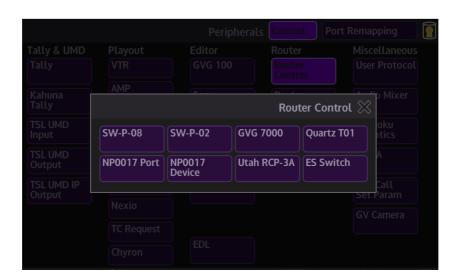
# Router

## **Router Control**

This function allows Kahuna to control a third party router. For this section of the manual we are going to look at the Grass Valley Router.

Touch the **{Router Control}** menu link button and the menu be low will be displayed. Touch the type of router control required.

Note: For this example the SW-P-08 router Control will be selected. All of the router controllers in listed in the menu below basically work in the same way.



## **Router Controller - SW-P-08**

6:	SW-P-08	Router			Crosspoint C	Control [	<b>6</b> :	SW-P-0	8 Router			Crosspoin	it Control 👔
Dest 1	Dest 2	Dest 3	Dest 4	Dest 5	Dest 6	$\left  \right  < \left  \right $	Dest 1	Dest 2					
Dest 7	Dest 8	Dest 9	Dest 10	Dest 11	Dest 12		Dest 7	Dest 8					
									6: SW-P	-08 Route	r Route	er Size 🔀	
									er Of Destinations				
								Numb	per Of Sources	2048 🔘			
Matrix 1	O Destina	tion Dest	1 0	Protect	UnProtect LO	ock	Matrix	1 O Dest	tination De	st 1	Protect	UnProtect	
Level 1	Current						Level						
	New So	urce	0	Take									
Size	Salvo	1 •		Take	Record		Size						

This menu enables the user to control the router Names.

When first connecting to a system controller, Kahuna will request all the names for the Destinations, Sources and Levels.

The user can then assign names to the 12 destination buttons and 12 next source selection buttons.

**Router Control Buttons** 

**Protect** - protects a destination

Take - Sets a crosspoint

UnProtect - removes the destination protection

#### **Router Overwrite**

The Router Overwrite menu allows the incoming source names from the external Router to overwrite the names given to the inputs on Kahuna.

In the "Engineer Config - Input Setup - Names" menu, the "Router Overwrite" parameter has to be set to "Yes" before using the menu below.

	Input A1		Inp	out Setup 🚺	lames
Source	Name	Description		Overwrite	TieLine O
Input A1	BNC A1			Yes	Yes
Input A2	BNC A2			Yes	Yes
Input A3	BNC A3		4	Yes	Yes
Input A4	BNC A4			Yes	Yes
Input A5	BNC A5			Yes	Yes
Input A6	BNC A6			Yes	Yes
Input A7	BNC A7			Yes	Yes
Input A8	BNC A8			Yes	Yes
Input A9	BNC A9			Yes	Yes
Input A10	BNC A10			Yes	Yes
Input A11	BNC A11			Yes	Yes
Input A12	BNC A12			Yes	Yes
Name	BNC A1		Router Overwrite	No Yes	Copy & Next
Descript	ion		Tie Line	No Yes	

Using the **Matrix**, **Level** and **Destination** parameters, map the Router Destinations connected to the Kahuna inputs, as shown in the above table.

					R	outer Co	onnection	2
Source	Name	Connection Det	ails					
Source	• Name	Slot	I	UMD	Matrix	Level	Dest	
Input A1	BNC A1	6: SW-P-08 Router						
Input A2	BNC A2	6: SW-P-08 Router						
Input A3	BNC A3	6: SW-P-08 Router						
Input A4	BNC A4	6: SW-P-08 Router						
Input A5	BNC A5	6: SW-P-08 Router						
Input A6	BNC A6	6: SW-P-08 Router						
Input A7	BNC A7	6: SW-P-08 Router				1		
Slot 6: S	W-P-08 Router	0	Matrix	1				
			Level				Set	
			Destination	n <b>1</b>			Jet	

In the "**Router Connection**" menu, select the Kahuna Input, the Destination and the level then press **{Set}**. Repeat for each connection.

## **K360 As Router Control**

This section details the protocol for controlling Kahuna Switcher as routers. It covers the protocol used to Change the Source Destination

				As Router Co	ntrol 🔨
Matrix	Destination	Bus	Lock		
1		ME 1 Key 1			
1		ME 1 Key 1 Split Key			
1 •		ME 1 Key 2			
1		ME 1 Key 2 Split Key			
1	4	ME 1 Key 3			
1		ME 1 Key 3 Split Key			
1		ME 1 Key 4			
1		ME 1 Key 4 Split Key			
1	8	ME 1 eKey 1			Lock
1		ME 1 eKey 1 Split Key			
1	10	ME 1 eKey 2			
1	11	ME 1 eKey 2 Split Key			
1	12	ME 1 eKey 3			
1	13	ME 1 eKey 3 Split Key			Lock All
1	14	ME 1 eKey 4			
1	15	ME 1 eKey 4 Split Key			
1	16	ME 1 Background A			Unlock All
1	17	ME 1 Background B			
1	10	ME 1 Declarge and C	0		

**Matrix** - Defines which M/E to retrieve source names (Router Control systems can contain a multiple of Matrix configurations).

**Destination** - Physical outputs associated with currently selected router matrix.

Bus - selects the source on the currently selected ME Matrix

				As Router Control
Matrix	Destination	Bus	Lock	
		ME 1 Key 1		
		ME 1 Key 1 Split Key		
		ME 1 Key 2		
		ME 1 Key 2 Split Key		
	4	ME 1 Key 3		
		ME 1 Key 3 Split Key		
	6	ME 1 Key 4		
		ME 1 Key 4 Split Key		
1	8	ME 1 eKey 1		Lock
1		ME 1 eKey 1 Split Key		
1	10	ME 1 eKey 2		
1	11	ME 1 eKey 2 Split Key		
	12	ME 1 eKey 3		Lock All
	13	ME 1 eKey 3 Split Key		LOCK All
1	14	ME 1 eKey 4		
	15	ME 1 eKey 4 Split Key		
1	16	ME 1 Background A		Unlock All
	17	ME 1 Background B		
	10	ME 1 Deel/agained C		

Lock - this button locks the currently selected bus

Lock All - will lock all the buses displayed in the table for the currently selected ME matrix only.

# Miscellaneous

#### **User Protocol Setup**

This function will allow the user to type in an ASCII or Hex command/message and send it out to a serial port.

6: User Defi	inable Protoco	ol	Commands
# o Name	Command		Length
1		*	
2			
3			
4			
5			
6			
7			0
8			0
9			0
10			0
11			0
12			0
13			0
14			0
Command Hex ASCIL 05			Canal
Name			Send

#### **Controls and Parameters**

**Command** - selects between ASCII or HEX as a command form. Command code written by the user. When in ASCII mode, Kahuna can be made to also send out two special characters.

To send a carriage return character type "<cr>" and "<lf>" for a line feed character

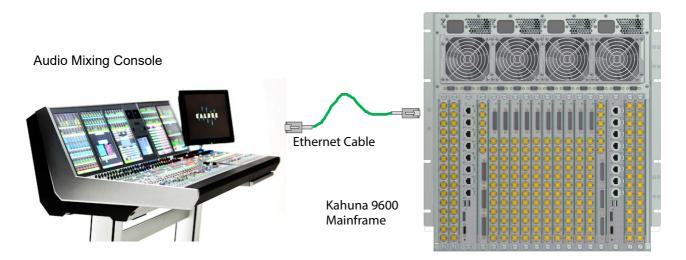
Name - name (function) given to the command data.

Length - command length

# **Audio Mixer**

Kahuna is able to communicate with and have a level of control over several different audio mixing consoles; in this case a "Calrec Audio Mixing Console".

Kahuna is able to communicate with a Calrec Audio Mixer via an IP Client protocol that enables Kahuna to take control of any Fader Level, Main Fader Level, Cut, PFL on the Calrec console.



What is required:

- Kahuna Mainframe running V7.2r1 software or greater
- Kahuna Maverik Control Surface with Audio MAV/s
- Connect the Kahuna Mainframe to the Calrec console via Ethernet cable

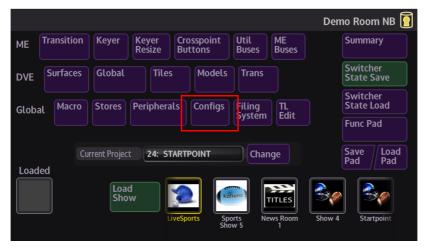
Note: The Kahuna Calrec protocol allows Kahuna to connect to the following Calrec Audio consoles: Artemis, Apollo and Summa consoles.

Note: Make sure that the MAV-Audio-Fader modules have been added to the Maverik Module Layout.

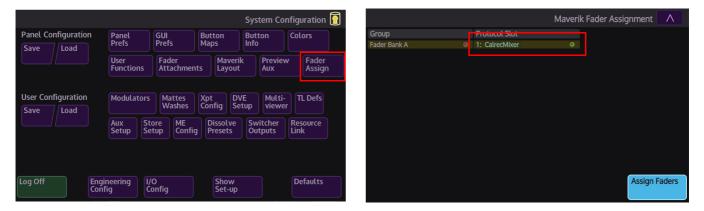
Setting Up Calrec on the MAV-GUI

In the "Home" menu, touch the "Configs" button to open the "System **Configuration**" menu.

**Fader Assign** - when a MAV-Aud-Fader module is connected to the control surface, this allows parameter controls to be assigned to the physical faders on the module (see the "Panel Config - Fader Attachments" section of the manual. Note: the "Fader Assign" button and the "Fader Attachments" menu are only available/visible if a MAV-AUD-FADER is attached to a Maverik control surface and setup in the "Maverik Layout" menu).



Touch the **{Fader Assign}** button, in the **Fader Assign** menu, touch the required Fader Bank to highlight and attach the rotary controls. Using the Protocol Slot parameter, select the Calrec Audio Mixer, then, touch the **{Assign Faders}** button.



Go back to the "Home" menu and touch the **{Peripherals}** menu link button, Then in the Peripherals main menu touch the **{Audio Mixer}** button.

								Der	mo Room NB 🛐			Peripheral	s Control Por	t Remapping
ME	Transition	Keyer	Keyer Resize	Cross Butte	spoint ons	Util Buses	ME Buses		Summary	Tally & UMD Tally	Playout VTR	Editor GVG 100	Router Router Control	Miscellaneous User Protocol
DVE	Surfaces	Global	Tile	25	Models	Trans			Switcher State Save	Kahuna Tally	AMP	Sony BVS/DVS	Router	Audio Mixer
Glob	al Macro	Stores	Peripher	als	Configs	Filing System	TL Edit		Switcher State Load Func Pad	TSL UMD Input	VDCP Odetics	Automation	Router Config	Shotoku Robotics
		rrent Projec	+ <b>2</b> 1. 0	TARTPO		Char			Save Load	TSL UMD Output	AVSP	Ignite	K360 As Router	VISCA
Load									Pad Pad	TSL UMD IP Output	P Bus Nexio	RollCall		RollCall Set Param
		Loa Sho	w	2	Ka		IITLES				TC Request			GV Camera
				LiveSport	s Spo Sho	orts Ne w 5	ws Room 1	Show 4	Startpoint		Chyron	EDL		

## Fader Map Menu

The first menu to appear will be the "Fader **Map**", the **Fader Map** menu allows the user to map the faders and buttons on Kahuna to faders and buttons on the Calrec console, it also allows the user to create a user defined fader setup. The Fader Map displays the faders 8 at a time, touching the **{Delegate}** button will allow the user to select faders from 1 up to 128.

📃 7 C	alrec 9-16				Audio Mixer Fader Map		1: Calrec	1-8	Audio	Mixer Fader M
Fader But Fader 1 Cut Fader 2 Cut	ton Type Channel Channel	Source 17 10	Cut Cut	Off Off	Level Label -inf -inf	Maverik Fader	1: Calrec			
ader 3 Cut ader 4 Cut	Channel Channel		Cut Cut	Off Off	-inf -inf	Ender1				
Fader 5 Cut Fader 6 Cut	Channel Channel		Cut Cut	Off Off	-inf -inf	Fader 4 Eader 5	1-8	9-16	17-24	25-32
Fader 7 Cut Fader 8 Cut	Channel Channel		Cut Cut	Off Off	-inf -inf	Fader 6 Fader 7	33-40	41-48	49-56	57-64
						Fader 8 Maverik	65-72	73-80	81-88	89-96
Fader 1 Bu	utton <b>Cut</b> Level	inf dB				Fader 1	97-104	105-112	113-120	121-128

#### **Fader Map Controls**

#### Maverik

Fader - this column relates to the faders on Kahuna.

**Button** - this is the fader button function that can be applied to the buttons above the faders in the Fader menu. Use the parameter controls to scroll through Cut, PFL and AFVO (audio follow video override.

#### Console

**Source** - this column relates to the fader channels on the Calrec console. Use the parameter control to set which fader on the console is attached to the fader in Kahuna. Use the menu expander at the bottom of the menu to quickly select the source required.

**Type** - this indicates whether the fader channels are assigned or not, it will display "Unassigned" or "Channel".

Cut - this displays if the "Cut" function is set or available to use.

**PFL (Pre Fade Listen)** - this displays if the "PFL" function is set or available to use. PFL allows the user to listen to the channel's audio at a point before the fader takes effect.

**Level** - this is the fader audio level; the level is default at 0dB, with a range of - infinity to 10dB. **Label** - this takes any name given to a fader from the external audio console.

	: Calrec						Fader Map							Fader Map
ader 💿 ader 1	Button O	Type Channel	Source 0	Cut Cut	PFL Off	Level O	Labei	Eader 1	Button Cut	Channel			Audio M	lixerMenus 🖇
ader 1	Cut	Channel	10	Cut	Off	-inf		Fader 2		Channel	10		Fader Map	Faders
der 3	Cut	Channel		Cut	Off	-inf		Fader 3				Cut	Fader Map	Faders
		Channel						Fader 4						
		Channel			Off	-inf		Fader 5					E-d-r	<b>F</b> - U \ <i>C</i> - I
	Cut	Channel		Cut	Off			Fader 6					Fader Buttons	Follow Video
der 7 der 8	Cut Cut	Channel Channel		Cut Cut	Off Off	-inf -inf		Fader 7 Fader 8					Doctoris	
													Sources	Mains
ader 1	Button Cu	t Level	-inf dB					Fader 1						
														Fader Attachments

Touch the menu link button at the top of the menu to display the audio mixer menu options.

#### Faders

Touch the menu link button at the top of the menu and then touch the **{Faders}** menu link button.

The fader controls in the Faders menu correspond to the faders setup in the **Fader Map** menu. At the top of each fader is the button that was selected in the fader map menu, in the menu below it is the **{Cut}** button.



Sliding the faders will also control the faders on the Maverik control surface and on the Calrec console.

#### **Fader Buttons**

Touch the menu link button at the top of the menu and then touch the **{Fader Buttons}** menu link button.

As displayed in the diagram below, there are 3 types of button in the audio mixer, each row of buttons corresponds to the 8 faders that have been selected in the **Delegates** menu. The button functions are:

Cut - this will cut the fader On or Off.

**PFL** - (Pre Fade Listen), this displays if the "PFL" function is set or available to use. **PFL** allows the user to listen to the channel's audio at a point before the fader takes effect.

**AVFO** - (Audio Follow Video Override), this is an audio sources that is associated with a video source which can be linked in the Fader Map.



Select the button you want to assign to the faders for each fader bank and then touch the **{Assign}** button.

#### **Follow Video**

Touch the menu link button at the top of the menu and then touch the **{Follow Video}** menu link button.

The **Follow Video** Menu Allows the user to map a Crosspoint a to Calrec Protocol Source. When the Tally Now is configured (Eng Config, Output Setup, Tally) Any Crosspoint that goes to air, the assigned protocol audio source will also go to air. If there is no transition time, the audio faders will use the quick crossfade cut buttons to follow, otherwise they will follow the transition time to air. The user can also set a transition delay, which delays the time for the audio source to go to air after the crosspoint has gone to air.

	PT 1 7:	Calrec			Audio Mix	er Follow	Video 🚺
Crosspoint			Protocol	Cut	Trans	Delay	Non Mute
0	Source	Name	Source 🕤		Time 🕤	Time 🕤	Level <sub>O</sub>
XPT 1	Input A1	BNC A1	None	Cut	00:00°	00:00°	-inf dB
XPT 2	Input A2	BNC A2	None	Cut	00:00°	00:00°	-inf dB
XPT 3	Input A3	BNC A3	None	Cut	00:00 <sup>o</sup>	00:00 <sup>o</sup>	-inf dB
XPT 4	Input A4	BNC A4	None	Cut	00:00°	00:00°	-inf dB
XPT 5	Input A5	BNC A5	None	Cut	00:00°	00:00°	-inf dB
XPT 6	Input A6	BNC A6	None	Cut	00:00°	00:00°	-inf dB
XPT 7	Input A7	BNC A7	None	Cut	00:00°	00:00 <sup>o</sup>	-inf dB
XPT 8	Input A8	BNC A8	None	Cut	00:00°	00:00 <sup>o</sup>	-inf dB
		DNIC AO			00.000	00.000	inf dD
Source	None						
Trans Time	00:00°						
Delay Time	00:00º	-0					
Level	-inf dB				Follow \	/ideo Off	On

Note: The AFVO button allows the user to manually override the Follow Video. On - takes the fader out of the follow transition. Off - takes the new follow level and places it back into the follow transition.

Sources - There are 192 protocol sources/faders that can be configured/mapped from the Calrec Mainframe. The Sources Menu shows the current status of this map.
Mains - There are 16 protocol sources for the Main Faders that can be configured/mapped from the Calrec Mainframe. The Mains Menu shows the current status of this map.

	1: Calrec	1		Audio	Mixer	Sources	$\wedge$		1: Calrec	1	Audio Mixer Mains
Source O	Туре	Cut	PFL	Level	Label			Source	PFL	Level	Label
1	Channel	Cut	Off	-Inf dB				1	Off	-inf dB	
2	Channel	On	Off	-1.7 dB				2	Off	-inf dB	
3	Channel	On	Off	-4.2 dB				3	Off	-inf dB	
4	Channel	On	Off	0.4 dB				4	Off	-inf dB	
5	Channel	On	Off	-1.0 dB				5	Off	-inf dB	
6	Channel	On	Off	-9.8 dB				6	Off	-inf dB	
7	Channel	On	Off	-6.9 dB				7	Off	-inf dB	
8	Channel	On	Off	4.5 dB				8	Off	-inf dB	
9	Channel	On	Off	-2.3 dB				9	Off	-inf dB	
10	Channel	Cut	Off	-2.9 dB				10	Off	-inf dB	
11	Channel	Cut	Off	-1.1 dB				11	Off	-inf dB	
	Channel	Cut	Off	-1.7 dB				12	Off	-inf dB	
13	Channel	Cut	Off	-0.1 dB				13	Off	-inf dB	
14	Channel	Cut	Off	-2.3 dB				14	Off	-inf dB	
15	Channel	Cut	Off	-0.6 dB				15	Off	-inf dB	
16	Channel	Cut	Off	0.1 dB				16	Off	-inf dB	

# **Shotoku Robotics**

This function allows Kahuna to communicate with and control a Shotoku robotic camera heads using an IP Server protocol.

#### **Using the Shotoku Robotic Peripheral Controls**

This function is used to control Shotoku Robotic Camera Heads. On the MAV-GUI, in the "Home" menu, touch the **{Peripherals}** menu link button, then in the Peripherals menu, touch the **{Shotoku Robotics}** menu link button.

		Peripheral	s Control Por	rt Remapping	8:	Shoto	ku Robo	otics		Camera	Control	Shots
Tally & UMD	Playout	Editor	Router	Miscellaneous								
Tally	VTR	GVG 100	Router Control	User Protocol								
Kahuna	AMP	Sony BVS/DVS	Router	Audio Mixer								
Tally	VDCP		Connection									
TSL UMD Input	Odetics	Automation	Router Config	Shotoku Robotics	Ofrtine							
TSL UMD Output	AVSP	lgnite	K360 As Router	VISCA	Pan <b>O:O</b>	00		0:000		ommand Sel	ect Detach	Grab
TSL UMD IP Output	P Bus	RollCall		RollCall Set Param	Tilt 0:0			0:000				
	Nexio			GV Camera	Zoom 0:0	000		0:000		efault Shot Tim	e 03:00	
	TC Request			Gv Callera	Height	0:000			Ca	imera Status		
	Chyron	EDL			Pan Revers	e Off O	n Tilt Reve	rse Off O	n Se			

**Camera - Control Menu** 

When connected, touch the "Delegates button and the menu will display that the Shotoku Robotics protocol is active (as shown below).



The 32 buttons in the top half of the menu are control buttons, they display the current cameras that are online. They can be used along with the "Command" parameter to Select, Detach and Grab cameras. The user can select a device by touching one of the Camera Control Buttons, making sure that the correct parameter controls is selected for the type of device, i.e. Pan, Tilt and Zoom.

Note: Each control button can have a number of commands and attachments, so the cloning of camera control buttons is recommended.

**Command** - makes the number button select that camera for controlling. *Detach* makes the number button deselect that camera.

**Pan, Tilt and Zoom** - move the camera as described, as soon as the attachers is touched the selected parameters can now be attached to the control surface joystick (if available).

**X**, **Y** and **Focus** - work in the same way as the parameters above and are selected by touching the attachers, and selecting **X**, **Y** & **Focus**.

Height - adjusts the height of the camera pedestal

Default Shot Time - The default time entered for camera shot storage control.

**Camera Status Menu Link Button** 

The menu displays the camera head connection status, when connected to either the Kahuna system or the Shotoku Robotic camera head control panel.



**Camera / ID** - this displays the number of Robotic Camera heads that are connected and can be controlled,

Selected - this displays if the Robotic Camera heads are selected and active

**Controller** - this displays a unique number for the controlling device, for example, the Shotoku Control panel could be Controller ID 1, and Kahuna could be Controller ID 2 depending which Kahuna ID value is entered by the user.

Local - this indicates if the camera head is currently under local control.

**Move Type** - this shows the 'shot type' of the current move. This will only display something during the shot recall.

**Time To Shot** - if a camera head has got a preset position setup in one of the Registers (shown later), this is the time that the camera head would take to move into that preset position.

**Settings Menu Link Button** 

**ID** - A unique ID set as the controlling device, when online this field will be greyed out.



The user can manually select which camera head they wish to use by touching one of the 32 available buttons.

Note: The camera head can only be selected if it is deselected on the Shotoku controller.

### **Camera - Shots Menu**

This menu allows the user to store {Store Shot} up to 100 recorded robotic camera head positions into registers, and recall them {Recall Shot} at any time.

8	Shoto	ku Robo	otics		Camera	Control	Shots
							Offline
							OffLine
							Offline
							Offline
Name Shot 1 Shot 2	• Descrip	otion	Camer 0 0	a Time To 00:00° 00:00°	Sw	ot Type o oop oop	Store Shot egisters
Shot 3 Shot 4 Shot 5 Shot 6			0 0 0	00:00° 00:00° 00:00° 00:00°	Sw Sw	oop oop oop oop	Recall Shot
Name	Shot 1		Description				

## **Using the Store Shot**

To use this function, the user will have to go back to the Camera Control Menu and touch either the Pan, Tilt, Zoom or X, Y, Focus attacher (depending on the type of camera head used) then press and hold down one of the 4 **{MEM}** buttons located next to the joystick. This will allow the user to move the camera head using the joystick whilst in the Camera Shots menu. Go back into the Camera Shots menu, select a camera head by pressing one of the available buttons (in the top half of the menu), the button will turn Green when selected. Next use the joystick to position the camera head, select a register position in the table, and then press the **{Store Shot}** button.

The stored position can be recalled by scrolling to the required "Shot" and pressing the **{Recall Shot}** button.

8:	Shoto	ku Robo	otics		Camera	Control	Shots
							Offline
							Offline
							Offline
							Offline
Name Shot 1 Shot 2	• Descrip	otion	Came 0 0	ra Time To 00:00° 00:00°	Shot O Sho Swo Swo		Store Shot
Shot 3 Shot 4 Shot 5 Shot 6			0 0 0 0	00:00° 00:00° 00:00° 00:00°	Swa Swa Swa Swa	op op	Recall Shot
Name	Shot 1		Descriptio				

Name - the name of the Shot.

**Camera** - will select one of the available camera heads, use either the parameter control or press one of the buttons in the menu.

**Time To Shot** - this changes the time that the camera head moves from its current position to its saved Store Shot position.

**Shot Type** - this controls the way the recorded shots are recalled by the system. Swoop, Cut and Fade.

#### **Store Shot Table**

The table displays the Name of the Shot (this can be altered using the Name attacher below the table), the Description (again, this can be given a name using the Description attacher below the table), Camera ID, this is the selected camera head when the Shot was saved and Time To Shot is the time that the camera head takes to move from its current position to its saved position in the selected register.

Touch the **Name** attacher twice and the on-screen Keyboard will appear, allowing the user to enter a new name for the stored shot.

Touch the **Description** attacher twice to enter a description for the stored shot.

# VISCA

Once in the VISCA Camera Control menu, touch the "**{Delegate}**" button and then select one of the cameras listed 1 to 7.

😑 11: VISCA Camera 1	Camera Control	
Delegate	×	
11: VISCA		
Camera 1 Camera 2 Camera 3 Camera 4	Camera 5 Camera 6	
Camera 7	11: VISCA Camera 1	Camera Control 🔼
	Pan 0:000 Speed 25.00% Reverse	Off On Status Pending
	Tilt 0:000 Speed 25.00% Reverse	Off On Power Power
	Zoom 0:000 Speed 25.00%	Off On
	Focus 0:000 Mode Auto Auto Manual Man	Manual
	Tilt Up Pan LeftTilt Up Pan RightZoom Tel Standard	Focus Near Standard Exposure
	Pan Left         Pan-Tilt         Pan Right         Zoom Stop	Focus Stop
	Tilt Down Pan LeftTilt Down Pan RightZoom Wide Standard	Focus Far Standard
	Pan-Tilt Home Pan-Tilt Memory Reset	Set Recall

**Controlling the Camera** There are two ways to control the robotic camera: Using the Pre-Defined Command buttons Using the Maverik Control Surface joystick

## **Pre-Defined Camera Commands**

The first method described here will be using the Pre-Defined camera commands in the Command parameter.

11: VISCA	Camera 1	Camera Control 🔨
Pan 0:000	Speed 25.00% O Reverse	Off On Status Pending
Tilt         0:000         Image: Constraint of the second	Speed         25.00%         Reverse           Speed         25.00%	Off On Power Off On
Focus 0:000 M	ode Auto Auto Man Manual Man	Manual
Tilt Up Pan Left	Tilt Up Pan Right Zoom Tel Standard	Focus Near Standard Exposure
Pan Left Pan-Tilt Stop	Pan Right Zoom Stop	Focus Stop
Tilt Down Pan Left	Tilt Down Pan RightZoom Wide Standard	Focus Far Standard
Pan-Tilt Home Rese		Set Recall

The pre-defined camera commands are selected by touching one of the commands, the camera will then move and keep moving until a different command is selected.

11	I: VISCA	Camera 1		Camera C	ontrol
Pan 0 Tilt 0	11:	VISCA C	amera 1	Exposure 🛞	S Pending
Zoom 0	Shutter Up	Iris Up	Gain Up	Brightness Up	Power On
Focus 0:0	Shutter Reset	Iris Reset	Gain Reset	Brightness Reset	
Tilt Up Pan Left	Shutter Down	Iris Down	Gain Down	Brightness Down	posure
Pan Left					
Tilt Down Pan Left					
Pan- Hom		t Me	Reset	1 Set	Recall

**Pre-defined Camera Commands** 

- Select
- Power On
- Power Off
- Pan Tilt Stop
- Tilt Up
- Tilt Down
- Pan Left
- Pan Right
- Tilt Up, Pan Left
- Tilt Up, Pan Right
- Tilt Down, Pan Left
- Tilt Down, Pan Right
- Pan Tilt Home
- Pan Tilt Reset
- Zoom Stop
- Zoom Tele (Standard)
- Zoom Wide (Standard)
- Focus Stop
- Focus Far (Standard)
- Focus Near (Standard)
- Manual Focus
- Auto Focus
- Auto/Manual Focus

#### **Exposure camera Commands**

- Shutter Up
- Shutter Reset
- Shutter Down
- Iris Up
- Iris Reset
- Iris Down
- Gain Up
- Gain Reset
- Gain Down
- Brightness Up
- Brightness Reset
- Brightness Down
- Memory Reset



Pan Speed and Tilt Speed parameters are only available when controlling the camera with pre-defined commands. When panning left or right, adjust the Pan Speed parameter using the GUI rotary control knob and the camera head will speed up or slow down. The same action is defined when using the Tilt Speed parameter.

Note: Pan, Tilt, Zoom and Focus can be used when using the pre-defined commands, but they will override the current Pan/Tilt/Zoom/Focus type commands.

Using the Maverik Control Surface Joystick to control the Camera

Touch the Pan, Tilt, Zoom, Focus attacher to attach the parameter controls to the Control Panel joystick.

Moving the joystick to the left or right will make the camera pan to the left or right.

Moving the joystick up or down will make the camera tilt up or down.

Rotating the joystick head will make the camera focus in or out.



Note: If the Pan/Tilt moves the opposite way to what is expected, select the Pan Reverse or Tilt Reverse parameters and set them to On. The camera will now move in the correct direction.

**Saving Camera Positions into the Camera Memory** 

The camera is able to store up to 16 different camera memory positions. Move the camera to the required position, use the Memory parameter to select a memory position and then press **{Set}**. If the memorized camera position is required in the future, select the memory location and then touch **{Recall}** and the camera will move to the memorized position.



# **RollCall Set Param**

The RollCall Set Param menus are to send a set parameter message over the RollCall network. Kahuna is the RollCall Client. The parameter can be a value, a string or both. You can construct a general purpose message using the "User Definable" menu, or a specific message such as "MV800 Layout" or "Set Crosspoint" message.

# **User Definable**

Set the Unit ID, you must specify the ID that you are trying to talk to. This is a unique ID which every unit has.

1:	RollCall Set Param	User Definable <u>[</u> ]
Unit ID	10 •	
Command	1 0	
Param Type	Preset Value String Value and String	
	0	
Set		l.
Set		

The RollCall Set Param menus are for sending a message to any unit on the RollCall network. The message can be a general purpose one, which consists of a command and a parameter. The parameter can be a value, a string or both.

## **MV-800 Layout**

This parameter allows Kahuna using RollCall set parameters to communication with the MV-800 integrated multiviewer fitted in the Grass Valley Sirius 800 range of Routers.

Set the unique **Unit ID** to communicate with the multiviewer.

📄 1: RollCall Set Param	MV800 Layout 🛐
Unit ID 0	
Wall 1 O	
Layout 1	
Set	
Sec	

Wall - this selects video wall outputs 1 to 12

Layouts - this accesses the user defined video wall layouts (up to 64 individual layouts) saved.

# **Set Crosspoint**

Set Crosspoint message is for switching a router source on a destination.



Set the unique ID for the unit that you are trying to communicate with. **Destination** - the destination on the router

Source - the source that you are trying to switch on the router

# **Global Configs - Panel Configuration**

# **Panel Config**

The **Panel Configuration** menu is part of the overall **System Configuration** menu on Kahuna Maverik, and is used to Save and Load Panel Config files, set the Panel and GUI Preferences, set Button, ME Bank, GUI and Misc Color Preferences, Button Info and Button Maps.

						News Room								System Co	onfiguration	2	
ME	Transition	Keyer		rosspoint outtons	Util Buses	ME Buses	Summary	Panel Configurati Save Load	on	Panel Prefs	GUI Pre		Butt Map		Button Info	Colors	
DVE	Surfaces	Global	Tiles	Models	Trans		Switcher State Save			User Functions	s Fa	der tachmen		Maverik Layout	Previe Aux	w Fader Assign	
Glob		Stores rent Project	Peripherals	Configs st Proj	l iiling System Chai		Switcher State Load Save Load Pad Pad	User Configuratio	n	Modulato Aux Setup		attes /ashes ME Config		fig DV Set ssolve esets			
	led	Load Show	i w Show	M 🗹		Kahuna prts Show 5	LiveSports	Log Off	Engi Conf	neering fig	l/O Config			Show Set-up		Defaults	

To {Load} a file, use the "Current Project" and "Panel Config" parameters to select the required file, then press the {Load} button.

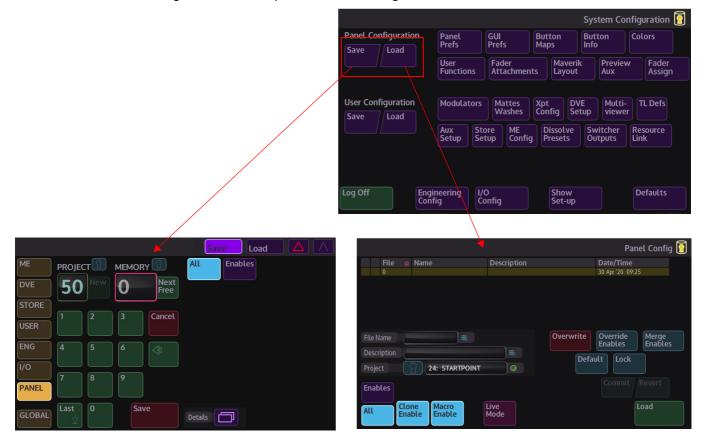
Pressing the {Default} button will load the default panel config file.

If changes are made, for example to the Button Assignment files, press the **{Overwrite}** button to save the Panel Config.

Save & Load Menus

Before looking at the Panel Configuration menus, it is important to know how to Save to and Load Projects and Files.

In the Panel Config menu, the user can access the "Save/Load" menus to create a new panel config file or choose a pre-saved user config.



To **"Load"** a file, touch the **{Load}** button, (as shown in the menu above) use the "**Project**" and "**File**" parameters to select the required file (the fine will be displayed in a table in the top half of the menu), then press the **{Load}** button.

Pressing the {Default} button will load the default user config file.

If changes are made, press the **{Overwrite}** button to overwrite the User Config. A dialog box will appear (below) and asks the use to confirm the overwrite.

File								
0*								
2		C		n Overw				
File Name Description			Panel Co	onfig 0 in pro Overw	oject 50 alrea rrite it ?	ady exist	is	
Project Enables		R	etain File	Enables	s, Overwrite	Cancel		
All	Clo Ena							

**Override Enables** - will override any enables that have been de-selected and turn the enable on.

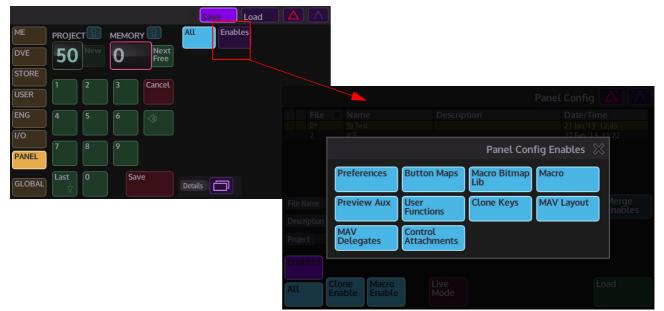
**Merge Enables** - this function merges the enables currently set in the switcher with the enables saved in the file is being loaded (a 'logical OR' of the enables).

Press the **{Save}** button to open the **"Save"** menu. The **Save** menu allows the user to quickly select a project and a memory file, use the colored rotary controls the correspond to the Project number and Memory number. When selected, touch the **{Save}** button. To create a new file within a project, touch the **{Details}** menu link button and the Panel Config - File Details menu will be displayed.

					Save	Load							Panel Confi	g - File Details 🛛 🕅
ME	PROJEC	тΩ	MEMOR	ΥΩ	All	inables				Name	De	escription		Date/Time
DVE	50		0	Next Free						 ICE				 27 Feb '13 11:22
			<b>~</b>											
STORE														
				Cancel				Name		SJ Test				
USER										SJTEST				
								Descri	ption					
ENG			6					Project	ŧ	50 O New				
								Floject		30 0				
I/O			9					Last Lo	bobce					
PANEL								Last Lu						
PANEL								Name						
	Last	0	Sav	10								Ret	tain Name &	
GLOBAL	Last		Jav		Details	ור		Descri	ption			Des	scription	
	$\square$					<u>-</u>								

In the File Details menu, the user can select a project to save the Panel Config file into, then use the "File" parameter control to scroll down the table and select a used or unused file slot. A Name and Description can be given to the new Panel Config file. To do this, touch the **Name** or **Description** bar, a cursor on-screen keyboard popup button, then use the on-screen keyboard to type the new name.

Back in the Save main menu, touch the **{Enables}** button and the **Panel Config - Enables** will be displayed. The menu allows the user to Enable/Disable enables options that will be saved with the new Panel Config file.



#### All - enables all Enables

			Panel Config 🛐
File o	Name	Description	Date/Time
0			30 Apr '20 09:25
File Name		Overwrite	Override Merge Enables Enables
Description			
Project	24: STARTPOINT	Defa	Lock
Enables			Commit Revert
All Clo Ena		Live Mode	Load

#### Enables:

Touch the **{Enables}** button and the **Panel Config - Enables** will be displayed. The menu allows the user to Enable/Disable enables options that will be saved with the new Panel Config file.

All - enables all Enables

**Override Enables** - will override any enables that have been de-selected and turn the enable on.

**Merge Enables** - this function merges the enables currently set in the switcher with the enables saved in the file is being loaded (a 'logical OR' of the enables).

#### **CLONES ENABLE**

When lit this button enables any of the Button Clones that are attached to Panel buttons. When unlit (press and hold) the panel will display any clones that are attached, in Red and turn out other lamps. When Off it disables all clones attached to Panel buttons.

Note: Not applicable to User Function Buttons

#### **MACROS ENABLE**

When lit this button enables any Macros that are attached to Panel buttons. When unlit (press and hold) the panel will display any macros that are attached, in Red and turn out other lamps. When Off it disables all macros attached to Panel buttons.

Note: Not applicable to User Function Buttons

#### LIVE MODE

Inhibits the use of selected buttons to limit errors when switching live.

The Live Mode button toggles (lit) On and (Unlit) Off, determining whether the inhibits are active.

To setup Live Mode, press and hold the button and the button will go purple. All the button back-lights will go out on the control panel. Press the required buttons to inhibit their function (the inhibited buttons will light up).

Finally press the **[Live Mode]** button once again to use the system. To remove the button inhibits, go through the same process and press the inhibited buttons to unlock them. To use Live Mode, touch the button and it will light up, if any of the inhibited buttons are pressed, their functionality is inhibited and the "Live Mode" button will flash.

# **Panel Preferences**

Panel Preferences are a set of control options for the control surface. They are designed to change functionality and interaction, setup extra features and change the display of some features. The menus below display the Panel Preferences options list, "Menu 1" is at the top of the scrolling list of options, "Menu 4" is at the bottom.

#### Menu 1

	Pa	anel Preferences 🛐
Keyboard Brightness	100.00%	
Legend Brightness	50.00%	
Graphic Button Brightness	100.00%	
Backlight Brightness	50.00%	
T-Bar Plate Brightness	100.00%	
	Disabled 1 Hour 2 Hours 3 Hours 4 Hours	
Snap Shot Remove On Hold	No Yes	
	Off On	Calibrate Tbars
Snapshot Sound On Write	Off On	
Module Backlight Follow ME	Off On	Center
Crosspoint Backlight Follow ME	Off On	Joystick

#### Menu 2

Menu 4

		Panel Preferences 🛐
	Off On	
Shifted Crosspoint	Unlit Lit	
	Off On	
Preset Bus Double Hit Shift	Off On	
Double Hit Adds Key Trans	Off On	
Crosspoint Hold Return	Off On	
Button Map Shift Levels	One Three	
Crosspoint Cascade Loop Avoid	Off On	Calibrate Tbars
DMEMS Set Bus Delegates	No. Yes	Ibars
Key Delegate Tracking	No Yes	Center
Key-in-Transition Delegate Tracking	No Yes	Joystick
	Nerral Deversed Fellow There	

## Menu 3



Current Bond Trans Display Mode





Keyboard Brightness - this adjusts the brightness of any buttons that are lit.

Panel Preferences

Legend Brightness - this adjusts the brightness of the blue mnemonic display.

Graphic Button Brightness - this adjusts the brightness of the OLED buttons

**Backlight Brightness** - all the buttons on a Maverik control surface have a backlight, this allows the user to easily see buttons if the control surface is being used in a darkened room. This parameter changes the brightness.

**T-bar Plate Brightness** - this sets the brightness of the backlighting behind the T-bar plate. Set to the required brightness.

**Display Saver Timeout** - this cause the MAV-GUI display to go into a sleep mode after a defined amount of time, if the MAV-GUI is not used. Default is 2 hours, maximum On time is 4 hours, can also be disabled so the MAV-GUI is on constantly.

**Snapshot Remove On Hold** - when set to "Yes", hold down a button that has a Snapshot and the snapshot will be removed.

**Snapshot Overwrite** - will allow a Snapshot that is attached to a User Function Button to be overwritten with another snapshot.

**Snapshot Sound on Write** - this will enable/disable and audible sound when a snapshot is taken.

**Module Backlight Follow ME** - this causes the MAV modules to follow the colors of the M/Es set in the Preferences - Colors - MEs menu.

**Crosspoint Backlight Follow ME** - this causes the crosspoint buttons to follow the colors of the Lamps set in the Preferences - Colors - Lamps menu.

Tally Next - this enables the Tally Next lamp to work on the crosspoint buttons

**Shifted Crosspoint** - this function when turned On will cause the Shift button to light up Red or "another color" (depending if the crosspoint is live to air) and allow the user to see that the Shift function is being used.

**Lockable Shift** - this will allow the locking of the shift function to display the shifted Xpts continuously.

**Preset Bus Double Hit Shift** - when turned On, if a Preset Bus button is pressed twice quickly, the Preview monitor and mnemonic will display the source and name of the "shifted" crosspoint. The panel will reflect this by either lighting the Xpt Shift button. This is determined by the user preference Shifted Crosspoint Lit/Unlit.

**Crosspoint Hold Return On/Off** - this allows the user to hold down crosspoint button 'A' and then additionally press button crosspoint button 'B'. Pressing 'B' will select that crosspoint until 'B' is released, at which point the crosspoint selection returns to that for 'A'

**DMDM Set Bus Delegates** - when set to "**Yes**", the panel delegates are set by a DMEM recall – i.e. they go to the state of the M/E on the panel which did the DMEM save. If there are more than one banks on the same M/E it goes to the last one which was set.

**Key Delegate Tracking** - If enabled, changing the bus delegate on the upper or lower crosspoint rows will cause the delegate on the key control block to track the bus selected. If an inappropriate bus is selected (such as AUX 3), the tracking is ignored

**Key-in-Transition Delegate Tracking** - If enabled, double-pressing the key-in-trans buttons in the transition control block will cause the delegate on the key control block to track the bus selected. If an inappropriate bus is selected (such as AUX 3), the tracking is ignored.

**Background Bus (Normal Reversed Follow Tbar)** - Normally ("Normal") the upper row of buttons is the program bus and the lower row is the preset bus. When "Reversed", they are the other way around. The "Follow T-Bar" setting means that when the T-Bar is pointing away from you the top row is the program bus, and when it points towards you the bottom row is the program bus.

**Normal Button Macros Yes/No / Normal Button Cloning Yes/No** - achievable - they enable or disable all the clone or macro function behind every button for the whole panel.

File Name, Macro Name, Project Number - can be added to the OLED buttons.

Panel Knob Reattachment (for the MAV-Keyer) - this function has 2 modes:

*Classic* - the Key Control functions that work in conjunction with the Assignable Controls will behave in the normal way.

**Safe** - when using the Key Control functions in conjunction with the Assignable Controls for Resize, Border, Mask and Bus Color, pressing the function button in the Key Control area will make the button light, and the Assignable Controls will reflect and adjust the selected function.

If a different function is selected, the previous function button used in the Key Control area will remain lit, this allows the user to step back and forth between the selected functions.

#### Audio Mixer Lamp Mode -

**Cut** - lamps is red when audio channel is muted/off and equivalent back-lit when on. **On** - lamps active when audio channel on and equivalent back-lit when muted/off.

**Center Joystick** - this button will calibrate and center the Joystick axis.

**Calibrate Tbars** - this is the end to end calibration for the Tbar/Tbars on the control surface. Touch the {Calibrate Tbars} button and the Up/Down arrow indicator for the Tbar will flash orange. Move the Tbar end to end a couple of times to calibrate. When calibrates the Up/Down indicators stop flashing and the Tbar now behaves normally.

Note: Do not offset the Joystick when pressing this button.

# **GUI Preferences**

GUI Preferences are a set of options that are designed to help the user access or control functions within the MAV-GUI more quickly and efficiently. The menus below display the GUI Preferences options list, "Menu 1" is at the top of the scrolling list of options, "Menu 3" is at the bottom.

Menu 2

		GUI Preferences 🚺				<b>GUI Preferences</b>
Display Brightness	100.00%		Animation Level	Off Gray Out Sc	ome Most All 肓	
Knob & Touch Button Brightness	100.00%		Extended GUI	Hide Show		
Display Saver Timeout	Disabled 1 Hour 2 Hours 3 Hours 4 Hou	ırs	USB Keyboard Language	en_US_101		
	Home Favorite Up Back		Shared Keyboard	No Yes		
			Menu Tracking	No Yes		
ouchscreen Click	Off On		Tracking On This GUI	Allow Inhibit		
	100.00%		Key-in-Transition Menu Tracking	No Yes		
Remember Knob Attachments	No Yes		ME & Bus Tracking	Off On		
Remember Scroll Position	No Yes		Key-in-Transition Bus Tracking	Off On		
Delegate Auto Close On	Minor Change Any Change Inhibit	Screen	Crosspoint Button Tracking	Off On		Screen
Show Knob Popup On	Change Press	Coords	Crosspoint Tracking	Off On		Coords
Menu 3						
		GUI Preferences 💽				GUI Preferences 🛐
Menu 3	No Yes	GUI Preferences 🛐	Current Ar	nimation Level Off		GUI Preferences 🛐
Menu 3 Key-in-Transition Menu Tracking	No Yes Off On	GUI Preferences 🛐	Current Ar Off		All Jzc	GUI Preferences 🛐
Menu 3 Key-in-Transition Menu Tracking ME & Bus Tracking	No Yes	GUI Preferences 🛐		nimation Level Off	Dost All	GUI Preferences 🛐
	No Yes Off On	GUI Preferences 🛐		nimation Level Off	Dist All	GUI Preferences 🛐
Menu 3 Key-in-Transition Menu Tracking ME & Bus Tracking Key-in-Transition Bus Tracking Crosspoint Button Tracking	No Yes Off On Off On	GUI Preferences 🛐		nimation Level Off	DST All	GUI Preferences 💽
Menu 3 Key-in-Transition Menu Tracking ME & Bus Tracking Key-in-Transition Bus Tracking Crosspoint Button Tracking Crosspoint Tracking	No Yes Off On Off On Off On	GUI Preferences 🛐		nimation Level Off	ost All	GUI Preferences 💽
Menu 3 Key-in-Transition Menu Tracking ME & Bus Tracking Key-in-Transition Bus Tracking Crosspoint Button Tracking Crosspoint Tracking Store Tracking	No Yes Off On Off On Off On Off On	GUI Preferences 🛐		nimation Level Off	Jost All	GUI Preferences 🚺
Menu 3 Key-in-Transition Menu Tracking ME & Bus Tracking Key-in-Transition Bus Tracking	No Yes Off On Off On Off On Off On Off On	GUI Preferences 💽		nimation Level Off	DST All	GUI Preferences 🛐

#### Menu 1

Display Brightness - adjusts the brightness of the MAV-GUI display

Screen Coords

While Held Toggle

**Knob & Touch Button Brightness** - this sets the brightness of the buttons and rotary controls on the MAV-GUI.

**Display Saver Timeout** - this cause the MAV-GUI display to go into a sleep mode after a defined amount of time, if the MAV-GUI is not used. Default is 2 hours, maximum On time is 4 hours, can also be disabled so the MAV-GUI is on constantly.

**Home Button** - this sets the action when pressing the Home button. If set to "Home" then pressing the button to force the MAV-GUI to go back to the "**Top**" or Home menu> If set to "**Favorite**" the fist touch of the button will go to the favorite menu, a second press will go to the home menu.

If set to "Up" and "Back" will step up through the menus or back through the menus.

**Favorite Menu** - the "Star" button allows the user to select a favourite menu, the display bar will display the selected favourite menu.

**Touchscreen Click** - this will enable/disable an audible click noise when the touch screen is being used.

**Volume** - this adjusts the volume for the audible sounds that the MAV-GUI makes, for example the logon sound and the button layout found sound.

**Remember Knob Attachments** - this allows the user to freely move the knob attachments to different parameters on the MAV-GUI.

**Remember Scroll Position** - this remembers the position of a menu if the user leaves the menu and then goes back into it, i.e. if the user scrolls to the bottom of a menu, then goes into another menu, and then swipes back into the original menu, its position will still be at the bottom of the menu.

**Delegate Auto Close On**- this will turn off the auto close function when a Delegate menu is selected.

**Show Knob Popup On** - this will set when the rotary control popup will be displayed, Either when one of the rotary controls is depressed or when a change is made by the rotary control to a parameter.

Animation Level - controls the level of animation on the MAV-GUI screen

Popup Numeric Keypad - this allows the Numeric Keypad to be displayed

User Keyboard Language- this allows the on-screen user Keyboard language layout to be changed

Shared Keyboard - this allows a USB Keyboard to be used.

**Menu Tracking** - Enables various button presses to cause the GUI to switch to an associated menu. Used by keys like WIPE, MIX, FTB, BORDER, MASK, RESIZE etc.

Note: There are independent enables for Maverik GUI and Soft MLC GUI

**ME & Bus** - Causes the menu ME delegate and the menu BUS delegate to follow when the ME or BUS delegate to changed elsewhere on the panel (crosspoint delegate buttons or key control block key buttons etc).

**Key-in-Transition Delegate Tracking** - If enabled, double-pressing the key-in-trans buttons in the transition control block will cause the key delegate of the menus to track.

Note: 1.There are independent enables for Maverik GUI and Legacy GUI

2. To be implemented soon. Will follow the Legacy option.

- 3. On the Maverik GUI, this is referred to as Key-in-Transition Bus Tracking.
- 4. Not working on Maverik. Maverik always follows regardless of this setting.

**Crosspoint Button Tracking** - If enabled, the row selector control in the button map editor menu will follow which crosspoint button is pressed.

**Crosspoint Tracking** - Causes various menu jumps and changes of delegates depending on what source is on a crosspoint button when it is pressed. e.g. Pressing a crosspoint that selects a matte will cause a jump to the matte menu and will set the matte selector to the appropriate matte.

Note: Crosspoints that select a store will only be tracked if the store-tracking option is also enabled.

Swell Buttons While Down - the buttons will visually swell giving an effect of being pressed.

Fader Value Pop-ups - will display fader values, for example in "dB" levels in the MAV-GUI

**Status Information pop-ups** - will display status information.

**Mainframe HDD Activity** - a "HDD" symbol will be displayed when there id activity with the mainframe's HDD.

Menu Shift - changed the interaction of the crosspoint "Shift" button

### **Screen Coordinates**

The Screen Co-ordinate System is a tool by which the user can adjust the display of coordinates on the GUI screen, co-ordinates that relate to the Resize engine, Mask areas and Wipe positions.

		G	UI Preferences 🚺
USB Keyboard Language	en_US_101		
Shared Keyboard	Scre	en Coordinate System 💢	
Menu Tracking	DVE/Resize in 16:9 Mode	1 x 9/16 0 📄	
Tracking On This GUI	Wipe/Mask in 16:9 Mode	1 x 9/16 🛛 🔳	
Key-in-Transition Menu	Crop in 16:9 Mode	Percent	
ME & Bus Tracking			
Key-in-Transition Bus Tr	DVE/Resize in 4:3 Mode	1 x 9/16	
Crosspoint Button Track	Wipe/Mask in 4:3 Mode	1 x 9/16 🛛 🗎	
Crosspoint Tracking	Crop in 4:3 Mode	Percent 💿 🖹	
Store Tracking	Off On		Screen
Swell Buttons While Dov	vn No Yes		Coords
Ender Value Den und	No. Yos		

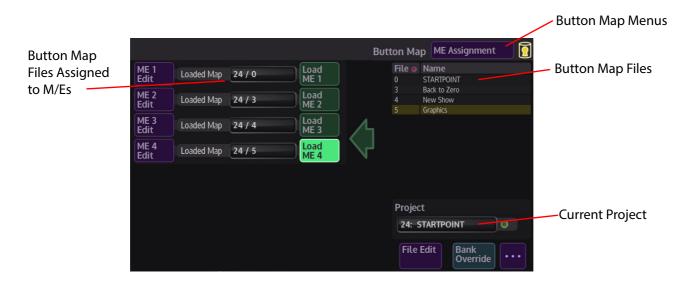
Screen Grid Crop: The ability to set the crop positions into Screen Grid mode (as per Wipe/masks) to allow the copying of Positions and Crops. To copy parameters "press and hold" the **{COPY}** button on the GUI and select the parameter using the **{Snap Norm}** button associated with that parameter.

Multiple parameters can be copied while copy button is held down, next go to the parameters you want to paste these values too, hold down **{PASTE}** and press the **{Snap Norm}** button associated with that parameter. The default mode for the Crop grid is percent.

## **Button Maps**

Button Maps are a quick way for the user to assign sources to crosspoints on a control surface. This is done by building M/E, Aux, DVE Aux and Bank button maps.

In these menus, the mapping of the internal crosspoints and sources to the crosspoint buttons on the control surface can be setup to suit a user's preference on a bank-by-bank, M/E by M/E and Aux Bus by Aux Bus basis. Button maps are easy to setup and are the preferred way to setup crosspoints on a control surface.



## **Loading a Button Map**

When opening the button maps menu, the first menu displayed is the "**ME Assignment**" menu. The menu displays the current project, button map files saved in the project and the button map files assigned to each M/E.

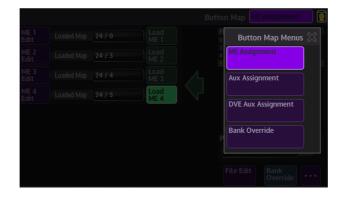
If the selected project contains previously built button map files, to load a file, select a button map file in the list, and then touch the **{Load ME}** button for the M/E. You will see the button map file listed in the "**Loaded Map**" display.

The button map setup is saved when you save the Panel Config file, Switcher State or GMEM.

Note: It is important at this point to make sure that all Enables are turned On.

If you touch the "**Button Map Menus**" button (as shown in the menu above), a drop down list of button map menus is displayed, showing ME Assignment, Aux Assignment, DVE Aux Assignment and Bank Override.

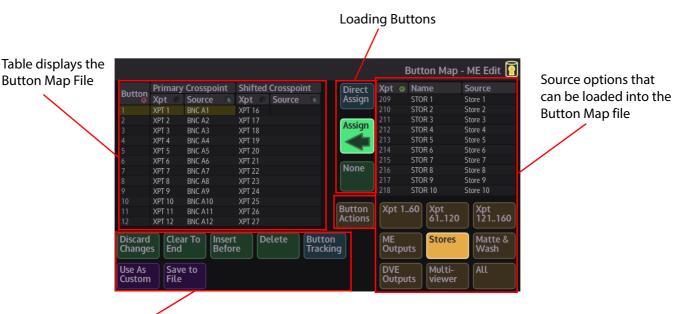
The way you load button map files into each of these menus is done in exactly the same was as described above.



## **Edit Button Maps**

In the ME Assignment menu, there are two ways to edit or create a new button map. Again, the process of editing or creating a new button map is identical.

Touch the **{ME 1 Edit}** button and the "**ME Edit**" menu is displayed. The menu displays the button map that is currently assigned to the M/E. As you will see from the information below, "**Editing**" and creating a "**New**" button map can all be done in the same menu.



## Action Buttons

On the left side of the menu, the table displays the sources currently assigned into the "**Primary**" and "**Shifted**" crosspoints for the button map file. The table on the right are the sources that can be assigned to the button map file.

To assign a source to a button map, select source form the right hand source option table, then select a "Button" row in the left hand table, and touch the **{Assign}** button.

The source option buttons "Xpt 1...60, ME Outputs, Stores" etc. allow the user to quickly select a group of sources, which will be displayed in the table, without having to scroll through the whole 275 crosspoints to find the source you want. If you wish to scroll through all the crosspoints, touch the **{AII}** button.

The "**Button Actions**" button will displays action options that can be assigned to a Xpt button and change the function of the button to the following actions; "Normal, Shift Button, Xpt Lock Button and Bus Select Button".

#### **Button Map Table:**

**Button** - selects the physical button on the Control Surface and M/E bank button number/row in the table.

**Primary Crosspoint** - changes the current Xpt that is associated with the button on the M/E bank. The source for the selected Xpt is also displayed in the next column.

**Shifted Crosspoint** - this will move (or shift) the crosspoint to a user defined point in the Button Map. When the shift button is pressed on the control surface the crosspoint will now be displayed in its new position on the control surface and the button map. The source for the selected Xpt is also displayed in the next column.

#### **Action Buttons:**

Discard Changes - will discard all changes to the button map file, if not saved!

**Clear To End** - if the first button in the button map table is selected, touching the "Clear To End" button will clear all the sources out of the table.

Insert Before - will insert a source into the table before the selected row

Delete - will delete the currently selected source

**Use As Custom** - will allow you to create a custom button map and allow the button map file to be allocated across M/Es, selected Aux Buses or all Aux Buses (as shown below).

Button				Custom Map	) Assign 💥	0
11	Use Custom Ma	ap In:				
12 13 14	ME 1 ME 2	ME 3 ME 4		All Aux Buses	Apply	
15 16 17	Aux 1 AUX 1	Aux 2 AUX 2	Aux 3 AUX 3	Aux 4 AUX 4		
18 19	Aux 5 AUX 5	Aux 6 AUX 6	Aux 7 AUX 7	Aux 8 AUX 8		
20 21 22	Aux 9 AUX 9	Aux 10 AUX 10	Aux 11 AUX 11	Aux 12 AUX 12		pt 21160
Discard Changes	Aux 13 AUX 13	Aux 14 AUX 14	Aux 15 AUX 15	Aux 16 AUX 16		latte & Vash
Use As	Aux 17	Aux 18	Aux 19	Aux 20		ιι
Custom	File			Outputs	viewer	

**Save To File** - allows you to save any changes to the current button map file, or to create a new button map file.

In the "**Save Button Map**" menu, the current "Project, Button Map, and Name/Description" is displayed. You can quickly save any changes to the current button map file by just touching the **{Save}** button.

To create a new button map file, use the "**Button Map**" parameter to select a new file number, then give the new file a name and description. Finally touch **{Save}**.

When you go back to the "**ME Assignment menu**", you can see the new button map file added to the file list.

Following the same procedure as above to create a new button map file for a different project, use the "**Project**" parameter to select a different project, when you touch the **{Save}** button, the button map file will be saved into the selected project.

							E Edit 頂
Button							
1	XPT XPT				Save Button	Мар 🔀	
3	XPT	Project	24: STARTPOINT				
4 5	XPT XPT	Button Map	30				
6 7	XPT XPT	Name	Back to Zero				
8	XPT XPT	Description	Back to Zero				
10	XPT XPT						
12	XPT	Save					
Discard Change				ciang j	Conchara		
Use As Custom							

#### **Aux Bus Button Maps**

Loading an Aux Bus Button Map is basically the same as loading a button map file to an M/E. Using the drop down list, top right of the menu, select "Aux Assignment", this will display the "Aux Bus Button Map Load" menu.

Note: Loading and Editing the Button Maps for the DVE Aux and Bank Override menus is exactly the same as the procedure below.

Aux Bus Quick Select		Aux 1		Butt	on Map	Aux Assignment		Button Map File
	Aux				File 💿 Na	ame		List
	Bus 🔾	Name	Map in Use		0 ST	ARTPOINT		2151
	Aux 1	AUX 1	24/0			ick to Zero		
	Aux 2	AUX 2	24/3	Load		ew Show		
	Aux 3	AUX 3	24/4	Load	5 Gra	aphics		
	Aux 4	AUX 4	24/5					
	Aux 5	AUX 5						
	Aux 6	AUX 6						
	Aux 7	AUX 7						
	Aux 8	AUX 8						
	Aux 9	AUX 9						
	Aux 10	AUX 10						
	Aux 11	AUX 11						
	Aux 12	AUX 12			Project			
	Aux 13	AUX 13						-Current Project
	Aux 14 Aux 15	AUX 14 AUX 15			24: STA			-
	AUX 15	AUX 15						
	Aux Edit	t Load to All Aux Buses	Load to Multiple			Bank Override	•••	

As with the M/E button map load menu, select an Aux Bus in the table, then select a button map file and touch the {Load} button. You will then see the button map attached to the Aux Bus in the "Map in use" column.

**Load to All Aux Buses** - as the button suggests, this loads the selected button map file to all of the Aux Buses.

Load to Multiple - allows the user to load the selected file to user defined Aux Buses.

To edit the button map file, touch the {Aux Edit} menu link button.

Aux 1	I						I	Butto	n Map -	Aux Ed	lit 🤶
Button	Primary	Crosspoint	Shifted C	rosspoir	nt	Direct	Xpt (	) Nai	me	Source	
BULLOI	Xpt 🕥	Source 🔹	Xpt 💿 🙎	Source		Assign		ME		ME1 Op1	
	XPT 1	BNC A1	XPT 16				162		PVW	ME1 Op2	
	XPT 2	BNC A2	XPT 17			Assign	163		I CLN	ME1 Op3	
	XPT 3	BNC A3	XPT 18			Assign	164		SPLT PGMc		
	XPT 4	BNC A4	XPT 19						SPLT PVWc.		
	XPT 5	BNC A5	XPT 20						SPLT CLNc"		
	XPT 6	BNC A6	XPT 21				167		l Op7	ME1 Op7	
	XPT 7	BNC A7	XPT 22			None			Op8	ME1 Op8	
	XPT 8	BNC A8	XPT 23					ME		ME2 Op1	
	XPT 9	BNC A9	XPT 24				170	ME2	2 PVW	ME2 Op2	
	XPT 10	BNC A10	XPT 25								
	XPT 11	BNC A11	XPT 26			Button	Xpt	160		Xpt	
	XPT 12	BNC A12	XPT 27			Actions			61120		160
Discard Change		r To Befor		ete	Button Tracking	3	ME Outp	outs	Stores	Mat Was	te & sh
Use As Custom	Save File	e to					DVE Outp	outs	Multi- viewer	All	

On the left side of the menu, the table displays the sources currently assigned into the "**Primary**" and "**Shifted**" crosspoints for the button map file. The table on the right are the sources that can be assigned to the button map file.

To assign a source to a button map, select source form the right hand source option table, then select a "Button" row in the left hand table, and touch the **{Assign}** button.

The source option buttons "Xpt 1...60, ME Outputs, Stores" etc. allow the user to quickly select a group of sources, which will be displayed in the table, without having to scroll through the whole 275 crosspoints to find the source you want. If you wish to scroll through all the crosspoints, touch the **{AII}** button.

The "**Button Actions**" button will displays action options that can be assigned to a Xpt button and change the function of the button to the following actions; "Normal, Shift Button, Xpt Lock Button and Bus Select Button".

#### **Button Map Table:**

**Button** - selects the physical button on the Control Surface and Aux Bus button number/row in the table.

**Primary Crosspoint** - changes the current Xpt that is associated with the button on the Aux Bus. The source for the selected Xpt is also displayed in the next column.

**Shifted Crosspoint** - this will move (or shift) the crosspoint to a user defined point in the Button Map. When the shift button is pressed on the control surface the crosspoint will now be displayed in its new position on the control surface and the button map. The source for the selected Xpt is also displayed in the next column.

#### **Action Buttons:**

Discard Changes - will discard all changes to the button map file, if not saved!

**Clear To End** - if the first button in the button map table is selected, touching the "Clear To End" button will clear all the sources out of the table.

Insert Before - will insert a source into the table before the selected row

Delete - will delete the currently selected source

**Use As Custom** - will allow you to create a custom button map and allow the button map file to be allocated across M/Es, selected Aux Buses or all Aux Buses (as shown below).

Button				Custom Map	Assign 💥	•
11	Use Custom Ma	ap In:				
12 13 14	ME 1 ME 2	ME 3 ME 4		All Aux Buses	Apply	
15 16 17	Aux 1 AUX 1	Aux 2 AUX 2	Aux 3 AUX 3	Aux 4 AUX 4		
18 19 20	Aux 5 AUX 5	Aux 6 AUX 6	Aux 7 AUX 7	Aux 8 AUX 8		
20 21 22	Aux 9 AUX 9	Aux 10 AUX 10	Aux 11 AUX 11	Aux 12 AUX 12		pt 21160
Discard Changes	Aux 13 AUX 13	Aux 14 AUX 14	Aux 15 AUX 15	Aux 16 AUX 16		latte & Vash
Use As Custom	Aux 17 File	Aux 18	Aux 19	Aux 20	viewer	ļl

**Save To File** - allows you to save any changes to the current button map file, or to create a new button map file.

In the "**Save Button Map**" menu, the current "Project, Button Map, and Name/Description" is displayed. You can quickly save any changes to the current button map file by just touching the **{Save}** button.

To create a new button map file, use the "**Button Map**" parameter to select a new file number, then give the new file a name and description. Finally touch **{Save}**.

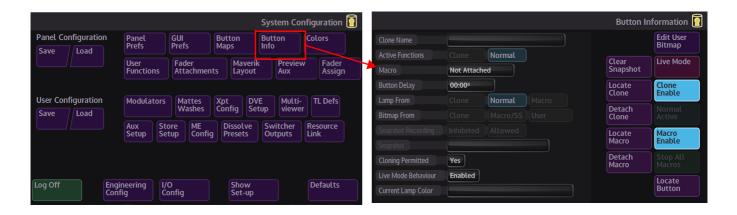
When you go back to the "**ME Assignment menu**", you can see the new button map file added to the file list.

Following the same procedure as on the previous pageto create a new button map file for a different project, use the "**Project**" parameter to select a different project, when you touch the **{Save}** button, the button map file will be saved into the selected project.

							IE Edit 👔
Button							
1	XPT XPT			Sa	ave Button	Мар 💥	
3	XPT XPT	Project	24: STARTPOINT				
5	XPT	Button Map	30				
o 7	XPT	Name	Back to Zero				
8 9	XPT XPT	Description	Back to Zero				
10 11 12	XPT XPT XPT	Save					Xpt 121160
Discard Change				SHS -	-outputs -		Matte & Wash
Use As							
Custom							

## **Button Information**

The Panel Config - Button Information main menu displays information about Clone button functions and Macro buttons. The Button Summary table displays all the information related to a selected button.



#### **Button Summary**

Clone Name - the clone function attached to a button. Normal Button Function - displays if the normal button function is active. Macro - displays if a macro is attached to the button Button Delay - this displays the delays attached to a macro function Lamp From - displays lamp from cloned function or from the normal function Bitmap From - display where a bitmap is derived from, when cloned to a User Function button Snapshot Recording - inhibits the user function buttons ability to record a snapshot. Cloning Permitted - if a function can be cloned, this parameter will display Yes Live Mode Behavior - shows "Enabled" if Live Mode can be set on this function. Current Lamp Color- displays if the cloned button function is active.

## **Button Functions**

These buttons are used to locate and disable Clones or Macros associated to a button.

Clear SnapShot - will clear the currently selected SnapShot from a button.

**Locate Clone** - locates the clone button by turning off all the lamps on all the buttons on the control panel and GUI except the clone button which will turn Red.

Detach Clone - detaches the clone function from a button.

Live Mode - will turn Live Mode On or Off

Stop All Macros - will stop all macros running

**Locate Button** - this will allow the current function of any button to be summarized in the table. Buttons with Clones and/or Macros attached will light Green when the Locate Button is Active. To locate a button Press the "Locate Button", it will go Red and the panel will only light up Normal Button (e.g. Clones, Macros attachments and Button that have had their Normal Functionality Disabled), the Table will then Display the current Information about that button. The Locate button will then return to Gray.

Locate Macro - works in the same way as Locate Clone, and locates a Macro function button

Detach Macro - detaches a macro function from a button

				Button In	formation 🚺
Clone Name					Edit User Bitmap
Active Functions		Normal		(	
Macro	Not Attach	ed		Clear Snapshot	Live Mode
Button Delay	00:00º			Locate Clone	Clone Enable
Lamp From		Normal			
Bitmap From				Detach Clone	
Snapshot Recording				Locate	Macro
Snapshot				Macro	Enable
Cloning Permitted	Yes			Detach Macro	
Live Mode Behaviour	Enabled				Locate
Current Lamp Color					Button

When a button is selected, this menu can be used to enable/disable functions listed below. Lamp From:

**Clone** - will set the button lamp to light up the same as the cloned function, i.e. if live to air the button will turn Red.

Normal - switches the lamp between its normal Green color and the Red cloned color

Macro - this will allow a lamp to be lit from a macro assignment

Bitmap From

Clone - displays a bitmap from the cloned function (above left)

**Normal** - by default, a User Function Button would be blank normally, however this will still allow the clone function to work.

**User** - displays a bitmap from the User Function, Edit Button Bitmap menu.

**Snapshot Recording** 

Inhibited - inhibits the user function buttons ability to record a snapshot.

Allowed - allows a user function button to save a snapshot

## **Edit User Bitmap**

In the button information menu, press the **{Locate Button}** in the menu and then press any button on the Maverik control surface, a new option in the Button Information menu will appear - **Maverik Button**.

			Button Ir	nformation <u>[</u>	<b>Store 1</b>	User Function Buttons
Clone Name				Edit User Bitmap		Draw Settings 🖈
Active Functions		Normal	Clear	Live Mode	•	Store Store 1
Macro	Not Attache	ed	Snapshot			Sub-Clip 1 Grab
Button Delay	00:00		Locate Clone	Clone Enable		
Lamp From		Normal Macro				Overlay Icon 0 Grab
Bitmap From			Detach Clone	Normal Active		Preset Library 36 O Grab
Snapshot Recording			Locate	Macro		User Library 1 O Grab
Snapshot			Macro	Enable		
Cloning Permitted	Yes		Detach Macro	Stop All Macros		
Live Mode Behaviour	Enabled			Locate		
Current Lamp Color				Button	Clear Edit Invert Bitmap	Save to User Library Changes

The **Edit User Bitmap** button will open a new menu that allows the user to create Bitmaps, grab images from stores or grab icons from and icon gallery, which can all be loaded on to the **OLED User Function Buttons** on the Maverik control surface.



A bitmap from a pre-installed library can be selected using the **Preset Library** parameter. A mimic of the lcon will appear in the larger gray square to the left of the menu. Running through the library of bitmaps, a user defined library can also be created and selected in this way. Once the required icon is found, press the **{Grab}** action button and this will place the library icon on to the large gray square.

Touching the **{Grab} Overlay Icon** will allow the user to select an icon from the icon library to save to the User Library and use as a bitmap for a user function button.

Touching the **{Grab} Preset Library** will allow the user to grab a bitmap to use for a user function button.

Touching the **{Grab} User Library** will allow the user to grab a user defined bitmap to use for a user function button.

When happy with the Bitmap in the display, move onto the **{Save}** menu.

To create an icon, touch the Drawing Settings menu link button to open the Drawing Settings menu.

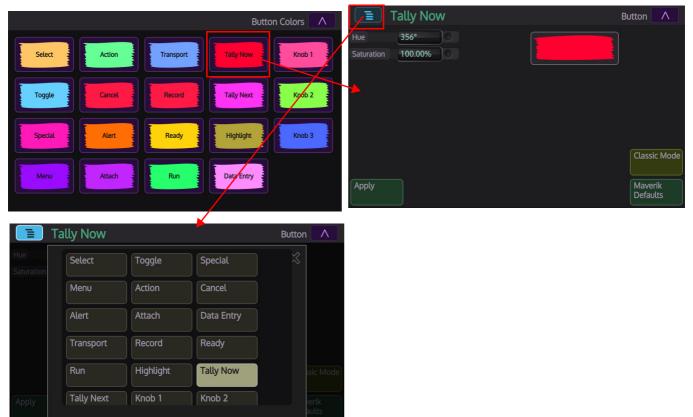
Select **Pen** from the **Draw Mode** parameter and the user can create their own icons by drawing in the large gray area. To delete any mistakes in the grid, select **Eraser** in the **Draw Mode** parameter and rub out the mistake in the grid. There are 5 different brush sizes to select from. Select "**Move**" in the drawing Settings menu and then touching the image that was just created, the user can move the image around the inside the box.

When happy with the icon press the **{Save to User Library}** button and the icon will be saved to the User Library.



# Colors

This menu allows the user to set user defines color schemes to specific buttons on the control surface and knobs on the MAV-GUI and change color schemes for actions and alerts.



All of the buttons and knobs and alerts on the MAV-GUI and the control surface can have their default color schemes changed in this menu. The diagram above shows an example of the Tally Now adjustment menu. touch one of the items in the main menu and an adjustment menu will appear.

The default color can be changed by adjusting the Hue and Saturation parameters. Touching the **{Classic Mode}** will put a uniform back light on the buttons on the control surface.

## **ME Colors**

This menu allows the user to set different color schemes for individual M/Es on the control surface.

	ME Colors A	-	ME Colors
ME1 Hue 137° O Sat 85.00% O		ME 1 Hue 328° Sat 85.00%	
ME 2 Hue 137° Sat 85.00%		ME 2 Hue 137° Sat 0.19%	
ME 3 Hue 137° Sat 85.00%		ME 3 Hue 73° Sat 100.00%	
ME 4 Hue 137° Sat 85.00%		ME 4 Hue 289° Sat 100.00%	
ME5 Hue 137° Sat 85.00%		ME 5 Hue 355° Sat 85.00%	
ME 6 Hue 137° Sat 85.00%		ME 6 Hue 137° Sat 85.00%	
Apply		Apply	

Adjusting the parameter control will change the color scheme on all the available M/Es. Press the **{Apply}** button to apply the color scheme to the M/Es.

## **GUI Colors**

This allows the user to set user defined color schemes for the different elements of the MAV-GUI menus.

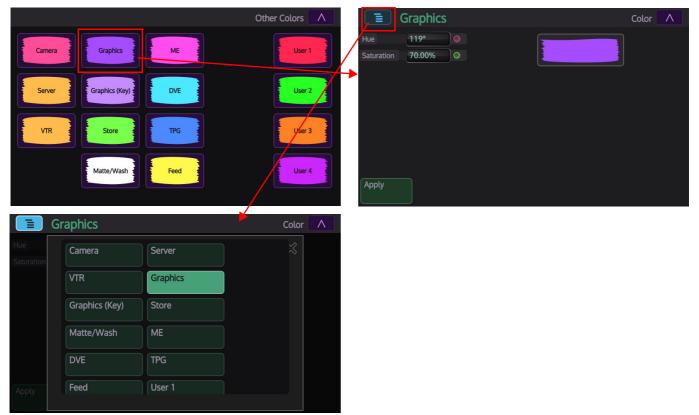
		GU	I Colors 🔨		Changed Value	GUI 🔨
Normal Valu	Changed Value	Modulated Value Highlighted Value	Text Label	Hue Luma	198° • 70.00% •	
System Delegate	ME Delegate	VE Delegate	Sub Layer Delegate	Saturation	29.00%	
Background	d Foreground	List Popup	Keyboard Popup			
				Apply		
	hanged Value		GUI A			
Hue	Background	Foreground	**			
	List Popup	Keyboard Popup				
	Normal Value	Changed Value				
	Modulated Value	Highlighted Value				
	Text Label	System Delegate				
	ME Delegate	DVE Delegate				

All of the **Preferences - Colors** menus allow the user to set their own color scheme preferences. Touch one of the options in one of the menus and a color adjustment menu will appear. Use the **Hue**, **Luma** and **Saturation** parameters to change the color scheme, when happy with the adjusted color, press the **{Apply}** button.

Each one of the items in the **GUI Colors** menus changes a different element of the MAV-GUI menu layout. These colors do not apply to any of the buttons in the MAV-GUI menus.

## **Misc Colors**

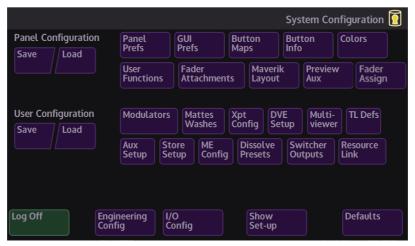
The Other Colors menu allows the user to change the preset color scheme of the Maverik Color crosspoint buttons.



In the **Crosspoint Mapping** menu on the **GUI**, the user can select crosspoint in the table and then use the **Maverik Color** parameter to set a preset color scheme for the selected crosspoint. The Other Colors menu allows the user to select and change the preset colors in the Maverik Color list. Touch one of the colors and then use the Hue and Saturation parameters to adjust to the desired color, then press the **{Apply}** button.

#### Fader Assign

Please see the **Peripherals - Audio Mixer** section of this manual for an explanation of "**Fader Assign**".



# **User Functions**

The **User Function Buttons** on the MAV-GUI emulate the physical MAV-UFB and MAV-AUTO modules. They are used for recalling Macro/Clone/SS (snapshot), ME Memory, DVE Memory, Store, GMEM, eKey and ME/DVE Memory. They are also a central point to quickly save and recall "Snapshots" of all available M/E's. This section of the manual describes how to setup and use the user function feature of Kahuna.

## **MAV-UFBPAD and MAV-AUTO Overview**

Before looking at the User Function button setup, it is useful to have an overview of the MAV modules that the user function software is applied to.

**MAV-UFBPAD and MAV-AUTO** 





	User Fu	unction Pages				User Function Pag	jes [
			DVE1 MEM	STOR 1 GMEM	USER 5 USER 6	USER 7 USER 8	
		EFGHIJ	Edit Bitmap			ABCDEFGH	I J
	Page 1 0				Page	10	
4 5 6	Page Type ME Memo	ry O			Page Type	Macro/Clone/SS	
7 8 9	ATM Layou	nt Next Used Page				ATM Layout	ext sed Page
/ O ME1	Cut Button Copy Butto	n Paste Button			Cut Button		iste Jtton

Note: The Layout Pages for the MAV-UFBPAD module are user defined and can be setup in the Panel Config - User Functions menus.

A User Function Button Pad that allows the user to directly load Macro/Clone/SS (snapshot), ME Memory, DVE Memory, Store, GMEM, eKey and ME/DVE Memory. The OLED buttons are user defined in the **Panel Config - Macros** menu.



**DMEM** - press the DMEM button and the OLED buttons display numbers 0 - 9 and a "/" (forward slash), OLED button - bottom right displays the current M/E.

Hold down the DMEM button and the available M/Es are displayed in the OLED buttons. Loading a DMEM - Hold down the DMEM button and select which M/E the DMEM is to load into (or press {Current ME} bottom left). Then use the number pad to enter the Project number, then press "/" and enter the File number, finally press the OLED button "bottom right" to select.

Example: M/E3 - 12 (project) / 05 (file) - Press OLED button to select.

The same procedure as above will apply when loading a DVE or Store.

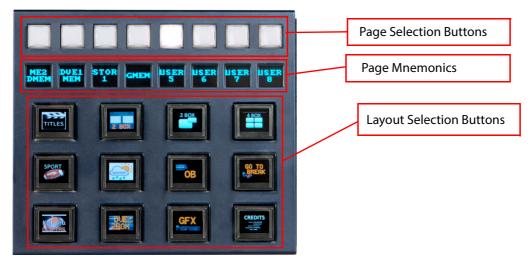
GMEMs are slightly different, the user does not have to enter the M/E as GMEM's are global and will affect the whole control surface.



**Macro** - the macro User Function Buttons are setup and programmed by the user, so are empty until macros are loaded into them.

Each of the 4 Macro buttons has ten pages of layouts and each layout can have 10 macros attached to them, so, a MAV-UFBPAD can hold 400 macros.

To access a macro, hold down a [Macro] button, then select a "Layout" using one of the OLED buttons. Then select a macro using the OLED buttons.



**MAV-AUTO** 

Note: The Layout Pages for the MAV-AUTO module are user defined and can be setup in the Panel Config - User Functions menus.

The Automation module that allows the user to directly load Macro/Clone/SS (snapshot), ME Memory, DVE Memory, Store, GMEM, eKey and ME/DVE Memory. The OLED buttons are user defined in the **Panel Config - Macros** menu.

**DMEM** - press the DMEM button and the OLED buttons display numbers 0 - 9 and a "/" (forward slash), OLED button - bottom right displays the current M/E.

Hold down the DMEM button and the available M/Es are displayed in the OLED buttons.

**Loading a DMEM** - Hold down the DMEM button and select which M/E the DMEM is to load into, (or press **{Current ME}** bottom left). Then use the number pad to enter the Project number, then press "/" and enter the File number, finally press the OLED button "bottom right"

to select.

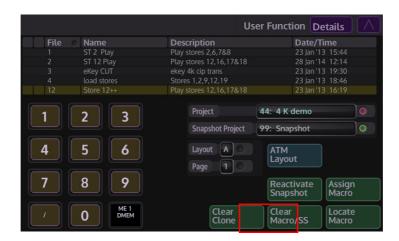
*Example:* M/E3 - 12 (project) / 05 (file) - Press OLED button to select.

The same procedure as above will apply when loading a DVE or Store. GMEMs are slightly different, the user does not have to enter the M/E as GMEM's are global and will affect the whole control surface.

**Macro/User Function Buttons** - the macro User Function Buttons are setup and programmed by the user, so are empty until macros are loaded into them.

Each of the 4 Macro buttons has ten pages of layouts and each layout can have 10 macros attached to them, so, a MAV-UFBPAD can hold 400 macros.

To access a macro, hold down a **[USER]** button, then select a "Layout" using one of the OLED buttons. Then select a macro using the OLED buttons.



## Layouts

On entering the **Panel Config - User Function** menus, the first menu that will be displayed will be the "**Pages**" menu, but it is a good idea to go to the "**Layouts**" menu first, to setup the "**Active Layouts**" before assigning functionality to the user function buttons. At the top of the menu, touch the {Pages} menu link button and a User Function options popup will be displayed (as shown below). Touch the {**Layouts**} button to display the **Panel Config - User Function Layouts** menu.

		User Fun	ction Layouts					
Group A B		Active Lay	User Function	n 🔆 Group A B	Bus Positio	n Cluster Inde 2 2	on Layouts	
Module Bank	A Pos 1 (2)		Shov					
				Module	Bank A Pos 1 (2)		Show	Banks

**Parameter Controls and Table** 

**Group** - this refers to the **M/E Group** that the MAV-AUTO/MAV-UFBPAD were set to in the **Panel Config - Maverik Layout** menu, (shown above are 2 MAV modules that have been set to M/E Group A and B).

**Bus Position** - this refers to the bus position given to the MAV module in the Maverik Layout menu when setting the Maverik control surface up.

Cluster Index - this is MAV-GUI cluster that the MAV modules are connected to.

**Active Layout** - these are the layouts given to each individual MAV module, so that they can be given individual **Page** and **Button** layouts. Up to 10 different active layouts (A - J) are available. If MAV modules require the same layout, then the Active Layout letter should remain the same for each MAV module, if all need MAV modules need to have different layouts, then all should be given a different Active Layout letter.

Module Selector - this parameter scrolls through the list of MAV modules in the table

When pressed, the **{Show Banks}** action button will make the **User Function buttons and Mnemonic displays** on each MAV module display which Group they are attached to.

## Pages

This is the firs menu that will appear when entering the User Function menus. Here, MAV-AUTO/MAV-UFBPAFD Pages and Buttons are setup as a user defined layout and the Page bitmap graphics can be changed if required.

				User	Function	ages 🔨
		ME1 DVE1 STOR GME	M USI		USER 7	JSER 8
		Edit Bitmap			lex 2	
Function select buttons on the MAV-UFBPAD				Page 1	0	
and MAV-AUTO and Mnemonic display				Page Type ME Consolidate Layouts	E Memory ATM Layout	
	1	9 / 0 ME	1		Copy Button	Paste Button

Layout - this parameter scrolls through the Active Layouts that were assigned to the MAV modules in the "Layouts" menu. When scrolling through, the Pages and Buttons layouts in the menu will change to reflect the layout on each MAV module.

Page - this parameter will scroll through each of the Page buttons in the "Page" area of the menu.

A Page buttons layout changes on an individual button by button basis, depending on the selected "Page Type" function assigned to each page button, or what may have been assigned from the "Edit Page Bitmap" menu.

Touch a page button to select it, or use the "Page" parameter to scroll through the buttons. The page button will turn brown.

The Page button display (in the menu above), displays the page button layout for each active layout, for each MAV module.

For the MAV-AUTO module, the text on the page button in the menu reflects what is seen in the mnemonic displays on the MAV module.

For the MAV-UFBPAD module, the page button layout will reflect by default the layout of the small white function buttons at the top of the module.

**Page Type** - this parameter scrolls through the list of Button Functions that can be assigned to each Page button. There are 8 Page (function buttons) and 12 User Function Buttons on each MAV module, giving the user up to 96 individual programmable OLED buttons to select, or 7 different Page Type Layouts per Page function button.

Buttons - this button grid displays the User function buttons that emulate the OLED buttons on the MAV module. Button layouts will change depending on the Page Type selected.

Note: Macros that have OLED button images can only be associated with a macro in the "Macro - Bitmap" menu. The same applies to user defined text created for OLED buttons.

#### Page Type Parameter (continued)

		Us	er Function	Pages A
ME1 DVE1 STOR DMEM MEM 1	5MEM USE 5		R USER 7	USER 8
Edit Bitmap		GUI	Index 2 🔳	
		Layout	A	
		Page	1 0	
1 2 3	4	Page Type	ME Memory	
567	8	Consolidat Layouts	ATM Layout	
9 / 0	ME 1 DMEM	Cut Button	Copy Button	Paste Button

Note: Re-calling DMEMs, DVEMEMS, GMEMs etc. is explained at the start of this section (User Function).

**Macro/Clone/SS (Snapshot)** - this will display all Macros, Cloned buttons or Snapshots applied to each Button.

**ME Memory (DMEM)** - this will set the selected OLED Button layout as a numeric keypad so that DMEMs can be re-called.

**DVE Memory**- this will set the selected OLED Button layout as a numeric keypad so that DVE setups can be re-called.

**Store** - this will set the selected OLED Button layout as a numeric keypad so that a Still or a Clip can be re-called.

**GMEM** - this will set the selected OLED Button layout as a numeric keypad so that a GMEM can be re-called.

**eKey** - this turns the OLED buttons into M/E eKey "Cut", "Auto" and "Time" for the available eKeys for each M/E.

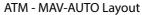
**ME/DVE Memory** - this will set the selected OLED Button layout as a numeric keypad so that ME/DVE memories can be re-called.

**{ATM Button Layout}** - this change the User function button layout in the menu to emulate the OLED buttons on the MAV-AUTO module and the MAV-UFBPAD module.



MAV-UFBPAD Layout





The **{Edit Page Bitmap...}** menu link button will enter the User Function Page Bitmap menu. The menu allows the user to apply a simple image or text to a Page button.

Note: The change of text or image in the "Edit Page Bitmap" menu can only be displayed in the mnemonic displays on a MAV-AUTO module.

## **Edit Page Bitmap**

In the ATM Layout menu, touch the **{Edit Bitmap}** button to open the Bitmap menu. This menu allows the user to attach a user defined bitmap or text to a Page button. The bitmap text can be typed in using the on-screen keyboard, or a bitmap image created or chosen from a selection of preset bitmaps from a library.

User Function Pages	STORE 1	
ME1 DMEM DVE1 MEM 1 GMEM USER USER USER 6 7 8	Draw Settings	
Edit Bitmap	Sub-Clip 1 Grab 1	
Page 1 0	Overlay Icon 0 Grab	
Page Type ME Memory	Preset Library 1 Grab	
5   6   7   8       ATM   Next     Used Page	User Library 1 Grab	
9 / 0 ME1 Cut Copy Paste Button Button	CLear Edit Invert Bitmap Save to User Library Changes	

Grabbing an Overlay Icon or an image from the Preset/User Libraries

Rotate one of the 3 parameter controls "Overlay Icon", Preset Library" and "User Library", notice that the images in the window change. Once happy with the bitmap, touch the **{Grab}** button and the bitmap will be displayed in the bitmap grid.

## **Creating a Bitmap**

If the user decides to create a bitmap, the bitmap can be drawn or typed into the bitmap grid area, and then saved to the **User Library**. To hand draw a bitmap, select **Pen** in the **Draw Mode** parameter, and then select the **Brush Size**. Create the bitmap in the grid area, if a mistake is made, select **Eraser** and erase the mistake out in the grid.

Once happy with the bitmap, press **{Save to Library}** and the bitmap will be saved to the User Library, up to 50 bitmaps can be stored and recalled.



## **Entering Text**

Select "**Text**" in the **Draw Mode** parameter, then select the required font size in the **Font** parameter. Touch the grid to select where the text will be placed, press the **{Keyboard}** button and an on-screen keyboard will appear, then type the text on the keyboard. When finished press the **{Enter}** button on the keyboard.

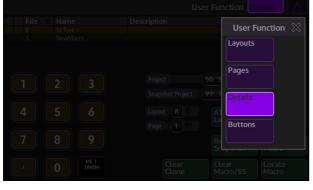
Text can also be saved into the User Library.

STORE 1	
	Draw Settings 💥
	Draw Mode Pen Eraser Text Move
	Brush Size 12 3 4 5
	Font 4 x 6 Narrow
	Overlay Icon 0 Grab
	Preset Library 1 Grab
	User Library 1 Grab
Clear Edit	Save to User Library Changes

Once happy with the bitmap, select the User Function button by touching the screen, the button will turn Orange, then press **{Apply Changes}**. The bitmap will then be displayed in the Page button.

## Details

In the User Function popup window touch the {Details} menu link button. This menu displays all the information related to user function buttons on all the different Pages, Layouts, Macros, Snapshots etc. that have been assigned to the User Function buttons.



			Us	er Function	Details	
File 💿 N	lame	Descriptio		Date	e/Time	
	T 2 Play	Play stores 2	,6,7&8	23 Jai		
2 S 3 el	T 12 Play	Play stores 1	2,16,17&18	28 Jai	n'14 12:14	
	Key CUT	ekey 4k cip t		23 Jai	n'13 19:30	
	oad stores	Stores 1,2,9,	12,19	23 Jai	n'13 18:46	
12 S		Play stores 1	2,16,17&18	23 Jai		
1 2	3	Projec Snaps	ct shot Project	44: 4 K demo 99: Snapshot		0
4 5	6	Layou Page	t A O	ATM Layout		
7 8	9			Reactivate Snapshot	e Assign Macro	1
· 0	ME 1 DMEM		Clear Clone	Clear Macro/SS	Locate Macro	

#### **Parameter Controls:**

**Project** - allows the user to select the project where the required macros are saved, the individual macros will then be displayed in the Macros table (shown in the menu above).

**Snapshot Project** - Snapshots are saved to projects, the default project for snapshots is Project 99, but can be user assigned to any project. Use this parameter to select which project a Snapshot is saved into. Touch to highlight a snapshot in the table and then assign. The attacher next to the button layout displays the number (register number) of the highlighted User Function button, the control function (Type) attached to the button, the Project, a Store/Macro if attached, and the file position of the Store/Macro in the Project.

Layout - this scrolls through the available Active Layouts.

Page - this selects one of the 8 available pages Layouts with the macros can be attached to.

**{ATM Button Layout}** - this change the User function button layout in the menu to emulate the OLED buttons on the MAV-AUTO module and the MAV-UFBPAD module.

The **{Locate Macro}** button will locate the position/description of the macro in the Macros table.

For example: if a macro button us highlighted by the Red square, and the light Blue in the Macros table is on a different Macro function, pressing the **{Locate Macro}** button will make the light Blue bar jump to the correct Macro file in the table.

#### **Buttons:**

**Reactivate SS** - if a macro is cleared from a user function button by accident, the Reactivate SS will restore the macro to the button.

Note: This is an immediate restore of a snapshot, and will only restore snapshots that have just been cleared from a user function button.

**Assign Macro** - this assigns macros to user function buttons. Touch an empty user function button in the menu, then select a macro from the table and press **{Assign Macro}**, the macro and any associated bitmap image is now attached to the user function button.

Clear Macro/Snapshot - will clear the macro or snapshot function from the table and Button.

Clear Clone - will clear the clone function from the table and Button

**Locate Macro** - this will locate a macro from any project, when attached to a user function button. If a macro is attached to a user function button, touch the button in the menu to high it then press the **{Locate Macro}** button and the macro will be highlighted in the macro list at the top of the menu.

#### **Buttons**

This menu is used to locate a button/page /layout where a macro clone or snapshot is currently attached and allows the user to clear the macro, clone or snapshot from the list.

	User Function Buttons			Use	er Function Butt	ons
	User Function 💥	# • Action	S/Shot Macro	Clone	Lamp	Bitmap
	Layouts	1				
		3				
	Pages	4				
		5				
	Details	6				
		8				
		9				
	Buttons	10				
		12				
		GUI Index 2			ſ	lear
		Layout A			1	/acro/SS
		Page 1				Clear Clone

## Table:

# (number) - user function button number 1 to 12

**Action** - displays the action attached to the user function button, Macro, Snapshot, Page Select GMEM etc.

S/Shot - displays the project and snapshot file number

Macro - displays the project and macro file number

Clone - displays the cloned function

**Lamp** - displays the type of lamp that will light the user function button. The user function button lamp default settings means the button lamp will be lit according to the button cloned/macro assigned or snapshot. The user is also able to assign a button color from a preset selection; using the **Lamp Mode** parameter. Select an action, then select a color. The selected lamp color is displayed in the **Lamp** column.

Bitmap - displays where the bitmap is taken from

#### **Buttons:**

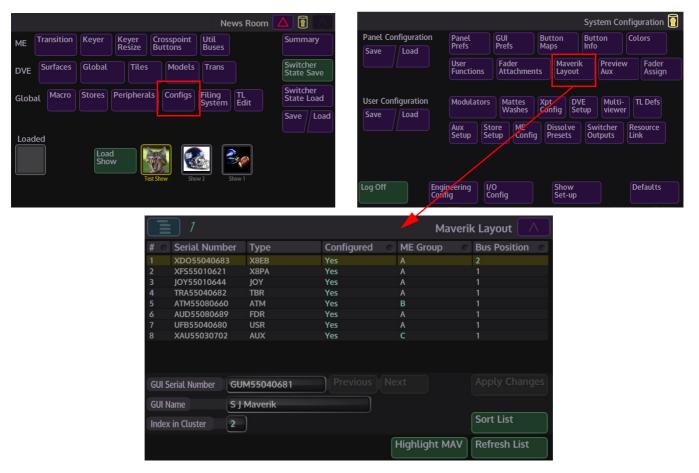
Clear Macro/Snapshot - will clear the macro or snapshot function from the table and Button.

Clear Clone - will clear the clone function from the table and Button.

## **Maverik Layout**

Once the MAV-GUI has logged in to the mainframe, the MAV-GUI or MAV-GUIs now have to know where the MAV modules are positioned within the control surface, so that for example, the crosspoint MAV module buses are setup correctly.

In the home menu, touch the **{Configs}** button, then in the **"System Configuration**" menu, touch the **{Maverik Layout}** menu link button in with the Panel Configuration functions.



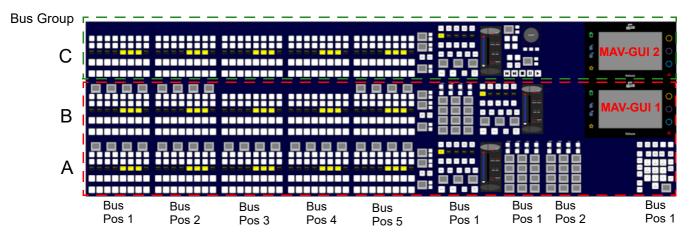
The table in the menu, displays all the MAV modules that are physically connected to the MAV-GUI that is currently selected. The "GUI Serial Number" box under the main table shows the user which GUI is currently selected, this can also be confirmed by pressing the **{Highlight MAV}** button. This becomes useful when there are multiple MAV-GUIs in a control surface.

It is vital to set the layout of MAV Xpt modules correctly to make sure that the crosspoints run in the correct numbered sequence.

To do this, use the rotary parameter to scroll through the table and select the first MAV Xpt module (the first MAV Xpt module on the left side of the control surface), again, this can be confirmed by pressing the **{Highlight MAV}** button. Then, using the BUS Position parameter, give the MAV module the number "1", use the ME Group parameter to place the module in an ME Group (e.g. A) and finally, press Configured **{Yes}**.

The above steps are repeated for the MAV Xpt module to the right of the first one, giving the module a Bus Position of 2, and so on for all the MAV Xpt modules and the other modules.

If there is a second MAV-GUI in the control surface, touch the **{Next}** button and then the "GUI Serial Number" box under the main table will display the second MAV-GUI and the table will display all the MAV modules connected.



**Example of Maverik Module Layout** 

The example above displays a Maverik Module Layout where all the MAV modules in **Bus Group A/B** are connected to **MAV-GUI 1** and the all the MAV modules in **Bus Group C** are connected to **MAV-GUI 2**.

**Bus Group A** shows the correct **Bus Position** numbering for the MAV Xpt modules, the MAV Tbar module, MAV UFB modules and the MAV Number Pad.

Once the **Maverik Module Layout** has been configured for the whole control surface, press the **{Save Changes}** button to save the layout.

Note: If any MAV Xpt modules are removed or their position changed and the system is re-booted the module layout will be lost.

# **Global Configs - User Configuration**

# **User Config**

The User Config menus now have the addition of Modulators and the new Format independent multiviewer.

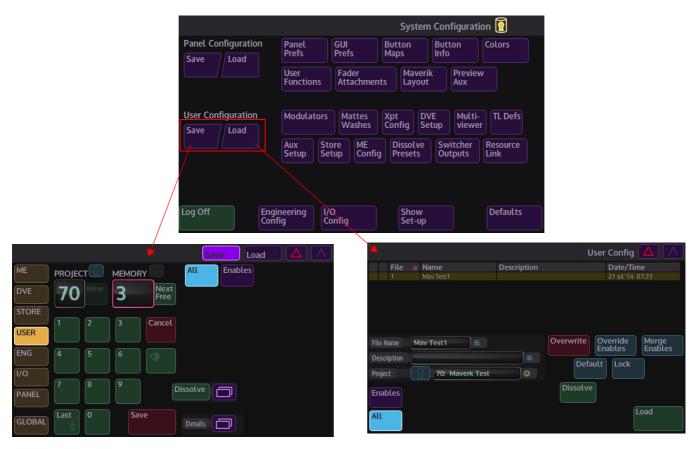
To get to the User Configuration menu, press the **{Configs}** button in the Home menu.

						1	News Room							Syste	em Configu	ration 🔨
ME	Transition	Keyer	Keyer Resize	Crosspoint Buttons	Util Buses	ME Buses	Summary	Panel Co Save	onfiguratio		Panel Prefs	GUI Pre		Button Maps	Button Info	Colors
DVE	Surfaces	Global	Tiles	Models	Trans		Switcher State Save				Jser Unction		der sign	Maverik Layout	Preview Aux	
Glob	al Macro	Stores	Periphera	ls Configs	liling System	TL Edit	Switcher State Load	User Co Save	nfiguration		∕lodulat			Crosspoint Config	DVE Setup	Multiviewer
		rent Project	50: SJ	Test Proj	Cha	nge	Pad Pad				lux Setup	Store Setup	ME Config	TL Defaults	Switcher Outputs	Resource Link
	led	Load Show	Ŵ			Kahuno orts Show 5	LiveSports	Log Off		Engine Config		I/O Config		Show Set-up		Defaults

See the next page for the Save & Load menus.

#### **Save & Load Menus**

In the User Config menu, the user can access the "Save/Load" menus to create a new user config file or choose a pre-saved user config.



To **"Load"** a file, touch the **{Load}** button, (as shown in the menu above) use the **"Project**" and **"File**" parameters to select the required file (the fine will be displayed in a table in the top half of the menu), then press the **{Load}** button.

Pressing the {Default} button will load the default user config file.

If changes are made, press the **{Overwrite}** button to overwrite the User Config. A dialog box will appear (below) and asks the use to confirm the overwrite.

			Engi	neering C	Config	$[\Delta] [ \land$
	Confirm O	verw	vrite			
Ма	Engineering Cor	nfig 1 ir Overv	n project 70 al write it ?	ready exi	sts	
2	Retain File Enabl	.es Y	es, Overwrite	Cancel		

**Override Enables** - will override any enables that have been de-selected and turn the enable on.

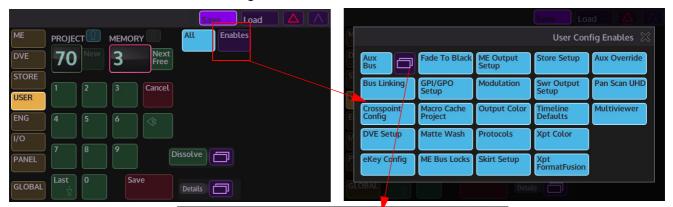
**Merge Enables** - this function merges the enables currently set in the switcher with the enables saved in the file is being loaded (a 'logical OR' of the enables).

Press the **{Save}** button to open the **"Save"** menu. The **Save** menu allows the user to quickly select a project and a memory file, use the colored rotary controls the correspond to the Project number and Memory number. When selected, touch the **{Save}** button. To create a new file within a project, touch the **{Details}** menu link button and the User Config - File Details menu will be displayed.

					Save	Load						User Confi	g - File Details
ME	PROJEC	тΩ	MEMOR	Y	All	nables				Name	Description		Date/Time
DVE	70		3	Next									
			2	Free									
STORE							1						
	1	2	3	Cancel									
USER				Cancer				Name					
								Descri	iption				
ENG	4	5	6				· ·			70 O New			
1/0								Projec	a (				
1/0	7	8	0					Last Lo	oaded				
PANEL				D	issolve 🛛 🗲	<b>อ</b> โ							
PANEL						<u> </u>		Name		Mav Test1			
	Last	0	Sav	10							Re	tain Name &	
GLOBAL			Sdv	e	Details	ล		Descri	iption		De	scription	
						<b>1</b> -							

In the File Details menu, the user can select a project to save the User Config file into, then use the "File" parameter control to scroll down the table and select a used or unused file slot. A Name and Description can be given to the new User Config file. To do this, touch the **Name** or **Description** bar, a cursor on-screen keyboard popup button, then use the on-screen keyboard to type the new name.

Back in the Save main menu, touch the **{Enables}** button and the **User Config - Enables** will be displayed. The menu allows the user to Enable/Disable enables options that will be saved with the new User Config file.



							User C	onfig Au	Jx Enab	les 🔀
	1	2	3	4	5	6	7	8	9	10
	11	12	13	14	15	16	17	18	19	20
JS	21	22	23	24	25	26	27	28	29	30
IN	31	32	33	34	35	36	37	38	39	40
/<	41	42	43	44	45	46	47	48	49	50
24	51	52	53	54	55	56	57	58	59	60
51	61	62	63	64	All	l On	All Of		Enable	:S

All - enables all Enables

# Modulators

The modulation function enables the user to add modulation effects to transitions, wipes, borders, 2D effects and 3D effects. The type of modulation applied to a function is selectable and can be added to many different parameters, whether it is Global, Bus, I/O, DVE or User related.

The modulators are sorted into relevant Groups, determined by their subject matter: **Global Modulators** - are used to modulate multiple parameters in a fixed relationship. **M/E Bus Group** - displays modulator parameters within a Bus function, such as Transition of a Keyer.

**M/E Trans Group** - displays the modulates parameters within the Transition functions. **User Config Group** - displays modulated parameters within a User function, such as Mattes and Washes.

**I/O Config Group** - displays modulated parameters within an I/O function, such as Red Gamma in RGB Input Color.

**DVE Group** - displays modulated parameters within a DVE function.

			Systen	n Configurat	ion [		1od 1			Modulators - G	ilobal 🔨
Panel Configuration	Panel	GUI	Button	Button	Colors	Name	Туре	Run	Frequency	Gain	Phase
Save Load	Prefs	Prefs	Maps	Info		Mod 1	Sine	Yes	1.00 Hz	50.00%	0:000°
Loud						Mod 2	Sine	Yes	1.00 Hz	50.00%	0:000°
	User Functions	Fader Attachmer	Maveri		v	Mod 3	Sine	Yes	1.00 Hz	50.00%	0:000°
	FUNCTIONS	Attachimer	nts Layout	AUX		Mod 4	Sine	Yes	1.00 Hz	50.00%	0:000°
						Mod 5	Sine	Yes	1.00 Hz	50.00%	0:000°
	-					Mod 6	Sine	Yes	1.00 Hz	50.00%	0:000°
User Configuration	Modulators	Mattes	Xpt D'	/E Multi-	TL Defs	Mod 7	Sine	Yes	1.00 Hz	50.00%	0:000°
Save Load		Washes	Config Se	etup 🛛 viewe	r	Mod 8	Sine	Yes	1.00 Hz	50.00%	0:000°
Save						Mod 9	Sine	Yes	1.00 Hz	50.00%	0:000°
		ore ME confi	g Dissolve Presets	Switcher Outputs	Resource Link	Mod 10	Sine	Yes	1.00 Hz	50.00%	0:000°
						Name None				All Start	ALL STOP
Log Off Eng	ineering I/ fig C	O onfig	Show Set-up		Defaults	Global	ME Bus Group	ME Trans Group	User Config Group	I/O Config Group	DVE Group

Note: The initial setup of modulators has to be done using the Soft MLC GUI, following the process listed below. once this has been done, the MAV-GUI can be used to adjust the modulation functionality.

## **Basic How to Use Modulators**

How to Use the Modulator Function

The setup sequence will follow these 3 easy steps:

- 1 Select the function the modulation is going to be attached to, and touch the **{MOD ASSIGN}** button.
- 2 Select the parameter that the modulation will be attached to, and touch the **{SNAP NORM}** button to attach the modulator.
- 3 Touch the **{Done}** button in the dialog box.



Select the function the modulation will affect, then select the parameter the modulation will be attached to.

Touch the **{MOD ASSIGN}** button, it will flash red and a dialog box will be displayed with "Assign Modulators" and asking you to "Select parameter(s) to modulate". Then touch the **{SNAP NORM}** button for the parameter you want to modulate. Notice that the selected parameter display now has a blue "sinewave" symbol top right of the box, as shown below.



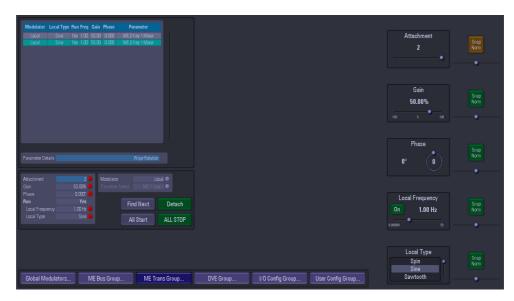


Also notice that the attacher that displays the parameter settings has turned blue as shown below.

Position	On
X Position	0.00 🔴
Y Position	0.00 🔴
Rotation	0:000° 🔴

Touch the {Modulate} button to display the modulator group menu, and you will be able to see the attached parameter function in the table.

The specific modulator setup can now be adjusted using the Gain, Phase, Local Frequency and Local Type parameters.



Note: If a parameter is selected and a modulator cannot be attached to it, a dialog box will appear in the menu stating that the parameter cannot be modulated.

#### **Global Modulators**

Touch the [MODULATE] button to enter the Modulators menu.

	Mod 2					Modulators Global		E Mo	od 2					Modu	lators Global
Name	💿 Туре	O Run 4	Freq	• Gain	Phase	Transition Select	0								
Mod 1	Sine	Yes	1.00 Hz	50.00%	0:000°	ME 1 Key 1		Delegat	e						
Mod 2	Sine		1.00 Hz	50.00%	0:000°	ME 1 Key 1									
Mod 3	Sine		1.00 Hz	50.00%	0:000°	ME 1 Key i		Mod 1	Mod 2	Mod 3	Mod 4	Mod 5	Mod 6	Mod 7	Mod 8
Mod 4	Sine		1.00 Hz	50.00%	0:000°	ME 1 Key 1		Mour	MOU 2	MOU 3	MOU 4	MOU 5	MOUO	mou /	MOU 0
Mod 5	Sine		1.00 Hz	50.00%	0:000°	ME 1 Key 1									
Mod 6	Sine		1.00 Hz	50.00%	0:000°	ME 1 Key 1		Mod 9	Mod 10						
Mod 7	Sine	Yes	1.00 Hz	50.00%	0:000°	ME 1 Key 1		inou /	iniou ro						
Mod 8	Sine	Yes	1.00 Hz	50.00%	0:000°	ME 1 Key 1									
Mod 9	Sine		1.00 Hz	50.00%	0:000°	ME 1 Key 1									
Mod 10	Sine	Yes	1.00 Hz	50.00%	0:000°	ME 1 Key 1									
Name	Mod 2				All	Start ALL STOP									
	Mad 2					Markelatawa Clobal			I - D						
	Mod 2	Run	Freq	Gain	O Phase	Modulators Global			od 2	Run	Freq	Gain		Modula	ators Global
Name	💿 Туре	Run	• Freq	• Gain	• Phase	• Transition Select		Name	Туре	O Run (	<b>Freq</b>	<b>Gain</b>	• Pi		
Name Mod 1	<b>Type</b> Sine	Yes	1.00 Hz	50.00%	0:000°	Transition Select     ME 1 Key 1		Name Mod 1	<b>Type</b> Sine	Yes	Freq		O PI O:		Modulators 💥
Name Mod 1 Mod 2	<b>Type</b> Sine Sine	Yes Yes	1.00 Hz 1.00 Hz	50.00% 50.00%	0:000° 0:000°	Transition Select     ME 1 Key 1     ME 1 Key 1		Name Mod 1 Mod 2	<b>Type</b> Sine Sine				• Pf 0: 0: 0: <b>Global</b>		
Name Mod 1	<b>Type</b> Sine	Yes	1.00 Hz	50.00%	0:000°	Transition Select      ME 1 Key 1      ME 1 Key 1      ME 1 Key 1      ME 1 Key 1		Name Mod 1	<b>Type</b> Sine	Yes			O PI O:		Modulators 💥
Name Mod 1 Mod 2 Mod 3	<b>Type</b> Sine Sine Sine	Yes Yes Yes	1.00 Hz 1.00 Hz 1.00 Hz	50.00% 50.00% 50.00%	0:000° 0:000° 0:000°	Transition Select ME 1 Key 1		Name Mod 1 Mod 2 Mod 3	Sine Sine Sine		1.00 Hz <u>1.00 Hz</u> 1.00 Hz	50.00% 50.00% 58.00%	O PH 0: 0: 0: Global		Modulators 💥 ME Bus Group
Name Mod 1 Mod 2 Mod 3 Mod 4	Sine Sine Sine Sine Sine	Yes Yes Yes Yes	1.00 Hz 1.00 Hz 1.00 Hz 1.00 Hz	50.00% 50.00% 50.00% 50.00%	0:000° 0:000° 0:000° 0:000°	Transition Select ME 1 Key 1		Name Mod 1 Mod 2 Mod 3 Mod 4	Sine Sine Sine Sine Sine		1.00 Hz 1.00 Hz 1.00 Hz 1.00 Hz 1.00 Hz 1.00 Hz 1.00 Hz	50.00% 50.00% 50.00% 50.00%	C Pr C Global		Modulators 💥 ME Bus Group ME Trans
Name Mod 1 Mod 2 Mod 3 Mod 4 Mod 5	<b>Type</b> Sine Sine Sine Sine Sine Sine	Yes Yes Yes Yes Yes	1.00 Hz 1.00 Hz 1.00 Hz 1.00 Hz 1.00 Hz 1.00 Hz	50.00% 50.00% 50.00% 50.00%	0:000° 0:000° 0:000° 0:000° 0:000°	Transition Select ME 1 Key 1		Name Mod 1 Mod 2 Mod 3 Mod 4 Mod 5	Type Sine Sine Sine Sine Sine		1.00 Hz 1.00 Hz 1.00 Hz 1.00 Hz 1.00 Hz 1.00 Hz 1.00 Hz	50.00% 50.00% 50.00% 50.00% 50.00% 50.00%	O PH 0: 0: 0: Global		Modulators 💥 ME Bus Group
Name Mod 1 Mod 2 Mod 3 Mod 4 Mod 5 Mod 6	<b>Type</b> Sine Sine Sine Sine Sine Sine Sine	Yes Yes Yes Yes Yes Yes	1.00 Hz 1.00 Hz 1.00 Hz 1.00 Hz 1.00 Hz 1.00 Hz	50.00% 50.00% 50.00% 50.00% 50.00% 50.00%	0:000° 0:000° 0:000° 0:000° 0:000° 0:000°	Transition Select ME 1 Key 1		Name           Mod 1           Mod 2           Mod 3           Mod 4           Mod 5           Mod 6           Mod 7           Mod 8	Type Sine Sine Sine Sine Sine Sine Sine Sin		1.00 Hz 1.00 Hz 1.00 Hz 1.00 Hz 1.00 Hz 1.00 Hz 1.00 Hz 1.00 Hz	50.00% 50.00% 50.00% 50.00% 50.00% 50.00% 50.00%	C Pr C Global		Modulators 💥 ME Bus Group ME Trans
Name Mod 1 Mod 2 Mod 3 Mod 4 Mod 5 Mod 6 Mod 7	<b>Type</b> Sine Sine Sine Sine Sine Sine Sine	Yes Yes Yes Yes Yes Yes Yes	1.00 Hz 1.00 Hz 1.00 Hz 1.00 Hz 1.00 Hz 1.00 Hz 1.00 Hz 1.00 Hz 1.00 Hz	50.00% 50.00% 50.00% 50.00% 50.00% 50.00% 50.00% 50.00%	0:000° 0:000° 0:000° 0:000° 0:000° 0:000° 0:000° 0:000°	Transition Select ME 1 Key 1		Name           Mod 1           Mod 2           Mod 3           Mod 4           Mod 5           Mod 6           Mod 7           Mod 8           Mod 9	Type Sine Sine Sine Sine Sine Sine Sine Sin		1.00 Hz 1.00 Hz 1.00 Hz 1.00 Hz 1.00 Hz 1.00 Hz 1.00 Hz 1.00 Hz 1.00 Hz	50.00% 50.00% 50.00% 50.00% 50.00% 50.00% 50.00%	Global	onfig	Modulators 💥 ME Bus Group ME Trans Group
Name Mod 1 Mod 2 Mod 3 Mod 4 Mod 5 Mod 6 Mod 7 Mod 8	Type Sine Sine Sine Sine Sine Sine Sine Sin	Yes Yes Yes Yes Yes Yes Yes Yes	1.00 Hz 1.00 Hz 1.00 Hz 1.00 Hz 1.00 Hz 1.00 Hz 1.00 Hz 1.00 Hz	50.00% 50.00% 50.00% 50.00% 50.00% 50.00% 50.00%	0:000° 0:000° 0:000° 0:000° 0:000° 0:000° 0:000°	• Transition Select ME 1 Key 1 ME 1 Key 1		Name           Mod 1           Mod 2           Mod 3           Mod 4           Mod 5           Mod 6           Mod 7           Mod 8	Type Sine Sine Sine Sine Sine Sine Sine Sin		1.00 Hz 1.00 Hz 1.00 Hz 1.00 Hz 1.00 Hz 1.00 Hz 1.00 Hz 1.00 Hz	50.00% 50.00% 50.00% 50.00% 50.00% 50.00% 50.00%	C Pr C Global	onfig	Modulators 💥 ME Bus Group ME Trans

The purple **{Global}** button next to the "Modulators" title, expands to display menu link buttons to all the other modulators:

- Global
- ME Bus Group
- User Config Group
- ME Trans Group
- I/O Config Group
- DVE Group

Global modulators, as mentioned earlier are used to run modulators globally across the logical switcher.

An example could be a color effect modulation that would affect all M/Es globally on the logical switcher.

Use the Delegate button to select the modulator, or touch the rotary control attacher in the Name column to select the required modulator.

#### **Global Modulators - Parameter Controls**

**Name** - there are 10 individual modulation setup options in this column, each one can be given a unique name, by selecting the required row using the Modulator parameter, then typing the name into the Name attacher.

**Type** - this is the modulation effect used, either Spin, Sine, Sawtooth, Triangle, Square, Shake, Linear Drift and Cubic Drift, Static, Bounce and Transition. Preset to start with a Sine wave modulation.

Run - allows the modulation to run.

**Frequency** - adjusts the frequency of the modulation, range from 0Hz to 30Hz. Preset to start at 1Hz

Gain - adjusts the gain of the modulation, range from -100% to +100%. Preset to start at +50%.

**Phase** - changes the phase of the modulation, range 360° plus complete turns, i.e. 5:180° this is 5 complete turns plus 180°.

An individual modulator setup can be switched **On**, by selecting an individual modulation using the Modulator parameter. Next, touch one of the On/Off buttons in the **Frequency**, **Gain** or **Phase** parameter displays.

Notice that "Yes" has now appeared in the Run column of the table.

All the modulator setups in the table can be started by pressing the **{All Start}** action button, or stopped by pressing the **{ALL STOP}** button.

The modulator Gain can be used to adjust how much effect the transition engine has on the modulated parameter. Global Modulators as well as Bus, I/O Config, DVE and User Config group modulators can all use the Transition type modulator.

#### **ME Bus Group**

This is a modulation applied to a parameter that will affect a Bus e.g. transition wipe, Bus color and Keyer parameters, and is for example applied to a Key on an M/E.

Touch the **{ME Bus Group}** menu link button to enter the **Modulators - Bus Config Group** menu.

📃 Mi	<del>1 Key</del>	<del>y</del> 1			Modulato	ors Bus Config Group	🛛 💽 ME 1 Key 1	Modulators Bus Config Group
Modulator	Local Typ	e 💿 Run	• Freq	Gain	O Phase O	Parameter		· · · · · · · · · · · · · · · · · · ·
Local	Sine		1.00 Hz	50.00%	0:000°	ME 1 Key 1 Colour Corrector	ME1 ME2 ME3 ME4	$\approx$
Local	Sine		1.00 Hz	50.00%	0:000°	ME 1 Key 1 Colour Corrector		
Local	Sine		1.00 Hz	50.00%	0:000°	ME 1 Key 1 Colour Corrector		
							Key 1       Key 2       Key 3       Key 4         eKey 1       eKey 2       eKey 3       eKey 4         Bgnd A       Bgnd B	
Parameter D	etails <b>B</b>	rightness				Detach	Util 1 Util 2	
Trans Select	M		0					
	Lo	ocal				ALL STOP		

Use the Delegate button to select the Bus

**Modulator** - this column will show if the modulation is Local to the Bus Config group or if it is attached to a **Global Modulators** setup (displayed as Mod 1 - 10 or named if setup in the **Global Modulators** menu).

Touch the **Modulator** rotary control parameter, then use the parameter to scroll through and select a modulator setup in the table, then use the Modulator parameter to select if the modulation is "Local" to the Bus Group or attached to a **Global Modulators** setup. The **Trans Select** parameter allows the use of the transition engines to control the level of other parameters.

**Local Type** - this is the type of modulation effect, notice that when the Modulator parameter is changed from Local to a Global Modulation the text in the Local Type, Run and Freq columns turns Gray and will not have any affect in the Local setup.

**Run, Freq, Gain and Phase** - these parameters have the same affect on a modulation setup as described on the previous page.

**Parameter Details** - this named box displays the actual function that the modulation is attached to for the selected Bus modulation in the table.

**All Start/ALL STOP** - as described on the previous page, this function will set all the modulation setups in the table to run or stop.

**Detach** - this will delete a selected modulation setup in the table.

User Config Group, I/O Config Group and DVE Group

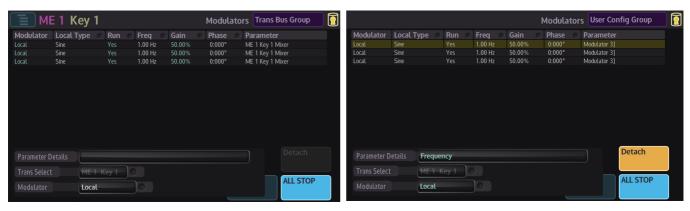
These four menus below work in exactly the same way as the Bus Config Group. They all have a "Local" type modulation setup or can be attached to a Global Modulations setup.

**The DVE Group** modulators are attached to parameters in the DVE Global, M and SURFACE menus.

ME Trans Group modulators are attached to Key and M/E Transitions

The I/O Config Group modulators are attached to parameters in the Input Color menu.

**The User Config Group** modulators are attached to parameters in the Output Color and Mattes & Washes menus.



M/E Trans Group

User Config Group

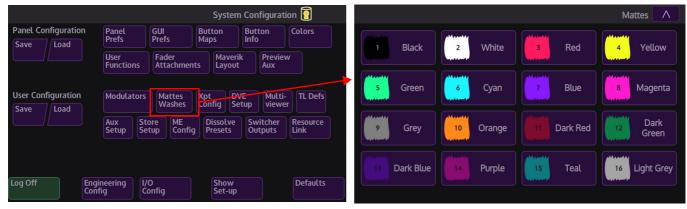
Modulators I/O Config Group	DVE 1 Modulators DVE Group	2
Modulator Local Type Run Freq Gain Phase Parameter	Modulator         Local Type         Run         Freq         Gain         Phase         Parameter           Local         Sine         Yes         1.00 Hz         50.00%         0:000°         DVE 1 Sphere 1] 1]           Local         Sine         Yes         1.00 Hz         50.00%         0:000°         DVE 1 Sphere 1] 1]           Local         Sine         Yes         1.00 Hz         50.00%         0:000°         DVE 1 Sphere 1] 1]           Local         Sine         Yes         1.00 Hz         50.00%         0:000°         DVE 1 Sphere 1] 1]	
Parameter Details Trans Select ME 1 Key 1 ALL STOP Modulator Locat	Parameter Details Rotation Detach Trans Select ME 1 Key 1 ALL STOP	

I/O Config Group

DVE Group

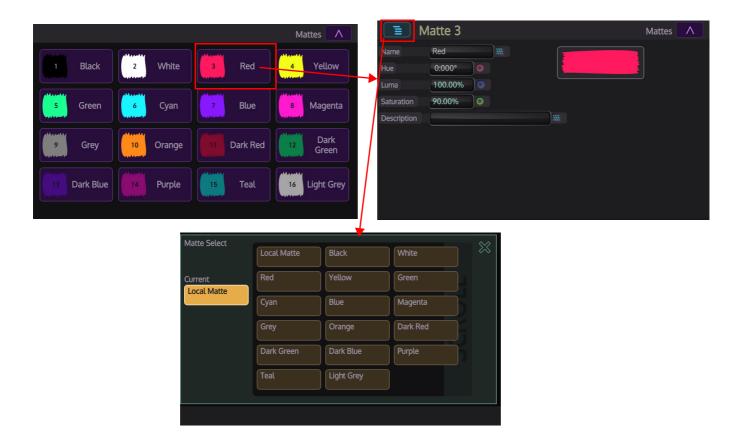
# **Mattes & Washes**

Mattes & Washes can be used as a background, a Fill or a border, they can be set on any crosspoint the in the same way as a Source Input, Store or a Wipe border.



## Mattes

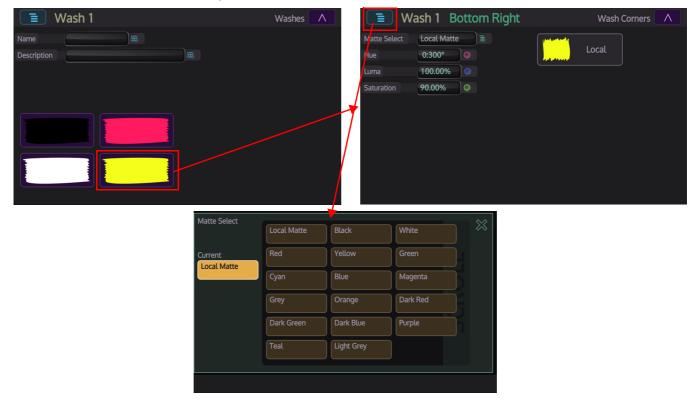
There are a total of 16 mattes that can be setup and used as a source. Touch a Matte color from the menu palette. A second Mattes menu appear, adjust the color using the Hue, Luma and Saturation, using the rotary controls.



When satisfied with the Matte color, a description can be applied to the Matte, to do this, touch the **Name** or **Description** bar, a cursor line will flash in the bar, then touch and hold the **"Star"** button on the MAV-GUI, when the dialog box opens, touch the {**Virtual Keyboard**} button and use the Keyboard. Alternatively, use a USB Keyboard attached to the USB port on the MAV-GUI. If a new name has been given to the matte, keep the number of characters in the name down to 8 (e.g. 4+4) and the Matte will be displayed in the mnemonic on the control panel, if added into the crosspoint as a source.

## Washes

The Wash function will allow a matte to fade from one color to another color as a background or Fill. The Wash can be used in the same way as a Matte, as a Source Input, Store or a Wipe border. It is a mix of colors instead of a single solid color and will fade from one color into another in a specified direction.



There are two Wash effects available (Wash 1 and Wash 2).

Press the **{Wash}** menu link button to enter the **Washes** menu. Use the Wash Selector to select a wash pallet to adjust.

Touch one of the 4 **Wash Corners**, a new menu will appear, allowing the user to change the color at each corner until the desired Wash is achieved.

The attachers can be set to one of the 16 available Matte colors, or use the Hue, Luma or Sat parameters to adjust to the desired color mix.

# **Crosspoint Config**

## Mapping

The crosspoint mapping menu is where all the physical inputs to the mainframe and all the internal sources are mapped to the Crosspoints using the crosspoint mapping table. The crosspoint map has been setup in a factory default state, and functions like the Key and Fill for coupling stores, and the Mattes/Washes have all been setup. Which means less work for the user.

Note: It is recommended that the crosspoint mapping setup remains in the factory default one-to-one state. User defined crosspoint setups should be created in the Panel Config - Button Maps menu.

	PT 1		Crosspoi	nt Config 🛛	apping	
Crosspoint	Namo	Fill		Key		Colit
Crosspoint	Name	Source	Name	Source	Name	Split
		Input A1	BNC A1	Input A1	BNC A1	Fill
XPT 2		Input A2	BNC A2	Input A2	BNC A2	Fill
XPT 3		Input A3	BNC A3	Input A3	BNC A3	Fill
XPT 4		Input A4	BNC A4	Input A4	BNC A4	Fill
XPT 5		Input A5	BNC A5	Input A5	BNC A5	Fill
XPT 6		Input A6	BNC A6	Input A6	BNC A6	Fill
XPT 7		Input A7	BNC A7	Input A7	BNC A7	Fill
Name Fill Source Key Source	??? Input A1 Input A1			Display St		
Split To Backlight Col	Fill Key			Next Show Crosspoin	Ena	ble

If the crosspoint map is going to be changed or modified, touch the "Fill Source" or "Key Source" popup menu buttons below, the user is able to map sources to crosspoints.

	PT 1		Crosspoir	nt Config Ma	ipping	$\Delta$ $\wedge$
osspoint	Name	Fill Source	Name	Key Source	Name	Split
PT 1	???	Input A1	BNC A1	Input A1	BNC A1	Fill
			BNC A2	Input A2	BNC A2	
(PT 3		Input A3	BNC A3	Input A3	BNC A3	
(PT 4 (PT 5		Input A4 Input A5	BNC A4 BNC A5	Input A4 Input A5	BNC A4 BNC A5	Fill Fill
KPT 5 KPT 6		Input A5	BNC A5 BNC A6	Input A6	BNC A5 BNC Ao	Fill
(PT 7	???	Input A7	BNC A7	Input A7	BNC A7	Fill
	???					
Name Fill Source	Input A1			Display Sta	atus	
Key Source	Input A1	0 1		Name '???' Next	&	
Split To	Fill Key				En En	able
Backlight Co	lor Default			Show Crosspoint		
,				crossponie		

Any crosspoint can be re-mapped to any of the physical inputs or the internal source, change the Key and Fill associations, setup the legend lamp for the mnemonic displays on the control surface and re-name the crosspoints. Crosspoint Map table has five columns, the columns left to right contain the crosspoint number, the name of the crosspoint, the Fill and Key sources and the Split column.

	PT 1		Crosspoi	nt Config 🛛	apping	
	Name	Fill		Key		Calls
Crosspoint	Name	Source	Name	Source	Name	Split
		Input A1	BNC A1	Input A1	BNC A1	Fill
XPT 2		Input A2	BNC A2	Input A2	BNC A2	Fill
XPT 3		Input A3	BNC A3	Input A3	BNC A3	Fill
XPT 4		Input A4	BNC A4	Input A4	BNC A4	Fill
XPT 5		Input A5	BNC A5	Input A5	BNC A5	Fill
XPT 6		Input A6	BNC A6	Input A6	BNC A6	
XPT 7		Input A7	BNC A7	Input A7	BNC A7	Fill
Name Fill Source	??? Input A1			Display S	tatus	
Key Source Split To	Input A1	0 1		Name '??? Next	'&	
Backlight Col				Show Crosspoin	ts Ena	ble

Xpt- crosspoint 1 to 160. Use this parameter to scroll down the list of crosspoints.

**Name** - This column is for a crosspoint name that the user can set using a on-screen Keyboard. When giving a name to the crosspoint, up to 11 characters can be entered, the characters font will vary in size and height depending on how many characters are typed in, that means characters 11 maximum. Adding "???" this forces the switcher to take the Name from the Source itself, this helps to make naming all sources quicker.

The next two columns are used to set the actual source to be mapped to the selected crosspoint and to give the source a name.

*Fill Source / Name* - This column is used to set the Fill Source, which is the signal that provides the Fill when selected on a Key bus or provides the source for the background buses.

*Key Source / Name* - This column selects the Key Source which provides the Key (hole cut) signal when selected on a Key bus. It has no effect when selected on a background bus.

**Split To** - this function is used when the user wish to use a Fill or a Key source to give you a key signal for the Key layer. Split to Fill/Key means that the setting on the crosspoint the user has "Split", will determine a Key signal for the Key layer.

**Backlight Color** - this allows the selected Xpt in the table to be given an identifying color. Once the colors are set, as the Crosspoints are assigned to the control surface, the buttons on the control surface will be lit according to the Maverik Color set in this parameter.

E XPT 1	Crosspoint Config Mapping
Current Backlight Color	×
Default Camera Server VTR	Graphic s (Key) Store Matte/ Wash
ME DVE TPG Feed	User 1 User 2 User 3 User 4

## **Function Buttons**

	PT 1		Crosspoin	t Config 🔀	apping	
Crosspoint	Name	Fill		Key		Culit
crosspoint	Name	Source	Name	Source	Name	Split
		Input A1	BNC A1	Input A1	BNC A1	Fill
XPT 2		Input A2	BNC A2	Input A2	BNC A2	Fill
XPT 3		Input A3	BNC A3	Input A3	BNC A3	
XPT 4		Input A4	BNC A4	Input A4	BNC A4	
XPT 5		Input A5	BNC A5	Input A5	BNC A5	Fill
XPT 6		Input A6	BNC A6	Input A6	BNC A6	
XPT 7		Input A7	BNC A7	Input A7	BNC A7	Fill
Name Fill Source Key Source Split To Backlight Col	2?? Input A1 Input A1 Fill Key or Default			Display Si Name '??? Next Show Crosspoin	" & Ena	ble

**Enable** - this function enables/disables the selected crosspoint. When disabled, the crosspoint "Name" will display as "Disabled" and the panel mnemonic is left blank.

**{Name '???' & Next}** - this button is a quick short cut, it puts '???' into the current Source Name and then jumps on to the next Source in the list, forcing the switcher to take the Name from the Source itself, this helps to make naming all sources quicker.

**{Show Crosspoints}** - this button when pressed will go Green, this will cause the mnemonic display on the control panel to change and show the crosspoints in their "unnamed" form, i.e. XPT1, XPT2, XPT3 etc. Press again to go back to the user specific crosspoint setup.

## **Color Correction**

Crosspoint Color is applied on a crosspoint by crosspoint basis, and are saved when saving a User Config, so it is important to check that any work done was created in the required User Config before saving.

E XPT 1			on $\Delta$	Ten XPT 1	Crosspoint Config Color Correction	
Color Correction Off On		Crosspo	oint Config 🔀	Color Correction Off On	RGB Off On	
YUV Off On		Mapping	Bitmap	YUV Off On	Lift 0.00%	
Brightness 0.00% O	Gamma 1.00 Gain 1.00	Color Correction	Preset Trigger	Brightness 0.00%	Gain 1.00 0	Normal
Saturation 1:00	S-Gain 0.00% S-Center 50.00%	Format Fusion	Store Setup	Saturation 1.00 0	S-Gain 0.00% O S-Center 50.00% O	Preset B & W
Bleed Off On		Key Drop	External	Bleed Off On		Preset
Red 100.00%			Router	Red 100.00%		Sepia Preset
Green 100.00% O			Inverse Preset	Green 100.00% O Blue 100.00% O		Inverse Preset

Crosspoint color allows the user to change the color balance on each individual crosspoint, there are 4 types of control, YUV, RGB, Bleed and Preset.

To use the color correction options, in the Configs main menu, press the **{Crosspoint Color}** button. In the Crosspoint Color main menu, turn "On" the Color Correction parameter, then touch the Delegate button to select which crosspoint the color correction is going to applied to.

The different stages of crosspoint color correction can now be applied.

Ten I	Crosspoint Config Color Correction		📃 ХРТ	ī 1	Crosspo	int Config	olor Correction	$n \Delta \wedge$
Color Correction Off On	RGB Off On		Delegate					$\approx$
YUV Off On	Lift 0.00% 0		XPT 1	XPT 2	XPT 3	XPT 4	XPT 5	
Brightness 0.00% O Contrast 1.00 O	Gain 1.00	Normal Preset	XPT 6	XPT 7	XPT 8	ХРТ 9	XPT 10	
Saturation 1.00 O	S-Center 50.00%	B & W	XPT 11	XPT 12	XPT 13	XPT 14	XPT 15	
Bleed Off On		Preset Sepia	XPT 16	XPT 17	XPT 18	XPT 19	XPT 20	<b>D</b>
Red 100.00%		Preset	XPT 21	XPT 22	XPT 23	XPT 24	XPT 25	
Blue 100.00%		Inverse Preset	XPT 26	XPT 27	XPT 28	XPT 29	XPT 30	

## YUV

To start using the YUV color correction parameters, turn the YUV parameter "On" and the Brightness, Contrast and Saturation parameters will light up.

Note: If the **Color Correction** button is turned Off (button is Gray) then all the color adjustments made to a Xpt will be turned Off; but not lost, they will all become active again when the Color Correction button is turned On.

Ten XPT 1	Crosspoint Config Color Correction	
Color Correction Off On	RGB Off On	
YUV Off On Brightness 0.00% Contrast 1.00 Saturation 1.00	Lift 0.00% 0 Gamma 1.00 0 Gain 1.00 0 S-Gain 0.00% 0 S-Center 50.00% 0	Normal Preset B & W
Bleed Off On		Preset
Red 100.00%		Sepia Preset
Green 100.00% O		Inverse Preset

Touch the Brightness rotary control attacher and the Brightness, Contrast and Saturation of the Xpt can be adjusted.

- Brightness default value is 0.00%, and the range is from -10% to 100%
- Contrast default value is 1.00%, and the range is from -0% to 16%
- Saturation default value is 1.00%, and the range is from -0% to 16%

As each of the above are adjusted notice that the parameters in the YUV Control menu turn Orange and the percentage of adjustment is shown.

## RGB

To start using the RGB color correction parameters, turn the RGB parameter "On" and the Lift, Gamma, Gain, S-Gain and S-Center parameters will light up.

E XPT 1	Crosspoint Config Color Correction	$\Box$			) XPT 1			RG	в 🔀	
Color Correction Off On	RGB Off On		Color	RGB	Off On			Colo	or ection	
YUV Off On	Lift 0.00% • • • • • • • • • • • • • • • • • •		YUV	Lift	0.00%	Gamma 1.00 O		1.00		
Brightness 0.00%	Gamma 1.00 O		Bright	Red	0.00%	Red 1.00	Red	1.00		
Contrast 1.00		Normal	Contra		0.00%	Green 1.00		1.00		
Saturation 1.00	S-Gain 0.00%	Preset	Satura	Blue	0.00%	Blue 1.00		1.00		
Bleed Off On	S-Center 50.00%	B & W Preset	Bleed	S-Gain	0.00%	S-Center 50.00%				
Red 100.00%		Sepia Preset	Red	Red	0.00%	Red 50.00%				
Green 99.97%		Inverse	Green	Green	0.00%	Green 50.00%				
Blue 100.00%		Preset	Blue	Blue	0.00%	Blue 50.00%				

The initial menu is set to a default condition, which shows all five Master adjustment parameters highlighted by the Red active circles. This will give an adjustment of Master Lift, Gamma, Gain, S-Gain and S-Center. Each of these adjustments will alter all three elements of the RGB signal at the same time.

Touch the menu expand menu link button to open the menu with the individual RGB parameter controls are accessed.

Touching one of the attachers allows a more accurate adjustment to the RGB components where the:

	E XPT 1		RGB 💥 🖊	
Color (	RGB Off On		Color Correction	
YUV	Lift 0.00%	Gamma 1.00 O	Gain 1.00 🔾	
Bright	Red 0.00%	Red 1.00	Red 1.00	
Contra	Green 0.00%	Green 1.00	Green 1.00 O	
Satura	Blue 0.00%	Blue 1.00	Blue 1.00 0	
Bleed Red	S-Gain 0.00%	S-Center 50.00%		
Green	Green 0.00%	Green 50.00%		
Blue	Blue 0.00%	Blue 50.00%		

Lift - parameters adjust the images Black Level, working on Black or shadow areas.

**Gamma** - parameters adjust the levels between dark/shadow and the mid tones, where the mid tones become brighter or darker; depending on the adjustment made.

**Gain** - parameters control the White level or highlights, where brighter colors become brighter or darker; depending on the adjustment made.

**S Gain and S Center** - the parameters adjust the gain mid tone levels of the S curve and the center point levels of the s curve.

When one of the master parameters is altered, notice that the RGB curve profile changes in the graph situated center of the menu.

### **Bleed Menu**

To start using the Bleed color correction parameters, turn the Bleed parameter "On" and the Red, Green and Blue parameters will light up

Color bleed is a situation where a single color will over power the other colors in the RGB signal. By using the bleed function the stronger color can be softened to make the color output more natural, or adjusted to suit a specific need.

Ten XPT 1	Crosspoint Config Color Correction	
Color Correction Off On	RGB Off On	
YUV Off On Brightness 0.00%	Lift 0.00% 0 Gamma 1.00 0 Gain 1.00 0	
Contrast 1.00 Saturation 1.00	S-Gain 0.00%	Normal Preset
Bleed Off On	S-Center 50.00%	B & W Preset
Red 100.00%		Sepia Preset
Green 100.00% O Blue 100.00% O		Inverse Preset

Again make sure the Color Correction is turned on.

The initial menu has a default state where a single adjustment for each parameter menu is active; this will allow the adjustment of the main RGB bleed parameters:

- Red into Red
- Green into Green
- Blue into Blue

Touch the menu expand menu link button to open the menu with the individual RGB parameter controls are accessed. This will allow a detailed adjustment for each of the R, G and B bleed settings. The adjustments are measured on a -100% to a +100% scale. Each parameter menu will adjust a single color, i.e. red into red, green into red and blue into red. These changes are also reflected graphically in the RGB bar graphs above the parameter sets.



#### Presets

Presets allow the user to quickly select commonly used preset color options for the crosspoint source, or quickly revert back to the original crosspoint source color levels.

Tel XPT 1	Crosspoint Config Color Correction	
Color Correction Off On	RGB Off On	
YUV Off On Brightness 0.00% O Contrast 1.00 O Saturation 1.00 O	Lift 0.00% 0 Gamma 1.00 0 Gain 1.00 0 S-Gain 0.00% 0 S-Center 50.00% 0	Normal Preset B & W
Bleed         Off         Image: Constraint of the second s		Preset Sepia Preset Inverse Preset

**Normal** - is the original color levels of the crosspoint source; without any color correction adjustments.

**B** & W - sets the chroma saturation to zero removing the chroma content, making the signal black and white.

**Sepia** - sets the chroma saturation to zero removing the chroma content, then adds positive portions of Red and Green and a negative portion of Blue to make-up a sepia appearance.

Inverse - Inverts the video signal making the picture a negative of its correct colors.

If the **Normal** preset option is selected, then all color correction controls are Grayed out preventing any adjustments. This is to make sure that the original crosspoint source can be recalled.

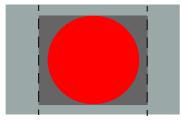
If B&W, Sepia and Inverse are selected, the preset levels can all be color corrected.

## **Format Fusion**

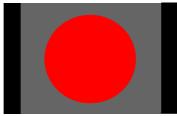
The FormatFusion controls in this menu allow the user to change the aspect ratio, zoom and position of a crosspoint source.

This function would most commonly be used to change the aspect ratio of a 525 or 625 4:3 source to a 16:9 aspect ratio, using the Kahuna Format Fusion engines.

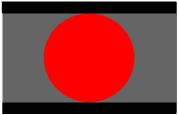
		Crd	225		Crosspoir		pint .		Position Crop					
		To	Crossp	oint Config  🎇	Xpt 🤇	Name	Aspect	Zoom			Тор	Bottmo	Left	Right
			Manning	Bitman	XPT 1									
			Mapping	Bitmap	XPT 2									
					XPT 3			1.00		0.00				
					XPT 4									
			Color	Preset	XPT 5			1.00	0.00	0.00				
			Correction	Trigger	XPT 6									
					XPT 7			1.00	0.00					
		0.0	Format	Store Setup	XPT 8			1.00		0.00				
			Fusion		XPT 9			1.00	0.00	0.00				
		0.0			XPT 10			1.00						
					XPT 11			1.00						
			Key Drop	External	XPT 12			1.00		0.00				
				Router	XPT 13			1.00						
					XPT 14			1.00						
		0.00	0.00%	0.00% 0.00%	XPT 15			1.00	0.00	0.00				



Original 4:3 Crosspoint Source on a 16:9 background



With Full Height Applied



With Full Width Applied



With Zoom Applied to fill 16:9 Aspect

## Aspect Mode has 3 settings: Zoom, Full Width and Full Height.

The **Zoom** parameter allows the crosspoint source to be zoomed out to fill the 16:9 aspect, when the source is zoomed to 16:9; it will appear slightly larger. The zoom function will not work if the aspect is set to Full Width or Full Height.

The **Full Width** parameter changes the aspect so that the full width of the 16:9 aspect is filled, in this setting a letter box effect is seen where there are bars at the top and bottom of the image.

The **Full Height** parameter will change the aspect so that the full height of the 16:9 aspect ratio is filled, leaving bars either side of the image.

The X and Y Position allow the source to be re-positioned within the 16:9 space.

	XPT 1		Cro	sspoii	nt Con	fig For	mat Fusi	on	7 🗸
Crosspo Xpt o	int Name	Aspect <sub> O</sub>	Zoom	Positio X	on Y C	Crop Top O	Bottmo	Left O	Right O
XPT 1									
XPT 2			1.00	0.00	0.00				0.00%
XPT 3			1.00	0.00	0.00				
XPT 4			1.00	0.00	0.00				
XPT 5			1.00	0.00	0.00				
XPT 6			1.00	0.00	0.00				
XPT 7			1.00	0.00	0.00				
XPT 8			1.00	0.00	0.00				
XPT 9			1.00	0.00	0.00				0.00%
XPT 10			1.00	0.00	0.00				
XPT 11			1.00	0.00	0.00				
XPT 12			1.00	0.00	0.00				
XPT 13			1.00	0.00	0.00				
XPT 14			1.00	0.00	0.00				
XPT 15			1.00	0.00	0.00				
						Crop	off On		

The **Crop** adjustments allow the user to crop areas of the image that may need to be hidden from view. Adjustments can be made to the **Top**, **Bottom**, **Left** and **Right** of the image.

## Key Drop

A simple explanation for Key Drop is that it allows the user to automatically switch off (drop) an active Key every time a new source is selected by cutting directly on the Program or Bgnd. Touch the **{Setup}** menu link tab at the top of the menu, then touch the **{Key Drop**} button to open the "Simple Key Drop" menu.

	Crosspoint Config Key Drop												Ke	y Drop Setu		
		Inhibit Crosspoint Config 💥												Inhibit All Clear All Advanced		
ME 1						Mapping	Bitmap	ME 1	Key 1	Key 2	Key 3	Key 4	eKey 1	eKey 2		
ME 2						Color Correction	Preset Trigger	ME 2	Key 1	Key 2	Key 3	Key 4	eKey 1	eKey 2		
ME 3						Format Fusion	Store Setup	ME 3	Key 1	Key 2	Key 3	Key 4				
ME 4						Key Drop	External Router	ME 4	Key 1	Key 2	Key 3	Key 4				

In this top menu or "simple" menu, the user can select a Key, from the list of available M/Es (the selected Key will turn blue).

When that Key is selected on the Pgm or Bgnd A Bus, on the selected M/E, the next Xpt button selected on that Bus will drop the Key. Notice that the Key is now shown on the Preview or Bgnd B Bus. Using the T-bar or **{CUT}**/**{AUTO}** buttons, will place the Key back on the Program or Bgnd A Bus, then next Xpt button pressed will drop the Key again. **Inhibit All** - when this is lit, no Key Drop functions will be active

Clear All - removes all Drop/Add settings from the Simple and Advanced modes

The "**Advanced**" menu (touch the **{Advanced}** button) provides a more powerful automatic control of Keyer on/off state which is dependent on the crosspoint selected on the Bgnd A Bus.

	XPT 1		Key Drop Setup
Crosspoi	int 💿 Name	Enables	Inhibit All Clear All Simple
XPT 1		ME 1	
XPT 2		ME 1	
XPT 3		ME 1	
XPT 4 XPT 5		ME 1 ME 1	Transition
APT 5		ME I	
ME 1	On Select / R	eselect	
ME 2	Add Key 1	Key 2 Key 3	Key 4 eKey 1 eKey 2
ME 3	Drop Key 1	Key 2 Key 3	Key 4 eKey 1 eKey 2
ME 4	On Deselect		
	Add Key 1	Key 2 Key 3	Key 4 eKey 1 eKey 2
	Drop Key 1	Key 2 Key 3	Key 4 eKey 1 eKey 2

This mode provides the user with the ability to have a Keyer active whenever a particular source is on-air by setting rules for every crosspoint and including automatic selection of the In Transition selection to ensure the Keyer state is controlled by the Transition control. Key Drop settings are stored in User Config files By selecting a Keyer on an ME, that Keyer will always turn off whenever a source is changed by directly cutting on the Program or Bgnd A Bus.

Note: If a Keyer has rules set in the Advanced mode, then this will be indicated by a Gold color on the Soft MLC GUI or a half lit button on the MAV-GUI.

The Inhibit All and Clear All functions for Key Drop can also be found on these menu pages. Each source can have rules set to Add or Drop a specific Keyer on each ME whenever that source is selected on the Program or Bgnd A Bus of that ME.

### **Transition**

By switching on this button, the selected ME will automatically set the In Transition states for each of the Keyers which have Add/Drop rules applied in the Advanced Mode, depending on which Crosspoints are selected on the Bgnd A and B Bus. The In Transition buttons will light in the Alert color to indicate that this In Transition state has automatically been set. The state of other Keyer and background In Transition states will not be changed. The automatically set states can be deselected by the user before the transition is made.

### Example:

The advanced state is extremely useful for situations where the user wants a source always to have a Keyer active, for example a remote source which always has a "Graphic" bug included in the picture.

Select M/E1 in the menu table. If the remote source is Xpt 1 and the bug is set up on Key 1 on M/E1, the user would need to go into the Advanced menu and select Xpt1 as the crosspoint and ME1 in the enables.

	XPT 1		Key Drop Setup 🚺 🔨
Crosspoi	nt 💿 Name	Enables	Inhibit All Clear All Simple
XPT 1		ME 1	
XPT 2		ME 1	
XPT 3		ME 1	
XPT 4		ME 1	
XPT 5		ME 1	Transition
VDT /			
ME 1	On Select / F	Reselect	
ME 2	Add Key 1	Key 2 Key 3	Key 4 eKey 1 eKey 2
ME 3	Drop Key 1	Key 2 Key 3	Key 4 eKey 1 eKey 2
ME 4	On Deselect		
	Add Key 1	Key 2 Key 3	Key 4 eKey 1 eKey 2
	Drop Key 1	Key 2 Key 3	Key 4 eKey 1 eKey 2

Touch {Add} {Key1} in the "On Select/Reselect" control

Touch {Key1} in the On Deselect control

Touch {Transition} to light this control.

Every time the remote source is put on the output of ME1 the "Graphic" bug will be included the picture.

Note: Re-selecting a source which is already on the Program or Bgnd A/B Buses will reapply the appropriate In Transition rules. This could be useful if the rules are inadvertently changed, for instance, by adding another Key to the transition.

## Bitmap

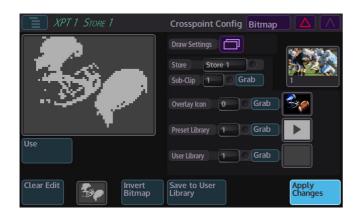
The bitmap function in the Crosspoint Config menu is used to create text or images, or place pre-made images on the mnemonic displays on the Xpt MAV modules.

Touch the menu link button in the menu bar to display the list of Crosspoint Config menus, then touch the **{Bitmap}** button. The Bitmap menu will show a large gray square that represents the area of the mnemonic display.

			XPT i	1 Store 1		Crosspoint Con	fig Bitmap	$\Box \Delta [ \land ]$
	Crossp	oint Config 🛛				Draw Settings	ר	
	Mapping	Bitmap				Store Store 1		528
	Color	Preset				Sub-Clip 1	Grab	1
	Correction	Trigger				Overlay Icon 0	O Grab	<b>1</b>
	Format Fusion	Store Setup				Preset Library 1	O Grab	
	Key Drop	External Router	lse			User Library 1	Grab	
			Clear Edit		Invert Bitmap	Save to User Library		Apply Changes

Use the **{Delegate}** button to open the Delegate popup. Here the user can select the Xpt that the bitmap will be applied to.

A bitmap from a pre-installed library can be selected using the **Preset Library** parameter. A mimic of the lcon will appear in the larger gray square to the left of the menu. Running through the library of bitmaps, a user defined library can also be created and selected in this way. Once the required icon is found, press the **{Grab}** action button and this will place the library icon on to the large gray square.



XPT 1 STORE 1	Crosspoint Config Bitmap
	Draw Settings 💥
	Draw Mode Pen Eraser Text Move
$C \land \land \land$	Brush Size 12 3 4 5
$  \setminus   \setminus   \gamma   $	Font 4 x 6 Narrow
	Fgnd Color Default
	Preset Library 1 Grab
Use	User Library 1 Grab
Clear Edit SAM Invert Bitmap	Save to User Library

To create an icon, touch the Drawing Settings menu link button to open the Drawing Settings menu.

Select **Pen** from the **Draw Mode** parameter and the user can create their own icons by drawing in the large gray area. To delete any mistakes in the grid, select **Eraser** in the **Draw Mode** parameter and rub out the mistake in the grid. There are 5 different brush sizes to select from. Select "**Move**" in the drawing Settings menu and then touching the image that was just created, the user can move the image around the inside the box.

When happy with the icon press the **{Save to User Library}** button and the icon will be saved to the User Library.

E XPT 1 STORE 1	Crosspoint Config Bitmap	XPT 1 STORE 1	Crosspoint Config Bitmap
	Draw Settings		Draw Settings 💥
	Store Store 1		Draw Mode Pen Eraser Text Move
	Sub-Clip 1 Grab 1	$C \land \land A$	Brush Size 12 3 4 5
		NAM	Font 4 x 6 Narrow
	Overlay Icon 0 Grab		Fgnd Color Default 🗎
	Preset Library 1 Grab		Preset Library 1 Grab
Use	User Library 1 Grab	Use	User Library 1 Grab
Clear Edit Invert Bitmap	Save to User Library Changes	Clear Edit SAM Invert Bitmap	Save to User Library

Touching the **{Grab} Overlay Icon** will allow the user to select an icon from the icon library to save to the User Library and use as a bitmap for a user function button.

Touching the **{Grab} Preset Library** will allow the user to grab a bitmap to use for a user function button.

Touching the **{Grab} User Library** will allow the user to grab a user defined bitmap to use for a user function button.

When finished touch the {Use} button to apply the bitmap to the selected Xpt.

## **Preset Trigger**

Preset Trigger is a function which allows a Macro to be triggered whenever a particular crosspoint is selected onto the output of an M/E, using a transition on the Transition MAV module.

A Preroll Delay can be specified which will delay the actual transition for a specified duration after the Macro has been triggered.

Note: The Macro will only be triggered by a transition made on the Transition area of the control surface, i.e. Cut, Auto or a physical transition of the T-Bar. It will not be triggered by a cut made directly on a bus row, i.e. "hot cutting" along the on-air bus.

XP.	Τ1	Crosspoint	Config	Preset Trigg		XP	Τ3	Cross	point Co	nfig Preset	t Trigger 💧 🔨
				Crossp	oint Config 🔀	Crosspoint	Name	Macro Project	File	Preroll	Enables
				Mapping	Bitmap	XPT 1 XPT 2 XPT 3					
				Color Correction	Preset Trigger	XPT 4 XPT 5 XPT 6 XPT 7					
				Format Fusion	Store Setup	XPT 8 XPT 9 XPT 10					
			At	Key Drop	External Router		3:- JW			Attach	Detach
						Macro File	I: EKEY 1 AUTO				

In the Crosspoint Config menu, touch the **{Preset Trigger...}** menu link button.

Firstly the operator needs to select the Xpt which will trigger the Macro. This is done either by touching the relevant Xpt in the top table, or by using the "Crosspoint" rotary parameter control.

XF	PT 6	Cross	ooint Con	fig Preset	: Trigger 🚺 🔨
Crosspoint	Name	Macro Project	File	Preroll	Enables
XPT 1				00:00°	
XPT 2					
XPT 3					
XPT 4					
XPT 5	???				
XPT 6					
XPT 7	???				
XPT 8					
XPT 9					
XPT 10					
1000 44					
Project	3: JW			Attach	Detach
Macro File	3: EKEY 3 AUTO				

Next, use the "**Project**" parameter to select the project that contains the required macro. Then use the "**Macro**" parameter to select the macro that will be triggered when the crosspoint is selected by a transition. Alternatively touch the sub menu select button and select the Project and Macro in this menu (displayed below).

X/	PT 6	Cross	point Cor	nfig Preset	t Trigger 🚺 🔨					Macro File 🖇
Crosspoint	Name	Macro Project	File	Preroll	Enables	File		Name JC Macro	Description	Date/Time 16 Jun '11 17:42
XPT 1		20		00:00°				EKEY 1 AUTO	Animated Transition	07 Nov '11 11:24
						2		EKEY 2 AUTO	Animated Transition	29 Sep '11 14:46
						3		EKEY 3 AUTO	Animated Transition	29 Sep '11 14:46
						4		EKEY 4 AUTO		05 Apr '12 11:38
XPT 5	???					5		MAX KEYS	SET UP TO SHOW EKEYS TO	05 Apr '12 11:37
XPT 6	???					6		MAX KEYS +	SUPER KEYS DUEL TILE MODE	05 Apr '12 12:00
XPT 7	???				-	2				
XPT 8 XPT 9						Project	3:	JW		
XPT 9 XPT 10						A				
						Macro File	3:	EKEY 3 AUTO		
Project	3: JW			Attach	Detach					
Macro File	3: EKEY 3 AUTO									
			j.							

Once all the Project and Macro File are selected, back in the main preset Trigger menu, touch the **{Attach}** button to attach the macro to the selected crosspoint.

Notice that an "Enables" selection parameter has now appeared in the menu. Touch the **{Enables...}** button to display the Enables options to set which M/E and which Bgnd, Key the transitions will actually trigger the Macro.

XPT	Г6	Cross	oint Cor	fig Prese	t Trigger	$[\Delta][\wedge]$		XPT 6				F	Preset Tric	iger Enabl	es 💥
Crosspoint	Name	Macro Project	File	Preroll	Enables		ME 1			<b>K</b> -11 <b>2</b>	Kara A				
XPT 1		20		00:00°			Bgnd	Key 1	Key 2	Key 3	Key 4	екеу і	eKey 2		
XPT 2 XPT 3							ME 2								
XPT 4							Bgnd	Key 1	Key 2	Key 3	Key 4	eKey 1	eKey 2		
XPT 6	??? ???	3	3	00:00º	ME 2		ME 3								
XPT 7							Bgnd	Key 1	Key 2	Key 3	Key 4				
XPT 8 XPT 9							ME 4								
XPT 10							Bgnd	Key 1	Key 2	Key 3	Key 4				
Project 3	: JW				Detach										
Macro File 3	: EKEY 3 AUTO														
Enables															
	<b>'</b>														
	<u>_</u> 1											_			
								XPT 6				P	reset Trig	ger Enable	es 💥
							ME 1			Ker 2	11 miles			ger Enable	es 💥
									Key 2	Key 3	Key 4	P eKey 1		ger Enable	25 💥
							ME 1 Bgnd ME 2	Key 1				eKey 1	eKey 2	ger Enable	25 💥
							ME 1 Bgnd		Key 2 Key 2	Key 3 Key 3	Key 4 Key 4		eKey 2	ger Enable	25 💥
							ME 1 Bgnd ME 2 Bgnd ME 3	Key 1 Key 1	Key 2	Key 3	Key 4	eKey 1	eKey 2	ger Enable	25 🔀
							ME 1 Bgnd ME 2 Bgnd	Key 1				eKey 1	eKey 2	ger Enable	25 💥
							ME 1 Bgnd ME 2 Bgnd ME 3 Bgnd ME 4	Key 1 Key 1 Key 1	Key 2	Key 3 Key 3	Key 4 Key 4	eKey 1	eKey 2	ger Enable	25 💥
							ME 1 Bgnd ME 2 Bgnd ME 3 Bgnd	Key 1 Key 1 Key 1	Key 2	Key 3	Key 4	eKey 1	eKey 2	ger Enable	25 💥
							ME 1 Bgnd ME 2 Bgnd ME 3 Bgnd ME 4	Key 1 Key 1 Key 1	Key 2	Key 3 Key 3	Key 4 Key 4	eKey 1	eKey 2	ger Enabl	25 💥
							ME 1 Bgnd ME 2 Bgnd ME 3 Bgnd ME 4	Key 1 Key 1 Key 1	Key 2	Key 3 Key 3	Key 4 Key 4	eKey 1	eKey 2	ger Enabl	25 💥
							ME 1 Bgnd ME 2 Bgnd ME 3 Bgnd ME 4	Key 1 Key 1 Key 1	Key 2	Key 3 Key 3	Key 4 Key 4	eKey 1	eKey 2	ger Enabl	25 💥
							ME 1 Bgnd ME 2 Bgnd ME 3 Bgnd ME 4	Key 1 Key 1 Key 1	Key 2	Key 3 Key 3	Key 4 Key 4	eKey 1	eKey 2	ger Enabl	25 💥

In the example above, by selecting Xpt 6, then selecting M/E2, Bgnd and Keys 1 and 2 the Macro will be triggered whenever a transition is made, which will bring "Xpt 6" onto the output of "ME2" using a transition on the Background or any of the 2 Keys.

A **Preroll** can be set which will delay the transition until a pre-determined time after the Macro has been triggered.

X	PT6	Crossp	oint Con	fig Preset	Trigger 🛆 🔨
Crosspoint	Name	Macro Project	File	Preroll	Enables
XPT 1				00:00°	
XPT 2					
XPT 3					
XPT 4					
XPT 5					
XPT 6				00:00º	ME 2
XPT 7					
XPT 8					
XPT 9					
XPT 10					
Project	3: JW				Detach
Macro File	3: EKEY 3 AUTO		<b>]</b>		
Enables					

## **Store Setup**

This is a link to the Store Setup menu, which allows the user to setup the way the stores are coupled when using a clip, the allocation of time to each store can also be setup in this menu and the stores can also be given names.

				Sto	ore Setup	Cou	pling & Lii	nking	
Store	Group	Dve Store		Store Coupling Key/Lighting •	Fill/Effect	s	Linked To Store		Audio Reversco
Store 1									
Store 2							- Store 1		
Store 3				Key Store 4					
Store 4					Fill Store 3				
Store 5				Key Store 6					
Store 6					Fill Store 5				
Store 7									
Store 8									
Store 9				Key Store 10					
Store 10					Fill Store 9				
Store 11	В								
Store 12	В								
Uncouple All	Ur	ılink Al	L	Apply Linking			UH	ID Ma	aster

## **Coupling & Linking**

The **Coupling & Linking** menu allows the user to setup stores which contain video clips or "Bugs" which are for example Keyed over a background where the Key source can be made to be transparent.

To do this the clip has to have a Key and Fill source coupled together over 2 stores.

Store	0	Group	Dve Store	0	Store Coupling Key/Lighting •	Fill/Effects	Linked To Store 🛛 🛓	Audio Reversco
Store 1								
Store 2							- Store 1	
Store 3					Key Store 4			
Store 4						Fill Store 3		
Store 5					Key Store 6			
Store 6						Fill Store 5		
Store 7								
Store 8								
Store 9					Key Store 10			
Store 10						Fill Store 9		
Store 11								
Store 12		В						

In the table from left to right; the Store column lists the available stores. The number of stores that are available to use depends on the number of control cards fitted in the mainframe. In the table above, Stores 1 - 12 can be seen, if the Kahuna mainframe being used is 9600, there can be up to 20 stores available, if the mainframe is a Kahuna 6400, 10 stores are available. **Group A** column, also relates to the single control card fitted and the 10 available stores. If a second control card is fitted, the table would display **Group B** and stores 11 - 20.

**DVE Store** - this selects the store as a DVE "Lighting" or "Effects" store, when selected "Yes" is displayed.

**Store Coupling** - the Key/lighting column is the Key store that is coupled to the Fill store. The Fill/Effects column is the Fill store that is coupled to the Key store.

For example, in the table below, Store 1 has a Key that is Key Store 2 coupled to Fill Store 1 in the row below.

			Sto	re Setup	Cou	oling & Lin	king	
Store o	Group	Dve Store	Store Coupling Key/Lighting •	Fill/Effects	5	Linked To Store		Audio Revers€
Store 1			Key Store 2					
Store 2				Fill Store 1				
Store 3								
Store 4								
Store 5			Key Store 6					
Store 6				Fill Store 5				
Store 7								
Store 8								
Store 9			Key Store 10					
Store 10				Fill Store 9				
Store 11								
Store 12								
Uncouple All						UHI	D Ma	aster

### **UHD Master**

Setting up UHD stills and clips in the internal clip store is done in a similar way to HD stores.

 Store Setup
 Coupling & Linking
 Inked Linked Reversor
 Audio Reversor

 Store
 A
 UHD Master
 Audio Reversor

 Store 1
 A
 UHD Master
 Audio Reversor

 Store 2
 A
 UHD Store 1
 -UHD Store 1

 Store 3
 A
 -UHD Store 1
 -UHD Store 1

 Store 4
 A
 -UHD Store 1
 -UHD Store 1

 Store 5
 A
 -UHD Store 1
 -UHD Store 1

 Store 6
 A
 -UHD Store 1
 -UHD Store 1

 Store 7
 A
 -UHD Store 1
 -UHD Store 1

 Store 8
 A
 -UHD Store 1
 -UHD Store 1

 Store 10
 A
 -UHD Store 1
 -UHD Store 1

 Store 11
 B
 -UHD Store 1
 -UHD Store 1

 Store 12
 B
 -UHD Master
 -UHD Master

 Untink Att
 Apply
 UHD Master

Note: Before setting up Coupling & Linking, a UHD still or clip will have been loaded into a store, in the Store menus.

Select the store with the UHD still or clip and then touch the **{UHD Master}** button. It will automatically link the next 3 Stores to the Master Store.

If the file loaded is a UHD clip, when the clip is played, the Master Store will automatically play the three linked stores in sync with the Master Store.

UHD Stills and Clips that are to be Keyed over a UHD source, that contain Key and Fill elements, are setup in exactly the same way as a HD still and clip, just remember that they will occupy 4 stores for the Key portion and 4 stores for the Fill portion.

## **External Router**

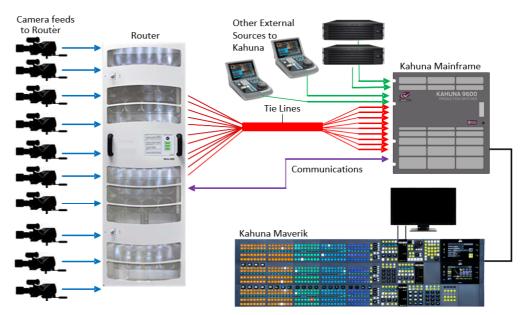
Kahuna has the mechanism to expand the number of sources coming into the mainframe using an external router. This is primarily due to a system setup running in UHD. Using this new feature, the number of sources to be used with the Kahuna, are expandable up to the size of the upstream router.

## Kahuna Intelligent Tie Line Concept

Kahuna deploys an intelligent "Tie Line" approach, the desired external router outputs (destinations) are connected to Kahuna inputs. These inputs on the Kahuna and destinations from the Router are treated as "Tie Lines". Each Tie Line acts as a floating video bus between the router and Kahuna, they are intelligently assigned and used as required.

Source selection on any Bus is transparent to the operator, regardless form where the Xpt is being made, i.e. in the external router, or in the Kahuna itself.

The Kahuna software knows what physical inputs / Tie Lines are allocated and what are not being used on a bus. Kahuna then assigns the Physical input /Tie Line to the desired Bus upon a source selection. Kahuna updates the upstream router's destination /Tie Line with the selected source.



Source selection on any Bus is transparent to the operator. Once setup, the operator sets the desired router source by selecting the appropriate router XPT on the required bus. The selection on the external router and the Tie Line path into the Kahuna is automated.

## Software Version:

Requires V7.7r1 software onwards

#### How many Tie Lines?

How many Kahuna inputs do you need to convert to Tie Lines? This is entirely dependent on a few external factors, such as:

How many inputs available on the Kahuna (max number shown below):

- HD = 120 Tie Lines
- UHD = 30 Tie Lines
- How many router destinations are available.
- How many router sources need to be selected on Kahuna at any one time.

#### For example:

If the user wants to select different external router sources on the A and B bus of ME2 this would require 2 Tie Lines.

For HD this would require 2 router destinations and 2 Kahuna inputs.

For UHD this would require 8 router destinations and 8 Kahuna inputs.

If the user requires external router sources on the A and B bus plus Key 1 and Key 2, this would require 4 Tie Lines.

In summary: Each different external router source selected simultaneously requires a Tie Line. Each Tie Line requires one router destination and Kahuna input in HD, or 4 router destinations and 4 Kahuna inputs in UHD.

Note: If at all possible, it is recommended that the user creates more Tie Lines than are actually required. This gives some redundancy and reduces the risk of the system running out of available Tie Lines.

## Setup - Protocol Setup

To setup the protocol, the user will have to go to the Eng Config - Protocols menu. Use the "Type" parameter to select "**Router**", then, use the "**Available Protocol**" parameter to select the required protocol. For this example, "SW-P-08 Router" is selected. Touch the **{Load}** button to add the protocol to the "**Loaded Protocols**" table.

1	Protocols 🛆 🔨	$\blacksquare 1 \qquad \qquad Protocols \ \bigtriangleup \ \land$
Loaded Protocols 1 As SW-P-08 Router (Xpt)	Available Protocols 1 Pesa CPU Link P1 Router	Loaded 1 Protocol Configure 💥
2 None 3 None 4 Nore	2 Pesa CPU Link USP Router     3 SW P 08 Router     4 As SW-P-08 Router (Xpt)	2 Nor 3 Nor 4 Nor
4 None 5 None 6 None	4 As SW-P-08 Router (Sp)     5 As SW-P-08 Router (Src)     6 SW-P-02 Router	Protocol As SW-P-08 Router (Xpt)     Non     Name     Mane
7 None 8 None	Type Router	7 Nor Maine 1997 1997 1997 1997 1997 1997 1997 199
Logical Switcher Control News Room Add All	None List 1	togical SV IP Port Number 1024
Transport / IP Client	Load Unload	Transport Channel
IP Port Number / 1024 Channel 1	Carfirmer	IP Port Nu Server IP Address 172.31.0.1 / 19
Connection Status / Inactive Server IP Address / 172.31.0.1 / 19	Configure Activate	Connectio

The user will now have to configure the protocol so that Kahuna can communicate with the router. Touch the **{Configure...}** menu link button and the "Protocol Config" menu is displayed. Use the "Transport Type" parameter to select the communications transport type, then, setup the "IP Client Configuration" details.

Once setup, touch the **{Apply}** button.

Then back in the Peripherals main menu, touch the {Activate} button to activate the protocol.

## **Peripherals Setup**

Touch the **{PERIPH}** button to enter the "Peripherals" menu. Then touch the **{Router Connections...**} menu link button.



Here the physical router outputs (Including Matrix and Levels) need to be mapped to the physical Kahuna inputs. These connections will form the "Tie Lines".

						Router	Connec	tion 🖊	7 🗸
Source	1	Name	Connec	tion De				I	
	•		Slot		1	UMD	Matrix	Level	Dest
Input A2		3NC A2							
Input A3		BNC A3							
Input A4		3NC A4							
Input A5		BNC A5							
Input A6		BNC A6							
Input A7		BNC A7							
Input A8		BNC A8							
Input A9		BNC A9							
Input A10		BNC A10							
Slot			0		Matrix	1			
					Level	1		ſc	et
					Destinatio	on 1			et

After each router connection row is set, touch the **{Set}** button.

**Setting Up Names and Tie Lines** 

Next, go to the **"ENG Config - Input Setup - Names"** menu. In this menu, select the BNCs that where set to connect to the router destinations in the "Peripherals - **Router Connections"** menu and set them to "TieLine = **Yes"**. Do this for all the inputs that will become Tie Lines from the router.

	nput A11		Input Setup	Names	$\Delta$
Source o	Name	Description		Overwrite	TieLine 💿
Input A1	BNC A1				Yes
Input A2	BNC A2				Yes
Input A3	BNC A3				Yes
Input A4	BNC A4				Yes
Input A5	BNC A5				Yes
Input A6	BNC A6				Yes
Input A7	BNC A7				Yes
Input A8	BNC A8				Yes
Input A9	BNC A9				Yes
Input A10	BNC A10				Yes
Input A11	BNC A11				
Input A12	BNC A12				Yes
Name	BNC A11		Router Overwrite	No Yes	Copy & Next
Description			Tie Line	No Yes	

Note: For inputs that are set as "TieLines", it is recommended that the "Source **Standard"** parameter (in the **Eng Config - Inputs** menu) is set to "Auto Standard" and the "Color **Correction"** function is set to "Off". If color correction is required then it should be done on the external router XPT.

Note: It's recommended that sources which are off standard (and therefore requires format conversion) do not come via Tie Lines if hot cutting is required.

Make sure at this point to "Overwrite" or "Save" the ENG Config setup.

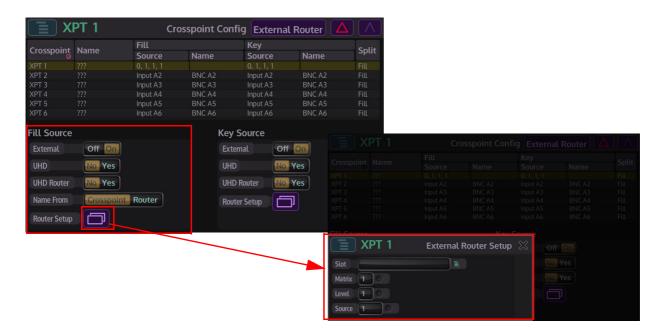
Setting up the User Config - Crosspoint Config - External Router configuration

In the User Config - Crosspoint Mapping menu, touch the {External Router...} menu link button.

	PT 1		Cross	point (	Config	External	Router 🛆	
Crosspoint	Name	Fill			1	Key		Colit
Crosspoint	Name	Source		Name	1	Source	Name	Split
XPT 1		Input A1				nput A1	BNC A1	Fill
XPT 2		Input A2		BNC A2		nput A2	BNC A2	Fill
XPT 3		Input A3		BNC A3		nput A3	BNC A3	Fill
XPT 4		Input A4		BNC A4		nput A4	BNC A4	Fill
XPT 5		Input A5		BNC A5		nput A5	BNC A5	Fill
XPT 6		Input A6		BNC A6		nput A6	BNC A6	Fill
Fill Source Extemal UHD UHD Router	Off On No Yes				Key Sou External UHD	Off.		
Name From Router Setup	Crosspoint	Router			Router S			

In the "External **Router"** menu, select free Xpts that are not being currently used, there are a total of 160 variable Xpts available. Each external router source required on the Kahuna will need its own router Xpt.

Use the "Crosspoint" parameter to select the required "Xpt" and then touch the "Fill **Source**" attacher to enable the parameters and set the "External" parameter to "**On**"



Touch the "Router Setup" sub menu button, then use the parameter controls to set the "**Matrix, Level and Source**" for the selected XPT (originally set in the "Peripherals - **Router Connections**" menu).

Note: If the source is UHD set the "UHD" to "Yes". When in UHD mode the 4 quadrants or streams from the router have to be consecutive.

	PT 1	с	Crosspoint (	Config	Externa	al Router	$\Delta$ $\wedge$
Crosspoint	Name	Fill		ŀ	(ey		Split
Crosspon	Name	Source	Name	S	Source	Name	Spur
XPT 1							Fill
XPT 2		Input A2	BNC A2	h	nput A2	BNC A2	Fill
XPT 3		Input A3	BNC A3	h	nput A3	BNC A3	Fill
XPT 4		Input A4	BNC A4	h	nput A4	BNC A4	Fill
XPT 5		Input A5	BNC A5	h	nput A5	BNC A5	Fill
XPT 6		Input A6	BNC A6		nput A6	BNC A6	Fill
Fill Source				Key Sou			
External	Off On			External	-01	fOn	
UHD	No Yes			UHD	No	Yes	
UHD Router	No Yes			UHD Rou	ter 🛛 💦	Yes	
Name From	Crosspoint	Router		Router Se	etup 📋	] 	
Router Setup							

If the router has its sources and destinations ganged as UHD then set "**UHD Router**" = Yes. This differentiates between the control protocol setting 4 router Xpts (un-ganged) or just the first router XPT (ganged).

"Name From" - Router means the name is fed into the Kahuna from the external router (should the protocol allow this).

"Name From" - Crosspoint uses the internal XPT name as set in the User Config - Crosspoint -Name menu.

Repeat the above for the "**Key Source**" for the Xpt if required. Otherwise it's recommended to set the Key source to black or white for the external router XPT.

Make sure at this point to "Overwrite" or "Save" the User Config.

### Operation

The Router Xpts can be mapped to the buttons on the control panel as per normal using the Panel Config - Button Maps menu.

The operator just selects the router XPT as per any other source and its fed via the Tie Lines from the external router.

Note: If too many router sources are selected for the Tie Lines available the following warning is displayed:

#### "Insufficient Router TieLines"

In this instance either extra Tie Lines need to be added, or router XPTs deselected from buses if not required.

Timing

#### In the Peripherals - Router - Router Configuration menu

If the source switch on the external router is changing later than Kahuna, the timing can be adjusted. This will delay the cut on the Kahuna to ensure the router switch is complete.

Adjust the "Cut Delay" until clean switching is achieved.

For routers that use the Grass Valley SWP08 protocol the Fast Protocol selection can be enabled. This sends out multiple commands per video field. It will depend on the implementation of SWP08 whether this mode works.

				Router Configuration 🛆 🔨
Slot			0	
Fast Protocol	No Yes			
Background Updates	Yes No			
Cut Delay	0 0			
Ext.Rtr. Background	Normal	E		

# **DVE** Setup

Note:Prior to Login:Note:DVE Channel Assignment between Logical Switchers has to be setupprior to using the information in this section.Note:This can be found in the "Logged Off" state, Mainframe Config -Switcher Config - DVE menu.

Note: Use this information with the DVE section of this manual.

Once the DVE channels have been assigned to logical switchers, the next thing to do is to assign DVE tiles to the DVE channels, this will determine the number of models and tiles that can used in a single DVE channel. There a 4 DVE tiles that can be spread across 4 DVE channels. To do this the user has to log back into the logical switcher on the MAV-GUI, then in the **"Main"** menu press the **{Configs}** button to enter the **"System Configuration"** menu. In the System Configuration menu, press the **{DVE Setup}** button.

			Syste	m Configu	uration 🔨		DVE 1			Dve Setup 🚺
Panel Configuration	Panel Prefs	GUI Prefs	Button Maps	Button Info	Colors	Dve DVE 1	<ul> <li>In Use</li> <li>0</li> </ul>	Allocated	New O	
	User Functions	Fader Assign	Maverik Layout	Preview Aux		DVE 2 DVE 3 DVE 4	0 0 0	1 1 0	1 1 0	Apply Changes
lless Careformetica						DVE 5 DVE 6	0	0	0 0	Changes
User Configuration Save Load	Modulators	Mattes Washes	Crosspoint Config	DVE Setup	Multiviewer	Unused Ti	les 0			
	Aux Setup Set	ore ME tup Config	g TL Defaults	Switcher Outputs	Resource Link					
						ME Bus ME 1 Key ME 1 Key		DVE 1 DVE 1	Button 2 O DVE 2 DVE 2	
						ME 1 Key ME 1 Key ME 1 Key		DVE 1 DVE 1 DVE 1	DVE 2 DVE 2 DVE 2	
Log Off	ineering fig	0 onfig	Show Set-up		Defaults	ME 1 eKe ME 1 eKe		DVE 1 DVE 1	DVE 2 DVE 2	

The DVE Setup menu allows the user (as mentioned above) to allocate DVE tiles to DVE channels. To do this, touch the required DVE channel in the menu and a brown bar will move to the selected DVE channel (defaults to DVE 1), then touch the attacher and the top two rotary controls on the MAV-GUI will be attached, the top rotary control will scroll though the DVE channels and the middle control will adjust the number of DVE tiles allocated to the selected channel.

#### Finally, press {Apply Changes}.

Any unused DVE Tiles will be displayed in the "Unused Tiles" window.

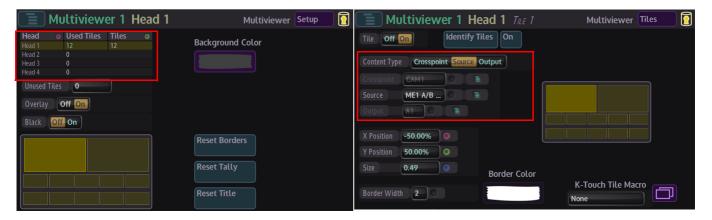
# **Multiviewer**

The format independent multiviewer provides great flexibility with its preset and user-defined layouts, and features the following:

- Up to 8 flexible output heads (Kahuna 9600 with two Router cards)
- Up to 24 windows (Kahuna 9600 with two Router cards)
- All external and internal sources selectable to all heads and all windows
- Instant preset layouts
- · Clear and follow-through labeling
- · Red and green tallies
- Assign to any output
- Format independent
- Memorize and recall layouts as part of a show setup.

There are 4 Heads per multiviewer, the heads can have up to 12 tiles assigned to 1 head or 12 tiles assigned across the 4 heads which can be used across different outputs or even logical switchers.

Sources are freely assignable to 10 tiles, the remaining 2 tiles are internal sources.



Output from the multiviewer are assigned to the outputs from the mainframe like any other output, this is done in the **Use Config - Switcher Outputs** menu, see below.

	utput 10		Switcher Outputs Cont	fig [	Outpu	t 10	Switcher Outputs Config
Output 1 2 3 4 5 6 7 8 9 10 11 12 13 14 Display Unallocat	Physical BNC Name A1 A2 A3 A4 A5 A6 A7 A8 A8 A9 A10 A11 A12 A14 A14 A14	Source Name ME2 A/B PGM ME2 A/B PGM STOR 1 STOR 2 STOR 3 STOR 4 STOR 5 STOR 6 AUX 9 MV1 0P1 AUX 11 AUX 12 AUX 13 AUX 14	Resolved Name           ME2 AV8 PGM           ME2 AV8 PGM           STOR 1           STOR 2           STOR 3           STOR 4           STOR 5           STOR 6           BNC A1           BNC A1           BNC A1           BNC A1           BNC A1	FTB Off Off Off Off Off Off Off Of	BNCs Mattes & Washes Stores ME Outputs DVE Outputs Auxes Multiviewer Outputs	Current Source Name MV1 OP1 MV1 MV1 MV1 OP1 OP2 OP3 OP4	×

As shown in the menu diagram above, "**Output 10**" is selected as multiviewer output. Allocating the Multiviewer to this output is done by touching the popup menu button in the "**Name**" column, then scroll down to the bottom of the source list and select the multiviewer head or MV Op1 to MV Op4.

## Setup

Once the multiviewer output has been assigned, the next step is to assign tiles to the multiviewer heads.

📃 Multiviewer 1 Head 1	Multiviewer Setup				ewer Setup
Head 1 Used Tiles O Head 1 12 12	Background Color		Background		Multiviewer $igodot$
Heat 1         12         12           Heat 2         0         0           Head 3         0         0           Head 4         0         0				Setup	K-Touch
Unused Tites				Presets	
Overlay Off On					
Black Off On				Tiles	
	Reset Borders		Reset Borde	Tally	
	Reset Tally		Reset Tally		
	Reset Title		Reset Title	Title	
			L		
		l			
<b>Multiviewer 1 Head 1</b> TILE					
Multiviewer 1					
Head 1 Head 2 Head 3 Head 4					
Tile 1     Tile 2     Tile 3     Tile 4	5 Tile 6 Tile 7 Tile 8				
Tile 9 Tile 10 Tile 11 Tile 12					

As can be seen in the diagram above, the rotary controls are used to select the required multiviewer head (or use the Delegate button, then select a Head from the list), then used to assign tiles to the head. The number of tiles assigned to a head is important because it will restrict the number of preset tile layouts and user defined multiviewer layouts that can be used.

The number of unused tile is displayed in the "**Unused Tile**" parameter **Overlay On/Off** - will turn off the borders around all tiles and background behind the multiviewer tiles.

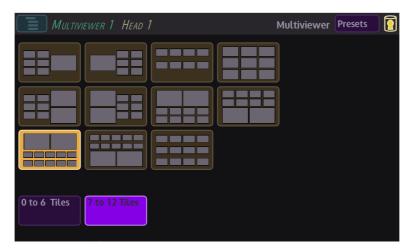
The background color behind the multiviewer tiles can be set by the user, touch the "Background Color" swatch and a dialog box will appear.

Multiviewer 1 Head 1	Multiviewer Setup					Multiviewer Setup
Head OUsed Tiles Tiles Head 1 12 12 Head 2 0	Background Color	Head 1 Head 2	Used Tiles T			nd Color
Head 3 0 Head 4 0		Head 3 Head 4	📄 Multiv	viewer 1 I	Head 1	Background 💥
Unused Tiles 0	·	Unused <sup>1</sup>				
Overlay Off On		Overlay		0:000°		
Black Off On		Black		25.00%		
	Reset Borders			0.00%		
	Reset Tally				Reset Tati	·y
	Reset Title				Reset Title	e

The background color can now be set using the Hue, Luma and Saturation controls. Reset Borders, Tally and Tile - will reset back to the default state, any unsaved setups will be lost.

## Preset

The Preset menu allows the user to select a multiviewer tile layout from a list of 12 layouts. A layout can only be selected if there are enough tiles allocated to the head currently being used.



To use the preset layouts, make sure there are enough tiles allocated, then touch one of the preset layouts. Once selected, the layout image will light up.

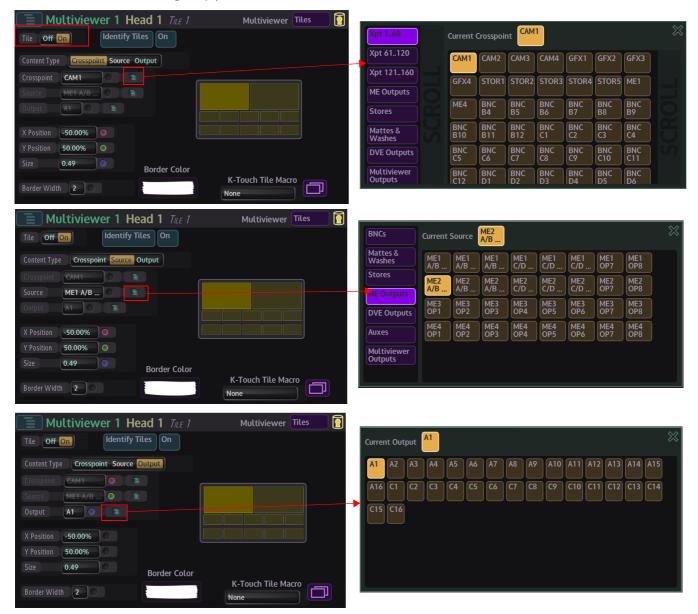
A user defined layout can be created by selecting a preset layout and using the Tile menu to reposition and size the tiles where as required.

## Tile

The Tile menu is used to select sources for the tiles, reposition and resize tiles and set the boarder and border color around the tiles.



Tile setup is done on an individual tile basis, this is done by making sure that the "**Tile**" parameter is turned "On" and then touching one of the tiles in the multiviewer tile layout and it will light up yellow.



The next step is to select the type of source for the selected tile, there are 3 options to select from the "**Content Type**" parameter:

- From Crosspoint
- From **Source**
- From Output

Touch one of the options from the "**Content Type**" parameter, the user can either scroll through the options for each of the options, or touch the menu expand button and a list of options will appear (as shown above for each option). This multiviewer source selection has to be done for each individual tile.

Multiviewer 1 Head 1 TILE 1  $\boxed{2}$ Multiviewer 1 Head 1 THE 1 2 Identify Tiles On Tile Off On Identify Tiles On Tile Off On Content Type Crosspoint Source Output Content Type Crosspoint Source Output ME1 A/B ... O ME2 A/B ... -50.00% -28.26% 50.00% -3.42% 0.49 0.49 Border Color Border Color K-Touch Tile Macro Border Width 200 Border Width 2 None None

Tiles can be freely moved around the multiviewer screen area using the X, Y and Size parameters.

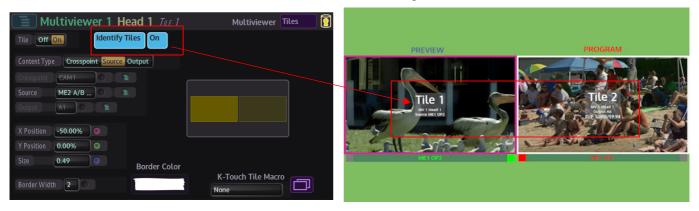
Use the rotary controls to position and size the selected tile as required.

# The border around the edge of selected tiles can also be changed, touch the border width

<b>Multiviewer 1 Head 1</b> THE 1	Multiviewer Tiles 🚺	Multiviewer 1 Head 1 TILE 1 Multiviewer Tiles
Tile Off On Identify Tiles On		Tile Off On Identify Tiles On
Content Type Crosspoint Source Output		Content 📃 Multiviewer 1 Head 1 Tile 1 Tile Border 💥
Crosspoint CAM1 O		Crosspo
Source ME1 A/B C		Source Hue O:000°
		Luma 100.00% O
X Position -50.00%		X Positi
Y Position 50.00%		Y Positio
Size 0.49 O Border Color		Size 0.49 Border Color
Border Width 2	K-Touch Tile Macro	Border Width 2 O None

parameter to adjust the width of the border around the tiles, then touch the "Border Color" swatch to open the Hue, Luma and Saturation parameters that allow the user to change the color of the border.

Touching the "**Identify Tiles**" button will display in the center of the tile the Tile Number, the multiviewer and head being used, the source feeding the tile and the output standard. the tile information will turn off once the button is let go.



Touch the "**On**" button will make the tile information stay on screen until the "**On**" button is pressed once more.

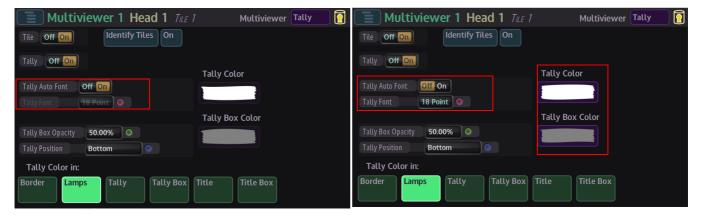
## Tally

The multiviewer tally menu allows the user to setup tally indicators and information for individual tiles, so that the user is constantly aware of the state of a source to a tile. Touch the Delegate button to select the required tile, the user has the option to display tally information on a per tile basis or not by using the "Tally" On/Off parameter.



With the tally option now turned on for the selected tile, the source information is displayed in the center of the tally box i.e. ME2 OP1 or CAM1 etc. (the source information is automatically displayed when the sources for the tiles are setup in the Tile menu).

By default the **"Tally Auto Font"** parameter is set to **"On"**, this means that for the larger size tiles have a default font size of 18 point and the smaller tiles have a font size of 10 Point.



If the **Tally Auto Font** parameter is set to the **"Off"** position, then the **"Tally Font"** parameter can be used to set the tally font size for the selected tile. The font sizes range from 6 point up to 88 point. The tally font color can also be changed by touching the **"Tally Color"** swatch (shown above) and adjusting the Hue, Luma and Saturation parameters (shown below). **Tally Box Opacity**, will change the opacity of the box that the tally information is placed in. The tally box color can also be changed by touching the **"Tally Box Color"** swatch (shown above)

Dultiviewer 1 Head 1 Tile 1	Tally 🔀	📄 Multiviewer 1 Head 1 Tile 1 🛛 🛛 Tally Box 💥
Hue 0:000° Luma 100.00% Saturation 0.00%		Hue 0:000° O Luma 50.00% O Saturation 0.00% O

and adjusting the Hue, Luma and Saturation parameters (shown below).

<b>Multiviewer 1 Head 1</b> Tile 1	Multiviewer Tally
Tile Off On Identify Tiles On	
Tally Off On	
	Tally Color
Tally Auto Font Off On	
Tally Font 18 Point O	
	Tally Box Color
Tally Box Opacity 50.00%	
Tally Position Bottom	
Tally Color in:	
Border Lamps Tally Tally Box	Title Box

**Tally Position** parameter, when the **Tally Lamps** and **Tally** are displayed, the user is able to move the tally indicator position up and down the tile. The options are:

Bottom (default position) - bottom just inside the tile border

**Under & Border** - places the tally indicators below, outside the tile with a border around the tally indicator as well as the tile

Under - under the tile with no border

Top - at the top of the tile just inside the tile border

**Over & Border** - places the tally indicators above, outside the tile with a border around the tally indicator as well as the tile

Over - at the top of the tile with no border

The "**Tally Color In**" buttons will switch On or Off individual tally indicators, titles and title boxes.

## Title

The **Title** menu as the name suggests, allows the user to place a title onto the selected tile. Use the **"Title"** parameter to turn the Title and Title Box **"On"**, with the **"Title Auto Font"** turned On, the title font defaults to 18 Point. Turn the Title Auto Font parameter off and the font size can be changed using the **"Title Font"** parameter.

Touch the **"Title"** name Keyboard button and a cursor will flash indicating that the text can be edited, touch and hold the **"Star"** button on the MAV-GUI to reveal the dialog box that has the on-screen Keyboard. Type a name and press **"Return"** and the name is displayed.

Multiviewer 1 Head 1 TLE 1     Multiviewer Titles	<b>Multiviewer 1 Head 1</b> <i>TILE 1</i> Multiviewer <b>Titles</b>
Tile Off On Identify Tiles On	Tile Off On Identify Tiles On
Title Off On Title Color	Title Off On Title Color
Title Auto Font Off On	Title Auto Font Off On
Title Font 18 Point	Title Font 18 Point
Title TILE 1 W.	Title TILE 1
Title Box Opacity 50.00% O Title Box Color	Title Box Opacity 50.00% Title Box Color
Title Position X 0.00% O	Title Position X 0.00% O
Title Position Y 0.00%	Title Position Y 0.00%

The **Title Color** can also be changed by touching the **"Title Color"** swatch (shown above) and adjusting the Hue, Luma and Saturation parameters (shown on next page).

The **Title Box Opacity** parameter changes the opacity of the box that the title sits in. The Title Box Color can also be changed by touching the **"Title Box Color"** swatch (shown below) and adjusting the Hue, Luma and Saturation parameters (shown below).

The **Title**/**Title Box** for each tile can be freely moved around the multiviewer space, using the "Title Position X, Y" parameters.

Hue       0:000°         Luma       100.00%         Saturation       0.00%	Multiviewer 1 Head 1 Tile 1	Title 🔀	Multiviewer 1 Head 1 Tile 1 Title Box 🖄
	Luma 100.00% O		Hue 0:000° • Luma 50.00% •

# K-Touch

K-Touch software allows the user to create customized control touch screens. This provides a simple interface with live video for operators to control simple or complex effects using customized buttons on the 2nd touch screen.

The basic idea for having K-Touch is that provides an operational interface for gallery staff or even presenters.



With K-Touch the user can cut sources to the program, or select them to the preview, recall effects on the M/E banks, control the clip stores and select sub-clips. example of other functions are wipes, Clip transitions and mixes all by using customized buttons on the touch screen.

## **Equipment Required**

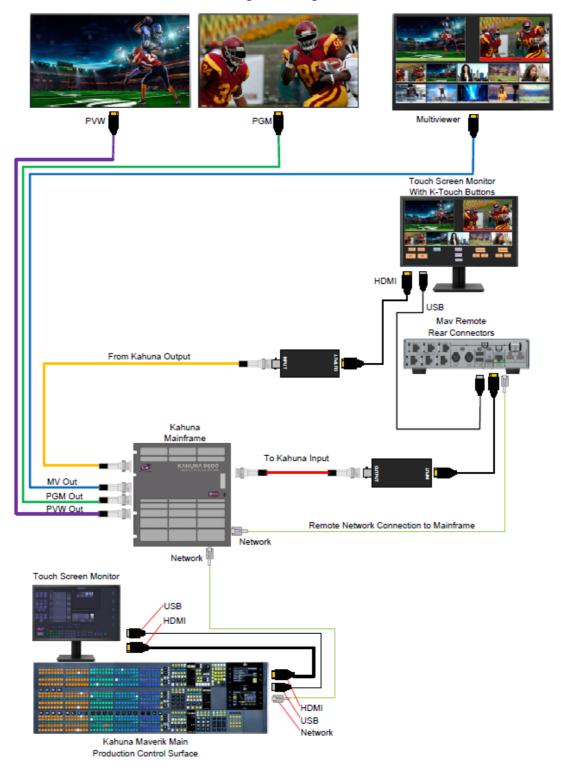
To use K-Touch, the Kahuna system requires a second interface controller to allow the touch screen monitor to communicate with the mainframe. An optional Mav Remote ancillary panel can be purchased.



The diagram on the following page displays how to connect a Kahuna system up to use K-Touch.

# Kahuna K-Touch Connection Diagram

## Kahuna K-Touch Connection Diagram using the Mav Remote



Note: The touch screen monitor that will be used for K-Touch has to be a 1920x1080 resolution.

#### **K-Touch Setup**

There are two ways to setup K-Touch on Kahuna, you can either have a K-Touch screen setup with just button functions, or you can setup a K-Touch screen with multiviewer tiles and button functions.

To setup the K-Touch multiviewer tiles, using the unused tiles on Multiviewer 1, for example if "**Head 1**" is allocated 6 tiles for the multiviewer and then allocate 6 tiles to "**Head 2**" for K-Touch. If you have a second "Router Card", then all 12 tiles for Multiviewer 2 can be used for K-Touch.

In the "User Config - Multiviewer Setup" menu, either use the "Head" parameter to select one of the four heads and allocate tiles, or use the "Multiviewer" parameter to select "Multiviewer 2".

Select one of the output Heads (1 to 4) and then select how many Tiles are required for the K-Touch output. Touch one of the "**Presets**" to form the basis for the video output tiles.

Multiviewei	r 1 Head 1	Multiviewer Setup
	Files • 2	Background Color
		Reset Borders Reset Tally Reset Title

Touch the **{Tiles...}** button to open the "**Multiviewer - Tiles**" menu, here you can position the multiviewer tiles to the required position within the K-Touch window.

Multiviewer 1 H	ead 1 THE 6	Multiviewer Ti	les 🚺
Tile Off On Identify 1	Tiles On		
Content Type Crosspoint Source	Output		
Crosspoint GFX2 O			
Source BNC A4			
Output 🖌 🖌 🧻			
X Position 74.43%			
Y Position -28.31%			
Size 0.24 O	Border Color		
		Touch Tile Macro	
Border Width 2	Non	e	

Touch a tile in the window and it will turn yellow, indicating that it is selected (as shown above). Then use the "**X/Y Pos and Size**" parameters to position and size the tiles to the required position within the window. At this point you can also add the required sources to each tile.

Touch the **{K-Touch...}** menu link button to open the "**K-Touch Setup**" menu. In this menu, you can now setup on-screen touch buttons that can be linked to macros or using the "Clone" function, clone button functions onto the touch screen buttons.

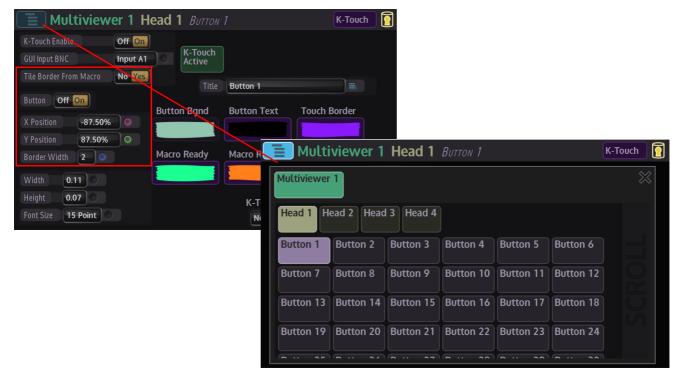


The "**Multiviewer**" and "**Head**" parameters display which multiviewer and head is being used for K-Touch. Make sure the correct Multiviewer and Head are selected.

To start using K-Touch, touch the "K-Touch Enable - On" button.

**GUI Input BNC** - this parameter selects the input to the mainframe from the "**Monitor**" output from the Mav Remote.

**Tile Border From Macro** - when "**Yes**" is selected, this allows a border to be added around a macro button in the K-Touch window.



To start adding buttons, touch the **{Delegate}** button to display the button selection, then touch "**Button 1**". Finally, touch the "**Button**" **{On}** button. A small yellow rectangle will be displayed in the top right of the K-Touch screen.

All adjustments to the position and size of the button are made using the using the "**Pos. X/Y**" and the "**Width**" and "**Height**" parameters.

To add another button, the **{Delegate}** button to display the button selection, then touch "**Button 2**". Finally, touch the "**Button**" **{On}** button.

**Adding Functions to K-Touch Buttons** 

To add a macro to a button, use the "**Button Macro**" parameter. Select the button, then use the "**Project**" parameter to select the project which has the macro, then use the "**Macro Select**" parameter to select the macro file. Finally touch the **{Attach}** button. The macro is now attached to the selected button.

📃 Multiviewer 1 Head	d 1 Виттом 1	K-Touch		
K-Touch Enable Off On				
GUI Input BNC Input A1	K-Touch Active			
Tile Border From Macro No Yes	Title Buttor	1		
Button Off On				
X Position -87.50%	itton Bgnd Butto	n Text Touch Border		
Y Position 87.50%				
Border Width 2	acro Ready Macro	Run Macro Pause		
Width 0.11 0				
Height 0.07 O		-Touch Button Macro		
Font Size 15 Point O		None		
		Multiviewer 2	1 Nead 1 BUTTON 1	K-Touch
		K-Touch Enable		K-Touch
		K-Touch Enable Off		K-Touch
		K-Touch Enable Off GUI Input Bhic		K-Touch 💽 Button Macro 💥
		K-Touch Enable Off GUI Input Bric Input Tile Border	On K-Touch	
		K-Touch Enable Off GUI Input B HC Incursion Tile Border Button C Project	On K-Touch	
		K-Touch Enable Off GUI Input B Tile Border Button C X Position Macro Select	CON K-Touch WER 1 HEAD 1 BUTTON 1	Button Macro 💥 Detach
		K-Touch Enable Off GUI Input B Tile Border Button C X Position Y Position Attached Mag	OWER 1 HEAD 1 BUTTON 1 24: STARTPOINT	Button Macro 💥 Detach
		K-Touch Enable Off GUI Input Buc Multrivie Tile Border Button C Project X Position Macro Select	ON WER 1 HEAD 1 BUTTON 1 24: STARTPOINT O: NewMacro	Button Macro 💥 Detach
		K-Touch Enable Off GUI Input B Tile Border Button V Y Position Border Wid Width	ON WER 1 HEAD 1 BUTTON 1 24: STARTPOINT O: NewMacro	Button Macro 💥 Detach
		K-Touch Enable Off GUI Input B Tile Border Button C X Position Border Wic	WER 1 HEAD 1 BUTTON 1 24: STARTPOINT 0: NewMacro	Button Macro 💥 Detach

You can also use the "**Copy Clone**" function to copy a button function from the control surface or from another menu, and attach to the K-Touch button.

# **Aux Setup**

In the Config menu, touch the **{Aux Setup**} button to enter the **Aux Setup** menu. In this menu, the exact setup for each individual Aux Bus can be adjusted. The center of the Aux setup menu screen shows a table, which contains each of the Aux Bus details.

Note: Setting up the Auxes will be reflected on the MAV-AUX panel if the control surface has one fitted.

1						< Setu	p			1								Αι	JX Se	tup	
k 5 • Name	Shar	crosspoin	nt 👘	Lock Pane	s el File	Macro	Prot	TLine	1	2	3	4	5	6	7	8	9	10	11	12	13
AUX 1	Yes	BNC A3																			
AUX 2		BNC A1								15	16	17	18	10	20	21	22	23	24		
AUX 3		BNC A7							14	15	10	17	18	19	20	21	22	23	24	25	26
AUX 4		BNC A4									J								J		
AUX 5		BNC A1							27	28	29	30	31	32	33	34	35	36	37	38	39
AUX 6		BNC A1							21	20	21	50	51	32	33	3-	35	30	37	30	37
AUX 7		BNC A1																			
AUX 8		BNC A1							40	41	42	43	44	45	46	47	48	49	50	51	52
AUX 9		BNC A1																			
AUX 10		BNC A1																			
AUX 11		BNC A1							53	54	55	56	57	58	59	60	61	62	63	64	
AUX 12		BNC A1																			
ne AUX 1	ext	Panel Lock Panel	File Lock File		Macro .ock Macro	Protoc Lock Protoc		Finceline Lock Fimeline													
		Lock All	Lock A		ock All	Lock /		ock All		1											
																		AUX	< Set	up	
									Curren	nt Nam	e BN	IC A3									8
									BNC	A1	BNC	A2	BNC	A3	BNC	A4	BNC	A5	BNC	A6	
									BNC	A7	BNC	A8	RPLY	1			RPLY	2	GFX	1	
									GFX	2	EVS	1	M/E	1	BNC	B4	BNC	B5	BNC	B6	
									BNC	B7	BNC	B8	BNC	B9	BNC	B10	BNC	B11	BNC	B12	
									BNC	C1	BNC	C2	BNC	C3	BNC	C4	BNC	C5	BNC	C6	

The Kahuna mainframe has freely assignable outputs; which means that any output can be assigned to be either a M/E output or an Aux output using the **Swr Outputs** menu in the **User Config** menu. The table in the center of the menu displays the setup of the Aux Buses and the sources that are assigned to them.

Sources for the Aux buses can be M/E output Xpts, Store Xpts or any of the sources on the 160 Xpts.

#### **Setup an Aux Bus**

To setup an aux bus, use the **Bus** parameter to select the required aux and the **Crosspoint** popup list selector to select the source for the Aux bus

The final part of setting up an Aux bus is to assign it to an output, this is done in the **User Config - Swr Outputs** menu.

	) 1					Aux	Setu	p	$\ \ \land \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \$
Aux				Locks					
Bus 🔍	Name	Share O	Crosspoir	IL 👔	Panel	File	Macro	Prot	TLine
1	AUX 1		BNC A3						
2	AUX 2		BNC A1						
3	AUX 3		BNC A7						
4	AUX 4		BNC A4						
5	AUX 5		BNC A1						
6	AUX 6		BNC A1						
7	AUX 7		BNC A1						
8	AUX 8		BNC A1						
9	AUX 9		BNC A1						
10	AUX 10		BNC A1						
11	AUX 11		BNC A1						
12	AUX 12		BNC A1						
Name	AUX 1		Panel Lock	File Lock	Ma		Proto Lock		imeline ock
Name	e '???' & Next		Panel Lock All	File Lock Al	ll Loc	cro ck All	Proto Lock		imeline ock All

The above menu attacher displays the selected Aux Bus and the Crosspoint source to the aux bus. The **Shared** parameter allows or stops an aux bus being shared with another logical switcher.

The Lock parameters are used to lock out specific functions on an Aux panel.

	) 1					Aux	Setup			1					Aux	Setu	ip	
Aux			Crosspoi	at	Locks				Aux			Creansi		Locks				
Bus 🔍	Name	Share O	crosspon		Panel	File M	lacro P	rot TLine	Bus	Name	Share	Crosspoi	11 1	Panel	File	Macro	Prot	TLine
1	AUX 1		BNC A3			On O	n O	n On	1	AUX 1		BNC A3						On
2	AUX 2		BNC A1						2	AUX 2		BNC A1		On	On	On	On	On
3	AUX 3		BNC A7						3	AUX 3		BNC A7		On	On	On	On	On
4	AUX 4		BNC A4						4	AUX 4		BNC A4		On	On	On	On	On
5	AUX 5		BNC A1						5	AUX 5		BNC A1		On	On	On	On	On
6	AUX 6		BNC A1						6	AUX 6		BNC A1		On	On	On	On	On
7	AUX 7		BNC A1						7	AUX 7		BNC A1		On	On	On	On	On
8	AUX 8		BNC A1						8	AUX 8		BNC A1		On	On	On	On	On
9	AUX 9		BNC A1						9	AUX 9		BNC A1		On	On	On	On	On
10	AUX 10		BNC A1						10	AUX 10		BNC A1		On	On	On	On	On
11	AUX 11		BNC A1						11	AUX 11		BNC A1		On	On	On	On	On
12	AUX 12		BNC A1						12	AUX 12		BNC A1		On	On	On	On	On
Name	AUX 1		Panel Lock	File Lock	Mac		Protoco .ock	l Timelin Lock	Nam	e AUX 1		Panel Lock	File Lock		acro ock	Proto Lock		Timeline Lock
Name	e '???' & Next		Panel Lock All	File Lock A	Mac Loc		Protoco .ock All		e	ne '???' & Next		Panel Lock All	File Lock A		acro ock All	Proto Lock		Timeline Lock All

The **Panel Lock**, lock out the selected crosspoint assigned to the Aux Panel so that when the button is pressed, the crosspoint does not operate.

File Lock stops the user from loading a file.

When a Macro is attached to a crosspoint, the **Macro Lock** parameter disables the crosspoint so that the attached macro cannot be triggered to run. This is the same for **Protocol Lock** and **Timeline Lock**.

# **Store Setup**

The Store Setup menu allows the user to setup the way the stores are coupled when using a clip, the allocation of time to each store can also be setup in this menu and the stores can also be given names.

			Sto	ore Setup	Coupling &	& Linking	
Store o	Group	Dve Store 🕤	Store Coupling Key/Lighting •	Fill/Effects	Linked 5 To Sto		Audio Reversco
Store 2					- Store		
Store 3			Key Store 4				
Store 4				Fill Store 3			
Store 5			Key Store 6				
Store 6				Fill Store 5			
Store 7							
Store 8							
Store 9	А		Key Store 10				
Store 10				Fill Store 9			
Store 11	В						
Store 12							
Uncouple All	Un	ılink All	Apply Linking				aster

# **Coupling & Linking**

The **Coupling & Linking** menu allows the user to setup stores which contain video clips or "Bugs" which are for example Keyed over a background where the Key source can be made to be transparent.

To do this the clip has to have a Key and Fill source coupled together over 2 stores.

Store	0	Group	Dve Store	0	Store Coupling Key/Lighting •	Fill/Effects	Linked To Store	Audio Reversc
Store 2							- Store 1	
Store 3					Key Store 4			
Store 4						Fill Store 3		
Store 5					Key Store 6			
Store 6						Fill Store 5		
Store 7								
Store 8								
Store 9					Key Store 10			
Store 10						Fill Store 9		
Store 11								
Store 12		В						

In the table from left to right; the Store column lists the available stores. The number of stores that are available to use depends on the number of control cards fitted in the mainframe. In the table above, Stores 1 - 12 can be seen, if the Kahuna mainframe being used is 9600, there can be up to 20 stores available, if the mainframe is a Kahuna 6400, 10 stores are available. **Group A** column, also relates to the single control card fitted and the 10 available stores. If a second control card is fitted, the table would display **Group B** and stores 11 - 20.

**DVE Store** - this selects the store as a DVE "Lighting" or "Effects" store, when selected "Yes" is displayed.

**Store Coupling** - the Key/lighting column is the Key store that is coupled to the Fill store. The Fill/Effects column is the Fill store that is coupled to the Key store.

For example, in the table below, Store 1 has a Key that is Key Store 2 coupled to Fill Store 1 in the row below.

				Sto	ore Setup	Cou	pling & Lin	kinç	
Store	Group	Dve Store	•	Store Coupling Key/Lighting •	Fill/Effect	s	Linked To Store		Audio Revers€
Store 1	A			Key Store 2		~			
Store 2	A			Rey Store 2	Fill Store 1				
Store 3	A				The Store T				
Store 4	A								
Store 5	A			Key Store 6					
Store 6					Fill Store 5				
Store 7									
Store 8									
Store 9	А			Key Store 10					
Store 10					Fill Store 9				
Store 11	В								
Store 12									
Uncouple All							UHI	D Ma	aster

#### **UHD Master**

Setting up UHD stills and clips in the internal clip store is done in a similar way to HD stores.

 Store Setup
 Coupling & Linking
 Inked Linked Reversor
 Audio Reversor

 Store
 A
 UHD Master
 Audio Reversor

 Store 1
 A
 UHD Master
 Audio Reversor

 Store 2
 A
 UHD Store 1
 -UHD Store 1

 Store 3
 A
 -UHD Store 1
 -UHD Store 1

 Store 4
 A
 -UHD Store 1
 -UHD Store 1

 Store 5
 A
 -UHD Store 1
 -UHD Store 1

 Store 6
 A
 -UHD Store 1
 -UHD Store 1

 Store 7
 A
 -UHD Store 1
 -UHD Store 1

 Store 8
 A
 -UHD Store 1
 -UHD Store 1

 Store 10
 A
 -UHD Store 1
 -UHD Store 1

 Store 11
 B
 -UHD Store 1
 -UHD Store 1

 Store 12
 B
 -UHD Master
 -UHD Master

 Untink Att
 Apply
 UHD Master

Note: Before setting up Coupling & Linking, a UHD still or clip will have been loaded into a store, in the Store menus.

Select the store with the UHD still or clip and then touch the **{UHD Master}** button. It will automatically link the next 3 Stores to the Master Store.

If the file loaded is a UHD clip, when the clip is played, the Master Store will automatically play the three linked stores in sync with the Master Store.

UHD Stills and Clips that are to be Keyed over a UHD source, that contain Key and Fill elements, are setup in exactly the same way as a HD still and clip, just remember that they will occupy 4 stores for the Key portion and 4 stores for the Fill portion.

## Allocation

The Allocation menu allows the user to see the time used by clips loaded into each individual store, adjust the time allocated store by store or set maximum time limits on each store. The amount of overall time that can be allocated to a single store or to all stores depends on the amount of ClipStore memory purchased.

Up to 64Gb of ClipStore memory can be purchased for the Kahuna Stores (32Gb per Control Card). A system with 64Gb is capable of handling over:

40 minutes of SD Video

8 minutes of HD Video

4 minutes of 1080p Video

	Store Setup	lemory Allocation					Store S	etup Me	mory Allocation	
			~~	C+	C	Allocation				
	Maximum	Store Setup	$\sim$	Store	Group	Reserved	1	Maximum	Current	
	4:54;24	Coupling &		Store 1		00;00		1:54;24	00;00	
		Linking		Store 2		00;00			00;00	
		Linking		Store 3		00;00			00;00	
	Ī			Store 4		00;00			00;00	
		Memory		Store 5		00;00			00;00	
		Allocation		Store 6		00;00			00;00	
				Store 7		00;00			00;00	
		Names		Store 8		00;00			00;00	
				Store 9		00;00			00;00	
				Store 10		00;00			00;00	
				Allocation Format	SD		E		Allocate Rele	ease
				Reserved	00;00				All	
				Maximum	No Yes	4:54;24	0			

The table in the menu above displays a list of available stores, if any clips are loaded into them, the clip time duration is displayed in the **Current** column. Selecting a Store and turning **On** the **Maximum** parameter, the user is able set a Maximum Duration of time for each store. So, if for example a time of 2:00;23 is set as a maximum in a store, a clip no larger than 2 minutes and 23 frames can be loaded into the store.

If a selected Store is 5 minutes long or has had 5 minutes Reserved, adjusting the **Allocation Format** parameter changes the amount of memory the store has depending on the option selected, i.e. if the store has 5 minutes of SD memory, then the store will have just over 51 seconds of 1080i store memory when selected.

		Store Con	figuration 🔨			Store	Setup Memory	Allocation
Logical Switcher	Stores	Memory Allocation	n	Store	Group	Allocation		
Name	A B	Store Group A	Store Group B		Gloop	Reserved	Maximum	Current
1 Demo Room NB	10 10	02;00°	00;00°	Store 1		02;00°	1:08;18°	00;00°
			89 - 199 - 199 - 199 - 199 - 199 - 199 - 199 - 199 - 199 - 199 - 199 - 199 - 199 - 199 - 199 - 199 - 199 - 199	Store 2		00;00°		00;00°
				Store 3		00;00°		00;00°
				Store 4		00;00°		00;00°
				Store 5		00;00°		00;00°
				Store 6	A	00;00°		00;00°
				Store 7	A	00;00°		00;00°
				Store 8	A	00;00°		00;000
				Store 9	A	00;00°		00;00°
				Store 10	A	00;00°		00;00°
				Allocation Format	Fast 1080p		Allo	
Allocation Format Fast 1080p				Reserved	02;00°	•	All	All
Store Group A Allocation 02;00°		sed Memory 1:41;00°		Maximum	No Yes	1:08;18º		
Store Group B Allocation 00;00°	O Unus	sed Memory 1:43;00°						

In the **Engineering Config - Store Setup** menu (above left), "chunks" of the overall **ClipStore** memory can be allocated to individual Logical Switchers. The allocated memory can then be allocated to individual stores in the Reserved store memory column in the **User Config Store Memory Allocation** in the above menu (right).

This means that the user is only able to allocate memory to stores that is equal to the total amount of memory allocated in the **Engineering Config - Store Setup** menu i.e. if 10 minutes of memory is allocated to a Logical Switcher, then only 10 minutes of memory time can be allocated to 10 Stores in total.

## Names

The Names menu allows the user to give a user defined name and description to individual stores.

	Ste	ore Setup Names	$\land$				Store Setup	Names	$[ \land ]$
	Descriptio	Store Setup	$\sim$	Store	Default Name	Store Name	Description		
	Sports Intro	Store Setup	~~~	Store 1	STOR 1	Sport	Sports Intro		
		Coupling &		Store 2	STOR 2				
		Linking		Store 3	STOR 3				
				Store 4	STOR 4				
				Store 5	STOR 5				
		Memory		Store 6	STOR 6				
		Allocation		Store 7	STOR 7				
				Store 8	STOR 8				
		Names		Store 9	STOR 9				
				Store 10	STOR 10				
				Store 11	STOR 11				
				Store 12	STOR 12				
				Store 13	STOR 13			Name '???'	
				Store 14	CTOD 14			& Next	
				Name	Sport				
				Description	Sports Intro				

A Name and Description can be given to a store using the on-screen Keyboard, by pressing the Keyboard select symbol.

If a Still or Clip that is imported into the Kahuna mainframe already has a file name, pressing the **{Name '???' & Next}** button will copy the name from the file and give it to the selected Store in the **Store Name** column, the selection bar will then automatically move on to the next Store in the table.

# **M/E Config**

Kahuna has a maximum of 64 outputs (depending on the system configuration purchased) all of which are programmable this means that the user is not restricted and can assign any one of the outputs to be an M/E output. All M/E outputs are programmable which means that the outputs can be configured and their states changed; in this menu, to suit the users needs.

📄 ME 2 1				ME C	onfig	Ou	tput	s 1		$\land$
Output_ Name	Trans	Bgnd	Key				eKey			
o o tpo to		- ging								4 0
ME1 Op1	Primary	A/B	Pg	Pg	Pg	Pg	Pg	Pg	Pg	Pg
ME1 Op2										
ME1 Op3	Primary	A/B	Pg	Pg	Pg	Pg	Pg	Pg	Pg	Pg
ME1 Op4	Primary	A/B	Pg	Pg	Pg	Pg	Pg	Pg	Pg	Pg
ME1 Op5	Primary	A/B	Pg	Pg	Pg	Pg	Pg	Pg	Pg	Pg
ME1 Op6	Primary	A/B	Pg	Pg	Pg	Pg	Pg	Pg	Pg	Pg
ME1 Op7	Primary	A/B	Pg	Pg	Pg	Pg	Pg	Pg	Pg	Pg
ME1 Op8	Primary	A/B	Pg	Pg	Pg	Pg	Pg	Pg	Pg	Pg
	Primary	A/B	Pg	Pg	Pg	Pg	Pg	Pg	Pg	Pg
ME2 Op2										
ME2 Op3	Primary	A/B	Pg	Pg	Pg	Pg	Pg	Pg	Pg	Pg
ME2 Op4	Primary	A/B	Pg	Pg	Pg	Pg	Pg	Pg	Pg	Pg

## **Outputs 1**

Output - The number of M/Es in this menu are dependent on the way the system has been setup and the number of M/E cards purchased with the system. There are 8 M/E outputs per M/E which who's resources are configured in the Mainframe Config/Switcher Config - Make M/E menu.

Name - This is the user assigned name for the M/E output

**Trans** - this selects the Primary or Secondary transition settings for the selected background bus. **Primary** and **Secondary** is explained for example when M/E 1 is selected using the Dynamic Mix Effect buttons on two M/Es on the control surface, M/E1 O/P1 with A/B background Primary is set.

When the Transition controls e.g. Wipe/Mix etc. are selected, the transition functions for both M/Es on the control panel will behave in the same way, as will all M/E 1 outputs. If M/E1 O/P 1 is set to primary and M/E1 O/P2 is set to secondary in the **M/E Output Config menu - secondary** is selected by toggling the OLED button, the secondary will then transition either mix or wipes.

Background - This sets up which bus/buses are used as the background.

- Black = Background will always be black
- **A/B** = The main A and B buses will be used as the backgrounds in transitions.
- **C/D** = The main C and D buses will be used as the backgrounds in transitions.
- A= Just background A will be used and the background will not transition
- **B**= Just background B will be used and the background will not transition
- C = Just background A will be used and the background will not transition
- D= Just background B will be used and the background will not transition
- **U1/U2** = Utility Bus 1 and Utility Bus 2 will be used as the background and transition with the selected background transition or this output. Util1 and Util 2 crosspoints can be selected on the main panel.
- U1/U2= Just Utility Bus 1 and 2 will be used and the background will not transition

Output	Name	Tranc	Band	Key				eKey			
Output	Name	Trans	Bgnd								
		Primary	A/B	Pg	Pg	Pg	Pg	Pg	Pg	Pg	Pg
ME1 Op2											
ME1 Op3		Primary	A/B	Pg	Pg	Pg	Pg	Pg	Pg	Pg	Pg
ME1 Op4		Primary	A/B	Pg	Pg	Pg	Pg	Pg	Pg	Pg	Pg
ME1 Op5		Primary	A/B	Pg	Pg	Pg	Pg	Pg	Pg	Pg	Pg
ME1 Op6		Primary	A/B	Pg	Pg	Pg	Pg	Pg	Pg	Pg	Pg
4E1 Op7		Primary	A/B	Pg	Pg	Pg	Pg	Pg	Pg	Pg	Pg
ME1 Op8		Primary	A/B	Pg	Pg	Pg	Pg	Pg	Pg	Pg	Pg
		Primary	A/B	Pg	Pg	Pg	Pg	Pg	Pg	Pg	Pg
ME2 Op2											
ME2 Op3		Primary	A/B	Pg	Pg	Pg	Pg	Pg	Pg	Pg	Pg
ME2 Op4		Primary	A/B	Pg	Pg	Pg	Pg	Pg	Pg	Pg	Pg

Key1 to Key4 - These columns determine what Keys will appear on the M/E output.

eKey1 to eKey4 - These columns determine what eKeys will appear on the M/E output.

- Off = This Key will NOT appear on this output
- **Program** = The Key is available on this output as determined by the transition status on the main panel
- **On** = The Key will always be present on this output. The main transition will NOT be able to remove it.

### **Outputs 2**

<b>ME 1 1</b>	ME Config Outputs 2	📄 ME 2 1	ME C	onfig Outputs 2
Output Name Preview	Key Of ME Config 💥	Output 💊 Name	Preview 🔗 Key Of	Ancillary Follow O Source O
ME1 Op1 ME1 Op2 OP 1 ME1 Op3	Outputs 1	ME1 Op1 ME1 Op2 ME1 Op3	OP 1	ME Background Input A1 ME Background Input A1 ME Background Input A1
ME1 Op4 ME1 Op5 ME1 Op6	Outputs 2	ME1 Op4 ME1 Op5 ME1 Op6		ME Background Input A1 ME Background Input A1 ME Background Input A1
ME1 Op7 ME1 Op8	Skirts	ME1 Op7 ME1 Op8		ME Background Input A1 ME Background Input A1
ME2 Op1 ME2 Op2 OP 1 ME2 Op3	Bus Locking	ME2 0p1 ME2 0p2 ME2 0p3	OP 1	ME Background Input A1 ME Background Input A1 ME Background Input A1 ME Dackground Input A1
ME2 Op4		ME2 Op4		ME Background Input A1
	eKey Setup			

Name - This gives the User assigned name for the M/E output.

**Preview Of**- This sets this output to be a Preview for the M/E output you select. Previews can be re-entered but there will be no tally. Once you have selected this option all options to the right of this will have no effect.

Look Ahead Preview

Look Ahead Preview feature is designed for a facility that has a limited number of monitors, typically only one monitor per M/E which is used to view both Pgm and Pvw outputs for that particular M/E (with the exception of the output M/E, which normally has dedicated Pgm and Pvw monitors).

This feature automates the switching between the Pvw and Pgm outputs by monitoring the 'on-air' state of the Pgm output, selected in the Preview Of parameter for that monitor's output, and selecting the appropriate output type Pgm or Pvw.

Under normal working conditions, when the Pgm output of an M/E is on-air (tallied Red) its Pvw monitor will display the normal Pvw output for that M/E.

However, when its program output goes off-air, the preview monitor can be set to act like a program output for that M/E, effectively turning the Preview Of setting for the monitor output to the Off state.

	1E 1 2		ME Cor	nfig Outputs 2	
Output	Name	Preview	Key Of	Ancillary	
. 0				Follow	Source O
ME1 Op1				ME Background	Input A1
ME1 Op2		Look Ahead OP4		ME Background	Input A1
ME1 Op3				ME Background	Input A1
ME1 Op4				ME Background	Input A1
ME1 Op5				ME Background	Input A1
ME1 Op6				ME Background	Input A1
ME1 Op7				ME Background	Input A1
ME1 Op8				ME Background	Input A1
ME2 Op1				ME Background	Input A1
ME2 Op2		OP 1		ME Background	Input A1
ME2 Op3				ME Background	Input A1
ME2 Op4				ME Background	Input A1

**Using Auto Look Ahead** 

Example:

If M/E2 is the output M/E, and M/E1 is a Key layer on M/E2.

If the Key layer is on-air, the monitor attached to ME1 will show the Pvw output for M/E1 since, by definition of the Key layer being on-air, the Pgm output of M/E1 will be displayed on the Pgm output monitor of M/E2 (since it is the output M/E).

If the Key layer goes off-air, the monitor attached to M/E1 will switch to showing the Pgm output for M/E1, as it's no longer visible on either of M/E2's monitors.

Therefore; Pgm output of M/E1 on one monitor or another will always be seen, and M/E1's Pvw output will only be seen if M/E1's monitor isn't being used to display the Pgm output.

#### Setup

Select the M/E output that will be connected to the preview monitor highlighting the appropriate row in the table, e.g. ME2 Op4.

	1E 2 2		ME Co	onfig Outputs 2	
Output	Name	Preview	Key Of	Ancillary	
outhor 0	Name	FIEVIEW		Follow C	Source O
ME1 Op1				ME Background	
ME1 Op2				ME Background	
ME1 Op3				ME Background	
ME1 Op4				ME Background	
ME1 Op5				ME Background	
ME1 Op6				ME Background	
ME1 Op7				ME Background	
ME1 Op8				ME Background	
				ME Background	
ME2 Op2		Look Ahead OP4	OP 2	ME Background	Input A1
ME2 Op3				ME Background	
ME2 Op4				ME Background	

Set the Preview Of parameter of M/E2 OP2 to "Look Ahead OP4". This will monitor the on-air state of M/E2 Op1 and set M/E2 Op4 to be a Pgm or a Pvw output of M/E2 accordingly.

When M/E2 Op1 is on-air, M/E2 Op4 acts as a Preview Of M/E2 Op1, as if the Preview Of parameter was set to OP1. However, when M/E2 OP1 is off-air, M/E2 Op4 will switch to act as a Pgm output for M/E2, as if the Preview Of parameter was set to Off.

**Key Of** - This sets this output to be a Key Only for the output selected. Once you have selected this option all options to the right of this will have no effect. It is normal in this case that the background for the output you want this to be the Key for is set to Black. E.g. OP2 in this row would set this output to be the Key for output 2 of this M/E.

**Ancillary Follow** - All of the outputs on Kahuna can support audio as well as video, if audio is required on an M/E output, this parameter selects where an audio source will come from. Audio can be supplied via the following options: M/E Background, Bgnd A/B, Bgnd C/D, Bgnd A to C, Util 1 and 2, Keys 1 to 4 and eKeys 1 to 4.

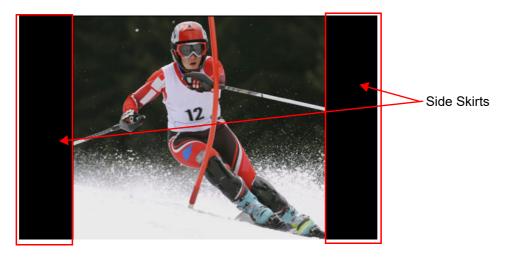
If **Source** is selected in the **Follow** parameter, the **Source** parameter becomes active, this will allow the user to select a direct input to the mainframe as the audio source.

Note: For audio to pass through the M/E output to the output Fins, the M/E is configured to an output BNC via the User Config - Switcher Output Config menu, then the Ancil Audio had to be turned On for the selected output in the Eng Config Output Standard menu.

#### Skirts

There are two types of "**Skirts**" available in Kahuna, this section will describe the first kind that are displayed on the **M/E Background Bus**, known as "**Side Skirts**".

If **Use Default Std** (in the **Eng Config - Input Setup**) parameter is set to **No** and the mainframe **System Standard** is set to **1080i/59.94** for example. If the mainframe then receives an SD 4:3 source on its input and the source is selected on a crosspoint (M/E background Bus), the source will be displayed in a 16:9 space like the image shown below.



The image above, displays the in coming 4:3 source, but because it is displayed in a 16:9 space, the image now has "**Side Skirts**".

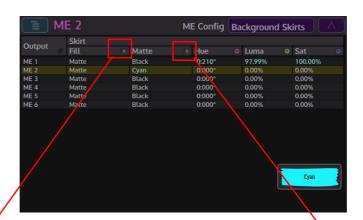
The side skirts can be filled using the **Skirt Setup** menu in the **User Config** menu as explained on the next page.

The **Background Skirts** menu allows the user to setup the side skirt fill sources for the background bus for each of the M/Es in the mainframe

		1E 2		ME Config	Background	d Skirts	Select the type of
	Output	Skirt	Matte	Hive	Luma	○ Sat ○	Matte (if using one)
	ME 1	Matte	Black	0:210°	97.99%	100.00%	l
	ME 2	Macte	Cyan	0:000°	0.00%	0.00%	
Select the M/E	ME 3	Matte	Black	0:000°	0.00%	0.00%	
	ME 4	Matte	Black	0:000°	0.00%	0.00%	
	ME 5 ME 6	Matte Matte	Black Black	0:000° 0:000°	0.00% 0.00%	0.00%	
Select where the Side Skirt fill comes from						Cyan	

Using the **Output** parameter (or Delegates button), select the M/E which has the 4:3 source and then select how the side skirts are going to be filled, i.e. using a Matte or a Utility Bus from the **Skirt Fill** parameter.

If Matte is selected, use the Matte Selector parameter to select a color from the list or create a color using the **Local Matte** parameters. If **Fill - Matte (U1-U2)** is selected, a fill source can be selected using the crosspoints on the selected Utility Bus.



🔳 ME 1	ME Config Background Skirts
Current Matte	×
Matte Util Bus 1 Util Bus	2 Matte (U3) Matte (U4)

		<u>×</u>		
<b>ME 1</b>		ME	Config Back	ground Skirts
Current Matte	Black			×
Local Matte	Black	White	Red	Yellow
Green	Cyan	Blue	Magenta	Grey
Orange	Dark Red	Dark Green	Dark Blue	Purple
Teal	Light Grey			



With Matte Side Skirts



With Utility Bus Side Skirts

 $\operatorname{Note:}~\operatorname{The}$  selected Side Skirt fill will be applied to all 4:3 sources on the selected M/E

# **Bus Locking**

This feature allows the user to lock out individual buses; Key, eKey, Background and Utility buses on each available M/E.

<b>ME 1</b>	Key 1	ME Config	Bus Locking	
ME Bus	Lock			
ME 1 Key 1				
ME 1 Key 2				
ME 1 Key 3				
ME 1 Key 4				
ME 1 eKey 1				
ME 1 eKey 2				
ME 1 eKey 3				
ME 1 eKey 4				
ME 1 Bgnd A				
ME 1 Bgnd B				
ME 1 Bgnd C				
ME 1 Bgnd D				
ME 1 Util 1				
ME 1 Util 2				
ME 1 Util 3 ME 1 Util 4				
ME I Util 4				

Use the "ME Bus" parameter control to scroll to the required bus, then use the "Lock" parameter to select "On".

The bus will now be locked out and the user will not be able to select any sources on that bus.



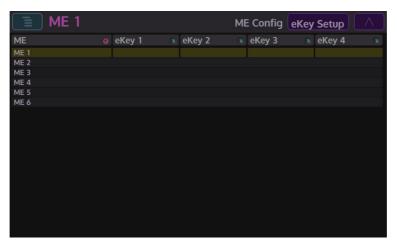
#### eKey Setup

Note: Please read the Keying section of the manual in conjunction with this section.

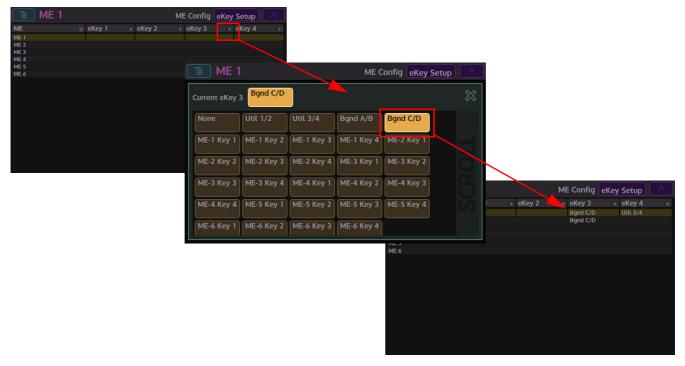
A Kahuna has 8 Key layers per M/E made up of 4 SuperKey layers and 4 extra Key layers that are called "**eKeys**". Each M/E will have 2 permanent eKeys, these will not need to use any spare Util buses or backgrounds (when selected, the user cannot assign any buses from the Delegates menu).

eKeys 3 and 4 are derived from Util buses, Background buses or SuperKeys that may not be required for a production.

When none of the Util, Background or SuperKey buses are being used by eKeys, the menu will look like the one below.



Touching the popup menu expander for eKey 3 or 4 will allow the user to select a bus for the eKey.



The number of eKeys available for each M/E is allocated in the Switcher Config - Make ME menu on the logged off state.

# **Switcher Outputs**

The **Switcher Outputs** menu is used to assign sources; i.e. Inputs, Mattes, Washes, Stores, M/E outputs, DVE outputs, Auxes and Multi Viewer outputs. to the output BNC's.

	Оитрит 9	2	Swi	itch	ner Outputs	Config		)	
Output	Physica BNC	al Name	Source Name		Resolved Nan	ne	FTB		
1	A1		ME2 Op1		ME2 A/P PGM				
2	A2		ME2 Op2		ME2 A/B PVW				
3	A3		Store 1		STOR 1				
4	A4		Store 2		STOR 2				Popup Button
5			Store 3		STOR 3				
6	A6		Store 4		STOR 4				
7	A7		Store 5		STOR 5				
8			Store 6		STOR 6				
9			MV1 Op1		MV1 OP1				
10	A10				BNC A1				
11	A11		Aux 11		BNC A1				
12	A12		Aux 12		BNC A1				
13	A13		Aux 13		BNC A1				
1/					RNC A1				
Display Unalloca	tod								
Unattoca	lieu								

# Config - Setting up a Switcher Output

The table displays sources that are assigned to the physical BNC outputs. The default layout displays the BNC outputs as they would be seen on the output Fins on the rear of the mainframe in alphanumerical order, so the actual number of BNC outputs displayed will depend on the number of output Fins purchased with the mainframe.

The default setting for the menu is "**Physical - BNC Output and Name**" this displays the actual BNC outputs.

The table columns from left to right of the menu display the following information: **Output** is the output designated in the Mainframe Config menu and depending on the way that the mainframe configuration is setup may not run sequentially. If for example Swr Output 1 has been moved to BNC A12, A12 will have an Astrix (A12\*) next to it to signify that it has been changed.

#### Physical

**BNC** is the physical BNC numbers as displayed on the output Fin at the rear of the mainframe. **Name** is the name that has been given to the BNC output in the Eng Config - Output Setup menu.

#### Source

**Name** is the default name given to the source. Touch the popup button next to the "Name" and the source for the selected output. Use the "Scroll" bar (shown below) to scroll to the required source. Touch to select.



**Resolved Name** is the user specific name given to the source in the User Config - ME Output Config menu

FTB displays if Fade To Black is enabled for the selected output.

The **Output** parameter allows the user to select a physical BNC connector on the back of the Kahuna mainframe, then using the **Source** parameter the user can assign a source to the selected BNC output.

The user can also assign **FTB** (Fade to Black) to any of the outputs as required.

To use the "**Output**" parameter to select the requires output BNC, then use the "**Name**" parameter to select the source for the output.

#### Safe Area

Touch the menu link button at the top of the menu, then select "Safe Area".

					Area		J 1				Swite	her C	otput	s Safe	Area		
Out Bl				Switch	er Outputs 🚿	Out	BNC	Mode	Positio	n Y ⊙	Zoom	Size X O	YO	Width	Dots	Black	Dyn
1 A1				Config	GPOs	1	A1	Off									
2 A2				coming	0103	2	A2	Off									
3 A3						3		Off									
4 A4			1.00	Cofe Area	Outmut	4	A4	Off									
5 A5			1.00	Safe Area	Output Color	5	A5	Off									
6 A6			1.00		COLOI	6	A6	Off									
7 A7			1.00			7	A7	Off									
8 A8				UHD Setup		8	A8	Off									
						9	A9	Off									
10 A1					J.	10	A10	Off									
12 A1				Fade To		11	A11	Off									
				Black		12	A12	Off									
Display				Skirts													

Safe area is used to superimpose a grid on a monitor display to ensure that a signal source and title area is setup correctly and is the correct aspect ratio. The use of safe areas in television production ensures that the most important parts of the picture are seen by the majority of viewers.

Put         Position         Size         Width         Dots         Black         Dyn           1         A1         Off         0.00%         0.00%         0.90         1.00         1.00         0.00%         1           2         A2         Off         0.00%         0.90%         0.90         1.00         1.00         0.00%         1           4         A4         Off         0.00%         0.90%         0.90         1.00         0.00%         1           5         A5         Off         0.00%         0.90%         0.90         1.00         0.00%         1           6         A6         Off         0.00%         0.90%         0.90         1.00         0.00%         1           7         A7         Off         0.00%         0.90         1.00         1.00         0.00%         1           8         A8         Off         0.00%         0.90%         1.00         1.00         0.00%         1           9         A9         Off         0.00%         0.90%         1.00         1.00         0.00%         1           10         A10         Off         0.00%         0.90%         1.00 <th></th> <th>] 1</th> <th></th> <th></th> <th>Switc</th> <th>her O</th> <th>utput</th> <th>s Safe</th> <th>Area</th> <th></th> <th><math display="block">[ \land ]</math></th>		] 1			Switc	her O	utput	s Safe	Area		$[ \land ]$
2         A2         Off         0.00%         0.00%         0.90         1.00         1.00         0.00%         1           3         A3         Off         0.00%         0.00%         0.90         1.00         1.00         0.00%         1           4         A4         Off         0.00%         0.00%         0.90         1.00         1.00         0.00%         1           5         A5         Off         0.00%         0.00%         0.90         1.00         1.00         0.00%         1           6         A6         Off         0.00%         0.00%         0.90         1.00         1.00         0.00%         1           7         A7         Off         0.00%         0.00%         0.90         1.00         1.00         0.00%         1           8         A8         Off         0.00%         0.00%         0.90         1.00         1.00         0.00%         1           9         A9         Off         0.00%         0.00%         0.90         1.00         1.00         0.00%         1           10         A10         Off         0.00%         0.00%         0.90         1.00         1.00 <th>Out</th> <th>BNC</th> <th>Mode</th> <th></th> <th>Zoom</th> <th></th> <th>Y O</th> <th>Width</th> <th>Dots</th> <th>Black</th> <th>Dyn</th>	Out	BNC	Mode		Zoom		Y O	Width	Dots	Black	Dyn
3         A3         Off         0.00%         0.00%         0.90         1.00         1.00         0.00%         1           4         A4         Off         0.00%         0.00%         0.90         1.00         1.00         0.00%         1           5         A5         Off         0.00%         0.00%         0.90         1.00         1.00         0.00%         1           6         A6         Off         0.00%         0.00%         0.90         1.00         1.00         0.00%         1           7         A7         Off         0.00%         0.00%         0.90         1.00         1.00         0.00%         1           8         A8         Off         0.00%         0.00%         0.90         1.00         1.00         0.00%         1           9         A9         Off         0.00%         0.00%         0.90         1.00         1.00         0.00%         1           10         A10         Off         0.00%         0.00%         0.90         1.00         1.00         0.00%         1           11         A11         Off         0.00%         0.00%         0.90         1.00         1.00<		A1	Off								
4         A4         Off         0.00%         0.00%         0.90         1.00         1.00         0.00%         1           5         A5         Off         0.00%         0.00%         0.90         1.00         1.00         0.00%         1           6         A6         Off         0.00%         0.90         1.00         1.00         0.00%         1           7         A7         Off         0.00%         0.90         1.00         1.00         0.00%         1           8         A8         Off         0.00%         0.90%         1.00         1.00         0.00%         1           9         A9         Off         0.00%         0.90%         1.00         1.00         0.00%         1           10         A10         Off         0.00%         0.90%         1.00         1.00         0.00%         1           11         A11         Off         0.00%         0.00%         0.90%         1.00         1.00         0.00%         1		A2	Off								
5         A5         Off         0.00%         0.00%         0.90         1.00         1.00         0.00%         1           6         A6         Off         0.00%         0.00%         0.90         1.00         1.00         0.00%         1           7         A7         Off         0.00%         0.00%         0.90         1.00         1.00         0.00%         1           8         A8         Off         0.00%         0.00%         0.90         1.00         1.00         0.00%         1           9         A9         Off         0.00%         0.00%         0.90         1.00         1.00         0.00%         1           10         A10         Off         0.00%         0.00%         0.90         1.00         1.00         0.00%         1           11         A11         Off         0.00%         0.00%         0.90         1.00         1.00         0.00%         1		A3	Off								
6         A6         Off         0.00%         0.00%         0.90         1.00         1.00         0.00%         1           7         A7         Off         0.00%         0.00%         0.90         1.00         1.00         0.00%         1           8         A8         Off         0.00%         0.00%         0.90         1.00         1.00         0.00%         1           9         A9         Off         0.00%         0.00%         0.90         1.00         1.00         0.00%         1           10         A10         Off         0.00%         0.00%         0.90         1.00         1.00         0.00%         1           11         A11         Off         0.00%         0.00%         0.90         1.00         1.00         0.00%         1		A4	Off								
7         A7         Off         0.00%         0.00%         0.90         1.00         1.00         0.00%         1           8         A8         Off         0.00%         0.00%         0.90         1.00         1.00         0.00%         1           9         A9         Off         0.00%         0.00%         0.90         1.00         1.00         0.00%         1           10         A10         Off         0.00%         0.00%         0.90         1.00         1.00         0.00%         1           11         A11         Off         0.00%         0.00%         0.90         1.00         1.00         0.00%         1		A5	Off								
8         A8         Off         0.00%         0.00%         0.90         1.00         1.00         0.00%         1           9         A9         Off         0.00%         0.00%         0.90         1.00         1.00         0.00%         1           10         A10         Off         0.00%         0.00%         0.90         1.00         1.00         0.00%         1           11         A11         Off         0.00%         0.00%         0.90         1.00         1.00         0.00%         1	6	A6	Off								
9         A9         Off         0.00%         0.00%         0.90         1.00         1.00         0.00%         1           10         A10         Off         0.00%         0.00%         0.90         1.00         1.00         0.00%         1           11         A11         Off         0.00%         0.00%         0.90         1.00         1.00         0.00%         1											
10         A10         Off         0.00%         0.00%         0.90         1.00         1.00         0.00%         1           11         A11         Off         0.00%         0.00%         0.90         1.00         1.00         0.00%         1											
11 A11 Off 0.00% 0.00% 0.90 1.00 1.00 0.00% 1											
	10	A10									
<b>12 A12 Off</b> 0.00% 0.00% 0.90 1.00 0.00% 1											
	12	A12	Off								

Safe Area can be set independently for each individual output using the **Out** parameter. There are various Marker **"Modes"** that safe area can work in:

**User** - allows a user defined safe area setup, where the safe area lines can be moved around the monitor with the X/Y Position parameters, the save area can be zoomed in or out, the length of the safe area lines can be adjusted using the X/Y Size parameter, the line width can be changed and the Line Style can be changed.

The following settings are in 2 groups of 4.

- 16:9 Mark, Box, Action and Title
- 4:3 Mark, Box, Action and Title

Mark - adds a line outside the safe area.

	1				Swite	cher O	utput	s Safe	Area				] 1				Swite	her C	otput	s Safe	Area		$\land$
Dut	BNC	Mode	Position X •		Zoom	Size X O	ΥO	Width	Dots	Black	Dyn	Out	BNC	Mode	Positio X o	n IY ⊙	Zoom	Size X 0	Y O	Width	Dots	Black	Dyn
	A1	User	0.00%	0.00%	0.90	1.00	1.00	0.00%	1			1	A1	16:9 Mark	0.00%	0.00%	0.90	1.00	1.00	0.00%	1		
		Off										Z		011									
		Off										3		Off									
	A4	Off										4	A4	Off									
	A5	Off										5		Off									
	A6	Off										6	A6	Off									
	A7	Off										7	A7	Off									
	A8	Off										8	A8	Off									
	A9	Off										9	A9	Off									
	A10	Off										10	A10	Off									
1	A11	Off										11	A11	Off									
2	A12	Off										12	A12	Off									

In User Mode

In Mark Mode

Box - places a line 1 pixel inside the safe area

Action - is a larger area outside of the Tile safe area (as explained below).

**Title** - the title safe area is, in broadcasting, a rectangular area which is far enough in from the four edges of the selected aspect ratio, to allow text or graphics show neatly, with a margin and without distortion.

#### **UHD Setup**

The UHD Setup menu allows the user to manually adjust the size an position of the 4 UHD quadrants of a UHD source.

Physical	Outrust	Pan and S	Scan			
BNC O Name	Output	Enable 🔿	Control 💿	Position Xo	Position Yo	Width O
	1	Off				0.50
A2		Off	Protocol	0.00%	0.00%	0.50
A3		Off	Protocol	0.00%	0.00%	0.50
A4		Off	Protocol	0.00%	0.00%	0.50
A5		Off	Protocol	0.00%	0.00%	0.50
A6		Off	Protocol	0.00%	0.00%	0.50
A7		Off	Protocol	0.00%	0.00%	0.50
		Off	Protocol	0.00%	0.00%	0.50
		Off	Protocol	0.00%	0.00%	0.50
A10		Off	Protocol	0.00%	0.00%	0.50
A11	11	Off	Protocol	0.00%	0.00%	0.50
A12	12	Off	Protocol	0.00%	0.00%	0.50
A13	13	Off	Protocol	0.00%	0.00%	0.50
A14	14	Off	Protocol	0.00%	0.00%	0.50
A15		Off	Protocol	0.00%	0.00%	0.50
A16		Off	Protocol	0.00%	0.00%	0.50

With the UHD settings turned On in the "**Output Setup**" menu, notice in the menu above outputs A1 to A4 are tied together.

By touching the "**Control**" column, the parameter control will become active and allow outputs 1 to 4 to be adjusted from the "Protocol" setting (the 4 UHD quadrants are in automatic mode and should not need adjusting), to "Manual" as shown below.

Physical     Pan and Scan       BNC     Name     Enable     Control     Position Ye       A1     1     Off     Manual     0.00%       A2     1     Off     Manual     0.00%       A3     1     Off     Manual     0.00%       A4     1     Off     Manual     0.00%       A5     5     Off     Protocol     0.00%	<ul> <li>Position Y</li> <li>0.00%</li> <li>0.00%</li> <li>0.00%</li> <li>0.00%</li> <li>0.00%</li> <li>0.00%</li> </ul>	<ul> <li>Width </li> <li>0.50</li> <li>0.50</li> <li>0.50</li> <li>0.50</li> <li>0.50</li> <li>0.50</li> <li>0.50</li> </ul>
BNCNameIEnableControlPosition YA11OffManual0.00%A21OffManual0.00%A31OffManual0.00%A41OffManual0.00%A55OffProtocol0.00%	0.00% 0.00% 0.00% 0.00% 0.00%	0.50 0.50 0.50 0.50
A2         1         Off         Manual         0.00%           A3         1         Off         Manual         0.00%           A4         1         Off         Manual         0.00%           A5         5         Off         Protocol         0.00%	0.00% 0.00% 0.00% 0.00%	0.50 0.50 0.50
A3         1         Off         Manual         0.00%           A4         1         Off         Manual         0.00%           A5         5         Off         Protocol         0.00%	0.00% 0.00% 0.00%	0.50 0.50
A4         1         Off         Manual         0.00%           A5         5         Off         Protocol         0.00%	0.00% 0.00%	0.50
A5 5 Off Protocol 0.00%	0.00%	
		0.50
A	0.00%	
A6 6 Off Protocol 0.00%	0.0076	0.50
A7 7 Off Protocol 0.00%	0.00%	0.50
A8 8 Off Protocol 0.00%	0.00%	0.50
A9 9 Off Protocol 0.00%	0.00%	0.50
A10 10 Off Protocol 0.00%	0.00%	0.50
A11 11 Off Protocol 0.00%	0.00%	0.50
A12 12 Off Protocol 0.00%	0.00%	0.50
A13 13 Off Protocol 0.00%	0.00%	0.50
A14 14 Off Protocol 0.00%	0.00%	0.50
A15 15 Off Protocol 0.00%	0.00%	0.50
A16 16 Off Protocol 0.00%	0.00%	0.50

This will allow the user to manually adjust the Position X/Y and adjust the width.

The four outputs are still tied together, so any adjustments made will be equal over the 4 outputs.

### Fade To Black

In the **User Config** menu is the **Fade To Black** (FTB) option, which allows the adjustment and control of the Fade To Black function.

Touch the menu link button and then touch the **{Fade To Black...}** button.

Switcher C	utputs Fade To Black	Switcher Outputs Fade To Black
Level 0.00% Time 01:00° Shape Linear Cubic C Cubic S Sine C Sine S	Switcher Outputs 🛞	Level 0.00% • Time 01;00° • Shape tinear Cubic C Cubic S Sine C Sine S
Profile 50.00%	Safe Area 4K Setup	Profile 50.00%
	Fade To Black Skirts	

The above parameter controls alter the FTB profile and transition timing.

Level - determines the amount of FTB added 0% no FTB applied and 100% full FTB.

**Time** - this parameter alters the amount of time that it takes for the FTB to transition. The parameter adjusts the minutes/seconds, frames and fields.

**Shape** - Selecting one of the Shape options will depict the type of profile curve, this will alter the acceleration rate for a FTB transition.

Linear - constant transition, no change in transition acceleration

**Cubic C and Sin C** - these profiles are similar to each other, the default transition will have a fast acceleration at the start and slowdown towards the end.

**Cubic Curve and Sin Curve** - these profiles are also similar to each other, the default transition will accelerate at the start slow down towards the mid point and accelerate again.

**Profile** - The Profile parameter control will adjust the FTB transition curve profile, changing the curve profile will make the transition accelerate or decelerate at a specific moment in the FTB transition period. The curve profile can only be used to change the Cubic S/Sin S and Cubic Curve/Sin Curve profiles, which are selected using the Shape parameter control. The Linear profile cannot be adjusted.

Fade To Black - Using the MAV-JOY

Fade To Black can also be controlled using the joystick [FADE TO BLACK] button.



Press the **[FADE TO BLACK]** button and the button will turn Green, which means that Fade To Black is ready to transition.

Press the **[RUN]** button to run a timed Fade To Black transition, the transition time can be setup in the **User Config - Switcher Outputs - Fade To Black** menu (previous page), adjusting the Time parameter will set the transition time. While the transition is taking place, the **[RUN]** button will turn White and the **[FADE TO BLACK]** button will flash White/Green/White/Green to display that Fade To Black is active. Press the **[RUN]** button once more and the system will transition back to the source signal, and the **[FADE TO BLACK]** button will turn Green.

Press the white [FADE TO BLACK] button to cancel the FTB option.

## Skirts

This is the second method of applying Skirts, they are applied to a switcher output, where "Side Skirts" are added to 4:3 sources on a 16:9 output.

Top/bottom skirts are added to 16:9 sources on a 4:3 output when set to "Letterbox" mode.

If a 4:3 source is applied to a 16:9 output, then side skirts will be applied, the side skirts can be filled by entering the **Skirt - Setup** menu.

	1			Sw	itche	er C	Output	s	Skirts			$\setminus$
Outrout	Physi	ical	Skirt									
Output	BNC	Name	Source •	Mat	te		Hue		Luma		Sat	0
1			BNC A1	Loca	l Matt	e	0:000°		0.00%		0.00%	
2	A2		BNC A1	Loca	L Matt	e	0:000°		0.00%		0.00%	
3	A3		BNC A1	Loca	L Matt	e	0:000°		0.00%		0.00%	
4	A4		BNC A1	Loca	l Matt	e	0:000°		0.00%		0.00%	
5	A5		BNC A1	Loca	l Matt	e	0:000°		0.00%		0.00%	
6	A6		BNC A1	Loca	l Matt	e	0:000°		0.00%		0.00%	
7	A7		BNC A1	Loca	l Matt	e	0:000°		0.00%		0.00%	
8	A8		BNC A1	Loca	l Matt	е	0:000°		0.00%		0.00%	
9	A9		BNC A1	Loca	l Matt	e	0:000°		0.00%		0.00%	
10	A10		BNC A1	Loca	l Matt	e	0:000°		0.00%		0.00%	
11	A11		BNC A1	Loca	l Matt	e	0:000°		0.00%		0.00%	
12	A12		BNC A1	Loca	l Matt	e	0:000°		0.00%		0.00%	
										Lo	ocal	

Use the **Output** parameter to select the output, then use the **Matte Selector** to select the fill for the side skirts.

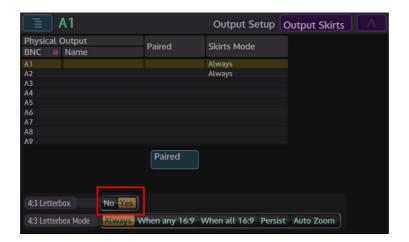


If the output receives a 4:3 source, or the **Output Setup** menus are set to a 4:3 standard, i.e. 525/59.94 4:3 as shown below:

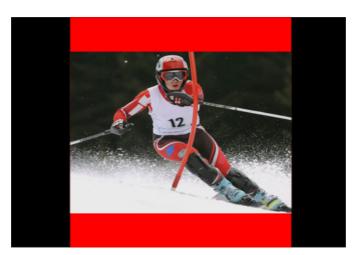
<b>a</b> A1		Output Set	up Standard	
Physical Output	Description	<b>Output Stand</b>	lard	All Made
BNO Name	Description	Default	Custom	4K Mode
A1		No	525/59.94 4:3	
A2			525/59.94 4:3	
A3		1080i/59.94	1080i/59.94	
A4		1080i/59.94		
A5		1080i/59.94		
A6		1080i/59.94		
A7		1080i/59.94		
A8		1080i/59.94		
A9		1080i/59.94		
Use Default Standard New Standard	No Yes 1080i/59.94 525/59.94 4:3 E Apply	SD sF		
Name			ID Quadrant	Off On
Description			D Downconvert	Off On

This will allow the user to turn On the **4:3 Letterbox** function in the **Output Skirts** menu.

Note: Once 4:3 Letterbox has been turned On, the video standard in the Output Standard menu (above) the video standard in the table will show for example 625/50 4:3 LB (LB = Letterbox)



With the letterbox mode setup, now go to the **User Config - Skirt Setup** menu where the letterbox skirts can be setup.



Once 4:3 letterbox has been turned the output will look like the diagram below.

The diagram shows a 16:9 source displayed on a 4:3 output. The fill for the top and bottom skirts, as mentioned earlier, is setup in the **Switcher Output- Skirts** menu, in the default state only a Matte fill can be selected.

		Switcher	Outputs	Skirts	
Physical	Skirt				
BNC Name	Source	Matte	Hue 🔍	Luma 🔍	Sat O
A1	BNC A1	Local Matte	):000°	0.00%	0.00%
A2	BNC A1	Local Matte	0.000°	0.00%	0.00%
A3	BNC A1	Local Matte	0:000°	0.00%	0.00%
A4	BNC A1	Local Matte	0:000°	0.00%	0.00%
A5	BNC A1	Local Matte	0:000	0.00%	0.00%
A6	BNC A1	Local Matte	0:000°	0.00%	0.00%
A7	BNC A1	Local Matte	0:000°	0.00%	0.00%
A8	BNC A1	Local Matte	0:000°	0.00%	0.00%
A9	BNC A1	Local Matte	0:000°	0.00%	0.00%
0 A10	BNC A1	Local Matte	0:000°	0.00%	0.00%
1 A11	BNC A1	Local Matte	0:000°	0.00%	0.00%
2 A12	BNC A1	Local Matte	0:000°	0.00%	0.00%
					cal
Switcher Outputs Sk	irts 🔿	<b>1</b>			
				_	

	1		Switcher (	Outputs	Skirts			≣ 1		/	Switcher Out	puts Skirts	
Output	Physical BNC Name	Skirt Source 0	Matte 🗈	Hue O	Luma 🔍	Sat O	[	Current Matte	Red				$\otimes$
1	A1 A3	BNC A1 BNC A1	Red Local Matte	0:000° 0:000°	0.00% 0.00%	0.00%							$\sim$
4	A4 A5	BNC A1 BNC A1	Local Matte	0:000° 0:000°	0.00%	0.00%		Local Matte	Black	White	Red	Yellow	
6	A6 A7	BNC A1 BNC A1 BNC A1	Local Matte	0:000° 0:000°	0.00%	0.00%		Green	Cyan	Blue	Magenta	Grey	
8	A8 A9	BNC A1 BNC A1	Local Matte	0:000° 0:000°	0.00%	0.00%							
, 10 11	A10 A11	BNC A1 BNC A1	Local Matte	0:000° 0:000°	0.00%	0.00%		Orange	Dark Red	Dark Green	Dark Blue	Purple	
12 13	A12 A13	BNC A1 BNC A1 BNC A1	Local Matte	0:000° 0:000°	0.00%	0.00%		Teal	Light Grey				
15	A13	DNC AT		0.000		Red				J			

To select a Matte Fill, touch the popup selector (shown above) and then select a matte from the list.

Go back to the **Eng Config - Output Setup - Output Skirts** menu, the user now has several modes that can be selected.

<b>a</b> 1		Output Setup	Output Skirts
Physical Output BNC    Name	Paired	Skirts Mode	
A1		Always	
A2		Always	
A3			
A4 A5			
A6			
Α7			
A8			
A9			
	Paired		
4:3 Letterbox No Yes			
4:3 Letterbox Mode Always N	When any 16:9 \	When all 16:9 Persis	st Auto Zoom

Using the 4:3 Letterbox Mode parameter, letterbox can be set to:-

- **Always** all sources will be placed into a 16:9 letterbox; when 4:3 sources are selected, they will get both top/bottom skirts and side skirts.
- When any 16:9 if the source is 4:3 or the M/E output feeding the switcher output has any 16:9 content on its background, it will be placed into a 16:9 letterbox.
- When all 16:9 if the source is 16:9 or the M/E output feeding the switcher output has any 16:9 content on its background, it will be placed into a 16:9 letterbox.
- **Persist** switches to show a letterbox 16:9 or full frame 4:3 and only changes once its source is completely the opposite format to the one it is currently showing.
- Auto Zoom Will show 16:9 as a letterbox, 4:3 as full frame, and an ME output will be resized according to the proportions of 4:3 and 16:9 sources that make up its background.

<b>A</b> 1		Output Setup	Output Skirts		1			s	witcher	Outputs	Skirts	
Physical Output	Paired	Skirts Mode		<b>A</b>	Physi	cal	Skirt					
BNC   Name	rairea	Skirts Mode		Output	BNC	Name	Source	0 1	latte 🔋 🗎	Hue 🔍	Luma	Sat 🔍
A1	Yes	Always		1			STOR 1	R	ed	0:000°	0.00%	0.00%
A2	Yes	Always		3			BNC A1		ocal Matte	0:000°	0.00%	0.00%
A3				4	A4		BNC A1	L	ocal Matte	0:000°	0.00%	0.00%
A4				5	A5		BNC A1		ocal Matte	0:000°	0.00%	0.00%
A5				6	A6		BNC A1		ocal Matte	0:000°	0.00%	0.00%
A6				7	A7		BNC A1		ocal Matte	0:000°	0.00%	0.00%
A7				8	A8		BNC A1		ocal Matte	0:000°	0.00%	0.00%
A8 A9				9	A9		BNC A1		ocal Matte	0:000°	0.00%	0.00%
АУ		-		10	A10		BNC A1		ocal Matte	0:000°	0.00%	0.00%
	Paired			11	A11		BNC A1		ocal Matte	0:000°	0.00%	0.00%
				12	A12 A13		BNC A1		ocal Matte	0:000° 0:000°	0.00%	0.00%
				13	AT3		BNC A1	L	ocal Matte	0:000-	0.00%	0.00%
4:3 Letterbox	No Yes											Red
4:3 Letterbox Mode	Always When any 16:9 V	When all 16:9 Persis	t Auto Zoom									

As mentioned earlier, the fill for output skirts is by default a Matte, but physical outputs can also be paired together using the **{Paired}** button (shown above), which will allow the output skirts top and bottom to be filled with any source Video, Still, Wash, DVE output or ME output. Output skirts Matte or fill sources can be set independently for each output. Both of the paired outputs will have the same source on them but the audio for the second output will come from the side skirt audio.

If a 4:3 input source is selected on an output that is set to a 4:3 standard, the output will have letterbox skirts and side skirts as shown below.



4:3 source on a 4:3 output Matte side skirts with Store letterbox skirts

When a 4:3 source is on a 4:3 output use the ME Background Skirts parameters to alter the side skirts, and Output Skirts parameters to alter the letterbox skirts.

	ME 2		ME Config	Background	d Skirts		1		Switcher	Outputs	Skirts	
-	Skirt					<b>•</b> • •	Physical	Skirt				
Output	○ Fill	Matte	🗉 Hue	Luma	Sat	Output	BNC Name	Source O	Matte 📑	Hue 🔍	Luma (	🗅 Sat 🛛 🔿
ME 1	Matte	Black	0:210°	97.99%	100.00%	1	A1	STOR 1	Red	0:000°	0.00%	0.00%
ME 2	Matte	Cyan	0:000°	0.00%	0.00%	3		BNC A1	Local Matte	0:000°	0.00%	0.00%
ME 3	Matte	Black	0:000°	0.00%	0.00%	4	A4	BNC A1	Local Matte	0:000°	0.00%	0.00%
ME 4	Matte	Black	0:000°	0.00%	0.00%	5		BNC A1	Local Matte	0:000°	0.00%	0.00%
ME 5	Matte	Black	0:000°	0.00%	0.00%	6	A6	BNC A1	Local Matte	0:000°	0.00%	0.00%
ME 6	Matte	Black	0:000°	0.00%	0.00%	7	A7	BNC A1	Local Matte	0:000°	0.00%	0.00%
						8	A8	BNC A1	Local Matte	0:000°	0.00%	0.00%
						9	A9	BNC A1	Local Matte	0:000°	0.00%	0.00%
						10	A10	BNC A1	Local Matte	0:000°	0.00%	0.00%
						11	A11	BNC A1	Local Matte	0:000°	0.00%	0.00%
						12	A12	BNC A1	Local Matte	0:000°	0.00%	0.00%
						13	A13	BNC A1	Local Matte	0:000°	0.00%	0.00%
					Cyan							Red

## GPOs

This GPO Setup menu is used to tally Crosspoint based, Bus based and User BIT functions. The default setup state allows the user to tally GPOs 121 to 256 which are the physical and internal GPOs and are comprised of:

GPO 121 to GPO 132 and GPO 133 to GPO 144 are the physical Ref Fin GPOs, again at the rear of the mainframe. These GPOs are system setup dependant; GPO 121 to GPO 132 Ref Fin A, GPO 133 to GPO 144 Ref Fin B.

GPO 145 to GPO 256 are Internal GPOs (but the configuration could be GPO 133 to GPO 256 if only 1 Ref Fin is fitted).

The Internal GPOs are used to trigger internal function such as Macro's, Timelines or any internal function that can be switched On or Off.

	121	Switcher Outputs GPO Setup
GPO Se	elect 121	Name Tally A1 Combine Mode OR AND
Alway	s Open	
Not	Xpt Now	Xpt BNC A1 📱 Tally 📶 Key Fill & Key
Not	Xpt Next	Xpt ISO
Not	Xpt On Bus	Xpt BNC A1 E Bus Aux 1 E
Not	Bus Now	Bus Aux 1 🖹 Tally Fill Key Fill & Key
Not	Bus Next	Bus ISO
Not	User Bit	User Bit O O User Bits
Not	GPI	GPI 1
Not	GPO	GPO 1

This menu allows the user to trigger a GPO or GPI when for example a crosspoint is setup to trigger a GPO, or an Aux is setup to trigger a Bus tally.

The GPO parameters will change allowing the user to setup a GPO trigger.

For a crosspoint tally for example, use the **GPO Select** parameter to the required GPO, use the **Crosspoint** parameter to select the crosspoint that will trigger the GPO, and then select the **Crosspoint Tally**. Touch the **{GPO}** button to select it, and each crosspoint trigger will only trigger a GPO, or touch the **{Xpt Now}** button, then when the selected crosspoint button (as shown in the menu above) is pressed the GPO will be triggered.

Note: Touch the popup selector (blue square) in the Crosspoint parameter and a greater selection of GPO trigger options will be displayed.

**Crosspoint and Bus Options** 

When selecting the type of GPO or GPI trigger, as mentioned previously, press the popup attacher to easily access the other Crosspoint or Bus options.

121	Switcher Outputs	GPO Setup	121			Switche	r Output	s GPO Set	up 🔿
GPO Select 121	Name Taller A1 Stranspine	e Mode OR AND GPO	Select 121	O Nam	121	Bus ISO	Cambir	ne Mode OR	AND
Always Open	Not Xpt ISO 1	Alwa	iys Open		Not	Bus ISO 1	$\sim$		
Not Xpt Now	Xpt M/E Not Xpt ISO 2	ll & Key	Xpt Now	Xpt M/E	Not	Bus ISO 2		ill & Key	
Not Xpt Next	Xpt ISO Not Xpt ISO 3	Not	Xpt Next	Xpt ISO	Not	Bus ISO 3			
Not Xpt On Bus	Xpt M/E Not Xpt ISO 4	∎	Xpt On Bus	Xpt M/E	Not	Bus ISO 4		Ē	
Not Bus Now	Bus Aux Not Xpt ISO 5 Fil	Il & Key	Bus Now	Bus Aux	Not	Bus ISO 5	F	ill & Key	
Not Bus Next	Bus ISO Not Xpt ISO 6	Not	Bus Next	Bus ISO	Not	Bus ISO 6			
Not User Bit	User Bit Not Xpt ISO 7	User Bits Not	User Bit	User Bit	Not	Bus ISO 7			User Bits
Not GPI	GPI 1 Not Xpt ISO 8	Not	GPI	GPI 1	Not	Bus ISO 8			
Not GPO	GPO 1	Not	GPO	GPO 1					

# **Output Color**

Output Color correction is applied on an output by output basis, and are saved when saving a User Config. It is important to check that any work done was created in the required User Config file before saving.

Output 1					Output	1	Switch	er Outputs	Output Color	
Color Correction Off On	RGB Off On	Switch	er Outputs 🚿	Color Corre	ection	On	RGB Off			
YUV Off On	Lift 0.00% C	Config	GPOs	YUV	ff On			00% 0		
Brightness 0.00%	Gain 1.00 C	Safe Area	Output Color	Brightnes				00 O		
Contrast 1.00	S-Gain 0.00%	UHD Setup		Contrast Saturation	1.00			0.00% C		Normal Preset
Bleed Off On	S-Center 50.00%	Fade To		Bleed	Off On		S-Center	50.00%		B & W Preset
Red 100.00%		Black		Red	100.00% C					Sepia Preset
Green 100.00% O		Skirts			100.00% C					Inverse Preset

Output color allows the user to change the color balance on each individual output, there are 4 types of control, YUV, RGB, Bleed and Preset.

In the Output Color main menu, turn "On" the Color Correction parameter, then touch the Delegate button to select which output the color correction is going to applied to. The different stages of output color correction can now be applied.

Dutput 1	Switcher Outputs Output Color		📃 Outp	out 1	Switch	er Outputs	Output Color	
Color Correction Off On	RGB Off On		Delegate					
YUV Off On	Lift 0.00% 0 Gamma 1.00 0		Output 1	Output 2	Output 3	Output 4	Output 5	
Brightness 0.00% • Contrast 1.00 •	Gain 1.00 0	Normal Preset	Output 6	Output 7	Output 8	Output 9	Output 10	
Saturation 1.00	S-Center 50.00%	B & W Preset	Output 11	Output 12	Output 13	Output 14	Output 15	
Bleed Off On		Sepia	Output 16	Output 33	Output 34	Output 35	Output 36	
Red 100.00%		Preset	Output 37	Output 38	Output 39	Output 40	Output 41	
Blue 100.00%		Inverse Preset	Output 42	Output 43	Output 44	Output 45	Output 46	

# YUV

To start using the YUV color correction parameters, turn the YUV parameter "On" and the Brightness, Contrast and Saturation parameters will light up.

Note: If the Color Correction button is turned Off (button is Gray) then all the color adjustments made to a Output will be turned Off; but not lost, they will all become active again when the Color Correction button is turned On.

📃 Output 1	Switcher Outputs Output Color	
Color Correction Off On	RGB Off On	
YUV Off On Brightness 0.00% O Contrast 1.00 O Saturation 1.00 O	Lift 0.00% 0 Gamma 1.00 0 Gain 1.00 0 S-Gain 0.00% 0	Normal Preset
Bleed Off On	S-Center 50.00%	B & W Preset
Red 100.00%		Sepia Preset
Green 100.00% O Blue 100.00% O		Inverse Preset

Touch the Brightness rotary control attacher and the Brightness, Contrast and Saturation of the output can be adjusted.

- Brightness default value is 0.00%, and the range is from -10% to 100%
- Contrast default value is 1.00%, and the range is from -0% to 16%
- Saturation default value is 1.00%, and the range is from -0% to 16%

As each of the above are adjusted notice that the parameters in the YUV Control menu turn Orange and the percentage of adjustment is shown.

# RGB

To start using the RGB color correction parameters, turn the RGB parameter "On" and the Lift, Gamma, Gain, S-Gain and S-Center parameters will light up.

Output 1	Switcher Outputs Output Color	$\Box \Delta \land$			Output 1			RGB 💥	$\wedge$
Color Correction Off On	RGB Off On		Color	RGB	Off On			Color Correction	
YUV Off On	Lift 0.00%		YUV	Lift	0.00%	Gamma 1.00 O		1.00 •	
Brightness 0.00%	Gain 1.00		Bright	Red	0.00%	Red 1.00	Red	1.00	
Contrast 1.00		Normal	Contra		0.00%	Green 1.00 O		1.00	
Saturation 1.00	S-Gain 0.00%	Preset	Satura	Blue	0.00%	Blue 1.00 O	Blue	1.00	
	S-Center 50.00%	B & W Preset							
Bleed Off On		Fleset	Bleed	S-Gain	0.00%	S-Center 50.00%			
Red 100.00%		Sepia Preset	Red		0.00%	Red 50.00%			
Green 100.00% O		Inverse	Green	Green	0.00%	Green 50.00%			
Blue 100.00%		Preset	Blue	Blue	0.00%	Blue 50.00%			

The initial menu is set to a default condition, which shows all five Master adjustment parameters highlighted by the Red active circles. This will give an adjustment of Master Lift, Gamma, Gain, S-Gain and S-Center. Each of these adjustments will alter all three elements of the RGB signal at the same time.

Touch the sub menu expand menu link button to open the menu with the individual RGB parameter controls are accessed.

Touching one of the attachers allows a more accurate adjustment to the RGB components where the:

		Outpu	rt 1					R	GB 💥	
Color	RGB	Off On						Col	or rection	
YUV	Lift	0.00%		Gamma	1.00 🔾		in C	1.00		
Bright	Red	0.00%		Red	1.00	Re		1.00		
Contra	Green	0.00%		Green	1.00	Gre	een	1.00		
Satura	Blue	0.00%		Blue	1.00			1.00		
Bleed	S-Gain	0.00%		S-Cent	er <b>50.00%</b>					
Red	Red	0.00%		Red	50.00%					
Green	Green	0.00%		Green	50.00%					
Blue	Blue	0.00%		Blue	50.00%					

Lift - parameters adjust the images Black Level, working on Black or shadow areas.

**Gamma** - parameters adjust the levels between dark/shadow and the mid tones, where the mid tones become brighter or darker; depending on the adjustment made.

**Gain** - parameters control the White level or highlights, where brighter colors become brighter or darker; depending on the adjustment made.

**S Gain and S Center** - the parameters adjust the gain mid tone levels of the S curve and the center point levels of the s curve.

When one of the master parameters is altered, notice that the RGB curve profile changes in the graph situated center of the menu.

# **Bleed Menu**

To start using the Bleed color correction parameters, turn the Bleed parameter "On" and the Red, Green and Blue parameters will light up.

Color bleed is a situation where a single color will over power the other colors in the RGB signal. By using the bleed function the stronger color can be softened to make the color output more natural, or adjusted to suit a specific need.

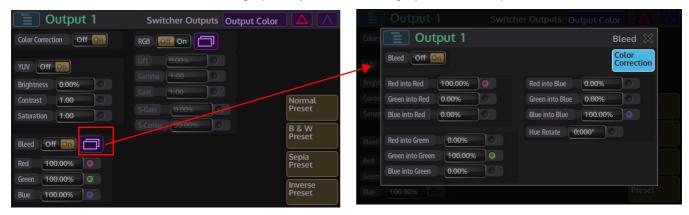
Output 1	Switcher Outputs Output Color	
Color Correction Off On	RGB Off On	
YUV Off On Brightness 0.00% Contrast 1.00 Saturation 1.00	Lift 0.00% 0 Gamma 1.00 0 Gain 1.00 0 S-Gain 0.00% 0 S-Center (50.00% 0	Normal Preset
Bleed Off on		Preset Sepia
Red         100.00%         Image: Constraint of the second		Preset Inverse Preset

Again make sure the Color Correction is turned on.

The initial menu has a default state where a single adjustment for each parameter menu is active; this will allow the adjustment of the main RGB bleed parameters:

- Red into Red
- Green into Green
- Blue into Blue

Touch the sub menu expand menu link button to open the menu with the individual Bleed parameter controls are accessed. This will allow a detailed adjustment for each of the R, G and B bleed settings. The adjustments are measured on a -100% to a +100% scale. Each parameter menu will adjust a single color, i.e. red into red, green into red and blue into red. These changes are also reflected graphically in the RGB bar graphs above the parameter sets.



# **Presets**

Presets allow the user to quickly select commonly used preset color options for the crosspoint source, or quickly revert back to the original crosspoint source color levels.

Output 1	Switcher Outputs Output Color	
Color Correction Off On	RGB Off On	
YUV Off On Brightness 0.00%	Lift 0.00% O Gamma 1.00 O	
Contrast 1.00 O Saturation 0.00 O	Gain 1.00 • • • • • • • • • • • • • • • • • •	Normal Preset
Bleed Off On	S-Center 50.00%	B & W Preset
Red 100.00%		Sepia Preset
Green 100.00% C		Inverse Preset

**Normal** - is the original color levels of the crosspoint source; without any color correction adjustments.

**B** & **W** - sets the chroma saturation to zero removing the chroma content, making the signal black and white.

**Sepia** - sets the chroma saturation to zero removing the chroma content, then adds positive portions of Red and Green and a negative portion of Blue to make-up a sepia appearance.

Inverse - Inverts the video signal making the picture a negative of its correct colors.

If the **Normal** preset option is selected, then all color correction controls are Grayed out preventing any adjustments. This is to make sure that the original crosspoint source can be recalled.

If B&W, Sepia and Inverse are selected, the preset levels can all be color corrected.

# **Resource Linking**

This allows the user to Link Buses or M/Es, allowing Buses or M/Es to become "Slaves" of other Buses or M/Es, e.g. M/E4 Key1 crosspoint selection will be mimicked on Aux1.

In the User Config main menu, Touch the **{Resource Linking...}** menu button.

# **Bus Linking**

	Au	x2.	Au,	x 1			F	lesou	rce Link	Bus Li	inking	$\land$
Enat	ole All	Links		Delet	e All Li	inks						
Bus		Slav	e B	luses				Mast				
Aux 1		Aux 2	2								Aux 2	
Aux 2								Aux 1				
Aux 3										Delete	Aux 2	0
Aux 4										Link	AUX 2	
A F												
	Slave	Bus		CFx 🔿	Key 🔿	Rsz 🔿	Xpt 🔿	Subs	stitution T	able		
	Aux 2						Yes	None				
	Color	Fx		eyer	Res		Xpt		Slave Bus	Aux 2		
	Link		L	nk	Link		Link		Table Au	x2 None		

**Parameter Controls** 

Enable All Links - turns the bus linking option On/OffDelete All Links - deletes all master/slave links that have been created

Bus - selects the Master BusCreate Link - creates a new master/slave linkDelete Link - deletes the selected bus link

Slave Bus - selects the Slave Bus

**Color FX Link, Keyer Link, Resize Link, Xpt** - Pressing one of these buttons, the Master settings for each of these selections are transferred (and linked) to the slave.

**Substitution Table** - assigns Links to a table (1 to 32 available) the selected table is where the Master Slave bus link will be saved

# **Substitution Tables**

Substitutions allow the user to substitute a crosspoint for example; select Xpt 1 on Master M/E which in turn selects the substitute Xpt on the slave M/E.

<b>1</b> XPT 1				Resou	rce	e Link	Substitution	
Table 🕥 Name								
						Name		
2 3								
4								
Master Crosspoint	0	Slave Crosspoint	1	Linlo				
XPT 1		BNC B4		Yes				
XPT 2		BNC A2		Yes				
XPT 3		BNC A3		Yes				
XPT 4		BNC A4		Yes				
VDT F		DNC AF						

**Master/Slave Crosspoint** - selects the master/slave crosspoint link, as the crosspoint mapping is setup, the mapping will be automatically saved into the substitution table

Link - (Yes/No) enables/disables individual crosspoint mapping links

**Using Bus Linking** 

To create a Bus Link select the Bus that will become the Master using the Bus Select parameter control, then select the Slaves to this bus using the New Slave Bus parameter, then press **{Create Link}**.

There are no limits to the number of Slave Buses that can be linked to the Master bus. To delete a Link, select the Link using Slave Select parameter, or touch the entry in the Table, and then press **{Delete Link}**.

	Au	x 2 .	Au,	x 1			F	Resou	rce Link	Bus Li	nking	
Enak	ole All	Links		Delet	e All Li	nks						
Bus		Slav	e B	uses				Mast	er			
Aux 1		Aux 2	2								Aux 2	
Aux 2								Aux 1				
Aux 3										Delete Link	Aux 2	
Aux 4										LINK		
	Slave	Bus		CFx O	Key O	Rsz o	Xpt o	Subs	titution 1	Table		
	Aux 2						Yes	None	2			
	Color Link	Fx		eyer nk	Resi		Xpt		Slave Bus	Aux 2		
	LITIR			IIK			Link		Table Au	x2 None	0	

By default the links are 1-1 links e.g. Xpt1 on the Master will select Xpt1on the Slave, although the bus linking can be further enhanced by use of substitution tables, where new crosspoint links can be created.

A **Substitution Table** can be generated where there is no link for some crosspoints (e.g. selecting a crosspoint on the Master Bus will not select a crosspoint on the Slave Buses), a single Substitution Table can be used multiple times.

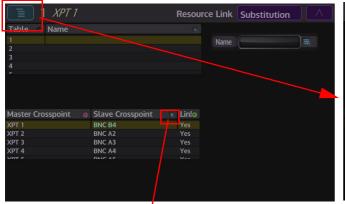
Note: There is an Overall Enable to turn the use of Bus linking On/Off, along with independent Link Enables

Note: The [UNDO] button on the GUI will restore the Link. By default the Substitution Table selected will be "None" (Substitution Table 0) which is a 1 to 1 crosspoint link.

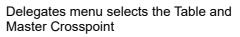
**Creating a Substitution Table** 

To create a Substitution Table select **{Substitution Tables...}**, then select a table number using the Substitution Tables parameter (this menu allows up to 32 substitution tables to be generated). The table can then be given a name in the **Table Name** attacher. Setup the crosspoint mapping as required, using the Master Crosspoint and Slave Crosspoint parameters.

The crosspoint set-up is displayed in the table below the Substitution Table, this includes any link that may need to be disabled. As the crosspoint mapping is setup, this will be automatically saved in the table.



	<b>1</b> X	ubstit	ution									
1	2	3	4	5	6	7		9	10	11	12	13
14	15	16	17	18	19	20	21	22	23	24	25	26
27	28	29	30	31	32							
XPT		XPT	2	XPT	3	XPT	4	XPT			۲6	
ХРТ	7	XPT	8	XPT	9	ХРТ	10	XPT	. 11	XP	Г 12	
XPT	13	XPT	14	XPT	15	XPT	16	XPT	17	XP	Г 18	
	10	1/0-7			~*	NOT				3783		



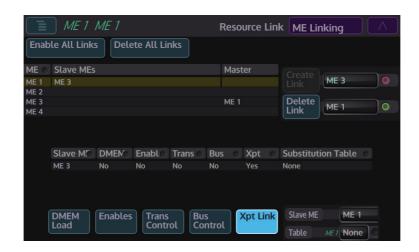
1	XPT 2		Resou	rce Link S	ubstitution	
Current S	lave BNC B4					$\approx$
BNC A1	BNC A2	BNC A3	BNC A4	BNC A5	BNC A6	
BNC A7	BNC A8	RPLY1		RPLY2	GFX 1	$\exists$
GFX 2	EVS 1	M/E 1	BNC B4	BNC B5	BNC B6	O
BNC B7	BNC B8	BNC B9	BNC B10	BNC B11	BNC B12	B
BNC C1	BNC C2	BNC C3	BNC C4	BNC C5	BNC C6	S
BNC C7	BNC C8	BNC C9	BNC C10	BNC C11	BNC C12	

Popup selector allows the user to select the Slave Crosspoint

The Substitution Tables and crosspoint assignments are saved in the User Config File, in the File System (Soft MLC menus) that has a separate Enable for Bus Linking.

# **M/E Linking**

M/E Linking works in a very similar way to Bus Linking, M/Es to become "Slaves" of other Buses or M/Es



# **Parameter Controls**

Enable All Links- turns the M/E linking option On/Off

Delete All Links - deletes all master/slave links that have been created

ME - selects the M/E

Slave MEs - selects the Slave M/E

Create New Link - creates a new master/slave link

Delete Link - deletes the selected bus link

Slave Select - selects the Slave Link

**DMEM Load, Enables, Trans Control, Bus Control and Xpt Link** - enable/disables the links to the Slave bus.

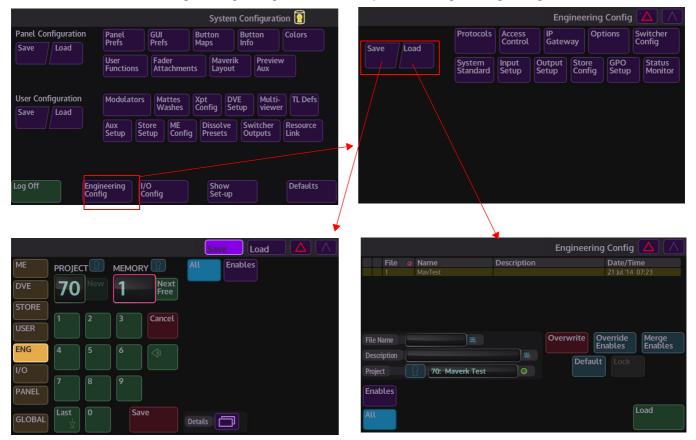
**Substitution Table** - assigns Links to a table (1 to 32 available) the selected table is where the Master Slave bus link will be saved

# **Global Configs - Engineering Configuration**

# **Engineering Config**

The Engineering Configuration is one of 4 main configuration functions on the Kahuna mainframe and is a very important part of a system setup. In this menu the source Inputs, Outputs, System video Standards, Store Config etc. are all accessed, It is important to understand how to navigate the main menu to learn how to Create, Save and Load Engineering Configurations.

In the Engineering Config main menu, the user can access the "Save/Load" menus to create a new engineering config file or choose a pre-saved engineering config.



To **{Load}** a file, touch the {Load} button, (as shown in the menu above) use the "**Project**" and "**File**" parameters to select the required file (the fine will be displayed in a table in the top half of the menu), then press the **{Load}** button.

Pressing the **{Default}** button will load the default engineering config file. If changes are made, press the **{Overwrite}** button to overwrite the Engineering Config. A dialog box will appear (below) and asks the use to confirm the overwrite.

		Engineering	g Config 🔼 🛆
			24 Apr '17 14:22 4 07:23
	Confirm O	verwrite	+ U7.23
	Engineering Con	fig 1 in project 70 already e Overwrite it ?	exists Merge Enables
	Retain File Enabl	es Yes, Overwrite Cance	
All			Load

**Override Enables** - will override any enables that have been de-selected and turn the enable on.

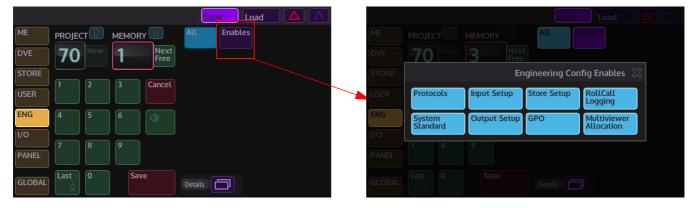
**Merge Enables** - this function merges the enables currently set in the switcher with the enables saved in the file is being loaded (a 'logical OR' of the enables).

Press the **{Save}** button to open the **"Save"** menu. The **Save** menu allows the user to quickly select a project and a memory file, use the colored rotary controls the correspond to the Project number and Memory number. When selected, touch the **{Save}** button. To create a new file within a project, touch the **{Details}** menu link button and the Engineering Config - File Details menu will be displayed.

					Save	Lo	ad $\Delta$ $\wedge$						Engineering Config	J - File Details 🛛
ME	PROJEC	T	MEMOR	Y	All	Enables					me	Descrip		Date/Time
DVE	70		1	Next Free					68 69					
			•	riee					70					
STORE														
				Cancel										
USER								Name						
								Descr						
ENG	4		6					Deser						
								Projec		70	O New			
I/O														
		8	9					Last I	oaded	50	/ 0			
PANEL										<u> </u>				
								Name						
	Last	0	Sav	10									Retain Name &	
GLOBAL	Last		Jav	e	Details			Descr	ription				Description	

In the File Details menu, the user can select a project to save the Eng Config file into, then use the "File" parameter control to scroll down the table and select a used or unused file slot. A Name and Description can be given to the new Eng Config file. To do this, touch the **Name** or **Description** bar, a cursor on-screen keyboard popup button, then use the on-screen keyboard to type the new name.

Back in the Save main menu, touch the **{Enables}** button and the **Engineering Config** - **Enables** will be displayed. The menu allows the user to Enable/Disable enables options that will be saved with the new Eng Config file.



All - enables all Enables

# **System Standard**

The System Standard menu allows the user to set the System Video Standard for the mainframe. This will take affect the Input and Output setup menus.

				Eng	ginee	ering Config	$\Delta \wedge$				System	Standard	
		Protocols	Access Control	IP Gatev	vay	Options	Switcher Config	System Standard	1080p/59.94 A		UHD Mode	Quadrant	
Save	Load	System	Input	Output	Sto	re GPO	Status	New Standard	1080p/59.94 A 🗎		HDR Format	Rec. 709	
		Standard	Setup	Setup	Cor			Action On	Next Field Field 1 Fie	ld 2		-800 ASA	
											Color Gamut	Rec. 709	
								Genlock Use Ref Card	Off On Genlock Phase	0.00 Lines	Convert		
								Ref Card 'A'					
								Locked	No				
									V No H No				
								Rate	0.00				
									No				

The default mainframe video standard is set using the New Standard parameter, touch the popup menu selector and a new menu will open giving the user a range of video standard options (shown below). In the sub-menu, select from the video standard type on the left and then select the exact video standard from the list of standards in the center of the menu. When selected, touch the **{Apply}** button.

What ever video standard is selected, it will affect the video standards that the user is able to select in the Input/Output video standards menus. For example if the user selects 1080i/59.94 as shown above, the input and output video standards can only be set to a standard that has 59.94.

Note: Any source that matches the System Standard and is correctly timed will cut at the correct defined position to avoid any damage to ancillary data.

	System Standard 🔨		System Standard
System Standard 1080p/59.94 A Internal Paths 4:3 New Standard 1080p/59.94 A Apply Action On Next Field Field 1 Field 2 Gentock Off On Gentock Phase 0.00 Lines Use Ref Card & B Ref Card & Input Loop 1 Loop 2 Locked No Present V No H No Rate 0.00	System Standard (VIII) Mode Quadrant 251 HDR Format Rec. 709 Exposure 800 ASA Color Gamut Rec. 709 Convert	Standard Def         Current New Standard         625/50 4:3           HD Interlaced         625/50 4:3         625/50 16:9           HD Seg. Frame         525/59.94 16:9         525/59.94 16:9           HD 1080p 1.5G         HD 1080p 3.0G         625/50 4:3         625/50 4:3	525/59.94 4:3
Interlaced No			

Switch **Genlock** On. Note if the standard set for the selected Reference Input is not compatible with the output standard, (generally 'compatible' means the frame rates are the same or differ by a factor or two) Kahuna will automatically switch to the other Reference Input. If neither is compatible, it will switch Genlock to Off.

- Actions On, using the rotary control, select the field that any function will act on.
- Action On Next Field: all actions on next TV field.
- Action On Field 1: sources cut on field 1 only, all other actions on next field.
- Action On Field 2: sources cut on field 2 only, all other actions on next field



**User Ref Card** allows the user to select between Reference Fins at the rear of the mainframe. If two control cards and two reference fins are fitted to the mainframe the user can select between the two using the User Ref Card buttons.

If only one card is fitted then only User Ref Card A is selectable.

**Card A Input and Card B Input** allows the user to select between the two analog reference inputs (Loop1 and Loop2) that are on each Reference Fin.

Genlock Phase sets the timing of the input router cut point relative to the genlock reference.

There are separate status attachers for each REF Fin, A and B. They refer to the analogue reference input (loop1 or loop2) which is currently selected for that REF Fin.

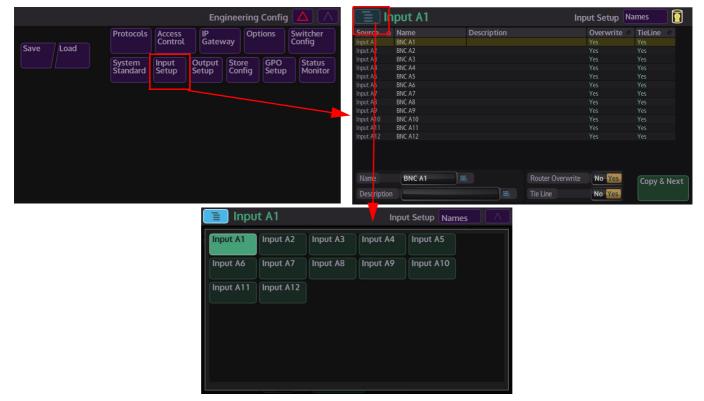
- A or B Locked Yes = genlocked
- A or B V Present Yes = vertical sync detected
- A or B H Present Yes = horizontal sync detected
- A or B Interlaced/Progressive Yes = interlaced
- A or B Rate = frame rate in Hz

The Ref Fin will not genlock if the standard of the reference is incompatible with the system standard. (Compatible means same 1/2 or 2x).

Reference status for V Present and Rate are valid even if genlock is off, or if the standard of the reference is incompatible with the system standard. Rate isn't valid if H and V are not present.

# **Input Setup**

The Input Setup menu has several main configuration functions integrated into one to allow the user to quickly configure an input to the mainframe. The user can give a name to the input source, apply a video standard, color correct the source and use FormatFusion to make sure the source has the correct aspect ratio.



The **Delegates** button is used to select an input, touch the delegates button and a list of available inputs will be displayed (the number of inputs depends on the amount purchased with the mainframe). Inputs can be selected in this way in all of the Input Setup menus.

Note: A mainframe fitted with 120 Inputs will have A1 to A12, through to J1 to J12 highlighted.

#### **Names & TieLines**

The first Input Setup menu to be displayed is the "Names" menu, here, all inputs can be given a name and description

	Input A1	_	Inp	out Setup	Names	2		Inpu	t A1		Inpu	ut Setup Names	
Source	Name	Description		Overwrite	• TieLine	0							
Input A1	BNC A1			Yes	Yes		Input	t A1	Input A2	Input A3	Input A4	Input A5	
Input A2	BNC A2							J				JL J	
Input A3	BNC A3						Input	+ 14	Input A7	Input A8	Input A9	Input A10	
Input A4	BNC A4						inpu		input A7	Πρυι κο	Input A9	Input ATO	
Input A5	BNC A5												
Input A6	BNC A6						Input	t A11	Input A12				
Input A7	BNC A7			Yes	Yes		in po		mpotrite				
Input A8	BNC A8												
Input A9	BNC A9			Yes	Yes								
Input A10	BNC A10 BNC A11			Yes Yes	Yes Yes								
Input A11 Input A12				Yes	Yes								
mporATZ													
Name	BNC A1		Router Overwrite	No Yes	Copy &	Next							
Descript	tion			No Yes									

The **Router Overwrite** parameter when set to **{Yes}** will allow an externally connected router to rename a source.

The **{Copy & Next}** button is a quick short cut function forcing the switcher to take the name from the current Source, and then jumps on to the next Source in the list - this makes naming all of the sources much easier and quicker.

# Standard

This menu displays the video standard for the selected input. The video standard for the incoming source can be set to the default mainframe video standard, changed to a new standard or using the **{Auto}** button which will allow the system to "auto detect" the incoming source video standard and will keep the original video standard of the incoming source

					$ \land $		nput A	1			In	put S	Setup	Standard
Source Input A1			Inpu	ut Setup	$\otimes$	Source	Name	Standard	UHD	Off	Ancil H	lary V	Timing	Margin
Input A2		(NI-	ames &	1		Input A1	BNC A1						No Video	No Video
Input A3				_		Input A2	BNC A2						No Video	No Video
Input A4						Input A3	BNC A3						No Video	No Video
Input A5				· · · · ·		Input A4	BNC A4						No Video	No Video
Input A6		St	andard	HDR		Input A5	BNC A5						No Video	No Video
Input A7						Input A6	BNC A6						No Video	No Video
Input A8						Input A7	BNC A7						No Video	No Video
Input A9		L Fo	ormat			Input A8	BNC A8						No Video	No Video
Input A10			sion			Input A9	BNC A9						No Video	No Video
Input A11														
Input A12						Use Defau	lt Standard	No Yes 1080i/50			Offset		0-0	
Input B1		De	e-interlace											
						Auto Sta	ndard						н	v
Massa			olor			New Stand		625/50 4:3 🖹 App						Non-3G Auto
Name		Router Ovel Co	orrection								nputs UH	שו		
Descriptio						CRC		FFFF/FFFF						
Descriptio		He Line												

The **Use Default Std** parameter will force the input source to use the default mainframe video standard which is set in the **Eng Config - Video Standard** menu. The Default Standard can be changed using the **New Standard** parameter, when using this parameter the full range of video standards available to the Kahuna mainframe cannot be selected, this is because for example; if 1080i/59.94 is set as the default standard, only video standards that end in 59.94Hz can be selected, if 1080p/50 is set as the mainframe default standard; only video standards ending in "50Hz" can be selected.

If a new default standard is selected press the **{Apply}** button for the new video standard to be set.

Source	Name		Standard	UHD	Off	Anci	llary	Timing	Margin
	Name		Stanuaru	UND	UII			mining	Margin
	BNC A1							No Video	No Video
Input A2	BNC A2					Yes	Yes	No Video	No Video
Input A3	BNC A3		No Video			Yes	Yes	No Video	No Video
Input A4	BNC A4					Yes	Yes	No Video	No Video
Input A5	BNC A5		No Video			Yes	Yes	No Video	No Video
Input A6	BNC A6					Yes	Yes	No Video	No Video
Input A7	BNC A7		No Video			Yes	Yes	No Video	No Video
Input A8	BNC A8					Yes	Yes	No Video	No Video
Input A9	BNC A9					Yes	Yes	No Video	No Video
Use Defaul	t Standard	No Yes	1080i/50			Offset		0-0	
Auto Sta	ndard					ncillar		ΗV	·
		625/50 4				nputs U	HD		

The **V Offset** parameter is used to adjust to the point where active video reaches the bottom line on both fields.

The **Timing** column (Timing Reference Signal TRS) This function counts the total TRS errors in the last n fields (where n is set by the Error Window control). A TRS is a flag embedded in every line of video, which marks the start and end of the active picture. If the start of the active line is in the wrong place (with respect to the selected video standard for that source) then this is registered as a TRS error. So again this indicates a problem with incoming SDI stream, and more specifically, may indicate that it is a different standard to the one selected (e.g. 1080i/60 when the input standard is 1080i/50).

**Margin** displays how much timing is in hand before a whole frame of delay gets added due to the source being too late. This number will typically be less than 5us and never negative. A whole frame of delay will give 16000us of margin. But if a whole frame of delay is added then there will not be a clean cutting due to this.

**CRC** (Cyclic Redundancy Check) displays when there is a problem with an incoming signal, e.g. where the cable is too long or is faulty. For a HD signal only, this function will check CRC errors in the last 'n' field (where n is set by the Error Window control).

Pressing the **{Standard...}** button will open the main Input Standard menu, this menu has all the same functionality as the parameters described on the previous page but allows the user to see a range of inputs, the exception in this menu is the Copy & Next button.

**Ancillary** - Kahuna is able to receive Ancillary Data to any of the BNC inputs to the mainframe, and pass the ancillary data out from any BNC outputs from the mainframe.

The ancillary data is part of the horizontal and vertical blanking portion of the video signal and is known as **HANC (Horizontal Ancillary Data)** and **VANC (Vertical Ancillary Data)**, the portion of the ancillary data we are interested in is **Embedded Audio**.

The embedded audio will usually be in the **HANC** portion of the video signal, and is the most likely way that embedded audio data is received. There can also be other forms of information embedded in the HANC data; such as, SMPTE 352 Payload identifier or SMPTE 2051 two-frame marker.

**VANC** is also able to carry embedded audio in the form of Dolby E<sup>TM</sup>, VANC also carries other ancillary data; such as video standard, aspect ratio, content name etc.

**Input Standard** menu is where each input to the mainframe is setup to receive ancillary data. It is a simple operation where the ancillary data is allowed to pass or is blocked using the **{H**} and **{V**} buttons.

If the buttons are lit blue, this means that the ancillary data is allowed to pass. The user is able to enable/disable the buttons individually depending on their requirements.

	nput A	1				lr	nput	Setup	Standard
Source 🖕	Name		Standard	UHD	Off	Anci H	llary V	Timing	g Margin
	BNC A1							No Video	No Video
Input A2	BNC A2					Yes	Yes	No Video	No Video
Input A3	BNC A3		No Video			Yes	Yes	No Video	No Video
Input A4	BNC A4					Yes	Yes	No Video	No Video
Input A5	BNC A5		No Video			Yes	Yes	No Video	No Video
Input A6	BNC A6					Yes	Yes	No Video	No Video
Input A7	BNC A7		No Video			Yes	Yes	No Video	No Video
Input A8	BNC A8		No Video			Yes	Yes	No Video	No Video
Input A9	BNC A9					Yes	Yes	No Video	No Video
Use Defaul	t Standard	No Yes	1080i/50			Offse		0-0	
Auto Sta	ndard					ncillar	у	Н	v
New Stand		625/50 4				iputs U	IHD	UHD	
Chie									

# Where Embedded Audio can be used:

The embedded audio can pass directly from input BNC to output BNC, or video containing the embedded audio can be grabbed from a crosspoint into a Store. The software allows just the audio to be grabbed separately from the video. This is setup using the **Grab Crosspoint** parameter in the **Store Grab** menu, where the audio has been setup on a crosspoint and then using the **Grab Crosspoint** parameter on a selected M/E, use the **"Grab Audio"** button to grab

the required embedded audio.

The other method of importing video with embedded audio into a clipstore is using KWatch application software, in the Filing System Import Export menu.

Note: The Clipstore ancillary data passes through a Transcoder (the Clipstore embedded audio data cannot take the "Pass-Through" path even if Pass-Through is selected) before being output from the mainframe, the embedded audio data is 8 channel only!

# **UHD Setup**

Working in UHD with Kahuna is as simple as working in any other video format, the setup menu structure is easy and intuitive and will allow the user setup UHD with just a few button presses. UHD demonstrates the power and flexibility of Kahuna, where SuperKeys can be resized and reposition anywhere on the UHD monitor, transitions are easy, a UHD Keyed source such as Clip transitions or UHD graphics can be keyed over the full UHD screen, and down conversion to a different video format is just a simple button press.

# **Connecting UHD Quadrants to the Inputs and Outputs**

The first step to understand when using UHD with Kahuna is how to correctly connect a UHD source to the inputs and outputs of the mainframe.

# **Inputs to the Switcher Mainframe**

The mainframe inputs are in groups of 12 on each input Fin, up to 120 inputs in total, depending on the system setup purchased. The 4 quadrants of the UHD source have to be connected to consecutive BNCs so that the **System Input** menu can be setup correctly (this will be explained in the following sections).

The UHD quadrants have to be connected in the following order, for example; A1 (top left), A2 (top right), A3 (bottom left) and A4 (bottom right), then the next source A5, A6, A7 and A8 following the same quadrant order. So, the first quadrant of each UHD source is connected to A1, A5, A9 then move on to the next input Fin B1, B5, B9. The first quadrant **cannot** start at A2 or A6 etc...

# **Outputs from the Switcher Mainframe**

There are 16 outputs on each output Fin up to 64 outputs in total, depending on the system setup purchased. Once again, the 4 quadrants of the UHD source have to connected to consecutive BNCs so that the **Output Setup** menu can be setup correctly. As with the input setup, the UHD quadrants have to be connected in the following order, for example; A1 (top left), A2 (top right), A3 (bottom left) and A4 (bottom right), then the next source A5, A6, A7 and A8. So, the first quadrant of each UHD source is connected to A1, A5, A9 and A13 then move on to the next output Fin B1, B5, B9 etc.The first quadrant **cannot** start at A2 or A6 etc...

# **UHD Input Setup**

It is worth noting at this point that if the System Video Standard is not set to 1080p... A or B then the **{Auto Standard}** button should be pressed so that the switcher mainframe will auto detect the incoming video signal and adjust to suit the four UHD quadrant 1080p sources coming into the mainframe.

	nput A1				Input Setup Standard						
Source	Name		Standard		UHD	Off	Anci H	llary V	Timing	y Margin	
Input A1	BNC A1								No Video	No Video	
Input A2	BNC A2						Yes	Yes	No Video	No Video	
Input A3	BNC A3		No Video				Yes	Yes	No Video	No Video	
Input A4	BNC A4						Yes	Yes	No Video	No Video	
Input A5	BNC A5		No Video				Yes	Yes	No Video	No Video	
Input A6	BNC A6						Yes	Yes	No Video	No Video	
Input A7	BNC A7		No Video				Yes	Yes	No Video	No Video	
Input A8	BNC A8		No Video				Yes	Yes	No Video	No Video	
Input A9	BNC A9		No Video				Yes	Yes	No Video	No Video	
Use Default	t Standard	No Yes	1080i/50				/ Offse	t	0-0		
Auto Star	ndard						Ancillar	у	Н	v	
	New Standard 625/50 4:3 E Apply					1	nputs U	IHD	UHD	Non-3G Auto Up-Convert	
			<u> </u>								

With the "**BNC Input**" parameter control set to the first UHD input connected to the mainframe (input A1 in this example), below the "H and V" buttons is a **{UHD}** button, press the button and it will turn light blue, the UHD button will now tie 4 UHD inputs together so that they all have the same settings. The UHD column will have "Yes" for the first 4 rows tied as UHD. The system assumes that the UHD source is connected in the quadrant order of T/L - T/R - B/L - B/R and sets all other parameters accordingly in the background.

Apply the same setup for any other UHD sources, that is all that is required to setup the UHD inputs.

# **FormatFusion**<sup>TM</sup>

The FormatFusion<sup>TM</sup> controls allow the user to change the aspect of an input source, this would be used for example if a portion of an HD source needs to be cropped and stretched to fit a 16:9 format or an SD 4:3 source aspect has to change to fit a 16:9 output.

🔳 Ir	nput A1		ļ	Input Setu	p Forma	t Fusion	
Source 🧕	Standard	Тор о	Bottom	Left o	Right O	Aspect O	Pan o
Input A1	1080i/59.94	0.00	0.00	0.00	0.00	Source	0.00%
Input A2	1080i/59.94	0.00	0.00	0.00	0.00	Source	0.00%
Input A3	1080i/59.94	0.00	0.00	0.00	0.00	Source	0.00%
Input A4	1080i/59.94	0.00	0.00	0.00	0.00	Source	0.00%
Input A5	1080i/59.94	0.00	0.00	0.00	0.00	Source	0.00%
Input A6	1080i/59.94	0.00	0.00	0.00	0.00	Source	0.00%
Input A7	1080i/59.94	0.00	0.00	0.00	0.00	Source	0.00%
Input A8	1080i/59.94	0.00	0.00	0.00	0.00	Source	0.00%
							0.000/
				Stretch Cro	op to Fit	Preserve	Aspect
						Copy & N	ext

The **Crop** adjustments allow the user to crop areas of the image that may need to be hidden from view. Adjustments can be made to the **Top**, **Bottom**, **Left** and **Right** of the image.

When the **Stretch Crop to Fit** parameter is enabled the cropped picture content will stretched to fill the 16:9 area.

With the **Preserve Aspect** parameter is enabled, this will maintain the aspect ratio of the image e.g. If you crop left and right the image will zoom vertically to compensate. If a source has become very distorted or stretched, this function will adjust the source outwards from the center in all directions creating a 'zoom in' effect.

Note: This may cause a very small amount of the source material around the edge of the source to be lost.

# **De-Interlace**

A video signal is made up of 2 fields of picture per frame, the first field contains the odd lines of picture and the second field contains the even lines. Each time the switcher creates a new output image an element of the previous and/or next field is used to fill the missing lines of picture. The Video De-Interlace function will allow the user control over the amount of picture taken from the adjacent fields.

	put A1	Input Setup	De	e-Interlace	$^{\land}$
Source O	Interlaced Source	Field Dominance		Vertical Softness	
Input A1	Automatic				
Input A2	Automatic				
Input A3	Automatic				
Input A4	Automatic				
Input A5	Automatic				
Input A6	Automatic				
Input A7	Automatic				
Input A8	Automatic				
Input A9	Automatic				
Input A10	Automatic				
Input A11	Automatic				
Input A12	Automatic				
				Copy & Ne	xt

If the source being used contains a lot of movement, e.g. sports, the difference in picture from one field to the next will be more pronounced than if the source is a static shot e.g. studio discussion then the Interlaced Source parameter should be used to compensate for different source types.

📄 Inp	out A1	Input Setup	De-Interlace
Source 💿	Interlaced Source	Field Dominance	Vertical Softness
Input A1	Film Pair	Normal	0.00%
Input A2	Automatic		
Input A3	Automatic		
Input A4	Automatic		
Input A5	Automatic		
Input A6	Automatic		
Input A7	Automatic		
Input A8	Automatic		
Input A9	Automatic		
Input A10	Automatic		
Input A11	Automatic		
Input A12	Automatic		
			Copy & Next

The Interlaced Source has 4 parameter settings, these settings are listed below:

**Automatic** is the default setting for Interlaced Source it is the most suitable mode for live programme making. When creating the current field/frame, the automatic setting will use the current input field and a percentage of both the previous and next input fields. Typically used when the output of a camera is fed to the switcher as a continuous stream of footage.

**Video Pair** is used when creating the current field/frame, will use the current input field and a percentage of either the previous or next field to maintain 1-2 or 2-1 pairing. This could be used for pre-prepared material with cuts on known field boundaries to prevent possible subtle artifacts appearing at cut points.

**Film Pair** is used when creating the current field/frame, will directly combine the current input field and either the previous or next field. This mode should only be used if the fields are temporarily matched, e.g. PAL film based sources or some animation.

Single Field is used when creating the current field/frame, will only use the current input field.

🔳 In	put A1	Input Setup	De	e-Interlace
Source	Interlaced Source	Field Dominance	0	Vertical Softness
Input A1	Film Pair	Normal		0.00%
Input A2	Automatic			
Input A3	Automatic			
Input A4	Automatic			
Input A5	Automatic			
Input A6	Automatic			
Input A7	Automatic			
Input A8	Automatic			
Input A9	Automatic			
Input A10	Automatic			
Input A11	Automatic			
Input A12	Automatic			
				Copy & Next

Note: Field Dominance and Vertical Softness can only be used with selected Interlaced Source settings.

The **Field Dominance** control selects which field comes first. The **Normal** setting is the default field setting for the input standard, the **Reversed** setting should only be used to correct sources that have incorrect field order (swapped fields). Swapped fields will manifest as very jittery motion.

The **Vertical Softness** control, this feature allows the user to visually "soften" the source on the selected input. Generally, this control is not required and should be set to 0% for the best de-interlacing quality. it is de-activated in Automatic mode, the function will work in Video Pair, Film Pair and Single Field modes.

Note: If multiple inputs require the same setup, select the first input, setup the input as required and press **{Copy & Next}** and the next input in the table will have the identical setup.

# **Color Correction**

Touch the menu link button at the top of the menu and select "Color Correction". **The Input Setup - Color Correction** menu allows the user to change the color balance on each individual crosspoint, there are 4 types of control, YUV, RGB, Bleed and Preset. To turn this menu on, touch the Color Correction **{On}** button.

📄 Input A1	Input Setup Color Correct	ion	📄 Input A1	Input Setup Color Corr	rection
Color Correction Off On	RGB		Cotor Correction Off On	RGB Off On	
YUV       Siff On         Brightness       0.00%         Contrast       1.00         Saturation       1.00         Bleed       5000         Bleed       5000         Green       100.00%         Blue       100.00%	S-Gain 0.00% O S-Center 50.00% O	Normal Preset B & W Preset Sepia Preset Inverse Preset	YUV       Off-On         Brightness       0.00%         Contrast       1.00         Saturation       1.00         Bleed       Off-On         Red       400.00%         Green       100.00%         Blue       400.00%	Lift 0.00% 0 Gamma 1.00 0 Gain 1.00 0 S-Gain 0.00% 0 S-Center 50.00% 0	Normal Preset B & W Preset Sepia Preset Inverse Preset

This will allow the other elements of the color correction menu to be selected. Use the "Delegates" button to select the required input for color correction.

#### YUV

Touch the YUV **{On}** button to activate the parameters. If the **Color Correction** main On/OFF button is turned Off, then all the color correction parameter controls will be turned off; but any adjustments made will not lost, they will all become active again when the Color Correction button is turned On.

📄 Input A1	Input Setup Color Correc	tion 🔨
Color Correction Off On		
YUV Off On Brightness 0.00% • Contrast 1.00 • Saturation 1.00 •	Lift 0.00% 0 Gamma 1.00 0 Gain 1.00 0 S-Gain 0.00% 0	Normal Preset
Bleed Off On	S-Center 50.00%	B & W Preset
Red 100.00%		Sepia Preset
Green 100.00%		Inverse Preset

Touch the Brightness attacher and the Brightness, Contrast and Saturation parameters will become active and can be adjusted with the rotary parameter controls.

- Brightness default value is 0.00%, and the range is from -10% to 100%
- Contrast default value is 1.00%, and the range is from -0% to 16%
- Saturation default value is 1.00%, and the range is from -0% to 16%

As each of the above are adjusted notice that the parameters in the YUV Control menu turn Orange and the percentage of adjustment is shown.

# Input RGB

Touch the RGB **{On}** button to activate the parameters.

📄 Input A1	Input Setup Color Correc	tion		Inpu	t A1			RGB 💥 🖊
Color Correction Off On	RGB Off On		Color		Off On			Color Correction
YUV Off On	Lift 0.00% O		YUV	Lift	0.00%	Gamma 1.00 O		1.00
Brightness 0.00%	Gain 1.00		Bright	Red	0.00%	Red 1.00	Red	1.00
Contrast 1.00		Normal	Contra		0.00%	Green 1.00		1.00
Saturation 1.00	S-Gain 0.00%	Preset	Satura		0.00%	Blue 1.00		1.00
Bleed Off On	S-Center 50.00%	B & W Preset	Bleed	S-Gain	0.00%	S-Center 50.00%		
Red 100.00%		Sepia Preset	Red		0.00%	Red 50.00%		
Green 99.99%		Inverse	Green	Green	0.00%	Green 50.00%		
Blue 100.00%		Preset	Blue	Blue	0.00%	Blue 50.00%		

The initial menu is set to a default condition, which shows all five Master adjustment parameters. This will give an adjustment of Master Lift, Gamma, Gain, S-Gain and S-Center. Each of these adjustments will alter all three elements of the RGB signal at the same time. Touch the menu link button (shown above) to open the full RGB menu, again some of the master parameters are selected.

When one of the master parameters is altered, notice that the RGB curve profile changes in the graph situated bottom right of the menu.

	Inpu	t A1					RGB 💥	
Color	RGB	Off On					Color Correction	
	Lift	0.00%		Gamma	1.00	Gain	1.00	
Bright	Red	0.00%		Red	1.00	Red	1.00	
	Green	0.00%	0	Green	1.00	Green	1.00	
Satura	Blue	0.00%		Blue	1.00	Blue	1.00	
Bleed	S-Gain	0.00%		S-Cente	er 50.00%	0		
	Red	0.00%		Red	50.00%			
	Green	0.00%		Green	50.00%			
	Blue	0.00%		Blue	50.00%			

Touching one of the attachers allows a more accurate adjustment to the RGB components where the:

Lift - parameters adjust the images Black Level, working on Black or shadow areas.

**Gamma** - parameters adjust the levels between dark/shadow and the mid tones, where the mid tones become brighter or darker; depending on the adjustment made.

**Gain** - parameters control the White level or highlights, where brighter colors become brighter or darker; depending on the adjustment made.

**S Gain and S Center** - the parameters adjust the gain mid tone levels of the S curve and the center point levels of the s curve.

# Bleed

Color bleed is a situation where a single color will over power the other colors in the RGB signal. By using the bleed function the stronger color can be softened to make the color output more natural, or adjusted to suit a specific need.

📄 Input A1	Input Setup Color Correction	on 🔨	📄 Inp	ut A1	Input Setup	Color Correction
Color Correction Off On	RGB Off On		olor Inpu	t A1		Bleed 🔀
YUV Off On	Lift 0.00%		Bleed	Off On		Color Correction
Brightness 0.00%	Gain 1.00		Bright Red inte	o Red 100.00%	Red into Blue	0.00%
Contrast 1.00		Normal	Green in	nto Red 0.00%	Green into Blue	0.00%
Saturation 1.00		Preset	Satura Blue int	to Red 0.00%	Blue into Blue	100.00%
Bleed Off On		B & W Preset	Bleed Red into	o Green 0.00%	Hue Rotate 0	:000°
Red 100.00%		Sepia Preset	Green in	nto Green 99.99%		
Green 100.00% O			Green Blue int	o Green 0.00%		
Blue 100.00%		nverse Preset	Blue 100.00	0%		Preset

Touch the menu link button to open the full Bleed menu. The initial menu has a default state where a single adjustment for each parameter menu is active; this will allow the adjustment of the main RGB bleed parameters:

- Red into Red
- Green into Green
- Blue into Blue

Touch one of the attacher to enable all the options in that part of the menu, this will allow a detailed adjustment for each of the R, G and B bleed settings. The adjustments are measured on a -100% to a +100% scale. Each parameter menu will adjust a single color, i.e. red into red, green into red and blue into red.

# Presets

Presets allow the user to quickly select commonly used preset color options for the incoming source, or quickly revert back to the original input source color levels.



**Normal** - is the original color levels of the input source; without any color correction adjustments.

**B** & W - sets the chroma saturation to zero removing the chroma content, making the signal black and white.

**Sepia** - sets the chroma saturation to zero removing the chroma content, then adds positive portions of Red and Green and a negative portion of Blue to make-up a sepia appearance.

Inverse - Inverts the video signal making the picture a negative of its correct colors.

If the **Normal** preset option is selected, then all color correction controls are Grayed out preventing any adjustments. This is to make sure that the original input source can be recalled.

If B&W, Sepia and Inverse are selected, the preset levels can all be color corrected.

# FormatFusion4<sup>TM</sup> - HDR

What is HDR

Note: You will only be able to use the HDR and SDR settings if you have a FormatFusion4<sup>TM</sup> option license. If you would like to upgrade your Kahuna, please contact Grass Valley Service Support.

The introduction of FotmatFusion4<sup>TM</sup>, gives Kahuna the ability to convert from SDR to HDR or from HDR to SDR.

FormatFusion4 also allows conversion between most commonly used HDR formats. HDR (High Dynamic Range) is the ability to display a wider and richer range of Colors, much brighter whites, and much deeper, darker blacks. This gives the video content a more 'dynamic' look, which is where the name comes from.

HDR content preserves details in the darkest and brightest areas of a picture that are lost using older standards like Rec.709. It also allows for more natural, true-to-life Colors that are closer to how we see them in real life.

The HDR element within the Kahuna supports the Electrical Optical Transfer Functions (EOTF) for:

- Perceptual Quantizer (PQ) SMPTE ST-2084
- Hybrid Log-Gamma (HLG) ARIB STD-B67
- Sony's Slog3 profile
- Arri LogC3
- Arri LogC2
- S-Log3L
- HLG (ITU-R BT.2100)

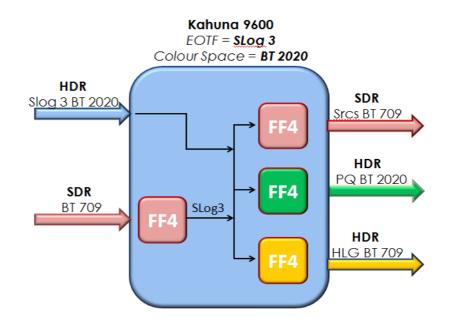
Also Kahuna supports Wide Color Gamuts (WCG):

- BT 709
- BT 2020
- S-Gamut3
- DCI-P3
- Arri Wide

The Kahuna Platform will allow a combination of the declared EOTFs and WGCs above. The above will be explained in detail on the next page.

# Supporting HDR in the Kahuna 9600 and 6400 Architecture

Kahuna can support HDR on every Input and every Output independently, as well as setting the 'Standard' of the Switcher to have a desired EOTF and WCG. The input stage will convert to the standard EOTF and WCG, and the outputs will convert from the standard settings.



This example shows the Kahuna Switcher's standard is set to SLog3, color space is BT 2020. SDR inputs are converted to Slog3 and the outputs are converted from this respectively.

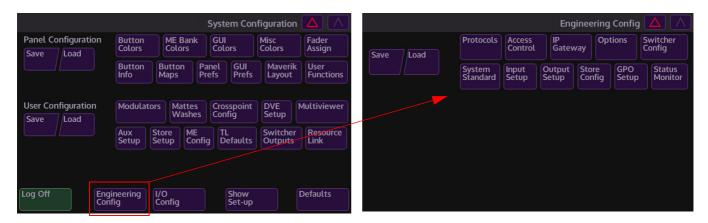
Using FormatFusion4<sup>TM</sup> HDR on Kahuna

This document will outline how to setup HDR on the Maverik MAV-GUI.

#### **System Standard**

The first step is to decide what video format the system will be working in and what video standard the outputs will be set to.

To get to the System Standard menu, touch the **{Config}** button, then in the Configuration menu, touch the **{Engineering Config}** button. Finally touch the **{System Standard}** button.



Using the "HDR **Format"** and the "Color **Gamut"** parameter controls, the user can set the system standard to be a SDR (standard dynamic range) standard, or a HDR standard.

	System Standard			Svetom Standard
System Standard 1080p/59.94 A Internal Paths 4:3 U	IHD Mode Quadrant 2SI	System Star	Sy	stem HDR/SDR Conversion 💥 251
New Standard 1080p/59.94 A E Apply H	IDR Format Rec. 709	New Standa	HDR Lift 0.00%	
	xposure 800 ASA	Action On	HDR Gain 1.00	
	Color Gamut Rec. 709		Reversible Conversion Off On O	
Genlock Off On Genlock Phase 0.00 Lines	Convert	Genlock	Camera (Scene Light) Off On O	System HDR to SDR
Use Ref Card		Un der Car	System SDR to HDR	Shadow Gain 2.00
Ref Card 'A' Input Loop 1 Loop 2		Ref C	Brightness (Gain) 1.00	Mid Tone Width 0.75
Locked No		Locke	White Peaking 0.00	Highlight Gain 0.00
Present V No H No		Prese		White Clip 0.00%
Rate 0.00		Rate		Black Clip 0.00%
Interlaced No		Interl	aced	

Note: If the outputs are going to be set as SDR outputs (1080p or UHD), then set the system standard to a 1080p standard or UHD Quadrant or 2SI mode. Set the **HDR Format** parameter to "**Rec. 709**" and set the **Wide Color Gamut** parameter to "**Rec. 709**".

If the outputs are going to be HDR outputs, then set the HDR Format parameter and the Wide Color Gamut parameter to the required HDR settings.

**Parameters** 

HDR Format - sets the HDR Format

**Exposure Index** - this is only relevant for Arri 'Log C' type curves. Arri 'Log C' is actually a set of curves dependent on the cameras sensitivity (ASA) or 'Exposure Index' setting. By setting the camera's Exposure Index on Kahuna the correct curve will be used and the Log C code values will always represent the same scene brightness levels even if different scenes are shot at different exposure indices.

Color Gamut - sets the required WCG

**Reversible Conversion** - The System HDR/SDR conversion can be forced to be reversible. This means when converting SDR to HDR and subsequently converting that HDR back to SDR you will get back to your original SDR signal. There is then only one set of conversion controls as the SDR to HDR conversion is the opposite of the HDR to SDR. This ensures correct 'round tripping' but will compromise the flexibility of conversions.

**Camera (Scene Light)** - All HDR conversion is done via a 'Linear Light' stage. This 'Linear Light' stage can either represent the real world light coming into the camera (the 'Scene' light) OR the light coming out of a display monitor (the 'Display' light).

'Camera Matching' mode 'On' will convert via 'Scene' light.

'Camera Matching' mode 'Off' will convert via 'Display' light.

If your source is coming directly from a camera then 'Camera' mode should be 'On'.

If your source is pre-packaged material from a server, such as adverts, 'Camera' mode should be 'Off'.

Brightness Gain - controls the HDR brightness

**White Peaking** - lifts high luminance areas to enhance the highlights in the SDR image and make the HDR version look less 'flat'.

**System HDR To SDR Shadow Gain** - adjusts the Gain, Highlight Gain & Mid Tone **System HDR To SDR Mid Tone Width** - defines the Luma region where a curve joins the two gains.

System HDR To SDR Highlight Gain- controls the gain at high Luma levels. System HDR To SDR White Clip- sets White Hard Clip Level. System HDR To SDR Black Clip- sets Black Hard Clip Level.

# **HDR Formats on Kahuna**

# Rec. 709 - Standard Dynamic Range (SDR)

Standard Dynamic Range signals as per ITU-R BT.709-6

# **PQ - Dolby Perceptual Quantizer**

The Dolby PQ curve aims to cover up to 10,000 nits, code words are equally spaced in perceived brightness over this range. PQ is display referenced so code words equate to specific screen brightness.

# HLG (Arib)

Hybrid Log Gamma, as per ARIB-STD-B67 This assumes diffuse white at 50% signal. This is for legacy compatibility - use HLG below

# S-Log3 - Sony S-Log3

This is a Sony proprietary format. Scene referenced almost pure log curve. S-Log3 is a production format only and would not be broadcast.

S-Log3 and Dolby PQ have a similar amount of headroom with HLG having slightly less.

# Arri LogC 3 and LogC 2

This is an Arri production standard. Note the additional 'Exposure Index' control.

# S-Log3L

S-Log3 soft clipped to 4000nits

# HLG - Hybrid Log Gamma

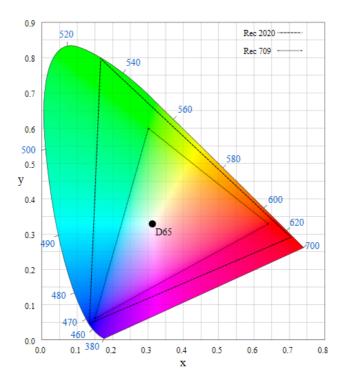
Developed by the BBC and NHK, part traditional gamma and part log curve. This gives a degree of back compatibility on SDR screens.

A consequence of this back compatibility is the Hybrid Log Gamma covers slightly less range than the Dolby PQ or S-Log3 curves by a few 'stops'.

HLG is scene referenced so is defined by scene light levels rather than output display levels.

### Wide Color Gamut

The color gamut or Color space of a signal defines the range of colors that signal can represent. The diagram below shows all the Colors visible to the human eye, any color space using three primaries forms a triangle in this diagram. The inner triangle below shows the Colors achievable with the traditional Rec. 709 gamut. The new wide Color gamut space is show by the outer triangle which encompasses much more of the visible Colors.



Wide Color Gamut Formats on Kahuna

"Rec. 709" - Standard Color Gamut

Traditional Color space as per ITU-R BT.709-6

## "Rec. 2020" - Wide Color Gamut

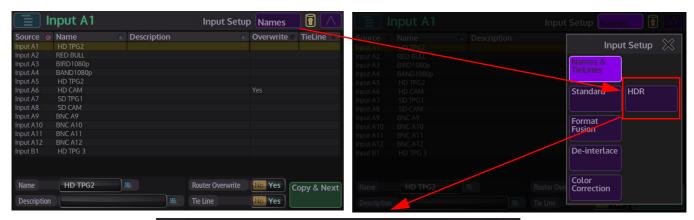
Wide Color space as per ITU-R BT.2020. This is the new broadcast format.

#### "S-Gamut3" - Sony Wide Color Gamut

This is a Sony proprietary production format.

## **HDR Input Setup**

In the Engineering Config - Input Setup menu, touch the {Names} button, then in the popup menu, touch the **{HDR}** button.



📃 In	put A14				Input Setup HDR						
Source	Name	Cont	ontrol Curve		Gamut	SDR to HDR Bright Peak					
		Local				1.00					
Input A2	BNC A2			Rec. 709	Rec. 709	1.00	0.00	2.50	0.75		
Input A3	BNC A3					1.00	0.00	2.50	0.75		
Input A4	BNC A4					1.00		2.50	0.75		
Input A5	BNC A5					1.00		2.50	0.75		
Input A6	BNC A6					1.00		2.50	0.75		
	RNIC A7										
Control	ocal System		SDR t								
Format	DR HDR		Bright	1.00				2.50			
HDR Format	Rec. 709		Peak Whi	te 0.00				0.75			
	800 ASA		Camera	Off	On O			0.00			
Gamut	Rec. 709			White 0.00%							
			HDR	Adjust 🛛			0.00				

Inputs are setup on an individual input by input basis. When the system standard is set to SDR or HDR, each input has to be setup in the Input HDR menu to the required HDR or SDR format. The incoming source is setup using the "**Conversion**" parameters.

Note: These parameters do not automatically follow the System Standard settings.

The **HDR Format** and **Gamut** "**Conversion**" parameters in the Input HDR menu have to be set to the same standard as the incoming source.

**For example:** If the incoming source is a HDR source and the System Standard is set to one of the HDR settings (e.g. HDR Format = S-Log3, Wide Color Gamut = Rec. 2020) then the incoming source has to be set to the required standard using the Conversion "HDR Format" and the "Gamut" parameters.

<b>I</b>	put A14				Input Setup HDR					
Source	Name	Cont	rol	Curve	Gamut	SDR to		HDR to SDR		
0	rianic					Bright	Peak	Shadow	/ Mid	
					Rec. 709			2.50		
Input A2	BNC A2	Local		Rec. 709	Rec. 709	1.00	0.00	2.50	0.75	
Input A3	BNC A3	Local		Rec. 709	Rec. 709	1.00	0.00	2.50	0.75	
Input A4	BNC A4	Local		Rec. 709	Rec. 709	1.00	0.00	2.50	0.75	
Input A5	BNC A5	Local			Rec. 709	1.00	0.00	2.50	0.75	
Input A6	BNC A6	Local		Rec. 709	Rec. 709	1.00	0.00	2.50	0.75	
Control	ocal System		SDR t	o HDR						
Format	DR HDR		Bright	1.00	Shadow Gain			2.50		
HDR Format	Rec. 709		Peak Whit	te 0.00		O Mid Tone				
Exposure	800 ASA		Camera Off On					0.00		
Gamut	Rec. 709		White 0.00%							
			HDR /		Black 0.00%					

"Lift" will be the only other parameter that is adjustable.

This should normally be set to zero, however additional lift adjustment may be required to correct the apparent black level during conversions. This is particularly true for S-Log3 where the defined black level is not always adhered to in practice.

#### Keying

Lift may also need adjustment with linear keying to ensure there is no change in background level when turning a key layer on and off.

**For example:** If the incoming source is a HDR source and the System Standard is set to 1080p (e.g. HDR Format = Reg. 709, Wide Color Gamut = Rec. 709) Set the "Conversion" parameters to match the incoming source format.

🔳 In	put A14				Inpu	ut Setup		R	$\bigcirc$	
Source	Name	Cont	rol	Curve	Gamut		SDR to HDR		SDR	
0						Bright	Peak	Shadow	Mid	
Input A14		Local							0.75	
Input A2	BNC A2	Local		Rec. 709	Rec. 709	1.00	0.00	2.50	0.75	
Input A3	BNC A3	Local				1.00	0.00	2.50	0.75	
Input A4	BNC A4	Local				1.00	0.00	2.50	0.75	
Input A5	BNC A5	Local				1.00	0.00	2.50	0.75	
Input A6	BNC A6	Local				1.00	0.00	2.50	0.75	
Innut A7				Poc 700					0.75	
Control	ocal System		SDR t	o HDR		HD				
Format	DR HDR		Bright	1.00	Shadow Gain			2.50	0	
HDR Format	Rec. 709		Peak Whit	te 0.00	0	Mid Tone			0	
Exposure	800 ASA		Camera	Off	On 🔾			0.00	0	
Gamut	Gamut Rec. 709					White 0.00%				
		HDR /	Black 0.00% 0							

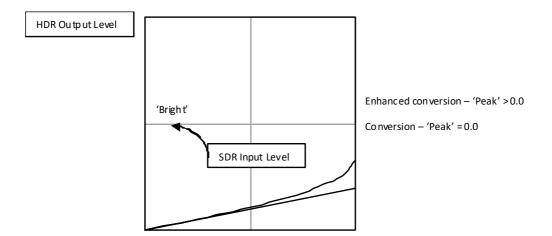
The parameters available to the user are the down conversion parameters to an SDR format.

**HLG Gain** - When converting from PQ or Slog3 to HLG on an output the system will allow additional gain to be applied. This is to compensate for the extra range or stops that S-Log3 supports over HLG which would otherwise give dark pictures.

	nput A14				Inpu	ut Setu	p HD	R										
ource	Name	Contr	ol o o	Curve	Gamut	SDR to Bright		HDR t Shado		Source			Control	Curv		Ut put also		
put A14						1.00				Input A14			Inpu	it A14	HDR /	Adjust 🔀	0.00	
put A2	BNC A2			PQ			0.00	2.50	0.75	Input A2							0.00	
put A3	BNC A3			PQ	Rec. 709	1.00	0.00	2.50	0.75	Input A3		Lift	0.00%					
put A4	BNC A4			PQ	Rec. 709		0.00	2.50	0.75	Input A4								
put A5	BNC A5			Rec. 709	Rec. 709	1.00	0.00	2.50	0.75	Input A5		Gain	1.00					
put A6	BNC A6	Local		Rec. 709	Rec. 709	1.00	0.00	2.50	0.75	Input A6							0.00	
	Local System						DR to S			Control							R to S	
Format	SDR HDR			-1.00		Snado	ow Gain	2.50		Format							W Gain	
IDR Forma	nt PQ			ite 0.00		Mid Te		0.75	0	HDR Form	nat PQ						ne	
	800 ASA			-Off	On O	Highl	ight Gaiı	n <b>0.00</b>		exposure								
Gamut	Rec. 709					White	e 0.00	0%		Gamut								
			HDR	Adjust		Black	0.00	1%										

#### **SDR to HDR Parameters**

Kahuna uses a spatially constant transfer curve to convert SDR to HDR. In its simplest form this maps SDR brightness range 0-100nits to the bottom end of the HDR brightness range (nominally 0-1000nits). Kahuna allows control over the gain required to do this which changes the overall brightness of the HDR image. This is the 'SDR to HDR' - 'Bright' control. In addition some gentle peaking can be included to lift high luminance areas to enhance the highlights in the SDR image and make the HDR version look less 'flat'. This is the 'SDR to HDR' - 'Peak' control. A value of 0.0 gives a pure linear conversion and 1.0 gives maximum enhancement.



#### **HDR to SDR Parameters**

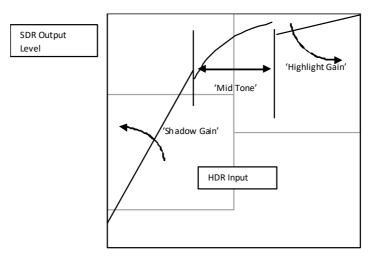
This conversion employs gain and soft clipping of the HDR version. HDR content is processed in two stages.

#### 1: White and Black Offset

The 'White' and 'Black' parameters define the amount of black levels or white levels that are to be hard clipped away and the resultant range stretched out. This will enhance contrast of the SDR image at the cost of crushing the blacks and or whites.

#### 2: Tone Mapping Curve

The remaining range of HDR brightness levels are then tone mapped into the SDR range. Two gains are defined one for the lower luminance levels, the 'Shadow Gain' and one for the peak luminance levels, the 'Highlight Gain'. The transition between these two gains is defined over a range called the 'Mid Tone Width'. This gives adjustable soft clipping; the 'Shadow Gain' should be used to control the overall SDR image 'brightness'. The 'Highlight Gain' and 'Mid Tone Width' should be used to bring down the HDR highlights while retaining some detail within them if desired.



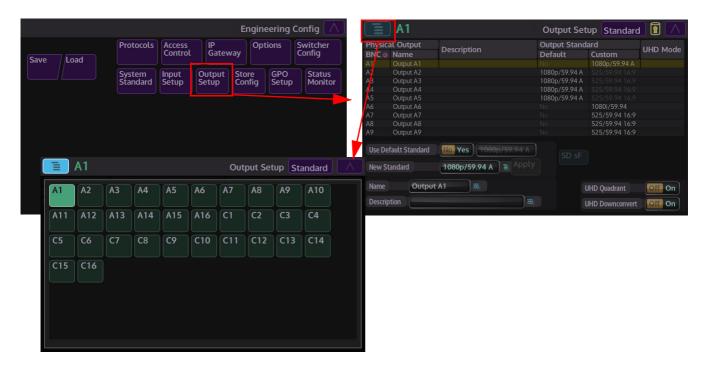
# **Output Setup**

This menu is where each BNC output from the Kahuna mainframe is setup, within these menus the user is able to:

- Name and give a Description to each BNC output
- Change the Video Standard for each BNC output
- Assign each BNC output to different Logical Switchers
- Setup ISO Tally's for each BNC output
- Ancillary
- HDR
- Output Color Correction
- Output Format Fusion
- Output Skirts

## Standard

The first menu to open after pressing the Output Setup button is the Standard menu, as the name suggests, the user is able to set the required video standard and give a name and description to the output.



Outputs can be selected using the **"Delegates"** menu or by scrolling down through the list of outputs in the table.

Touching the Name/Description bar, a name and description can be given to the output using the on-screen Keyboard.

Note: Naming an output distinguishes the output and allows outputs to be recognized and selected in other menus such as the User Config menu.

<b>A</b> 1		Output S	Setup Standa	ard 🔨	<b>A</b> 1		Output S	etup Standar	d ( ^ )
Physical Output		<b>Output Stand</b>	lard		Physical Output	Description	Output Sta	ndard	AV Manda
BNC O Name	Description	Default	Custom	UHD Mode	BNO Name	Description	Default	Custom	4K Mode
		1080p/59.94 A			A1		No	525/59.94 4:3	
A2		1080p/59.94 A			A2			525/59.94 4:3	
		1080p/59.94 A			A3		1080i/59.94		
A4		1080p/59.94 A			A4		1080i/59.94		
A5		1080p/59.94 A			A5		1080i/59.94		
A6		1080p/59.94 A			A6		1080i/59.94		
A7		1080p/59.94 A			A7		1080i/59.94		
A8		1080p/59.94 A			A8		1080i/59.94		
A9		1080p/59.94 A			A9		1080i/59.94		
Use Default Standard New Standard	No Yes 1080p/59.94 A				Use Default Standard New Standard	No Yes 1080i/59.94 525/59.94 4:3 ≣ App	SD sF		
Name Description			UHD Quadrant UHD Downconvert	Off On	Name Description			UHD Quadrant UHD Downconvert	Off On Off On

In this part of the menu the user has the option to keep the default video standard, or by pressing "No" in the **Use Default Standard** parameter the user can then use the New Standard parameter select and apply a different standard to the output.

**SD** s**F** - This function (shown selected above right) is only available when the video standard is changed to an SD standard (488sF and 576sF - 4/3 and 16/9). This function would be used on fast moving video in SD mode, it de-interlaces the video and makes the video frame based with the effect of correcting any interlace problems that can be seen in the video.

The update rate for the SF is still 50 Fields per second but the image has no spatial movement between the two fields, they are temporally matched, hence the term segmented frame. A segmented Frame based image will potentially look better on a computer feed due to the fact that the computer will not have to de-interlace the image (nearly all computer screens are Frame Based).

This is ideally used for video feeds for the Internet, giving a smooth video output. If the video standard is changed to a HD/1080p, this function will automatically turn off.



## Segmented Frame (sF) based image (SD sF On)



## **UHD Outputs**

There are 16 outputs on each output Fin up to 64 outputs in total (11RU mainframe), depending on the system setup purchased. The 4 quadrants of the UHD source have to connected to consecutive BNCs so that the **Output Setup** menu can be setup correctly. As with the input setup, the UHD quadrants have to be connected in the following order, for example; A1 (top left), A2 (top right), A3 (bottom left) and A4 (bottom right), then the next source A5, A6, A7 and A8. So, the first quadrant of each UHD source is connected to A1, A5, A9 and A13 then move on to the next output Fin B1, B5, B9 etc.The first quadrant **cannot** start at A2 or A6 etc...

<b>E</b> A1		Output S	etup Stand	ard
Physical Output		<b>Output Stand</b>	ard	
BNC O Name	Description	Default	Custom	UHD Mode
A1		1080p/59.94 A		UHD T.L.
A2		1080p/59.94 A		UHD T.R.
A3		1080p/59.94 A		UHD B.L.
A4		1080p/59.94 A		UHD B.R.
A5		1080p/59.94 A		
A6		1080p/59.94 A		
A7		1080p/59.94 A		
A8		1080p/59.94 A		
A9		1080p/59.94 A		
Use Default Standard New Standard	No Yes 1080p/59.94 A			
Name		(L	JHD Quadrant	Off On
Description		l i	JHD Downconvert	Off On

**UHD Quadrant** - Use the "BNC" parameter to select the first BNC of the UHD output, (BNC A1 in this example), then press the "**UHD Quadrant**" **{On}** button. The system will automatically setup that output plus the next three outputs to be UHD outputs in quadrant order as was done with the inputs.

<b>A</b> 1		Output S	Setup Standa	ard 🔨
Physical Output	Description	Output Stand		UHD Mode
BNC O Name	Description	Default	Custom	one mode
A1		1080p/59.94 A	1080i/59.94	UHD Down
A2		1080p/59.94 A		UHD Down
A3		1080p/59.94 A		UHD Down
A4		1080p/59.94 A		UHD Down
A5		1080p/59.94 A		
A6		1080p/59.94 A		
A7		1080p/59.94 A		
A8		1080p/59.94 A		
A9		1080p/59.94 A		
Use Default Standard New Standard	No Yes 1080p/59.94 A			
Name			UHD Quadrant	Off On
Description			UHD Downconvert	Off On

UHD Downconvert - the "**UHD Downconvert**" button, this feature basically does what it says. When an output is selected and the UHD Downconvert button is turned "**On**", the system will automatically setup the selected output plus the next three outputs to be UHD downconverted at the video standard that has been selected for all 4 outputs. All four outputs must be the same standard.

## Assignment

Touch the menu link button at the top of the menu and select the "Assignment" menu. This menu allows the user to assign outputs to a logical switcher or switchers as required.

<b>a</b> A1		Output S	etup Assignment
Physical Output	Logical Switcher		Source
BNC • Name	Name	Out	Source
A1	Demo Room NB	1	ME2 OP1
A2	Demo Room NB		ME2 OP1
A3	Demo Room NB		ME2 OP1
A4	Demo Room NB		ME2 OP1
A5	Demo Room NB		ME2 OP1
A6	Demo Room NB		ME1 OP2
A7	Demo Room NB		ME2 OP1
A8	Demo Room NB		ME2 OP2
A9	Demo Room NB		ME2 OP1

Use the **BNC** parameter to select an output, then using the **Logical Switcher "Name"** parameter select the logical switcher that the output is to be assigned to. Finally use the "**Out"** parameter to assign an output to a logical switcher.

## Tally

Tally Now/Next is used to set the tally lights on the buttons on the Maverik control surface to signal that the selected source/Key is live to air.

ISO Tally's can be used for example in a studio situation where studio cameras are recording live and/or live to disk or tape, the ISO tally can be used to signal if a camera is live, or recording.

	A1					(	Dutput	Setup	Tally	/	$\left[ \ \wedge \ \right]$
Physica	al Output	Tally									
BNCO	Name	Now	Next	ISO 1	ISO 2	ISO 3	ISO 4	ISO 5	ISO 6	ISO 7	ISO 8
A1		On									
A2		On									
A3		On									
A4		On									
A5											
A6 A7											
A7 A8											
A8 A9											
Tally N	ow On				ISO 1	Off			io 5 O	ff	0
Tally N	ext Off				ISO 2	Off	0		i0 6 0	ff	
					ISO 3	Off			io 7 O	ff	
					ISO 4	Off			io 8 0	ff	

Tally Now sets the tally for an for On Air Sources. Tally Next - This sets the Tally for the next on air source.

The Tallies can be set to provide up to 8 further output Tallies ISO1 to ISO8. These can be used to Tally outputs that are being used as ISO (isolation) Feeds.

The menu shows the current state of the selected Output. Each column display the Tally options of each output, this defines what tally is assigned to a selected output.

As each attacher is selected, the Tally parameter controls are displayed to the right of the menu, allowing the user to turn the Tally On or Off.

GPO Select 1 Name Tally A1 Combine Mode OR AND
hiput A1 Now
Not Source Now Source Input A1
Not Source Next Source ISO
Not GPI GPI 1
Not GPO GPO 1 O
Pulse Duration 00;00
User Configurable No Yes
Combine User OR AND
Controlled by Logical Switcher Demo Room NB Add All None List Atl

The physical Tally switch is setup in the **Eng Config - GPO Setup** menu, so for example, if BNC Output 1 source is a HD CAM with an ISO1 Tally on GPO 1.

If BNC Output 1 had been set for ISO1 Tally and the HD CAM is the currently selected source GPO 1 will close and the Tally will become active. This can be repeated as required for either ISO tally or required sources.

The ISO Tallies can be "OR"ed or "AND"ed with any other GPO enables to Tallies.

## Ancillary

As mentioned earlier in the **Eng Config - Input Standard** menu, Ancillary Data can be output from any BNC output on the mainframe. The **Ancillary** menu is used to either pass or block the ancillary data on each individual output.

Note: Please read the **Eng Config - Input Standard Ancillary Audio** section before proceeding any further.

As with all inputs to the mainframe, HANC and VANC can be allowed or blocked on each output BNC using the **{HANC}** and **{VANC}** buttons.

<b>A9</b>					Output Se	etup Anc	illary
Physical Output	SMPTE 352	Ancil		Mar da		- N	
BNC O Name	E	Enab	lea	Mode	HAN		ANC
A1	Enabled	On		Transcode	On	0	
A2	Enabled	On		Transcode	On	0	
A3	Enabled	On		Transcode	On	O	
A4	Enabled	On		Transcode	On	O	
	Enabled	On		Transcode	On	O	
	Enabled	On		Transcode	On	O	
A7	Enabled	On		Transcode	On	O	
	Enabled	On		Transcode	On	O	
	Enabled	On		Transcode	On	O	
SMPTE 352 Payload	Enabled Inhib	oited	Ancillary	Data	Off On		
Payload UHD Channel Id	Off On		Ancillary	Mode	Transcode	PassThro.	
			H Anc.		Off On	Blank Cut	Off On
			V Anc.		Off On	Blank Cut	Off On

**SMPTE 352 Payload** - this parameter specifies a "payload packet" which can be included in a serial stream as ancillary data, this indicates such things as the video standard, picture rate, aspect ratio etc. of the video signal that stream carries. The button turns it on and off on each output.

It's main use in a studio is to indicate whether SD is 4:3 or anamorphic (i.e. compressed) 16:9.

**Ancillary Data** - this will allow or block ancillary audio data from passing through the selected output or outputs.

**Ancillary Mode** - **Transcode** is used to disassemble the audio from an external source or Clipstore and re-embed the audio onto an output. The advantage of transcoding is that it does not matter what the source or output video standards are.

The only disadvantage is that it is transcoding is restricts the audio data to 8 channels (from groups 1 and 2). Making an audio cut where the source and output standards do not match, this may not make a clean audio cut.

Note: The Clipstore ancillary data passes through a Transcoder (the Clipstore embedded audio data cannot take the "Pass-Through" path even if Pass-Through is selected) before being output from the mainframe, the embedded audio data is 8 channel only!

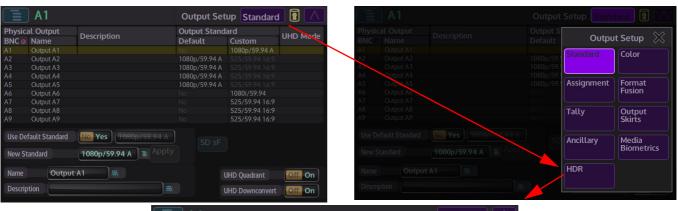
From the Transcoder, the embedded data takes the form of two groups of 4 channels. Each channel is mono and independent. However, the user could set Group 1 CH1 and CH2 for a stereo source and Group 1 CH3 and CH4 for another stereo source. Similarly for Group 2.

The **Pass-Through** mode passes all HANC and VANC data from an input source to an output, if the input and output video standard, and the system video standards match (which defines the Kahuna source cut point), the sources will be correctly timed and the audio cuts will be clean.

Note: If the user has selected Pass-through mode on an output and selects a Clipstore as a source, the Kahuna automatically uses transcode mode. Clipstores generate audio in an internal format, so must be transcoded.

## **HDR Output Setup**

In the Engineering Config menu touch the **{Output Setup}** menu link button, touch the **{Standard}** button to open the **"Output Setup**" popup. Finally, touch the **{HDR}** button.



A1				Ou	tput Set	up Hi	OR		
Physical Output BNC O Name	Control	0	Curve	Gamut	HDR to S Shadow	DR Mid	SDR to I Bright	IDR Peak	
A2					2.50	0.75	1.00	0.00	
A3			Rec. 709	Rec. 709	2.50	0.75	1.00	0.00	
A4			Rec. 709	Rec. 709	2.50	0.75	1.00	0.00	
				Rec. 709	2.50	0.75	1.00	0.00	
A6					2.50	0.75	1.00	0.00	
Control Local Syst	em				Н	HDR to SDR			
Format SDR HDR			ght 🔤	1.00 0	Sha	dow Gair	ı <b>2.50</b>	0	
HDR Format Rec. 70	9 🔾		ak White	0.00 O	Mid	Tone	0.75		
Exposure 640 AS/			mera	Off On C	High	nlight Ga	in 0.00	0	
Gamut Rec. 70	9 0				Whi	te 0.0	00%		
		ŀ	HDR Adjus	st 🗍	Blac	k 0.0	00%		

Outputs are setup on an individual output by output basis. As with the inputs, when the system standard is set to SDR or HDR, each output has to be setup in the Output HDR menu to the required HDR or SDR format. The output source is setup using the "Conversion" parameters.

Note: These parameters do not automatically follow the System Standard settings.

#### **Parameters**

#### HDR Format - sets the HDR Format

**Exposure** - this is only relevant for Arri 'Log C' type curves.

Arri 'Log C' is actually a set of curves dependent on the cameras sensitivity (ASA) or 'Exposure Index' setting.

By setting the camera's Exposure Index on Kahuna the correct curve will be used and the Log C code values will always represent the same scene brightness levels even if different scenes are shot at different exposure indices.

Gamut - sets the required WCG

Brightness Gain - controls the HDR brightness

**White Peaking** - lifts high luminance areas to enhance the highlights in the SDR image and make the HDR version look less 'flat'.

**Camera** - All HDR conversion is done via a 'Linear Light' stage. This 'Linear Light' stage can either represent the real world light coming into the camera (the 'Scene' light) OR the light coming out of a display monitor (the 'Display' light).

'Camera Matching' mode 'On' will convert via 'Scene' light.

'Camera Matching' mode 'Off' will convert via 'Display' light.

If your source is coming directly from a camera then 'Camera' mode should be 'On'.

If your source is pre-packaged material from a server, such as adverts, 'Camera' mode should be 'Off'.

**System HDR To SDR Shadow Gain** - adjusts the Gain, Highlight Gain & Mid Tone **System HDR To SDR Mid Tone Width** - defines the Luma region where a curve joins the two gains.

System HDR To SDR Highlight Gain- controls the gain at high Luma levels.

System HDR To SDR White Clip- sets White Hard Clip Level.

System HDR To SDR Black Clip- sets Black Hard Clip Level.

The HDR Format and Gamut "Conversion" have to be set for each output.

**For example:** If the output source is a HDR source and the System Standard is set to one of the HDR settings (e.g. HDR Format = S-Log3, Wide Color Gamut = Rec. 2020) then the output source has to be set to the required standard using the Conversion "HDR Format" and the "Gamut" parameters.

	A1			Ou	utput Set	up H	DR	
Physical	l Output	Control	Curve	Gamut	HDR to S	DR	SDR to I	HDR
BNC	Name		Curve	Gainot	Shadow	Mid	Bright	Peak
A1		Local		Rec. 709				0.00
A2		Local	Rec. 709	Rec. 709	2.50	0.75	1.00	0.00
A3		Local	Rec. 709	Rec. 709	2.50	0.75	1.00	0.00
A4		Local	Rec. 709	Rec. 709	2.50	0.75	1.00	0.00
A5		Local	Rec. 709	Rec. 709	2.50	0.75	1.00	0.00
A6		Local	Rec. 709	Rec. 709	2.50	0.75	1.00	0.00
^7				Poc 700				0 00
Control	Local Syste	em			н	DR to	SDR	
Format	SDR HDR			1.00	Sha	dow Gai	n <b>2.50</b>	0
HDR For	mat Rec. 709	9 0		0.00	Mid	Tone	0.75	0
Exposure	e 640 ASA			Off On	Higl	nlight Ga	ain 0.00	0
Gamut	Rec. 709	>			Whi	te 0.	00%	0
			HDR Adjı	ıst 📋	Blac	k 0.0	00%	D )

"Lift" will be the only other parameter that is adjustable.

This should normally be set to zero, however additional lift adjustment may be required to correct the apparent black level during conversions. This is particularly true for S-Log3 where the defined black level is not always adhered to in practice.

#### Keying

Lift may also need adjustment with linear keying to ensure there is no change in background level when turning a key layer on and off.

**For example:** If the output source is a HDR source and the System Standard is set to 1080p (e.g. HDR Format = Reg. 709, Wide Color Gamut = Rec. 709) Set the "Conversion" HDR to SDR or SRD to HDR parameters to match the output source format.

<b>A</b> 1				Οι	utput Se	tup H	DR	
Physical Output	Control		Curve	Gamut	HDR to	-	SDR to	HDR
BNC O Name	0		Corve	Gamot	Shadow	/ Mid	Bright	Peak
	Local		PQ	Rec. 709	2.50	0.75		0.00
A2	Local		PQ	Rec. 709	2.50	0.75	1.00	0.00
A3	Local		PQ	Rec. 709	2.50	0.75	1.00	0.00
A4	Local		PQ	Rec. 709	2.50	0.75	1.00	0.00
A5	Local		Rec. 709	Rec. 709	2.50	0.75	1.00	0.00
A6			Rec. 709	Rec. 709	2.50	0.75	1.00	0.00
			Poc 700	Poc 700			1 00	
Control Local Sy	stem		SDR to H	IDR				
Format SDR HDF		В	right	1.00			n <b>2.</b> 50	
HDR Format PQ		P	eak White	0.00			0.75	
Exposure 640 A		Ca	amera	Off On			ain 0.00	
Gamut Rec. 7	709					hite 0.	00%	0
			HDR Adj	ust 📋		ack 0.		

The parameters available to the user are the down conversion parameters to an SDR format and are the same as the input parameters.

<u></u> A1				0	utput Se <sup>.</sup>	tup [H	DR		A1				
Physical Outpu	t Control		Curve	Gamut	HDR to		SDR to		Physical Output				
BNC Name	Local Local	SDR SDR	Rec. 709 Rec. 709	Rec. 709 Rec. 709	Shadow 2.50 2.50	0.75	Bright 1.00 1.00	Peak 0.00	BNC Name			Adjust 💥 75	
2 3 4	Local Local Local		Rec. 709 Rec. 709 Rec. 709	Rec. 709 Rec. 709 Rec. 709	2.50 2.50 2.50	0.75	1.00	0.00 0.00 0.00	A2 A3 A4		0.00%	75	
45 46	Local Local		Rec. 709 Rec. 709	Rec. 709 Rec. 709	2.50 2.50 2.50	0.75	1.00 1.00	0.00	A5 A6	Gain	1.00	.75 .75 .75	
	System					HDR to			Control Local S	Syste		Ri	
Format SDR	HDR			1.00		adow Ga	in 2.5	0	Format SOR HE			v G	
HDR Format R	ec. 709			0.00	) Mie	d Tone		5 0	HDR Format Rec.	709		ne	
Exposure 50	O ASA			Off On	O Hig	ghlight G	ain 0.0	0 0	Exposure 500				
Gamut R	ec. 709		HDR Adj	ust 🗂			00%	0	Gamut Rec.				

#### How to Use HDR on Kahuna

Note: The information below shows the user how to setup HDR using the MAV-GUI menus. This information can be applied to the Soft MLC menus in exactly the same way.

What format do you want to work in? SDR or HDR

The first thing to setup is the "**System Standard**", this will allow the user to setup the internal system HDR/WCG format using the "**HDR Format**" and "**Color Gamut**" parameters. The switcher, inputs and stores are converted to this format and outputs are converted from this format.

**Working in HDR** - If the user is making a HDR production, the system standard; HDR Format parameter will need to be set to one of the HDR formats, ideally this will be the format of the majority of your sources.

*For example* - if using Sony cameras running in S-Log3, the system standard 'HDR Format' should also be 'S-Log3'. Outputs can then be set to a broadcast HDR format as required.

Similarly if making a Wide Color production, the system standard 'Color Gamut' must be set to a wide gamut either 'Rec. 2020' or 'S-Gamut3'. Outputs can then be set to a broadcast gamut as required.



*Working in SDR* - If making an SDR only production but have a few HDR sources, the switcher should be in SDR (system HDR format of 'Rec. 709') and those HDR inputs will then be down converted at the input.

#### HDR Input Setup Scenario - SDR to HDR or HDR to SDR Inputs?

In the Engineering Config - Input Setup menu, the user will need to set each individual input to the system HDR/WCG format (as set in the System Setup menu). Kahuna needs to be told the HDR format and Color gamut of any input being used.

If an input is SDR and the system standard is HDR the input '**SDR to HDR**' parameter controls will be lit and active, allowing adjustment of the conversion process.

If an input is HDR and the system standard is SDR the input '**HDR to SDR**' controls will be active. Use the parameter controls to setup the selected input to the required picture quality.

	nput A14				Inpu	ut Setu	p HD	R		📃 In	put A14	ļ.			Inp	ut Setu	p HD	R	$\land$
Source	Name	Cont	rol o o	Curve	Gamut	SDR to Bright		HDR to Shadov		Source	Name	Cont	rol o o	Curve	Gamut	SDR to Bright		HDR to Shadov	
Input A14																			0.75
Input A2	BNC A2								0.75	Input A2	BNC A2			PQ				2.50	0.75
Input A3	BNC A3						0.00	2.50	0.75	Input A3	BNC A3			PQ	Rec. 709	1.00	0.00	2.50	0.75
Input A4	BNC A4			Rec. 709	Rec. 709		0.00	2.50	0.75	Input A4	BNC A4			PQ		1.00	0.00	2.50	0.75
Input A5	BNC A5						0.00	2.50	0.75	Input A5	BNC A5			Rec. 709	Rec. 709	1.00	0.00	2.50	0.75
Input A6	BNC A6			Rec. 709			0.00	2.50	0.75	Input A6	BNC A6			Rec. 709	Rec. 709	1.00	0.00	2.50	0.75
Input A7																			0.75
Control	Local System		SDR 1	to HDR						Control	ocal System					HD	R to S	DR	
Format	SDR HDR		Bright	1.00	0			2.50	0	Format	IDR HDR			1.00		Shado	ow Gain	2.50	•
HDR Forma	nt Rec. 709		Peak Whi	te 0.00	0			0.75	0	HDR Format	PQ			ite 0.00		Mid Te		0.75	0
Exposure	800 ASA		Camera	Off	On O			n <b>0.00</b>			800 ASA			Off	On O	Highl	ight Gair	0.00	0
Gamut	Rec. 709						. 0.00	0%			Rec. 709					White	0.00	%	
			HDR	Adjust		Black	0.00	3%	D				HDR	Adjust		Black	0.00	%C	

**Using SDR or HDR when Keying Graphics** 

It is assumed that a lower 3rd store is being used as a Key over a background. In the Store Load menu, touch the menu link button at the top of the menu to display the popup and then touch the **{HDR}** button. The HDR menus below will be displayed.

If stores contain HDR or wide Color gamut material, Kahuna must be told the HDR format and Color gamut being used. Use "**Delegate**" parameter or Sub-Clip parameter to select the required store, then user the "**HDR Format**" and "**Gamut**" parameters to set the HDR format for the selected store.

If a still is SDR and the system standard is HDR, the store 'SDR to HDR' conversion controls will be active in the menu. If a still is HDR and the system standard is SDR the store 'HDR to SDR' conversion controls will be active in the menu.

#### For example - Working with BT 709 and Lower 3rd Graphics

Start adjustments with the 'Peak White' control at 0.0 then set the desired brightness with the 'Bright' control. Finally increase the 'Peak White' control to give a pleasing HDR result.

tore HDR	Store 1	S	tore HDR
	Sub-Clip 1		
HDR to SDR	Control Local System	SDR to HDR	HDR to SDR
Shadow Gain 2.50	Format SDR HDR	Bright 1.00 O	Shadow Gain 2.50 O
Mid Tone 0.75	HDR Format Rec. 709	Peak White 0.00 O	Mid Tone 0.75
Highlight Gain 0.00	Exposure 800 ASA	Camera Off On O	Highlight Gain 0.00 O
White 0.00%	Gamut Rec. 709	HDR Adjust	White 0.00%
	HDR to SDR Shadow Gain 2.50 Mid Tone 0.75 Highlight Gain 0.00	HDR to SDR       Sub-Clip         Shadow Gain       2.50         Mid Tone       0.75         Highlight Gain       0.00         White       0.00%         Gamut       Rec. 709	Sub-Clip         HDR to SDR         Shadow Gain       2.50         Mid Tone       0.75         HDR Format       Rec. 709         Highlight Gain       0.00         White       0.00%         Gamut       Rec. 709         USDR Adjust       USDR Adjust

Note: Loading a store will clear down the HDR/WCG settings to SDR/Rec. 709.

HDR Output Setup Scenario - SDR to HDR or HDR to SDR Outputs?

In the Engineering Config - Output Setup menu, as with the Input menus, all outputs have to be setup individually, all outputs have to be set to the System Standard HDR format. Using the "HDR Format" and "Gamut" parameters, the outputs on Kahuna need to be told the HDR format and Color gamut required.

If the system format is HDR and an output is SDR the output 'HDR to SDR' conversion controls will be active allowing adjustment of the conversion process. If the system format is SDR and an output is HDR the output 'SDR to HDR' conversion controls will be active.

A1 Output Setup HDR										A1			Οι	utput Set	up H	DR	
Physical Output BNC Name	Control		Curve	Gamut	HDR to Shadov		SDR to Bright		Physica BNC O	al Output Name	Control	Curve	Gamut	HDR to Shadow		SDR to Bright	HDR Peak
A1	Local		Rec. 709	Rec. 709	2.50	0.75	1.00	0.00	A1		Local	Rec. 709	Rec. 709	2.50	0.75	1.00	0.00
A2	Local		Rec. 709	Rec. 709	2.50	0.75	1.00	0.00	A2		Local	Rec. 709	Rec. 709	2.50	0.75	1.00	0.00
A3					2.50	0.75			A3						0.75		0.00
A4						0.75			A4						0.75		0.00
A5					2.50	0.75		0.00	A5								0.00
A6					2.50	0.75		0.00	A6					2.50			0.00
۸7									^7				Poc 700	2 50	0.75	1.00	0.00
Control Local Sys	tem					HDR to	SDR		Control	Local Sys	stem			ŀ	IDR to	SDR	
Format SDR HDR				1.00		adow Gai	in 2.5	50-0	Format	SDR HDR			1.00		idow Gair	າ 2.50	
HDR Format Rec. 70	09 🔘	Pe		0.00		id Tone	0.7	/5	HDR Fo	ormat Rec. 7	09 0		0.00		Tone	0.75	; O
Exposure 640 AS	SA O			Off On		ghlight G	ain 0.0	0 0	Exposu	re 500 AS	SA O		Off On	Hig	hlight Ga	in 0.00	
Gamut Rec. 70	09 🔾					hite O.	.00%		Gamut	Rec. 7	09				ite 0.0	00%	0
			HDR Adju	ıst 📋	B	ack O.	00%	0				HDR Adju	ust 📋	Bla	ck 0.0	00%	0

Use the parameter controls to setup the selected output to the required picture quality.

## **Color Correction**

This menu allows the user to add color correction to the output selected in the Output Standard menu. The menus are very similar to the other color correction menus in the Kahuna software. There are 4 types of control, YUV, RGB, Bleed and Preset. To turn this menu on, touch the Color Correction **{On}** button.

<b>E</b> A1	Output Setup Cold	or 🔨
Color Correction Off On		
YUV Off On	Lift 0.00%	
Brightness 0.00%	Gain 1.00 O	Normal
Saturation 1.00	S-Gain 0.00%	Preset
Bleed Off On		Preset
Red 100.00%		Sepia Preset
Green         100.00%         O           Blue         100.00%         O		Inverse Preset

This will allow the other elements of the color correction menu to be selected. Use the "Delegates" button to select the required output for color correction.

## YUV

Touch the YUV **{On}** button to activate the parameters. If the **Color Correction** main On/OFF button is turned Off, then all the color correction parameter controls will be turned off; but any adjustments made will not lost, they will all become active again when the Color Correction button is turned On.

<b>E</b> A1	Output Setup	r (^)
Color Correction Off On		
YUV Off on Brightness 0.00% O Contrast 1.00 O Saturation 1.00 O	Lift 0.00% 0 Gamma 1.00 0 Gain 1.00 0 S-Gain 0.00% 0	Normal Preset
Bleed Off On	S-Center 50.00%	B & W Preset
Red 100.00%		Sepia Preset
Green 100.00%		Inverse Preset

Touch the Brightness attacher and the Brightness, Contrast and Saturation parameters will become active and can be adjusted with the rotary parameter controls.

- Brightness default value is 0.00%, and the range is from -10% to 100%
- Contrast default value is 1.00%, and the range is from -0% to 16%
- Saturation default value is 1.00%, and the range is from -0% to 16%

As each of the above are adjusted notice that the parameters in the YUV Control menu turn Orange and the percentage of adjustment is shown.

#### RGB

#### Touch the RGB **{On}** button to activate the parameters.

☐ A1	Output Setup Color		A1			RGB 💥	$\wedge$
Color Correction Off On RGB Off On		Color	RGBC	Off On		Color Correction	
YUV Off On Lift 0.00%		YUV	Lift 0.	.00%	Gamma 1.00 O	Gain 1.00 🔾	
Brightness 0.00% Gain 1.00		Bright	Red	0.00%	Red 1.00	Red 1.00 0	
Contrast 1.00		Vormal		0.00%	Green <b>1.00</b> O	Green 1.00	
Saturation 1.00 S-Gain 0.00%		Preset		0.00%	Blue 1.00 O	Blue 1.00 O	
S-Center 50.00		3 & W Preset					
Bleed Off On		Bleed	S-Gain	0.00%	S-Center 50.00%		
Red 100.00%		Sepia Preset Red	Red	0.00%	Red 50.00%		
Green 100.00%		Green		0.00%	Green 50.00%		
Blue 100.00%		nverse Preset Blue	Blue	0.00%	Blue 50.00%		

The initial menu is set to a default condition, which shows all five Master adjustment parameters. This will give an adjustment of Master Lift, Gamma, Gain, S-Gain and S-Center. Each of these adjustments will alter all three elements of the RGB signal at the same time. Touch the menu link button (shown above) to open the full RGB menu, again some of the master parameters are selected.

When one of the master parameters is altered, notice that the RGB curve profile changes in the graph situated bottom right of the menu.

	A1					RGB 💥	$[\Lambda]$
Color	RGB	Off On				Color Correction	
YUV	Lift	0.00%		Gamma 1.00 O	Gain	1.00	
Bright	Red	0.00%	0	Red 1.00	Red	1.00	
Contra	Green	0.00%	0	Green 1.00	Green	1.00	
Satura	Blue	0.00%		Blue 1.00 O	Blue	1.00	
Bleed	S-Gain	0.00%		S-Center 50.00%	0		
Red	Red	0.00%		Red 50.00%			
Green	Green	0.00%	0	Green 50.00%			
Blue	Blue	0.00%		Blue 50.00%			

Touching one of the attachers allows a more accurate adjustment to the RGB components where the:

Lift - parameters adjust the images Black Level, working on Black or shadow areas.

**Gamma** - parameters adjust the levels between dark/shadow and the mid tones, where the mid tones become brighter or darker; depending on the adjustment made.

**Gain** - parameters control the White level or highlights, where brighter colors become brighter or darker; depending on the adjustment made.

**S Gain and S Center** - the parameters adjust the gain mid tone levels of the S curve and the center point levels of the s curve.

### Bleed

Color bleed is a situation where a single color will over power the other colors in the RGB signal. By using the bleed function the stronger color can be softened to make the color output more natural, or adjusted to suit a specific need.

☐ A1	Output Setup Color		A1	Output Setup Color
Color Correction Off On RGB Off On		Color	A1	Bleed 🔀
YUV Off On Common (1.00)		YUV	Bleed Off On	Color Correction
Brightness 0.00% Gain 1.00		Bright	Red into Red 100.00%	Red into Blue 0.00%
Contrast 1.00	Normal Preset	Intra	Green into Red 0.00%	Green into Blue 0.00%
Saturation 1.00 S-Gain 0.009		Satura	Blue into Red 0.00%	Blue into Blue 100.00%
Bleed Off On	B & W Preset	Bleed	Red into Green 0.00%	Hue Rotate 0:000°
Red 100.00%	Sepia Preset	Red	Green into Green 100.00%	
Green 100.00% O Blue 100.00% O	Inverse Preset	Green Blue	100.00%	Preset

Touch the menu link button to open the full Bleed menu. The initial menu has a default state where a single adjustment for each parameter menu is active; this will allow the adjustment of the main RGB bleed parameters:

- Red into Red
- Green into Green
- Blue into Blue

Touch one of the attacher to enable all the options in that part of the menu, this will allow a detailed adjustment for each of the R, G and B bleed settings. The adjustments are measured on a -100% to a +100% scale. Each parameter menu will adjust a single color, i.e. red into red, green into red and blue into red.

#### **Presets**

Presets allow the user to quickly select commonly used preset color options for the incoming source, or quickly revert back to the original output source color levels.



**Normal** - is the original color levels of the input source; without any color correction adjustments.

**B** & W - sets the chroma saturation to zero removing the chroma content, making the signal black and white.

**Sepia** - sets the chroma saturation to zero removing the chroma content, then adds positive portions of Red and Green and a negative portion of Blue to make-up a sepia appearance.

Inverse - Inverts the video signal making the picture a negative of its correct colors.

If the **Normal** preset option is selected, then all color correction controls are Grayed out preventing any adjustments. This is to make sure that the original input source can be recalled.

If B&W, Sepia and Inverse are selected, the preset levels can all be color corrected.

## **Format Fusion**

This menu is used to change the aspect of an SD source before the source leaves the mainframe through the BNC outputs.

<b>A</b> 1			Output Setup Format Fusion					on \land
Physical Output	Acpost	Zoom		Positio	on		Anti-Alias	Filter
BNC O Name	Aspect 🛛 🔵	20011		x			Mode 📀	Strength O
A1	Zoom	1.00		0.00	0.00		Auto	0.20
A2	Zoom	1.00		0.00	0.00		Auto	0.20
A3	Zoom	1.00		0.00	0.00		Auto	0.20
A4	Zoom	1.00		0.00	0.00		Auto	0.20
A5	Zoom	1.00		0.00	0.00		Auto	0.20
A6	Zoom	1.00		0.00	0.00		Auto	0.20
A7	Zoom	1.00		0.00	0.00		Auto	0.20
A8	Zoom	1.00		0.00	0.00		Auto	0.20
A9	Zoom	1.00		0.00	0.00		Auto	0.20
A10	Zoom	1.00		0.00	0.00		Auto	0.20
A11	Zoom	1.00		0.00	0.00		Auto	0.20
A12	Zoom	1.00		0.00	0.00		Auto	0.20
A13	Zoom	1.00		0.00	0.00		Auto	0.20
***	-	1 00		~ ~ ~	A A A		• •	~ ~~

The FormatFusion controls in this menu allow the user to change the aspect ratio, zoom and position of a crosspoint source.

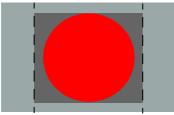
This function would most commonly be used to change the aspect ratio of a 525 or 625 4:3 source to a 16:9 aspect ratio, using the Kahuna FormatFusion engines.

**Aspect Mode** has 3 settings: **Zoom**, **Full Width** and **Full Height**. The **Zoom** parameter allows the source to be zoomed out to fill the 16:9 aspect, when the source is zoomed to 16:9; it will appear slightly larger. The zoom function will not work if the aspect is set to Full Width or Full Height.

The **Full Width** parameter changes the aspect so that the full width of the 16:9 aspect is filled, in this setting a letter box effect is seen where there are bars at the top and bottom of the image.

The **Full Height** parameter will change the aspect so that the full height of the 16:9 aspect ratio is filled, leaving bars either side of the image.

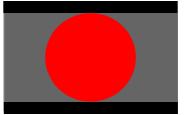
The X and Y Position allow the source to be re-positioned within the 16:9 space.



Original 4:3 Source on a 16:9 background



With Full Height Applied



With Full Width Applied



With Zoom Applied to fill 16:9 Aspect

<b>A</b> 1		(	Ou	tput Set	tup 🗗	or	mat Fusi	on
Physical Output	Aspect	Zoom		Position			Anti-Alias	Filter
BNC  Name	Aspect	20011		<b>X</b> 0		0	Mode O	Strength O
	Zoom	1.00		0.00	0.00		Auto	0.20
A2	Zoom	1.00		0.00	0.00		Auto	0.20
A3	Zoom	1.00		0.00	0.00		Auto	0.20
A4	Zoom	1.00		0.00	0.00		Auto	0.20
A5	Zoom	1.00		0.00	0.00		Auto	0.20
A6	Zoom	1.00		0.00	0.00		Auto	0.20
A7	Zoom	1.00		0.00	0.00		Auto	0.20
A8	Zoom	1.00		0.00	0.00		Auto	0.20
A9	Zoom	1.00		0.00	0.00		Auto	0.20
A10	Zoom	1.00		0.00	0.00		Auto	0.20
A11	Zoom	1.00		0.00	0.00		Auto	0.20
A12	Zoom	1.00		0.00	0.00		Auto	0.20
A13	Zoom	1.00		0.00	0.00		Auto	0.20
		1						<u> </u>

**Anti-Alias Filter** - is used to vertically soften interlaced outputs. This will reduce line 'twitter' and 'jaggies', replicating the vertical filtering that would normally happen in an interlaced camera. This is particularly useful on SD outputs.

Off - will never apply the filter.

**Auto** - will apply the filter when the output is interlaced and not the same standard as the input.

On - will always apply the filter.

**Filter Strength** - 0.0 is the normal amount of filtering but the user can choose a bit more or a bit less than this if required.

## **Output Skirts**

This is the second method of applying Skirts, they are applied to a switcher output, where "Side Skirts" are added to 4:3 sources on a 16:9 output and top/bottom skirts are added to 16:9 sources on a 4:3 output when set to "**Letterbox**" mode.

If a 4:3 source is applied to a 16:9 output, then side skirts will be applied, the side skirts can be filled by entering the **User Config - Switcher Output - Skirts** menu.

	Output <sup>·</sup>	1	Switcher Outputs Confi	ig [	M	E 2		ME Config	Background	l Skirts	$\wedge$
Output	Physical	Source		FTB	Output	Skirt					
Ουτρυτ	BNC Na	ame Name I	Resolved Name	FIBO	Output	Fill	Matte	🗉 Hue	Luma	Sat	0
1		ME2 A/B PGM	ME2 A/B PGM		ME 1	Matte	Black	0:210°	97.99%	100.00%	
2		ME2 A/B PVW	ME2 A/B PVW		ME 2	Matte	Cyan	0:000°	0.00%	0.00%	
3		STOR 1	STOR 1		ME 3	Matte	Black	0:000°	0.00%	0.00%	
4	A4	STOR 2	STOR 2		ME 4	Matte	Black	0:000°	0.00%	0.00%	
5		STOR 3	STOR 3		ME 5	Matte	Black	0:000°	0.00%	0.00%	
6	A6	STOR 4	STOR 4		ME 6	Matte	Black	0:000°	0.00%	0.00%	
7		STOR 5	STOR 5								
8	A8	STOR 6	STOR 6								
9		AUX 9	BNC A1								
10	A10	AUX 10	BNC A1								
11		AUX 11	BNC A1								l i
13		AUX 13	BNC A1								l i
14	A14	AUX 14	BNC A1								
15			RNC A1	1						Cuan	
										Cyan	
Display											
Unalloc	ated										
											l i

Use the **Output** parameter to select the output, then use the **Matte Selector** to select the fill for the side skirts.



To setup **letterbox mode**, an output from the mainframe has to have its video standard changed to 4:3 in the **Eng Config - Output Setup - Standard** menu.

<b>A</b> 1		Output S	etup Standard	d	<b>A</b> 1		Output Setup	Output Skirts
Physical Output BNO Name	Description	Output Sta Default	ndard Custom	4K Mode	Physical Output BNC • Name	Paired	Skirts Mode	
A1		No	525/59.94 4:3		A1		Always	
A2			525/59.94 4:3		A2		Always	
A3		1080i/59.94			A3			
A4		1080i/59.94			A4			
A5		1080i/59.94			A5			
A6		1080i/59.94			A6			
A7 A8		1080i/59.94 1080i/59.94			A7			
A8 A9		1080i/59.94 1080i/59.94			A8			
Use Default Standard New Standard	No Yes 10801/59.94	SD sF			A9	Paired		
Name			UHD Quadrant	Off On	4:3 Letterbox	No Yes		
Description			UHD Downconvert	Off On	4:3 Letterbox Mode	Always When any	16:9 When all 16:9 Pers	ist Auto Zoom

This will allow the user to turn On the **4:3 Letterbox** function in the **Output Skirts** menu. With the letterbox mode setup, now go to the **User Config - Skirt Setup** menu where the letterbox skirts can be setup.

Once 4:3 letterbox has been turned the output will look like the diagram below.



The diagram shows a 16:9 source displayed on a 4:3 output. The fill for the top and bottom skirts, as mentioned earlier, is setup in the **User Config - Skirt Setup** menu, in the default state only a Matte fill can be selected.

Go back to the **Eng Config - Output Setup - Skirts** menu, the user now has several modes that can be selected.

<b>E</b> A1		Output Setup	Output Skirts	
Physical Output BNC • Name	Paired	Skirts Mode		
A1 A2		Always Always		
A3 A4				
A5 A6 A7				
A7 A8 A9				
	Paired			
4:3 Letterbox No Yes				
4:3 Letterbox Mode Always W	When any 16:9 V	When all 16:9 Persi	st Auto Zoom	

Using the 4:3 Letterbox Mode parameter, letterbox can be set to:-

**Always** - all sources will be placed into a 16:9 letterbox; when 4:3 sources are selected, they will get both top/bottom skirts and side skirts.

**When any 16:9** - if the source is 4:3 or the M/E output feeding the switcher output has any 16:9 content on its background, it will be placed into a 16:9 letterbox.

**When all 16:9** - if the source is 16:9 or the M/E output feeding the switcher output has any 16:9 content on its background, it will be placed into a 16:9 letterbox.

**Persist** - switches to show a letterbox 16:9 or full frame 4:3 and only changes once its source is completely the opposite format to the one it is currently showing.

**Auto Zoom** - Will show 16:9 as a letterbox, 4:3 as full frame, and an ME output will be resized according to the proportions of 4:3 and 16:9 sources that make up its background.

🔳 A1		Output Setup	Output Skirts
Physical Output BNC • Name	Paired	Skirts Mode	
A1		Always	
A2	Yes	Always	
A3			
A4			
A5			
A6			
A7 A8			
A8 A9			
	Paired		
4:3 Letterbox No Yes			
4:3 Letterbox Mode Always	When any 16:9	When all 16:9 Persist	Auto Zoom

As mentioned earlier, the fill for output skirts is by default a Matte, but physical outputs can also be paired together using the {Paired} button (shown above), which will allow the output skirts top and bottom to be filled with any source Video, Still, Wash, DVE output or ME output. Output skirts Matte or fill sources can be set independently for each output. Both of the paired outputs will have the same source on them but the audio for the second output will come from the side skirt audio. If a 4:3 input source is selected on an output that is set to a 4:3 standard, the output will have letterbox skirts and side skirts as shown below.



4:3 source on a 4:3 output Matte side skirts with Store letterbox skirts

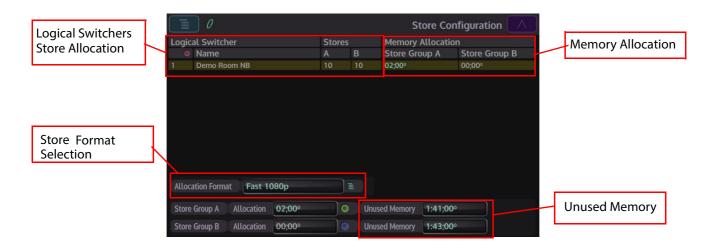
When a 4:3 source is on a 4:3 output use the ME Background Skirts parameters to alter the side skirts, and Output Skirts parameters to alter the letterbox skirts.

	1		Switcher (	Outputs	Skirts			Ξ2	м	E Config 🖪	Background Sk	kirts 🔨
Output	Physical BNC Name	Skirt Source O	Matte 🔹	Hue 🔍	Luma 🔍	Sat 0	Output	Skirt Fill 🔹	Matte 📑	Hue	● Luma  ●	Sat o
1		STOR 1	Red	0:000°	0.00%	0.00%	ME 1	Matte	Black	0:210°	97.99%	100.00%
3		BNC A1	Local Matte	0:000°	0.00%	0.00%	ME 2	Matte	Cyan	0:000°	0.00%	0.00%
4	A4	BNC A1	Local Matte	0:000°	0.00%	0.00%	ME 3	Matte	Black	0:000°	0.00%	0.00%
5	A5	BNC A1	Local Matte	0:000°	0.00%	0.00%	ME 4	Matte	Black	0:000°	0.00%	0.00%
6	A6	BNC A1	Local Matte	0:000°	0.00%	0.00%	ME 5	Matte	Black	0:000°	0.00%	0.00%
7	A7	BNC A1	Local Matte	0:000°	0.00%	0.00%	ME 6	Matte	Black	0:000°	0.00%	0.00%
8	A8	BNC A1	Local Matte	0:000°	0.00%	0.00%						
9	A9	BNC A1	Local Matte	0:000°	0.00%	0.00%						
10	A10	BNC A1	Local Matte	0:000°	0.00%	0.00%						
11	A11	BNC A1	Local Matte	0:000°	0.00%	0.00%						
12	A12	BNC A1	Local Matte	0:000°	0.00%	0.00%						
13	A13	BNC A1	Local Matte	0:000°	0.00%	0.00%						
						Red						Cyan

# **Store Config**

The Stores Setup menu allows the user to allocate time to a group of stores for video or audio playback.

This menu should be setup after allocating stores to Logical Switchers in the Mainframe Config menus.



A table in the center of the menu will display all the logical switchers associated to the Kahuna mainframe, and how the stores are allocated across them. The diagram above displays 1 logical switcher with 20 stores allocated (Stores A/B).

The information area below the logical switcher store allocation list; displays the unused store memory that is available to use. This will change as more memory is allocated to the stores.

The **Store Group A/B Allocation** parameter is used to allocate memory to the selected stores group. The slider bar in this parameter starts at 00;00 and at the other end of the slider displays the amount of maximum time that can be allocated to stores; which depends on the video or audio standard selected in the **Allocation Format** parameter.

The store **Allocation Format** parameter is used to select the video/audio format for the stores group.

## **Store Capacity Tables**

The tables below display the Kahuna storage capacity as selected using the Allocation Format parameter. The size of storage is determined by the size of the RAM purchased with the system, the options are:

16Gb, 32Gb, 48Gb, and 64Gb. The outputs listed are the number of available stores.

	50				59.94		
	16Gb 10 Outputs		Total		16Gb 10 Outputs	5	Total
Allocation Format		Group B (0GB)		Allocation Format		Group B (0GB)	
SD	10:20;20	00:00:00	10:20;20	SD	10:08;14	00:00:00	10:08;
1080i/Slow 1080p	2:04;04	00:00:00	2:04;04	1080i/Slow 1080p	1:43;16	00:00:00	1:43;
Fast 1080p	1:02;02	00:00:00	1:02;02	Fast 1080p	00:51;38	00:00:00	00:51;3
720p		00:00:00	2:20;13	720p		00:00:00	
	2:20;13				1:56;30		1:56;
Audio	6:14;10	00:00:00	6:14;10	Audio	6:14;10	00:00:00	6:14;
SD Frames	15520	0	15520	SD Frames	18236	0	1823
HD 1080 Frames	3104	0	3104	HD 1080 Frames	3104	0	310
HD 720 Frames	6984	0	6984	HD 720 Frames	6984	0	698
Audio Frames	558720	ő	558720	Audio Frames	558720	0	55872
Chunks	388	0	388	Chunks	388	0	38
	32Gb 10 Outputs				32Gb 10 Outputs		
Allocation Format		Group B (0GB)		Allocation Format			
SD	20:41;15	00:00:00	20:41;15	SD	20:16;28	00:00:00	20:16;2
1080i/Slow 1080p	4:08;08	00:00:00	4:08;08	1080i/Slow 1080p	3:27;04	00:00:00	3:27;0
Fast 1080p	2:04;04	00:00:00	2:04;04	Fast 1080p	1:43:16	00:00:00	1:43;1
720p	4:39:09	00:00:00	4:39;09	720p	3:53;00	00:00:00	3:53;0
Audio	12:28:20	00:00:00	12:28:20	Audio	12:28:20	00:00:00	6:14;1
SD Frames	31040	0	31040	SD Frames	36472	0	3647
HD 1080 Frames	6208	0	6208	HD 1080 Frames	6208	0	620
HD 720 Frames	13968	0	13968	HD 720 Frames	13968	0	1396
Audio Frames	1117440	0	1117440	Audio Frames	1117440	0	111744
		0 0				0	
Chunks	776	U	776	Chunks	776	U	77
	32Gb 20 Outputs				32Gb 20 Outputs		
Allocation Format	Group A (16GB)			Allocation Format			
SD	10:20;20	10:20;20	20:41;15	SD	10:08;14	10:08;14	20:16;2
1080i/Slow 1080p	2:04;04	2:04:04	4:08:08	1080i/Slow 1080p	1:43:16	1:43:16	3:27;0
Fast 1080p	1:02;02	1:02;02	2:04;04	Fast 1080p	00:52;13	00:52;13	1:43;1
720p	2:20;13	2:20;13	4:39;09	720p	1:56;30	1:56;30	3:53;0
Audio	6:14;10	6:14;10	12:28:20	Audio	6:14;10	6:14;10	12:28:2
SD Frames	15520	15520	31040	SD Frames	18236	18236	3647
HD 1080 Frames	3104	3104	6208	HD 1080 Frames	3104	3104	620
HD 720 Frames	6984	6984	13968	HD 720 Frames	6984	6984	1396
Audio Frames	558720	558720	1117440	Audio Frames	558720	558720	111744
Chunks		388		Chunks	388	388	
Chunks	388	300	776	Churks	300	300	77
	48Gb 20 Outputs				48Gb 20 Outputs		
Allocation Format				Allocation Format			
SD	20:41;15	10:20;20	31:02;05	SD	20:16;28	10:08;14	30:24;1
1080i/Slow 1080p	4:08;08	2:04;04	6:12;12	1080i/Slow 1080p	3:27;04	1:43;16	5:10;2
Fast 1080p	2:04:04	1:02:02	3:06:06	Fast 1080p	1:43:16	00:52:13	2:35:2
720p	4:39;09	2:20;13	6:59;24	720p	3:53;00	1:56:30	5:49;3
Audio	12:28:20	6:14;10	18:42;30	Audio	12:28:20	6:14;10	18:42;3
SD Frames	31040	15520	46560	SD Frames	36472	18236	5470
HD 1080 Frames	6208	3104	9312	HD 1080 Frames	6208	3104	931
HD 720 Frames	13968	6984	20952	HD 720 Frames	13968	6984	2095
Audio Frames	1117440	558720	1676160	Audio Frames	1117440	558720	167616
Chunks	776	388	1164	Chunks	776	388	116
oanto	110	000	1104	Onunits	110	500	110
	64Gb 20 Outputs				64Gb 20 Outputs		
Allocation Format				Allocation Format			
SD	20:41;15	20:41;15	41:22;30	SD	20:16;28	20:16;28	40:33;2
1080i/Slow 1080p	4:08;08	4:08;08	8:16;16	1080i/Slow 1080p	3:27;04	3:27;04	6:54;0
Fast 1080p	2:04;04	2:04;04	4:08;08	Fast 1080p	1:43;16	1:43:16	3:27;0
720p	4:39;09	4:39;09	9:18;18	720p	3:53;00	3:53;00	7:46;0
720p Audio				Audio			
	12:28:20	12:28:20	24:57;10		12:28:20	12:28:20	24:57;1
SD Frames	31040	31040	62080	SD Frames	36472	36472	7294
HD 1080 Frames	6208	6208	12416	HD 1080 Frames	6208	6208	1241
	13968	13968	27936	HD 720 Frames	13968	13968	2793
HD 720 Frames							
		1117440	2234880	Audio Frames	1117440	1117440	223488
HD 720 Frames Audio Frames Chunks	1117440 776	1117440 776	2234880 1552	Audio Frames Chunks	1117440 776	1117440 776	223488 155

## **GPO Setup**

This menu allows the user set up any of the GPO 1 to 256 of which:

Tally GPO 1 to GPO 120 correspond to the physical Input Fin GPOs at the rear of the mainframe. GPO 121 to GPO 132 and GPO 133 to GPO 144 are the physical Ref Fin GPOs, again at the rear of the mainframe. These GPOs are system setup dependent; GPO 121 to GPO 132 Ref Fin A, GPO 133 to GPO 144 Ref Fin B.

GPO 145 to GPO 256 are Internal GPOs (but the configuration could be GPO 133 to GPO 256 if only 1 Ref Fin is fitted).

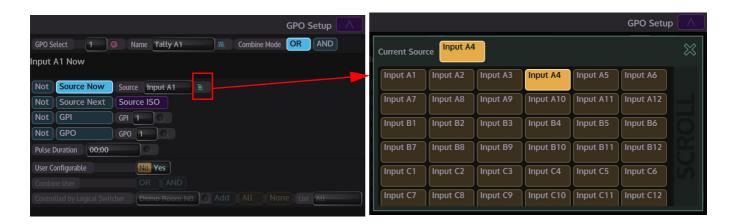
This is a "source" based GPO setup menu, meaning that it is used to tally on sources coming into the Kahuna mainframe.

The physical relay tallys are in groups of 12 and are a one-to-one connection to the BNC inputs on the input Fins, so Input Fin A (Fin In A) - BNC 1 to 12 will have a direct connection with Tally A1 to Tally A12. This will be the same for all input Fins fitted to the mainframe up to Fin In J. The GPO connections are not physically tied to the inputs so can be assigned to any other input as required.

The internal Tally's are used to trigger internal functions; for example Macro's.

The GPO Select parameter is used to select GPOs 1 through to 256. How the GPOs are driven is determined by the GPO Enables set.

The user can also select and setup up any of the 256 GPIs, 144 GPIs are real (depending on the system configuration purchased) and GPIs 145 to 256 are internal.



**GPO Select** is used to scroll through the individual GPO/Tally's, the **Name** parameter allows the user to re-name the tally if required. The default table is a one-to-one connection; Tally to Input, use the **Source** popup select parameter to assign another input as required. The **User Configurable** Yes/No parameter will allow the tally to be used in the **User Config - GPO Setup** menu.

Note: If the user does not have the correct access permissions to work in the Engineering Config menu, the physical input Tally relays are not visible to the switcher operator in the User Config - GPO Setup menu, but can be assigned to be visible in this menu by a user with engineering access permission using the User Configurable parameter.

### **GPO Enables**



Source Now - This sets the GPO to be a tally for On Air Sources.

**Source Next** - This sets the GPO to be a Tally for the next on air source. Source next is determined by which sources are just one transition away, including any M/E re-entry. E.g. If M/E2 is set to look at M/E1 the next configuration will indicate the next sources, including Keys, in the M/E2 transitions, as well as the next sources in the M/E1 transition.

**Combine OR and Combine AND** - Performs a logical 'ANDing' or ORing' of the GPO Enables. This defines the combined event, which will trigger a GPO and GPI.

Source ISO/ISO8 - This sets the GPO to be an ISO (Isolated) tally for On Air Sources.

**Red Indicator** - If GPO 1 is set to look at a Source and its State is Closed the light for GPO 1 will be Red.

Note: The GPO Enables have to be set for each GPO for the parameter to be actually used.

GPO - This is used to add a GPO as the function in the selected "Condition" in the table.

**GPI** - This is used to add a GPI as the function in the selected "Condition" in the table.

## **GPO Pulse**

	GPO Setup
GPO Select 1 Name Tally A1 Combine Mode	OR AND
Input A1 Now	
Not Source Now Source Input A1	
Not Source Next Source ISO	
Not GPI GPI 1	
Not GPO GPO 1	
Pulse Duration 00;00	
User Configurable No Yes	
Combine User OR AND	
Controlled by Logical Switcher Demo Room NB Add All Nor	ne List All

This will trigger a selected GPO to be pulsed On constantly when set to 00;00, or to be pulsed On/Off from instantaneously (1 field) up to a set pulse duration time that is adjusted using the **Pulse Duration** parameter. The pulse will briefly invert the state of the GPO even if it is currently timing out a pulse generated by the **Pulse Duration** function.

The user is able to "Lock" selected GPOs to specific logical switchers, thus stopping any other logical switcher from accidentally turning off a GPO if it is being used.

Make sure that the **User Configurable** parameter is set to **"Yes"**. Notice that the "Controlled by Logical Switcher" **{Add}**, **{All}** and **{None}** buttons come alive. The **Controlled by Logical Switcher** parameter can be adjusted to select a logical switcher.

If **{All}** is selected, then all GPOs are selected. If **{None}** is selected then no GPOs are selected.

## **Status Monitor**

The Status Monitor function monitors the overall health of the mainframe allowing the user to easily see any problems in the unlikely event that the Kahuna mainframe should have a fault.

Note: Please also see the "Status Alert" section in the "GUI and Menu Familiarization" chapter.

				St	atus Mo	nitor M	ainframe	eΔ	
Router Card 1	Router Card 2	ME / DVE 1	ME / DVE 2	ME / DVE 3		ME / DVE 5	ME / DVE 6	Out Card 1	Out Card 2
Input Fin A	Input Fin B	Input Fin C	Input Fin D	Input Fin E		Input Fin G	Input Fin H	Input Fin I	Input Fin J
Net Fin A	Net Fin B	Output Fin A		Output Fin C		Ref. Fin A			
PSU 1	PSU 2	PSU 3		Fans		SATA Router 1	SATA Router 2	Extern SATA	

On opening the Status Monitor menu, the first menu will be one of the cards in the Mainframe category. All the cards in the mainframe can be selected individually, using the popup selector at the end of the **"Card"** parameter, as each card is selected the table in the menu will display the relevant status information related to the selected area of the card, meaning that using the **"Sub Card"** parameter, the user is able to select and display different areas of a card such as the Base Card, the CPU and any other Sub Card GMEs etc.

The menu will also display information related to the card, such as FPGA info, RAM (if applicable) and Card issue, Run Time and the On/Off status. Obviously this information changes depending on the type of card being looked at.

						Status	Monitor 🛆 🔨								Status	Monitor
<ul> <li>Name</li> </ul>	Value		Max	Units	Alarm 💿	Card	Router 1	C	Name	Value		Max	Units	Alarm 🕥	Card	ME/DVE 1
Voltage								1				70.22				
Current	5.56	3.05	6.69			Sub Card	Base Card	2	1V0 Core		0.98	0.99			Sub Card	5
1V2 SRC			1.20					3	2V5 Aux	2.49	2.48	2.50				
1V2 CAS			1.20					4	1V8 Ram	1.81	1.80	1.81				
2V5	2.49	2.49	2.50			Туре	RTR	5	1V2 SerDes	1.20	1.19	1.20			Туре	GMB
3V3 3V3 Backplan	3.33 3.35	3.32 3.32	3.35 3.37				-1Y:0	6	1V0 SerDes		0.99	1.00				1Y:0
5V5 Backpian 5V	5.02	4.99	5.04				11.0									
		4.77				Barcode	S51111177								Barcode	S55042252
						Run Time	42937.4 Hours								Run Time	17688.6
RTR 1 System M/ Store RAM		0 GB				Power Power Alar	Off On 🖒		SWR 1 -	ME 1 - C	OP 1, 2,	3, 4, 5	, 6, 7, 8			

The menus above display the Base Card selected (left) and Sub Card "5" GMB status.

## **Card Selection**

In the main Status Monitor menu, the user simply touches the required card in the menu to display the status information in a sub menu. (as shown below).

				St	tatus Mo	nitor M	lainfram	e 🔼									Status	Monitor		$\wedge$
				$ \longrightarrow $						0	Name	Value		Max	Units	Alarm 💿	Card	Router 1		
Router	Router	ME /	ME /	ME /	ME /	ME /	ME /	Out	Out	1	Voltage	12.15	12.11	12.22	V					
Card 1	Card 2	DVE 1	DVE 2	DVE 3	DVE 4	DVE 5	DVE 6	Card 1	Card 2	2	Current 1V2 SRC	5.56	3.05 1.18	6.69			Sub Card	Base Card		
										3	1V2 SRC 1V2 CAS	1.18 1.17	1.18	1.20 1.20						
										5	2V5	2.49	2.49	2.50			Туре	RTR		
Input Fin A	Input Fin B				Fin F	Input	Input Fin H		Input Fin J	6	3V3	3.33	3.32	3.35				KIK		
FILLA	FIILD									7	3V3 Backplan	3.35	3.32	3.37			Issue	-1Y:0		
										8									- )	
Net	Net	Output		Output	Output	Ref.											Barcode	S5111117	7	
Fin A	Fin B			Fin C	Fin D	Fin A											Run Time	42937.4	Hour	rs
																	Power	Off O		
PSU 1	PSU 2	PSU 3		Fans		SATA	SATA	Extern			RTR 1									
						Router	Router	SATA			System M Store RAM		0 GB				Power Alar	m On Of	f	
							2				Store ItA	1 54.50	0.00							
											FDC4 1. 3	01 5 /1 2	102.12	. 42.27						
											FPGA 1: 2	015/12	2/02 13	5:42:30						

## **RollCall Logging**

At the top of the Status Monitor main menu, touch the {Mainframe} menu link button to display the Status Monitor sub menu buttons. The RollCall Logging menu allows the user to enable/disable different data types listed in the menu, the data can be monitored by an external RollCall log server.

		St	tatus Mo	onitor	Mainframe				Status Monitor	RollCall Loggi	ng 🔨
Router Card 1					Status <mark>Mainframe</mark>	Monitor 💥	\$ Logging Mode Specify Server Name	Off Broadcast		Log Fans Log Power Supplies	No Yes
Input Fin A					Panel		Active Server Name Server IP Port	2050		Log Inputs Log Outputs	No Yes
Net Fin A					RollCall Logging					Log Front Cards Log Rear Cards Log Temperatures	No Yes No Yes
PSU 1				SAT/ Rout 1	Setup Messages						
											ľ

By default all of the logging data is enabled.

### Setup

The Setup menu allows the user to setup alarms for Temperature, Fan Speed and also setup a Warning Message that will be displayed should the temperature or fan speed go above the set value.

		St	tatus Mo	nitor	Mainframe $\Delta$	St	atus Monitor Setup
					Status Monitor 💥	Warning Message Hardware Warning 300	
					Panel	Temperature Warning     80.00%       Fan Warning     80.00%	N
					RollCall Logging	Mainframe Clock 2nd Dec 2020 16:27:18 Set Clock	Synchronize Clock Use SNTP Use PTP
				SAT Rou 1	Setup	SNTP Server IP Address 172.28.1.63 PTP Server Passive Active Passive PTP Domain 0	DST No Yes O Offset UTC +00:00
						Responding No Master ID Not Found	

The default setting for the temperature and fan speed alarms is 80%. The menu also allows the user to set the internal Mainframe Clock, touch the **"Set Clock"** menu link button and the clock adjustment menu will be displayed.

			Status Monito	or Setup							
Warning Message											
Temperature Scale											
Temperature Warning	Real Time Clock Set 💥										
Fan Warning	Day 2	Hour 17									
	Month 12	Minute 12	0	ze Clock							
Mainframe Clock 2nd	Year 2020 O	Second 41	0	Use PTP							
SNTP Server New Time 2nd Dec 2020 16:12:41 Apply											
IP Address 172.28.1.	PTP	Server	Offset U								
Passive Active Pa											
Responding No											

Use the parameters in the menu to set the current date and time, then touch the **{Apply**} button.

The Real Time Clock can also be synchronized by connecting to an SNTP or PTP server.

**SNTP (Simple Network Time Protocol)** - is based upon the TCP/IP protocol suite. It is an application layer time protocol, part of the Network Time Protocol base protocol. Along with NTP, SNTP communicates using the User Datagram Protocol (UDP). On receipt of a response from the server, the Kahuna can calculate the system time offset between its internal clock and the servers clock.

Use the SNTP Server parameters to enter the IP address of the SNTP server.

**PTP (Precision Time Protocol)** - provides a mechanism for distributing common reference clock throughout the system. Kahuna maintains an internal clock that can be synchronized to this common reference clock. RTP timestamps within the RTP packet header (and extended header) is used for synchronization. Synchronization across multiple essence streams is achieved by comparing the offset between the RTP timestamp and clock.

### Messages

The Messages menu will display a history of any significant events or hardware warnings, with the time and date next to the warning. In the unlikely event of a failure, the messages menu can be used as a high level review.

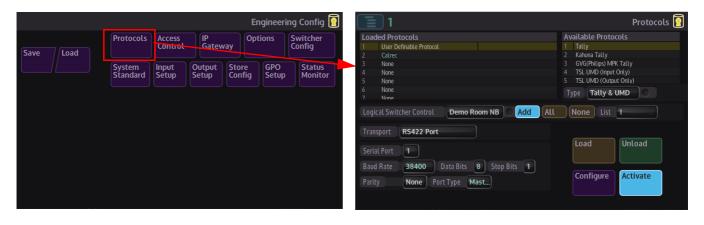
	Status Monitor Messages 🛛 🛆	
	Message	
Current Time 7th	Jun 2017 15:32:49	
content mile /u	JOIT 2017 13.32.49	

## Protocols

### **Protocol Setup**

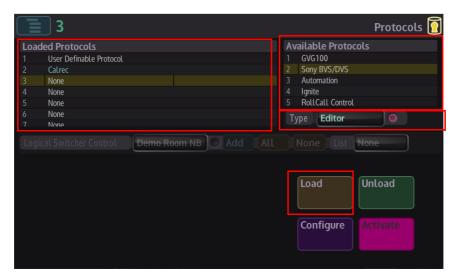
The Protocols menu is used to set parameters for bi-directional communication with external devices either by one of the Serial ports or over IP.

Protocols have to be setup in this menu before the Peripherals functions can be used. To get to the Protocols menu, in the "**Home**" menu, touch the "**Global - Configs**" menu link button, then in the "**System Configuration**" main menu, touch the "**Engineering Config**" menu link button. Finally in the Engineering Config menu, touch the "Protocols" menu link button.



The next step is to setup the protocol ready to use the required Peripheral. The method for setting up a protocol is exactly the same for all protocols, which will be explained over the next couple of pages.

### How to Setup a Protocol



Use the **"Type"** parameter is used to scroll through the protocol sets to the required protocols. Then touch the **Available Protocols** parameter to select a protocol from the list, if there are more protocols, use a finger to scroll down/up the list of protocols. The number of protocols available to the user will depend on the protocol options purchased with the system. If the system has been configured as multiple switchers, select the required switcher using the **"Logical Switcher Control**" parameter to select the correct switcher. Finally, touch the **{Load}** button.

Notice that the protocol has now been added to the "Loaded Protocols" table (below).

3	Protocols 🧕
Loaded Protocols	Available Protocols
1 User Definable Protocol	1 GVG100
2 Calrec	2 Sony BVS/DVS
3 Sony BVS/DVS	3 Automation
4 None	4 Ignite
5 None	5 RollCall Control
6 None	Type Editor
7 None	
Logical Switcher Control Demo Room NB Add All	None List All
Transport RS422 Port	
Serial Port 2	Load Unload
Baud Rate <b>38400</b> Data Bits <b>8</b> Stop Bits <b>1</b>	
Baud Rate <b>38400</b> Data Bits <b>8</b> Stop Bits <b>1</b>	Configure Activate
Parity Odd Port Type Slave	Configure Activate

The next step is to configure the protocol.

3       Protocols         1       User Definable Protocol       1       GVG100         2       Calrec       2       Sony BVS/DVS         3       Sony BVS/DVS       3       Automation         4       None       5       RollCall Control         6       None       Type       Editor         7       None       Add       All         Logical Switcher Control       Demo Room NB       Add       All         Transport       R\$422 Port       R\$422 Port
1       User Definable Protocol       1       GVG100         2       Calrec       2       Sony BVS/DVS         3       Sony BVS/DVS       3       Automation         4       None       4       Ignite         5       None       5       RollCall Control         6       None       Type       Editor         7       None       Add       All
2     Calrec     2     Sony BVS/DVS       3     Sony BVS/DVS     3     Automation       4     None     4     Ignite       5     None     5     RollCall Control       6     None     Type     Editor       7     None     Add     All
3     Sony BVS/DVS     3     Automation       4     None     4     Ignite       5     None     5     RollCall Control       6     None     Type     Editor       7     None     Add     All
4     None     4     Ignite       5     None     5     RollCall Control       6     None     Type     Editor       7     None     Demo Room NB     Add
5     None     5     RollCall Control       6     None     Type     Editor       7     None     Demo Room NB     Add     All
6 None 7 None 7 None Logical Switcher Control Demo Room NB Add All None List All
7 None Type Editor Logical Switcher Control Demo Room NB Add All None List All
Z     None       Logical Switcher Control     Demo Room NB       Add     All       None     List
Transport <b>BS422 Port</b>
Hunsport KS422 Fort
Load
Serial Port 2
Baud Rate 38400 Data Bits 8 Stop Bits 1
Configure Activate
Configure Activate
Parity Odd Port Type Slave
Parity Odd Port Type Stave

Touch the **{Configure}** menu link button to enter the **"Protocol Configure**" menu.

3			Dente	cols 👔
Loaded Pro	3		Protocol Configure 🔀	
1 User D 2 Calrec	Slot	3		
3 Sony B 4 None	Protocol	Sony BVS/DVS		
5 None	Name			
6 None 7 None	Transport Type	RS422 Port		
Logical Swit	Serial Port 2	O Type Slave Master		
Transport	Baud Rate 38	400 🖹		
Serial Port	Data Bits 5	6 7 8 Stop Bits 1 2		
Baud Rate	Parity No	ne Odd Even		
Parity			Apply	

The user is able to select the type of connection to the external equipment that is required, using the "**Transport Type**" parameter i.e Serial or IP.

If a specific setup is needed, the user is able to setup the protocol using the parameters in this menu, as shown above. When the parameters have been set correctly press the **{Apply}** button. The menu will now return to the main menu.

	tocols [
Loaded Protocols Available Protocols	
1 User Definable Protocol 1 GVG100	
2 Calrec 2 Sony BVS/DVS	
3 Sony BVS/DVS 3 Automation	
4 None 4 Ignite	
5 None 5 RollCall Control	
6 None Type Editor	
7 None	
Logical Switcher Control Demo Room NB Add All None List All	
Transport RS422 Port	
Load	
Serial Port 2	
Baud Rate 38400 Data Bits 8 Stop Bits 1	
Parity Odd Port Type Slave Configure Activa	te

Once back in the Protocols menu, touch the **{Activate}** button.

When using one of the Peripherals, the user can see if the protocol has been setup because the top bar of the menu will have the "**Loaded Protocol**" number and the name of the protocol, i.e. "**AMP Ip**" as shown below.

3: Sony	BVS/DVS		Enable <u>।</u>
Editor 🕤 Switcher 🔿	Editor		
PP ME 1	Enable		
ME 1 ME 2			
ME 2 ME 3			
ME 3 ME 4			
ME 4 ME 4			
ME 5 ME 4			
Wipe Number Remap	None Sony SMPTE		
Crosspoint Offset	0		
Snapshot Recall	GMEM DMEM DVE M	EM Auto	
Snapshot Project	0: Default	•	
Inhibit Crosspoint Ke	y Control		

If the number and the protocol name are not there, the protocol has not been setup.

## **Access Control**

Access Control allows engineering staff or advanced users to setup user accounts with the ability to allow full access to all of Kahuna's functionality or restrict access as necessary. Care is needed when setting up user accounts to make sure the right access is given.

#### **Manage Users**

Note: Access to this menu is restricted to users with full access rights. Access to the menu is grayed out to all other users.

					Access C	ontrol	Manage	Users
ID o	Name				Enabled	Full	Control	
	Ken					Yes		
	User				Yes	Yes		
	Simon Eng				Yes	Yes		
	Simon Pow				Yes	Yes		
	Simon User				Yes	Yes		
	User 6				Yes	No		
	User 7				Yes	Yes		
	Richard				Yes	Yes		
New U		Next Free	<b>e</b>		Create User	Delete User		
Enable		No Yes			Update Icon	Delete Icon		
Name		Ken		***				
Comm	ents			***	Update Password	Reset Passwor	rd	Control Rights
Passw		No password						

To create a user, select the **Next Free** parameter to select a **New User ID** position (there are up to 1000 user ID's can be setup) and then select "Enable **{Yes/No}**. Then press **{Create User}**. Notice that a new user has now been added to the table.

A name can be given to the user account by touching the Name attacher and then touching the Keyboard select button to enable the on-screen Keyboard.

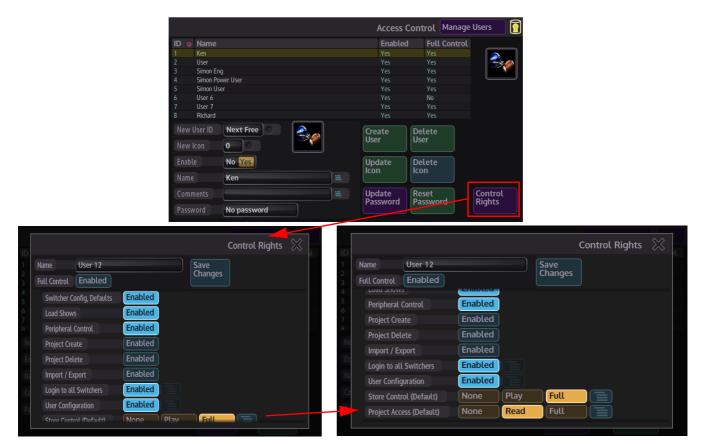
The user account can be given a **Password**, press the **{Update Password}** button and then enter a password into the dialog box, you will then be prompted to save the password. The password can be reset by pressing the **{Reset Password}** button.

			Ac	cress Con	trol	
ID 💿 Name	9	Enter	new pas	sword 🖇	$\otimes$	
1 Ken			2	3		
2 User 3 Simon			ABC	DEF		Yes
4 Simon 5 Simon	Power User					
6 User 6	5	4		6	r	
7 User 7 8 Richar		GHI	JKL	MNO		Yes Yes
New User ID	Next Free		8	9		Delete
Enable	No Yes					User
Name	User 12	PQRS	τυν	WXYZ		
Comments				Next		
Password	No password					Reset
						Password

An "lcon" can be selected to associate with a user. Use the "lcon" parameter to select an icon, which will be displayed in a box in the center of the menu. The icon will then be associated to the user.

### **Control Rights**

This menu is used to setup the access rights to the users setup in the Manage Users menu. Press the **{Control Rights}** menu link button.



The **User Select** parameter selects a user setup in the **Manage Users** menu, the name of that user will be displayed at the top of the menu. The user can be given full access control by pressing the "Full Control" **{Enabled}** button. Once enabled, when the user logs into the system with there account, if they do not have full access rights then some of the menus will be grayed out. If the user has "Full Control" rights, they will also be able to access the **Mainframe Config** menus before logging into the system.

Access control can be limited by using the **{Enabled}** button next to the options running down the menu.

Once the access rights have been set for the new account, press the {Save Changes}.

### **Manage Controllers**

The **Access Control - Manager Users** menu also allows a user account to associated to a specific GUI panel connected to the Kahuna mainframe.

If the Kahuna mainframe has been configured as multiple Logical Switchers, this allows more than one MAV-GUI to be connected to the mainframe to control the individual logical switchers. Touch the menu link button at the top of the menu and select "**Manage Controllers**" this menu allows user accounts to be assigned to MAV-GUIs.

	Access Control Manage	Users	A	ccess Control 🛛	anage Cor	ntrollers
ID 💿 Name	Enabled Full Control	Controller	ID 💿 Name		ID 🔘 Nam	
1 Ken		00:23:70:00	36:F4 S J Maverik		7 User 7	1
2 User					8 Rich	
3 Simon Eng					9 Ann	
4 Simon Power User					10 Dave	
5 Simon User					11 JP	
6 User 6					12 User 1	2
7 User 7						
8 Richard						
New User ID Next Free	Create Delete	Controller		Associated User		
New Icon 0	User User	ID	Panel Name	ID Name		Create
		00:05:81:00	06:35	3 Simon Eng		Association
Enable No Yes	Update Delete	00:05:81:00	09:25	3 Simon Eng		
Name Ken 🚟	Icon					Delete
						Association
	Update Reset	Control				
Password No password	Password Password	Rights				
Password No password						

If one or multiple MAV-GUIs are connected to the mainframe, they will be displayed in the **Currently Visible Controllers** table.

To create an association between the user account and the controller, use the **Controller** parameter to select the MAV-GUI/s, the user account is selected using the **User** parameter, then user the **Association** parameter to create an association between the user account and the controller, then finally press **{Create Association}**. Notice that a user account and a controller are now entered in the **Controller/User Associations table**.

### **IP Gateways**

The **Engineering Config - IP Gateway** menu allows the user to add a route to a destination network through a local IP Gateway.

0		IP Gateways	
# 🧿 Gateway	Destination Network		
0			
1			
2			
3			
4			
5			
6			
7			
IP Address of Gateway 0.0	.0.0 / 0	Add Gateway Gateway	
IP Address of Destination 0.0	.0.0 / 0	Galeway	
	Ping		
	Gateway		

Touch the *IP Address of Gateway* on-screen keyboard button and set the four *New Gateway* parts of the address (A) (e.g. 172.28.1.6). Note. The network part of this address must exactly match the network part of the panel's IP address.

Next touch the *IP address of Destination* on-screen keyboard button and set the four parts of the destination network address (e.g. 172.23.0.0) and set the number of bits of the netmask for the destination network.

Finally, touch **Add Gateway** to add the new gateway to the list at the top of the menu. This has now told the panel how to send a message onto network 2, but not where it should go when it gets there.

To check that the gateway is attached to the network and is responding, touch the **{Ping Gateway}** action button. The box below the button should show the ping round-trip time for a few seconds followed by:

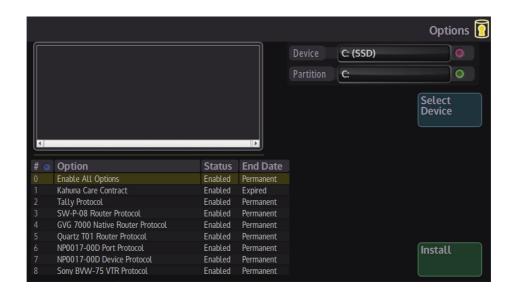
"Good""Fair" may give occasional "Lumpy" controls

"Poor" may have excessive lumpy controls and cause a loss of comms, "Failed" no link at all.

Press **{Remove Gateway}** then make the required changes to the five parameters, then press **{Add Gateway}** to put the modified entry back into the list.

## **Options**

This menu is used to install new software options that upgrade the Kahuna mainframe, e.g. installing protocols or installing extra inputs and outputs, these are just a few examples of the many options available to the Kahuna.



**Installing Options** 

Place a USB memory device with the option file/s into the USB port.

Touch the **"Input Device"** parameter control to search for the USB device. If there is more than one file on the USB device then use the **File** parameter control to select the required software file.

Touch to select the new option file, finally press **{Install}** and the option file will be installed into the mainframe.

After installing a new option, the mainframe has to be re-booted.

### **Redundant Mainframe**

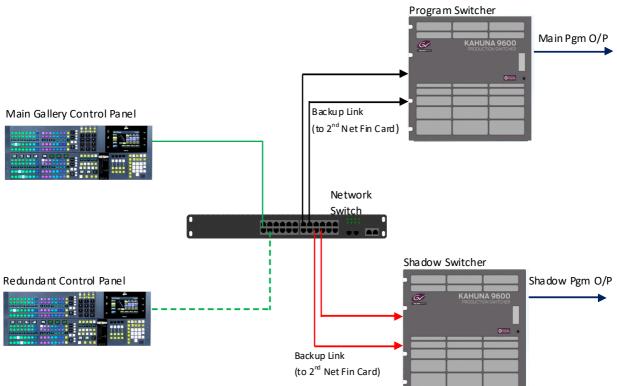
Redundant Mainframe or Shadow Switcher gives a complete redundant video path (or number of Video paths) from two independently connected Kahuna mainframes. The shadow switcher mainframe will copy and execute all commands with it the exact time boundary as the respective "Master" switcher mainframe.

Note: The Master Switcher mainframe and the Shadow Switcher mainframes must be running the same version of software and have all the same resources i.e. M/E cards, DVE cards

Master/Main

	Switcher Config 🚺
Redundant Mainframe	
Inhibit Master Control	
Multiviewer Allocation	
Multiviewer B Switcher 1	
Predefined Config	

### Example of Redundant Mainframe (Shadow Switcher) Setup



The diagram on the previous page is an example that shows a Maverik Control Panel in the main gallery connected to a (customer provided) Ethernet Switch. This could be two separate Ethernet switches for redundancy. From this Switch there are two connections to the Master

Kahuna Mainframe. These connections go to both Net Fins on the rear of the Kahuna Mainframe to give Net Fin Redundancy. It is not necessary to have this second link to allow Shadow Switcher to function.

The switch has also two connections to the Shadow Switcher mainframe, again to both Net Fins. The Master switcher mainframe communicates to the Shadow Switcher via a connection through the Ethernet switch.

This mechanism works from a single Master Mainframe to a single Slave Mainframe. However if there are logical switchers declared within the same Mainframes, the Shadow Switcher concept will link together the declared Logical Switchers. In the diagram, a second Maverik control panel the "Redundant Control Panel" (any Configuration) can be locally installed by the Main gallery control panel and can login into the Master switcher mainframe in case of Failure with the control Panel.

	Switcher Config 🚺			Redundant Mainframe 🛐
Redundant Mainframe		Redundant Mainframe	D311-A798-9CC1-6BDB	Detach From
Inhibit Master Control		Name		Mainframe
		Mainframe Present	No	
Multiviewer Allocation			Shadowed Projects	
Multiviewer B Switcher 1				
		Options	Include Misc Files	
		Other Switcher		
		Links		
Predefined Config				

Note: Before the **Redundant Mainframe** option can be used, in the "Logged Out" state, use the **{Mainframe Finder...}** or the **Panel Config - IP Mainframes** menus to locate the mainframe that will be used for Shadow Switching.

On the **Master** mainframe go to **Global - Configs - Engineering Config** menu and touch the **{Redundant Mainframe}** button. The Redundant Mainframe mainframe will display all mainframes that the master mainframe is able to see over a network, select the mainframe that will become the shadow switcher from the list and press the **{Attach To Mainframe}** button.

	Redundant Mainframe 🛐			Redundant M	lainframe 👔
Redundant Mainframe     D311-A798-9CC1-6BDB       Name     Mainframe Present       Mo     No       Overall Enable     Shadowed Projects       Options     Include Misc Files	Detach From Mainframe	Redundant Mainframe Name Mainframe Present Overall Enable	D311-A798-9CC1-6BDB Sw Background Updating Shadow Protocols This Switcher Link	Detach F itcher Link Enables X Shadow Eng Config Shadow User Config	rom Ie
Other Switcher Links		Other Switcher Links			

The next menu that will be displayed is the Redundant Mainframe menu, from here the user will setup the shadow switching functions as required.

# Note: CAUTION! Before taking the next step, make sure that the selected shadow switcher mainframe is the correct one that is going to be used for shadow switching!

The first thing that must be done is to synchronize the Master and Shadow switcher mainframe hard disk drives. Once completed, the shadow switcher mainframe hard disk drives will be over written with information from the master mainframe.

				R	edundant M	lainframe					Red	dundant M	ainframe	
Redundant Mai		BB7C-47F	5-F19F-E8F4		Detach	From	Redundant Ma	inframe	BB7C-4	7F5-F19F-E8F4		Detach	From	
Name		-Buzzard-	Validaton		Mainfra		Name		-Buzzaro	d- Validaton		Mainfra		
Mainframe Pres	sent	Yes					Mainframe Pre	sent	Yes					
				Proje	ct Synchroni	ization					Project	Synchronia	zation	
Overall Enable	Backgroun Updating		Synch State	Idle			Overall Enable	Backgrou		Synch State	Evaluati	ng Status		
			Last Backup	11:44	27 Aug 2015	5				To Be Deleted	0			
This Switcher Link	Other Swi Links	itcher	Result	Compl	ete		This Switcher Link	Other Sw Links	vitcher	To Be Copied	0			
Shadow Eng	Shadowed	4	To Be Delete	ed 0	_	_	Shadow Eng	Shadowe	4		Can			
Config	Projects		To Be Copie				Config	Projects	u					
Shadow Protocols	Include Ico Files	on	Evalua Synch		[	Start Synch	Shadow Protocols	Include Io Files	on					

Press the **{Evaluate Sync}** button, the hard disk drives will be compared to see the number of files that need to be copied or deleted, a dialog box will appear displaying the evaluation status.

Once the evaluation is completed, press {Start Sync} button.

				Redu	undant Mainframe						Red	undant Mainframe	
Redundant Mai		BB7C-47F	5-F19F-E8F4		Detach From		Redundant Mai		BB7C-47F	-5-F19F-E8F4		Datash From	
		-Buzzard-	Validaton		Mainframe		Name		-Buzzard-	Validaton		Detach From Mainframe	
Mainframe Pres	sent	Yes Project Synchronizatio				Mainframe Pres		Yes					
				Project S	ynchronization		- 10 10 - 10 - 10 - 10 - 10 - 10 - 10 -				Project	Synchronization	
Overall Enable	Backgroun Updating	nd	Synch State	Performin			Overall Enable	Backgrou		Synch State	Idle		
			Deleting	0	rming Synchronisation Of 0			opadanig		Last Backup	11:44 27		
This Switcher	Other Swit	tcher	Copying	0	Of 0		This Switcher	Other Sw	vitcher	Result	Complete	9	
Link	Links		File Copy	0	Of 0		Link	Links					
Shadow Eng	Shadowed	k		Canc	el		Shadow Eng	Shadowe	d	To Be Deleted	d 0		
Config	Projects						Config	Projects		To Be Copied	0		
Shadow Protocols	Include Icc Files	on	Evaluati Synch	e	Start Synci		Shadow Protocols	Include Io Files	on	Evaluat Synch	ie 🛛	Start Synch	h

A dialog box will display the synchronization progress, then once completed a dialog box will display "**Completed**" in the "Result" window. The hard disk drives are now synchronized and the shadow switcher mainframe is ready to mirror the master switcher.

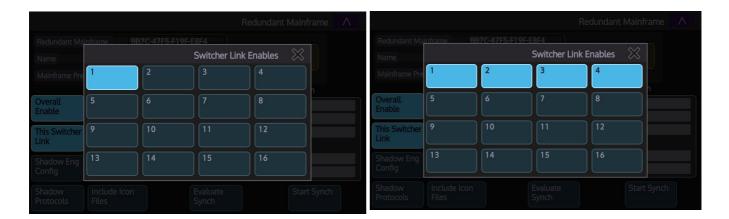


### **Redundant Mainframe Parameter Controls**

**Overall Enable** - This enables all commands to be sent to the shadow switcher. The Shadow switcher will now copy and perform bus and crosspoint selection, Transitions, DVEs, Store Load etc with it the exact time boundary as the Master Kahuna (when using the same reference). Any Effects Files (DMEMs/GMEMs/DVEMEMs) Macros etc will also be loaded on command and executed.

**Background Updating** - The system will constantly check the status of the shadow switcher to ensure it is in the same state as the Master switcher and update it to ensure it is the same.

This Switcher Link - single link to the attached mainframe



**Other Switcher Links** - select additional /multiple switcher links to be enabled **Shadow Eng Config** - Enables Eng Config loaded on the master to be shadowed Shadowed Projects - Select which projects will be shadowed by the shadow switcher

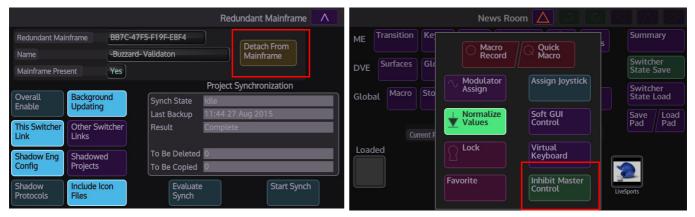


									Shad	owed	Projects 💥 🔨
Redu	0	1	2	3	4	5	6	7	8	9	
Nam	10	11	12	13	14	15	16	17	18	19	
Mair	20	21	22	23	24	25	26	27	28	29	All
Over	30	31	32	33	34	35	36	37	38	39	
Enak	40	41	42	43	44	45	46	47	48	49	-
This	50	51	52	53	54		56	57	58	59	
Link	60	61	62	63	64	65	66	67	68	69	None
Shac	70	71	72	73	74	75	76	77	78	79	
Cont	80	81	82	83	84	85	86	87	88	89	
Shac	90	91	92	93	94	95	96	97	98	99	
Chord											

**Shadow Protocols** - Enables if protocols on the master switcher are shadowed by the shadow switcher.

Include Icon files - Enables Icons to be shadowed by the shadow switcher

**Detach From mainframe** - removes the link between the Master and Shadow mainframe. This can also be done using the **{Inhibit Master Control}** in the "Star" menu. Press the "Star" button on the MAV-GUI to display the menu.



## **Global Configs - I/O Configuration**

## I/O Config

Note: A full explanation of Input/Output User Configuration features, is in the Kahuna 9600/6400 User Manual, supplied with this system.

In the I/O Config menu, the user can access the "Save/Load" menus to create a new panel config file or choose a pre-saved user config.

				System	Configurat	ion [
	Panel Configuration	Panel Prefs	GUI Prefs	Button Maps	Button Info	Colors
		User Functions	Fader Attachmen	Maverik Layout	R Preview Aux	N
	User Configuration	Modulators	Mattes Washes	Xpt Config Set	E tup Multi- viewe	r TL Defs
I/O Config 🛆 🔨		Aux Setup Set	ore ME Config	g Dissolve Presets	Switcher Outputs	Resource Link
	Log Off Engi	ineering [// fig	0 onfig	Show Set-up		Defaults
File Name     Merge       Description     Image       Project     50: SJ Test Proj       Enables			Next Free	Save III Enat	Load	
All By Crosspoint Save Load	STORE 1 2	3	Cancel			
	ENG 4 5	6				
	PANEL 7 8	9				
	GLOBAL	Save		etails		

To **"Load"** a file, touch the **{Load}** button, (as shown in the menu above) use the **"Project**" and **"File**" parameters to select the required file (the fine will be displayed in a table in the top half of the menu), then press the **{Load}** button.

Pressing the {Default} button will load the default user config file.

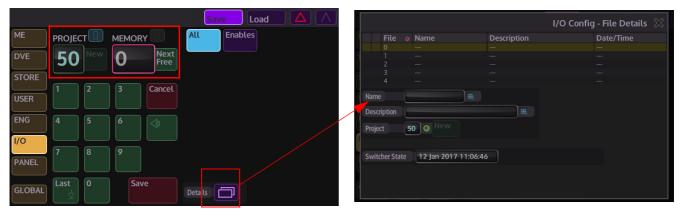
If changes are made, press the **{Overwrite}** button to overwrite the User Config. A dialog box will appear (below) and asks the use to confirm the overwrite.



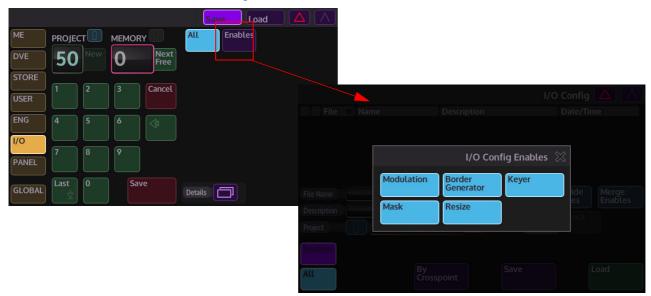
**Override Enables** - will override any enables that have been de-selected and turn the enable on.

**Merge Enables** - this function merges the enables currently set in the switcher with the enables saved in the file is being loaded (a 'logical OR' of the enables).

Press the **{Save}** button to open the **"Save"** menu. The **Save** menu allows the user to quickly select a project and a memory file, use the colored rotary controls the correspond to the Project number and Memory number. When selected, touch the **{Save}** button. To create a new file within a project, touch the **{Details}** menu link button and the I/O Config - File Details menu will be displayed.



In the File Details menu, the user can select a project to save the I/O Config file into, then use the "File" parameter control to scroll down the table and select a used or unused file slot. A Name and Description can be given to the new I/O Config file. To do this, touch the **Name** or **Description** bar, a cursor on-screen keyboard popup button, then use the on-screen keyboard to type the new name. Back in the Save main menu, touch the **{Enables}** button and the **I/O Config - Enables** will be displayed. The menu allows the user to Enable/Disable enables options that will be saved with the new I/O Config file.



### All - enables all Enables

**Override Enables** - will override any enables that have been de-selected and turn the enable on.

**Merge Enables** - this function merges the enables currently set in the switcher with the enables saved in the file is being loaded (a 'logical OR' of the enables).

## **Global - Filing System**

### **Filing System**

The filing system is as it suggests a menu where all the Projects, Configs, DMEM/GMEM, Stills, Macros and Button Maps etc. are stored.

Note: Filing System menus allow the user to create a New Project file and Load, Delete, set as Default and Lock files. Files cannot be saved within these menus. Saving files is done within the individual Eng Config, User Config, Macros etc. menus.

To enter the Filing System menu, touch **{Filing System}** button on the GUI, the menu below will appear.



All the menus are straightforward, easy to use and are accessed, updated and deleted in a similar way.

Touching the **Filing System** menu link button will open the **Filing System** menu selection buttons (shown below). From here the user can select wish menu to go to.

			Filing	System	Pro	jects		Δ							Fi	ling System	ojects
Project O	Name Default	<b>ME</b> 3	DVE 1	Global 4	Still 0	Macro 0	Eng- 5	User 7	Other	Proj 0						Filir	ng System 🔀
1 2 3	factory clips factory clips JW				34 42 2					1 2 3	Projects		Import	Exp	ort	Export Status Logs	Status
4 5 6	John's tests IBC IP IBC 2015 News	12 19 28			42 17 21	2 39 23				4 5 6 7	Global	ME	DV	E	Stills		Manage Media
/ Project Name	NAB 2015									, Project N	Eng Config	User Co	nfig I/O	Config	Event	s T/L	Defragment
Total Disk Size Free Disk Space	949.963 GB 453.383 GB				De		Lock		Delete	Total Dis	Panel Config	Macros	Bu	ton Map	s Snaps	ihots	Backup
New Project	00						mmit oject	Proj	ject		Switcher States						Restore
	Commit Revert Misc Misc									File Sat		П					

## **File Safe**

What is File Safe

When a user loads a system setup file, for example loading a "Show" and then turns "On" File Safe, the original show setup files are kept "Safe" This will now allow the user to modify the show setup, i.e. add extra camera's to crosspoints or add macros and key layers, knowing that the original show setup files remain safe and un-touched.

The user will then have 2 options:

- 1 When finished, "Revert" back to the original setup state of the show and loose any filing system changes.
- 2 Save the new show setup state, using the "Commit" function, which will now overwrite the original show setup files.

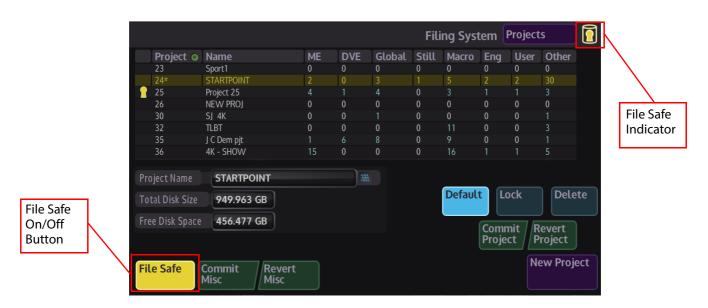
The user has the option to either Commit or Revert on a per file, per project or all files basis. File Safe is easy to setup and gives a visual indication to the user that critical setups are not being overwritten unless the user wants them to be. Then after using the system, the user can quickly go back to the original file setup.

						Fili	ng Syst	tem (	Project	:S	2
	Project o	Name	ME	DVE	Global	Still	Macro	Eng	User	Other	
	23	Sport1	0	0	0	0	0	0	0	0	
		STARTPOINT	2	0	3		5		2	30	
2	25	Project 25									
	26	NEW PROJ									
	30	SJ 4K									
	32	TLBT					11				
	35	J C Dem pjt									
	36	4K - SHOW	15				16				
Pro	oject Name	STARTPOINT									
	tal Disk Size	949.963 GB					Defaul	t Lo	ock	Dele	te
Fre	e Disk Space	456.477 GB						Comr Proje		evert roject	ļ
Fil		Commit Revert Misc Misc							Ne	ew Proj	ect

File Safe is accessed in the **Filing System** menus, the first menu to open is the **Filing System** - **Projects** menu, and it is where File Safe is turned On/Off.

### How to use File Safe

The user can select a project that contains the setup files for a "Show" and then turn File Safe "**On**" by touching the **{File Safe}** button. The button will go green and an "FS" indicator is displayed in the center top bar area of the menu. The "**FS**" indicator is also green indicating that File Safe is active.



File Safe will remain active and displayed in the top bar until turned Off, below are the operational states of file Safe:

- No icon = OFF
- Pale Yellow = Icon ON but no files have been placed in the File Safe
- **Yellow** = ON with files in the File Safe because files have been saved without being committed.

Note: In the orange state, File Safe cannot be turned Off until all files have been "**Committed**" or "**Reverted**".

	Name Sport1 STARTPOINT Project 25	ME 0 2 4	DVE 0 1	Global 0 3 4	Still 0 1 0	Filing Macro 0 5 3		m Projects User Other 0 0 2 30 1 3	F	ile	Safe (	Dn -	No file	in F	ile Saf	e						
	NEW PROJ SJ 4K TLBT											Fil	ing System.	Project	ts 🚺	]						
	J C Dem pjt 4K - SHOW STARTPOINT					Projec 23 24* 25	Sp ST	ame ort1 ARTPOINT oject 25	ME 0 2 4	0 0	E Global 0 3	Still 0 1	Macro Eng 0 0 5 2 3 1		Other 0 30 3	Fi	le Saf	e Or	n and	l wo	rkin	g
Total Disk Size Free Disk Space	949.963 GB					26 30 32 35	NE SJ TL	W PROJ 4K			0	0	0 0	0	0			Fili	ing Sys <sup>.</sup>	tem 🚺	Project	:s
						36		- SHOW			Proj	ect o	Name Sport1		ME 0	DVE 0	Global 0	Still 0	Macro 0	Eng 0	User 0	Other 0
File Safe						oject Nar tal Disk !		STARTPOINT 949.963 GB			24*		STARTPOINT Project 25		2	0	3	1	5 3	2 1	2	30 3
File Safe	e Off							456.480 GB			26 30		NEW PROJ SJ 4K									
											32 35		TLBT J C Dem pjt									
					Fil	le Safe	Col						4K - SHOW									
											Project N Total Dis		STARTPO 949.963						Defaul	t La	ock	Delete
																				Com		evert
																				Proje		roject ew Project
											File Sat		Commit Misc	Rever Misc								en roject

### File Safe Buttons:

**Commit Project** - This will commit any new Files within the selected project, a pop up will appear need confirmation to commit.

**Revert Project** - This will revert any new Files within the selected project back to the original file state.

File Safe - Will Enable/Disable File Safe mode.

**Commit Misc** - Will commit Filing System changes when Commit is pressed in the pop up dialog box, any filing system changes that have been performed after File Safe has been enabled will now become the current files and the File Safe will be emptied.

**Revert Misc** - Will Revert Filing System changes back to the original file state. Any filing system changes that have been performed after File Safe has been enabled will now be copied to be the original files and the File Safe will be empty.

Saving files with File Safe turned On

When File Safe is ON, and a file (for example, User Config) is changed (overwritten, a copy of the original file is placed into the File Safe. In this condition the "FS" indicator in the top bar will turn Yellow.

The menu with the saved file, will display the File Number/Date and Time in yellow, as shown below.

				User Config - File Details 💥 🚺
M	File	• Name	Description	Date/Time
D١	4			
	5 6			09 Dec '20 14:23
2				
US	Name			
EN	Description			
1/0	Project	24 O New		
E				
	Switcher State	e 01 Jan 19	70 00:00:05	le le
PA				Save
G				Sure

If the user now goes into the Filing Sys menu and looks at the Filing System - User Config menu, the file number will also have the yellow background indicating that the file has been saved (but not committed) since the File Save function was turned On.

All subsequent loads of this file will load the new file. If the file is Reverted, the original file will replace the new saved file, the yellow fill will now be clear and all subsequent file loads will use the original file.

Note: This can not be undone.

Note: When overwriting a file multiple times, only the original file will have been put into the File Safe, so any Revert of this file will return to the original file (prior to File Safe being turned ON).

If the user commits the file, then this will now become an original file; therefore the next overwrite will copy the committed file into the File Safe.

When File Save is active, the user is able to individually commit Button Maps, Engineering, User, Panel and I/O Config files, GMEMs, DMEMs and Macros into Projects, or commit them all together by pressing the **{Commit Misc}** button.

Multiple files can be changed and saved, they will all display the file number in a yellow background, and all can be committed or reverted.

					Fili	ing Syst	tem	Project	t <b>s</b>	2
Project o	Name	ME	DVE	Global	Still	Macro	Eng	User	Other	
23	Sport1	0	0	0	0	0	0	0	0	
24*	STARTPOINT		0	3		5		2	30	
25	Project 25	4	1	4	0	3	1	1	3	
26	NEW PROJ									
30	SJ 4K									
32	TLBT					11				
35	J C Dem pjt									
36	4K - SHOW	15				16				
Project Name Total Disk Size Free Disk Space	STARTPOINT 949.963 GB 456.477 GB					Defaul	t Comr Proje		Dele Revert Project	ete
	Commit Revert Misc Misc							N	ew Proj	ect

As mentioned earlier, when a file has been changed (e.g. User Config), the user is able to go into the "**Filing Sys - User Config**" menu (shown above) and only commit the changed Panel Config file. If the user has saved files in the User Config, Panel Config, created Macros and wants to commit all the changes, you can either touch the "**File Safe**" {**Commit User Config**} button, or go to the Projects menu in the Filing System menu and in the menu, touch the {**Commit Project**} button.

						Fili	ng Syst	em F	Project	s
Project o										
23										
24*										
25	Project 25							1		
		War	ninc	1 I				0		
		<b>T U U</b>		)				0		
32								0		
35		<b>171</b> - 1-						0		
		Inis	WILL	permai		eep ai	ny Filo	1		
	STARTPO	Safe	was a	ctivate 13:30	nently ko t 24 sinc d (28th ):42)	Oct 2	020			
	949.963							t L(		
	454 477		Co	mmit	Cancel					
	456.477							Comr Proje		

A warning dialog box will appear asking if the user really wants to commit filing system changes since File Safe was activated.

## **Projects**

The default menu when entering the Filing Sys is the Project menu; where all the DMEMs, GMEMs, all the Configuration files, Button maps, Stills and Macros are all saved into Projects.

How to create a new Project

To create a new Project, touch the **{New Project...}** button (shown below). A new menu popup will be displayed with a number of options to select.

					Fil	ing Sys	tem	Project	ts	2
Project o	Name	ME	DVE	Global	Still	Macro	Eng	User	Other	
0	Default								13	
<b>1</b>	factory clips				34					
2	factory clips				42			2		
3	JW	33			2	41		12	25	
4	John's tests	12	0		42	2			4	
5	IBC IP	19		2	17	39	10	18	34	
6	IBC 2015 News	28			21	23		4		
7	NAB 2015									
Project Name Total Disk Size	STARTPOINT 949.963 GB					Defaul	t L	ock	Dele	te
Free Disk Space							Comi Proje	ect P	evert roject ew Proje	act
	Commit Revert Misc Misc									

New Project button

The menu popup has a parameter control for selecting an empty project slot, but if for example you currently working in "Project 24" selected, then clicking on the **{New Project}** button will select the next available project number in the table. The popup also gives the user options to select the type of project that they want to create.

						Filin	ng Syst	em P	rojects	;	
Project O											
0	Default.		3	1	4	0	0	5			
1	factory o						)	$\sim$			
2	factory o					New P	Project	$\sim$			
3	JW	New Project	27 (								
4	John's te	NewTroject									
5	IBC IP	New Name	-								
6	IBC 201							_			
7	NAB 201	Independent Pr	niect		o Yes						
D. J. J. H.		independent i	ojeci	<u> </u>	o res						
Project Name	STAI				o Allow						
Total Disk Size	949										
TO LOC DISK SIZE		Reference Proj	ect	<b>L</b>	o Yes		anto Ma				
Free Disk Space	456.	Reference Still	c Projec	+	o Yes		eate Ne oject				
		Nererence Stitt	.s r i o jec	<u>د</u>	U Tes		υјест				
								والعدين			

Project Number

There are two types of project that you can create; one is a "**Reference Project**" that references files such as stills, configs, macros and other files from other projects, this is the default setting. The second type of project is called an "**Independent Project**" this will only reference files

saved with the independent project, basically a stand-alone project with its own files. The advantage of an independent project is that it is easily transferable to another Kahuna system because an independent project doesn't rely on referencing files from other projects. The only consideration is that it does not have the same project number as one on the Kahuna you are transferring to.

Use the parameters (below) to select the type of project you want to create. If "No" is selected in all the parameters then you can create a project that references files from other projects in the system.

Independent Project	No Yes
External Stills	No Allow
Reference Project	No Yes
Reference Stills Project	No Yes

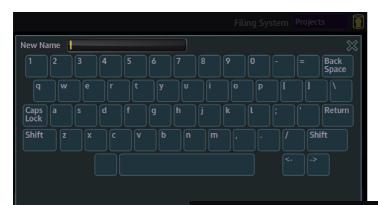
Independent Project - "Yes" will create an independent project.

**External Stills** - "Yes" will allow you to reference stills from other projects on the system.

Reference Project - "Yes" will allow files to be referenced from other projects on the system.

Reference Stills Project - "Yes" will allow stills from other projects to be referenced.

Once you have selected the type of project you want to create, you can add a name by touching the "**New Name**" parameter. A keyboard will be displayed allowing you to type in a name. Touch **{Enter}** when done.





When done, touch the {**Create New Project**} button, and a new project is added to the table in the main project menu.

## **Delete a Project**

To delete a project, select a project using the "Project" parameter control then press **{Delete}**. A message will appear requesting confirmation of deletion.

			Filing	System	Proj	ects		<u> </u>	
Project	t o Name	ME	DVE	Global	Still	Macro	Eng	User	Other
- <del></del>	Default								10
1		2							
2	factory clips				42				
3		33						12	25
4	John's tests	12			42				
5	IBC IP	19			17				34
6	IBC 2015 News				21	23			
7	NAB 2015								
Project Nam	e factory clips								
Total Disk S	ize 949.963 GB				De	fault	Lock		Delete
Free Disk Sp	bace 453.383 GB					Co	mmit	Reve	ert
New Project	22					Pro	oject	Proje	ect
File Safe	Commit Rever Misc Misc	rt							

### **Project Locking**

Projects can now be locked to prevent files from being over written and deleted. touch the **{Lock}** button and it will turn light blue. A locked project is indicated by the **Pad Lock** symbol in the row next to the Project number (shown below). To unlock the project, touch the **{Lock}** button once more.

			Filing	System	Proj	ects		<u>\</u>	
Project o	Name	ME	DVE	Global	Still	Macro	Eng	User	Other
	Default								
1	factory clips	2							
	factory clips				42				
		33						12	25
	John's tests	12			42				
	IBC IP	19			17				34
	IBC 2015 News				21	23			
	NAB 2015								
Project Name	factory clips						_		
Total Disk Size	949.963 GB				De	fault	Lock		Delete
Free Disk Space	453.383 GB					Co	mmit	Reve	ert
New Project	22 0					Pro	oject	Proje	
	Commit Revert Misc Misc								

## **Default Project**

Pressing the **{Default}** button will change the default project from being "**Project 0**" to being a user defined default project. Touch the **{Default}** button, the button will turn light blue and stay light blue indicating that the selected project is the default one.

		I	Filing	System	Proj	ects		7	
Project o	Name	ME	DVE	Global	Still	Macro	Eng	User	Other
15	hk rugby								
16	ANNA 2								
17	Multiviewer								
18	SAM DEMO ROOM								
19	TestProject								
20	News Grab								
21									
22	TestProject								
Project Name	TestProject					6 11			
Total Disk Size	949.963 GB				De	fault	Lock		Delete
Free Disk Space	453.383 GB					(Ē	mmit	Reve	art
New Project	22 ()						oject	Proje	
	Commit Revert Misc Misc								

## Import / Export

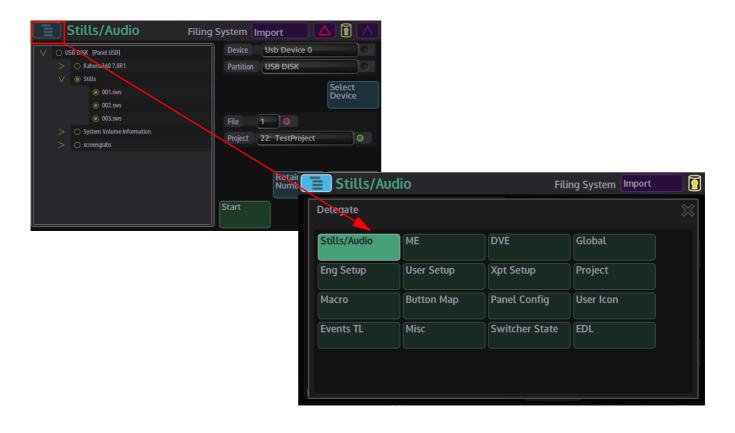
The Import/Export menus, as the name suggests are used to import/export Projects, Stills, ME and Global memory files, Macros and configurations from or to a USB/eSATA memory device.

Kahuna can Import 98 projects, and 1000 (0 - 999) Configs, Stills, Clips, Macros etc into each project.

Filing System Projects Global Still Macro Eng Project o Name ME Other Filing System 次 Export Status Status Logs 2 Import Global Manage Media Eng Config User Config I/O Config Events T/L Defragment Delete 949.963 GB Panel Config Macros **Button Maps** Snapshots Backup 453.383 GB Revert Project Commit Project 0 0 Switcher States New Project Restore File Safe Commit Misc Revert Misc

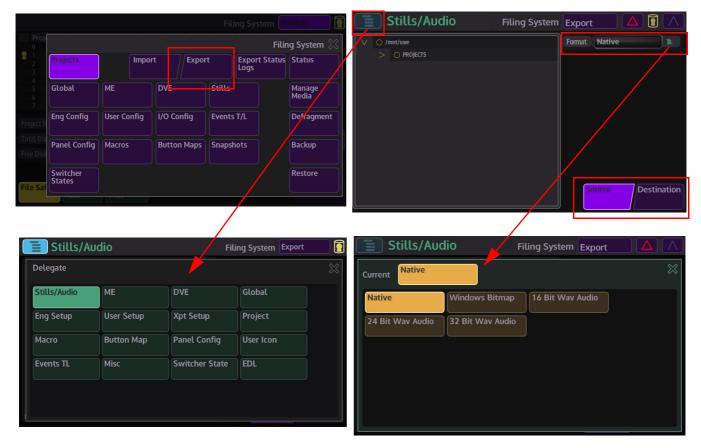
Touch the {Projects} menu link button to open the Filing System options menu.

The Import and Export menus both work in the same way, where the user will select a Project or individual file to import or export, the menu displays a familiar folder structure which is easy to navigate and use. This will be explained in detail over the next few pages.



### Exporting

To export a project, stills, GMEM, DMEM or still, touch the **{Export}** button and the Filing System Export "Source" menu will be displayed. Touch the **{Delegate}** button to select what is going to be exported (in this example "Stills/Audio"), touch the "x" to go back to the Export menu. The "**Source**" menu (bottom of the Export menu) is used to select the files that are going to be exported and the "**Destination**" menu is used to setup where the selected files are exported to.



In the Export - Source menu (in this example exporting Stills), use the "**Format**" parameter (shown above) to select the type of format the files will be exported in, then touch the "x" button to go back to the Export menu.

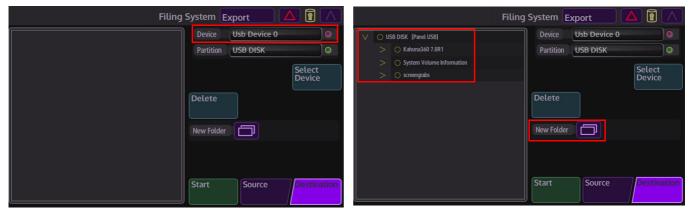
📃 Stills/Audio	Filing System Export		📃 St	ills//	Audio	Filing System	Export		
/mnt/user	Format Native			> () PR				Native	
				> () PR () () PR					
					<ul> <li>STILLS</li> <li>110.SWS</li> </ul>				
					130.SWS				
					○ 500.SWS				
					<ul> <li>502.SWS</li> <li>503.SWS</li> </ul>				
					504.SWS				
	Source	Destination			○ 506.SWS		So	urce	Destination
[					F07.CWC				

Touch the Export menu, touch the ">" next to the "**O PROJECTS**" (shown above left) and a folder list of "PRJ" projects will be displayed, touch the ">" next to the project containing the files to be exported. The selected project will open and because "**Stills/Audio**" was selected in the "**Delegate**" menu, the Stills folder can be opened displaying all the stills in that project.

Touch the required Stills "**.SWS**" file, notice that the "O" next to the.SWS file is now filled displaying that it is selected.

<b>Stills/Audio</b>	Filing System	Export		
> O PRJ00000		Format N	lative	ī
> O PRJ00001		_		
V O PRJ00002				
V O STILLS				
110.SWS				
130.SWS				
○ 500.SWS				
○ 501.SWS				
○ 502.SWS				
○ 503.SWS				
○ 504.SWS				
○ 505.SWS				
○ 506.SWS		Sou	rce	Destination
C ENT CLUC				

Next, touch the **{Destination}** button to open the Export Destination menu. As stated earlier, this is where the user sets up where the selected files are exported to.



Use the "Device" parameter to select the memory device/hard drive the files will be exported to. Once found, touch the **{Select Device}** button and the device will be displayed in the gray area on the left of the menu (as shown in the diagram above right).

If a new folder needs to be created on the memory device to store the exported files, touch the "New Folder" menu link button, then in the "**Create New Folder**" menu touch the keyboard button and use the on-screen keyboard to type a name for the folder. Finally touch the **{Create}** button.

	Filin	g System E	xport					Filing S	System Ex	(port	
V OU				]0	V O	USB DISK [F	Panel USB]			Usb Device 0	
>				0	>	🔿 Kahu	na360 7.8R1			USB DISK	
>					>	<ul> <li>More</li> </ul>	Stills				Select
>	9 Contraction of the second se			Select		• O Stills					Device
>	q	Create	New Folder	×	>	O Syste	m Volume Information				
	New Folder MoreStills	)*	Create			o scree	ngrabs		Delete New Folder		
				Destination					Start	Source	Destination

A new folder has now been created on the memory device.

Touch the "**O**" next to the name of the new folder to select the folder and then touch the **{Start}** button.

Filing	System Expor	rt 🛆 🚺	$\land$			Filing System	Import/Export Sta	atus 🛆 🔋 🔨
USB DISK [Panel USB]	Device Usb	Device 0	•	Operation	n	State	Status	Time
> O Kahuna360 7.8R1	Partition USB	3 DISK	0	Export		Processing		
> <ul> <li>MoreStills</li> </ul>								
> O Stills		Select						
> O System Volume Information								
> O screengrabs	Delete							
	New Folder			File Name	user:/PROJECTS/	PRJ00002/STILLS		
				Durgo	Advance	ancel		
	Start	Source Destina	ation	Purge Done	Advance	ancer		

The selected files will now start to be exported to the memory device, an "**Export Status**" menu will be displayed showing the progress with two yellow bars that are a visual indication of the export progress.

When completed, the "State" column will display "Complete" and the "Status" column will display "OK".

### Importing

Importing files is basically a reverse process where the user selects the memory device that the files are imported from, using the "Device" parameter. Touch the "Delegate" button and in the Delegate menu, select the type of files being imported (touch the "X" to go back to the Import menu).

Stills/Audio Filing	g System Import 🛛 🛆 🛐 🔿	📃 Stills/Audio	Filing System Import
USB DISK [Panel USB] > OKahuna360 7.8R1	Device Usb Device 0	Delegate	*
<ul> <li>✓ ● Stills</li> <li>● 001.sws</li> </ul>	Select Device	Stills/Audio ME	DVE Global
<ul><li>002.sws</li><li>003.sws</li></ul>	File 1	Eng Setup User Setup	Xpt Setup Project
System Volume Information     Screengrabs	Project 22: TestProject O	Macro Button Map	Panel Config User Icon
	Retain Numbers Allow Overwrite	Events TL Misc	Switcher State EDL

Use the "**Project**" and "**File**" parameters to select the project and file number where the file are being imported into.

Select the {**Retain Numbers**} if wanting to keep the original file numbers. If this is not selected and there are files with the same number already existing in the Project/File with the same the imported files will be given new file numbers.

Touch the **{Allow Overwrite}** button and any imported files with the same number as existing files, the existing files in the Project/File will be overwritten.

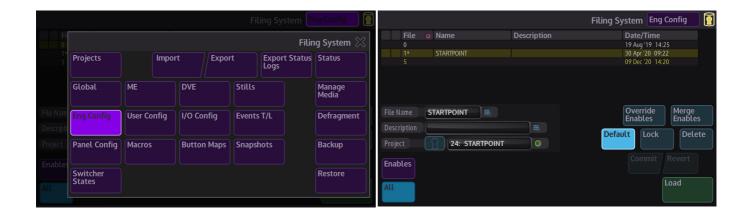
Finally, touch the **{Start}** button and the import process will begin.

An "Import Status" menu will be displayed showing the progress of the import process.

## Filing System - Config Filing System

The Eng Config, User Config, I/O Config and Panel Config menus all have exactly the same functionality, so for this example the Eng Config will be used.

Note: The Eng, User, I/O and Panel Configs are saved within their own menus, the Filing System menu is used to Export, Delete, Load, set Enables and make Default.

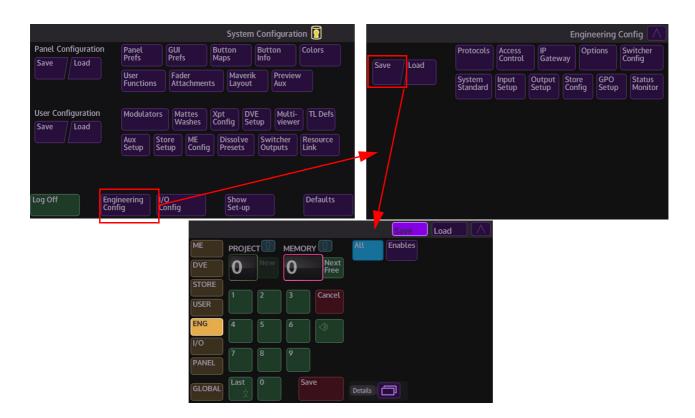


### Overview

All Config files can be saved into a default project or into a user defined project. Config files are saved within their own Config main menu, meaning that if a specific Eng Config setup is created by a user before the file can be saved, the user has to go into the Eng Config menu.

Press the **{Save}** button, select a Project from the **"Project"** parameter, this is where the Eng Config setup is recalled from, use the **"File"** parameter to create a new Eng Config file position, give the file a name and description and finally press the **{Save}** button. (see the Engineering Config section of this manual).

			Filing System Eng Config	
	File 💿 Name	Description	Date/Time	
	0		19 Aug '19 14:25	
	1* STARTPOINT		30 Apr '20 09:22	
	5		09 Dec '20 14:20	
				Config Options
			Override Merge	
	File Name STARTPOINT		Override Enables Enables	
	Description			
			Default Lock Delete	
	Project 24: STARTPOINT			
			Commit Revert	
	Enables			
Currently selected	All		Load	
Project				



#### **Delete an Engineering Config File**

To delete an Engineering Config file, use the **"File"** parameter to select the eng config file, then press **{Delete}**. A dialog box will appear asking if the user wishes to Continue or Cancel.



#### **File Locking**

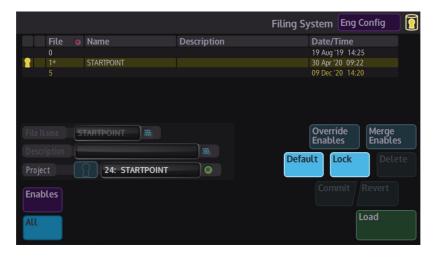
Each engineering config file can be locked to prevent files from being over-written or deleted. This is indicated by the Pad Lock symbol next to the file.

			Filing System Eng Config 🛛 🚺
File	• Name	Description	Date/Time
			19 Aug '19 14:25
<mark> </mark> 1*	STARTPOINT		30 Apr '20 09:22
			09 Dec '20 14:20
	STARTPOINT		Override Merge Enables Enables
Project	24: STARTPOINT	0	Default Lock Delete
Enables			
All			Load

Touch the **{Lock}** button and the button will light up light blue and the pad lock symbol will appear next to the selected file. Touch the **{Lock}** button again to turn the lock off.

#### **Default File**

Touching the **{Default**} button, will allow the user to change the default Eng Config to a user defined default Eng Config. When/if the system is re-booted or the selected Default Eng Config file will start along with all the other default Configuration files if setup in the **"Defaults"** startup menu.



Load Engineering Config File

The {Load} button is used to load the currently selected Engineering Config File.

### Filing System - Global (memory file), ME, Macros and Stills

The following explanation is an example of how to use the Global, ME, Macros and stills menus. As stated previously, these menus basically all work in the same way.

Note: Highlighted in red is the "Effects Dissolve" button. For further information about this button, please see the "Effects Dissolve" section in the "Save Pad and Other Save Menus" chapter.

#### **Global (memory file)**

				Filing System Global 🛐
	File	Name	Description	Date/Time
	0.h			08 Jul '20 11:29
				20 Nov '20 15:23
	11.h			26 Jun '20 08:39
File	Name	STARTPOINT		Override Merge
				Enables Enables
Des				Startup Lock Delete
Pro	ject	24: STARTPOINT		
				Dissolve Commit Revert
				Load

#### **Hold Inputs**

When on, prevents a Global memory file (GMEM) load from altering any of the current crosspoint selections, when enabled the button will light up green.

#### **Override Enables**

To load only a subset of a GMEM, select the required parts using the ME Enables and turn this function On before loading the GMEM.

Press once to turns the function On/Off (when On the button is Green), press and hold the button to latch ON (goes orange). When On (Green) a GMEM can still be loaded, when latched (orange) nothing can be loaded.

#### **Merge Enables**

This function merges the enables currently set in the switcher with the enables saved in the file is being loaded (a 'logical OR' of the enables).

#### Delete

To delete a Global memory file, use the **File** parameter to select the file, then press **{Delete}**. A dialog box will appear asking if the user wishes to Continue or Cancel.

#### Lock

Each file can be locked to prevent them from being over-written or deleted. This is indicated by the Pad Lock symbol next to the f.

#### Normal

This will load the user defined Factory Default Global settings and take the system back to those factory default settings state default i.e. resize setting set to various measurements, when normalizing resize they will default to those measurements rather than factory setting

#### Startup

This will set a user defined Global to a startup state, for instance, if the Kahuna mainframe is rebooted when a software update has taken place, the mainframe will startup in the user defined "Startup" global memory state i.e. with resize parameters set to 0.00 they will start up at 0.00, or if the Global memory includes resize measurements that start up at 5.369 then it will start up in that state

#### Load

The {Load} button is used to load a selected Engineering Config File.

Note: Dissolve will be explained in the "Save Pad and Other Save Menus

#### **ME (memory file)**

The ME (DMEM) menu allows the user to select and load ME files that are saved into projects.

			Filing System ME
File o	Name	Description	Date/Time 20 Nov '20 15:23
20	News Room		30 Jun '20 11:26
File Name Description			Override Enables Dissolve Lock Delete
Project	24: STARTPOINT	•	
	E 2 ME 3 ME	ables	Commit Revert

Functions like Delete, Lock, Load, file Name and Description, all work in the same way as in the Global menu functions.

#### **Hold Inputs**

When on, prevents a ME memory file (DMEM) load from altering any of the current crosspoint selections, when enabled the button will light up green.

#### **Override Enables**

To load only a subset of an ME file, select the required parts using the ME Enables and turn this function On before loading the ME file.

Press once to turns the function On/Off (when On the button is Green), press and hold the button to latch ON (goes orange). When On (Green) a ME file can still be loaded, when latched (orange) nothing can be loaded.

#### **Merge Enables**

This function merges the enables currently set in the switcher with the enables saved in the file is being loaded (a 'logical OR' of the enables).

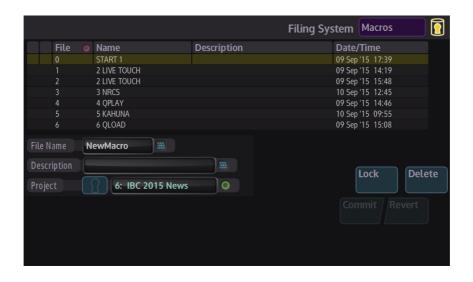
The **{M/E 1**} to **{M/E 4**} selection buttons and the **{Enables**} buttons allow the user to select or de-select enables function when used in conjunction with the "Override Enables" function.

M	E 1			Laye	er Enables 🔼	E ME	Ξ 1			Layer En	ables
Key 1 Key 2	All all	Bgnd A/B		Util 1 Util 2		Key 1	ME 1 Ke	Rand A/R		Enables	
Key 2 Key 3	All			Util 3		Key 2 Key 3	Modulation	Transition	Mix Wipe		
Key 4	All	Trans		Util 4		Key 4	Color Effect	Crosspoint	Mask		
еКеу 1	All					eKey 1		Resize	Border		
eKey 2 eKey 3	All				Sources	eKey 2 eKey 3		Keyer			Sources
eKey 4	All all		All		All	eKey 4	All	Events			All

Note: Dissolve will be explained in the "Save Pad and Other Save Menus.

#### Macro

The macro menu has a slightly different menu options from all other menus in the Filing system.



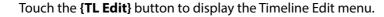
The user is only able to Lock or Delete a macro file from the table and use the File Safe "Commit" and "Revert" functions.

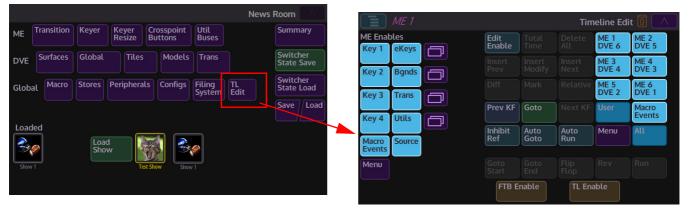
# **Global - TL Edit**

## **Timeline Edit**

#### **Timeline Edit Buttons**

Note: The MAV-GUI TL Edit menu functions must be used in conjunction with the "Timelines" section of the Kahuna 9600/6400 User Manual (manual 2 of 2), that came with this Kahuna system. It will explain in detail how to create and edit Timelines.





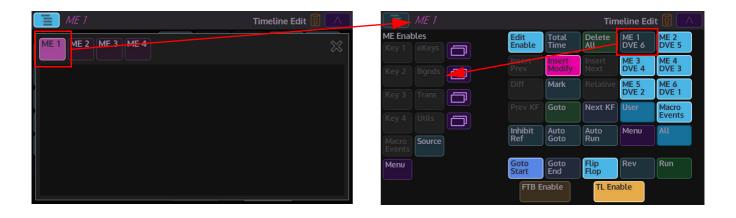
The **Timeline Edit** buttons in the MAV-GUI splits into two sections. The 3 columns of buttons to the left relate to timeline editing and navigation. The 2 columns to the right relate to enables.



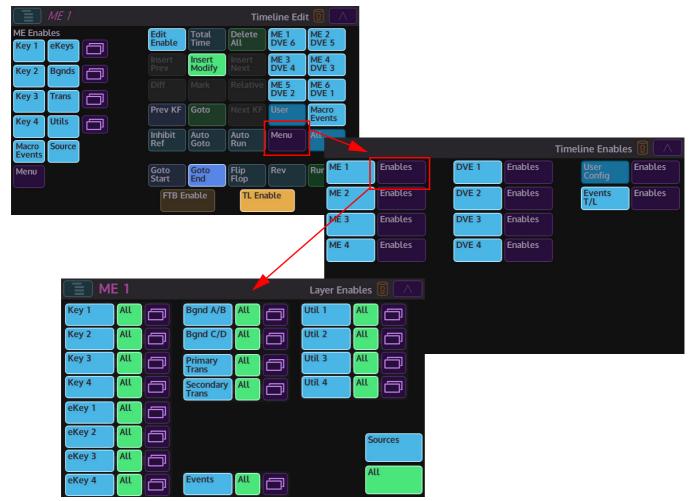
#### Timeline Edit Buttons

The Edit Enable button at the top left, controls the timeline edit facilities. Most of the edit buttons are only effective when the **{Edit Enable}** button is active (lit green). Only 4 of the buttons will work when edit enable is off - these are navigation buttons: **{Goto}**, **{Prev KF}**, **{Next KF}** and **{Mark}**.

Use the **{Delegate}** button to select which M/E the Timeline will be created on. If the user deselects the M/E button (for the M/E selected in the Delegates menu), in the Timeline Enables area, the "ME Enables" buttons will be grayed out and not selectable.

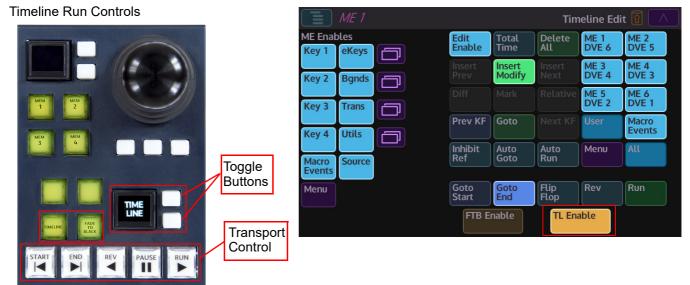


The Enables buttons in the **Timeline Edit** area are Enables buttons for the switcher and its functions such as M/E's, Keys, eKeys, Bgnds etc.



#### Transport Control (using the MAV-JOY module)

The **Transport Controls** can be delegated to control either **{FTB Enable}** or Timelines via the Timeline Edit menu as shown below. The controls are delegated to run timelines when the **{TL Enable}** button is lit green.



#### **MAV-JOY module**

The MAV-JOY module can be used to control "**Fade to Black**" and the "**Timeline**" Run functions. Use the "Toggle" buttons next to the OLED button to toggle to the "**Timeline**", then press the [**TIMELINE**] button on the MAV-JOY module. The user can now use the transport control buttons to control a timeline.

When in Timeline enable mode, the transport controls have the following actions:

#### **Goto Start**

The **{Goto Start}** button moves all the current positions within the timeline to the start position of the timeline. Note that in reverse mode the Start of the timeline is actually the end most time of the total timeline.

#### **Goto End**

The **{Goto End}** button moves all the current positions within the timeline to the end position of the timeline. Note that in reverse mode the End of the timeline is actually the start most time of the total timeline.

#### **Flip Flop**

When the **{Flip Flop}** control is switched on (lit green), the direction of travel of the run control will flip between forward and reverse at the end of each travel.

#### Rev

The **{Rev}** Button controls (and indicates when in Flip Flop mode) whether the timeline will run in forward or reverse mode (lit green for reverse mode).

#### Run

The **{Run}** control puts all the levels of the timeline into run. The direction of travel depends on the Flip Flop and Rev settings. During run, only enabled parts of the timeline will be applied.

#### **Cloning Transport Controls**

The Transport Control buttons can be cloned to the **User Function** buttons using the standard Kahuna Copy Clone/Paste Clone functionality.

To clone a button, touch the **[Copy Clone]** button on the Soft MLC GUI, and it will flash green (the copy button on the MAV-GUI will also flash). Touch the **{Paste Clone}** button and all the buttons that can have a cloned button attached to them will go out.

Touch the button that will receive the cloned function, the cloned function is now attached. All the lamps on the panel will light up again in their normal state.

In order for cloned Transport Control buttons to work, it is necessary to have the **[TL ENABLE]** button cloned on the same User Function pad and switched on (lit green).

Global - TL Edit Timeline Edit



# **Grass Valley Technical Support**

For technical assistance, contact our international support center, at 1-800-547-8949 (US and Canada) or +1 530 478 4148.

To obtain a local phone number for the support center nearest you, please consult the Contact Us section of Grass Valley's website (www.grassvalley.com).

An online form for e-mail contact is also available from the website.

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