

KAHUNA MAVERIK

PRODUCTION SWITCHER CONTROL SURFACE

User Manual

13-06514-020

2020-12-17

(Document 1 of 2)

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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(See www.grassvalley.com.)

Title	Kahuna Maverik User Manual
Part Number	13-06514-020
Revision	2020-12-17, 21:22

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.



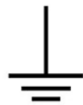
Indicates that the user, operator or service technician should refer to the product manuals for important operating, maintenance, or service instructions.



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.



The presence of this symbol in or on Grass Valley product means that it complies with safety of laser product applicable standards.

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.



Identifie 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 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 nettoyeurs 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 ci-dessous :

- 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 **shall only** 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

LASER SAFETY



The average optical output power does not exceed 0 dBm (1 mW) under normal operating conditions. Unused optical outputs should be covered to prevent direct exposure to the laser beam.

Even though the power of these lasers is low, the beam should be treated with caution and common sense because it is intense and concentrated. Laser radiation can cause irreversible and permanent damage of eyesight. Please read the following guidelines carefully:

- Make sure that a fiber is connected to the board's fiber outputs before power is applied. If a fiber cable (e.g. patchcord) is already connected to an output, make sure that the cable's other end is connected, too, before powering up the board.
- **Do not** look in the end of a fiber to see if light is coming out. The laser wavelengths being used are totally invisible to the human eye and can cause permanent damage. Always use optical instrumentation, such as an optical power meter, to verify light output.

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

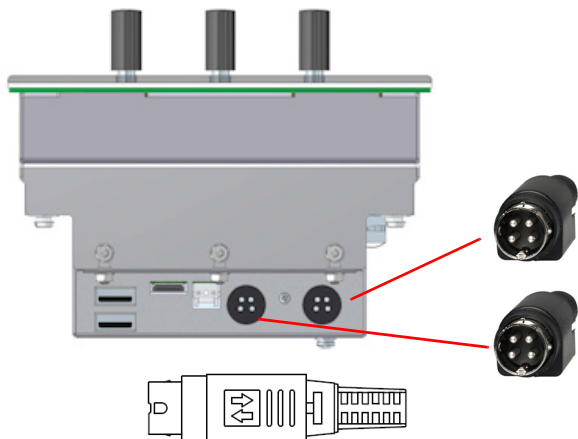


MAV-GUI Power Supplies

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.



Snap and Lock type connector

External PSU for the MAV-GUI



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



Information Technology Equipment - Safety Part 1

EN60950-1: 2006

Safety of Information Technology Equipment Including Electrical Business Equipment.

UL1419 (4th 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 Ω 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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1 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 2 of 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.

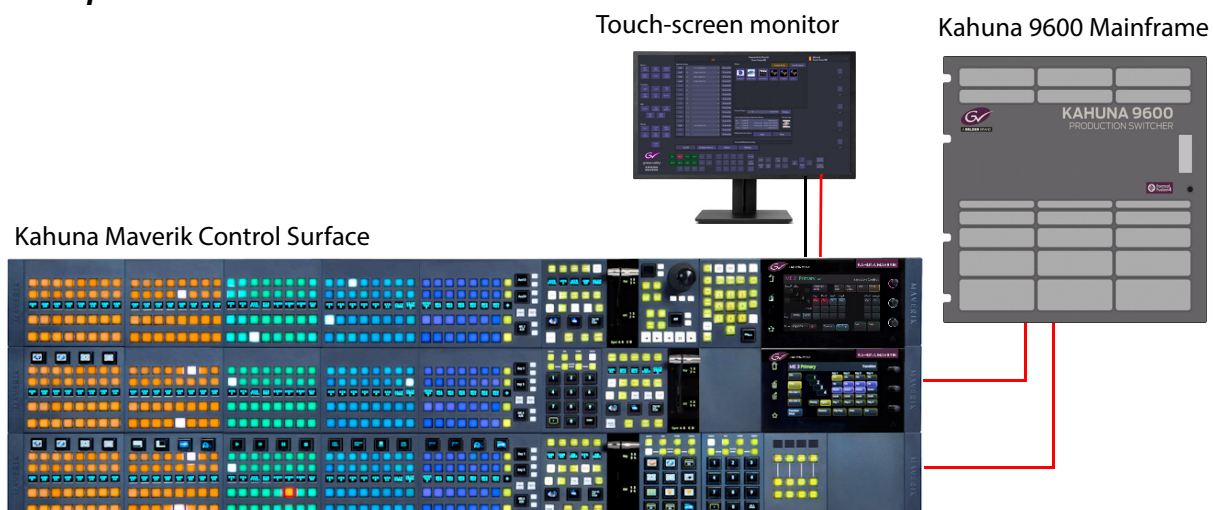
Note: Diagrams are for illustration purposes only.

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.

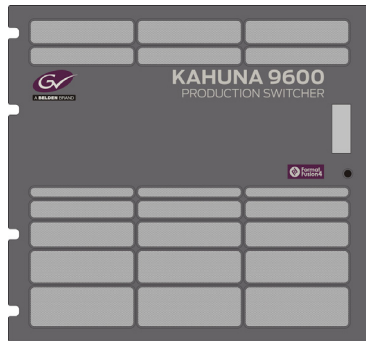
In the studio, Maverik offers complete flexibility to design the control surface in the manner in which the studio is laid out - making complex live productions more efficient and intuitive.

Example of Kahuna Maverik and Kahuna 9600



Kahuna Mainframe Introduction and Overview

Kahuna 9600



Kahuna 6400



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™ 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.

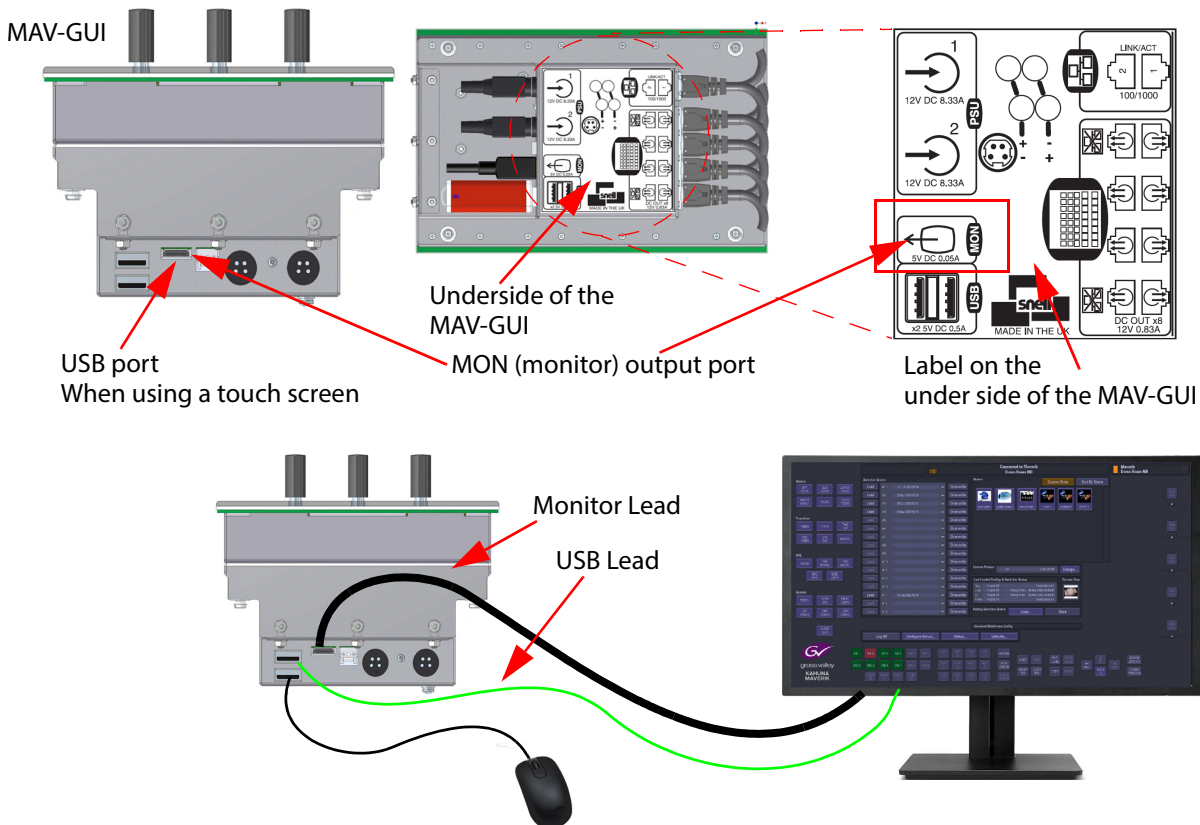
Kahuna Maverik Quick Setup Guide

Overview

The Quick Setup Guide is designed to enable the user to get the Kahuna Maverik control surface up and 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.

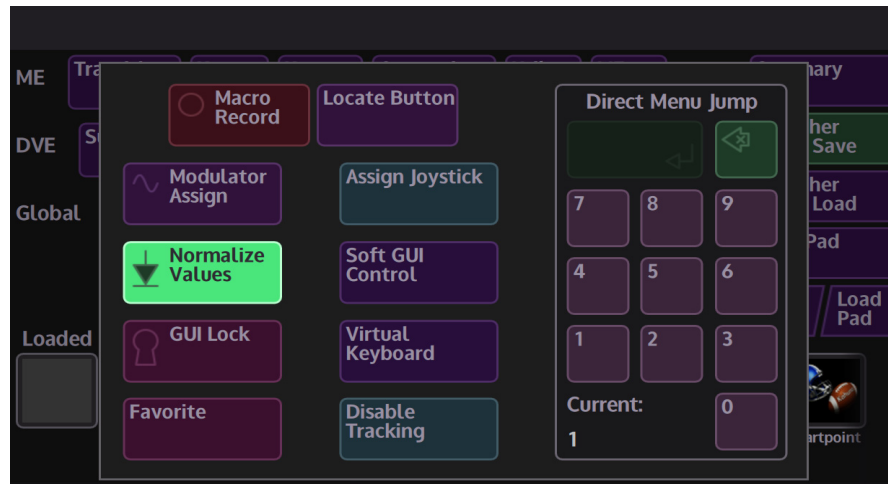


Touch screen monitor - once the external monitor is connected to the MAV-GUI, a USB control lead (also connected to the MAV-GUI - shown above) is connected, allowing the touch screen functions to be used.

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

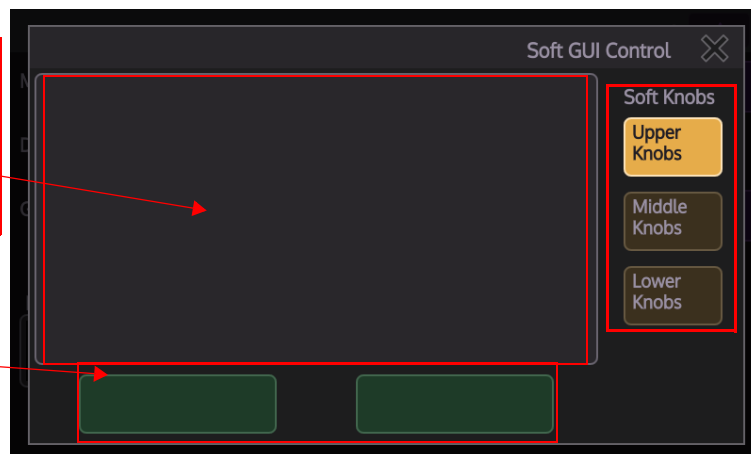
The MAV-GUI has an option that allows the rotary controls on the MAV-GUI to be attached to the parameters in the Soft MLC GUI menus.



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.

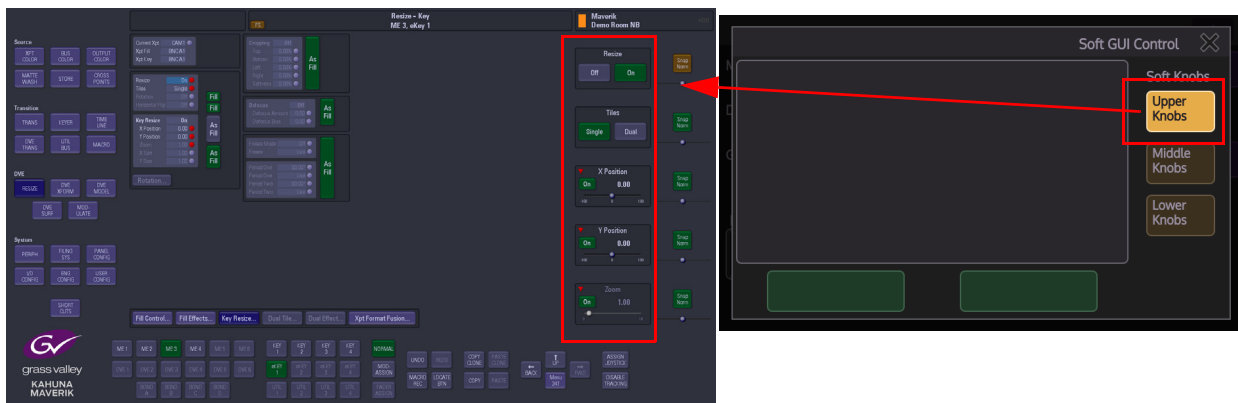
Track Pad
Used like a Track
Pad on a Laptop
(used with no touch
Screen Soft MLC
Monitors)

Select Buttons
Like buttons on
mouse



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.



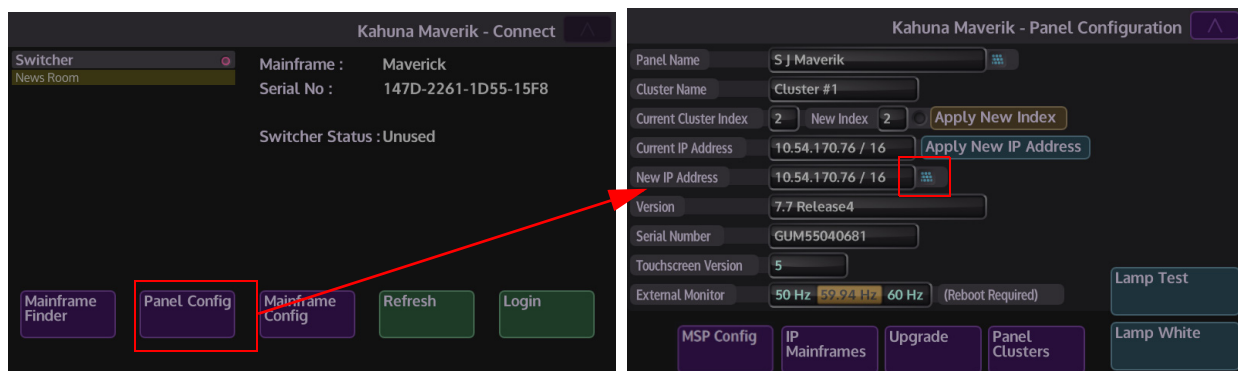
System Quick Setup

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.



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.



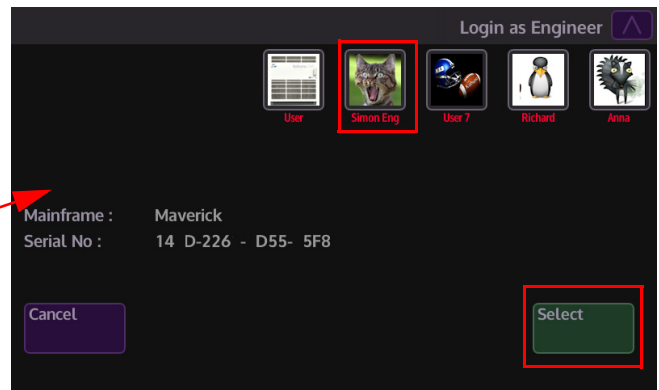
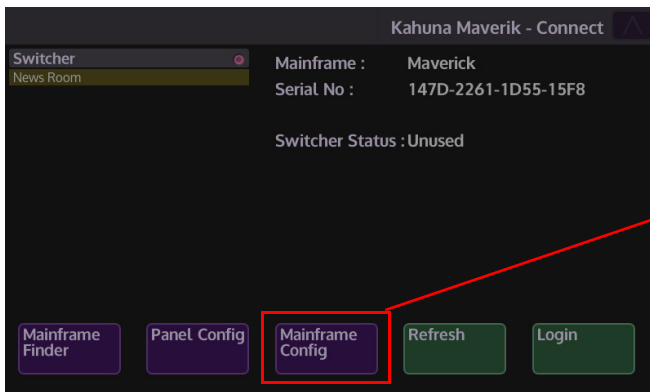
Touch the keyboard symbol for the **"Panel Name"** parameter and a name can be given to the MAV-GUI panel. This is useful to identify the panel if there are a number of MAV-GUIs within a network.

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

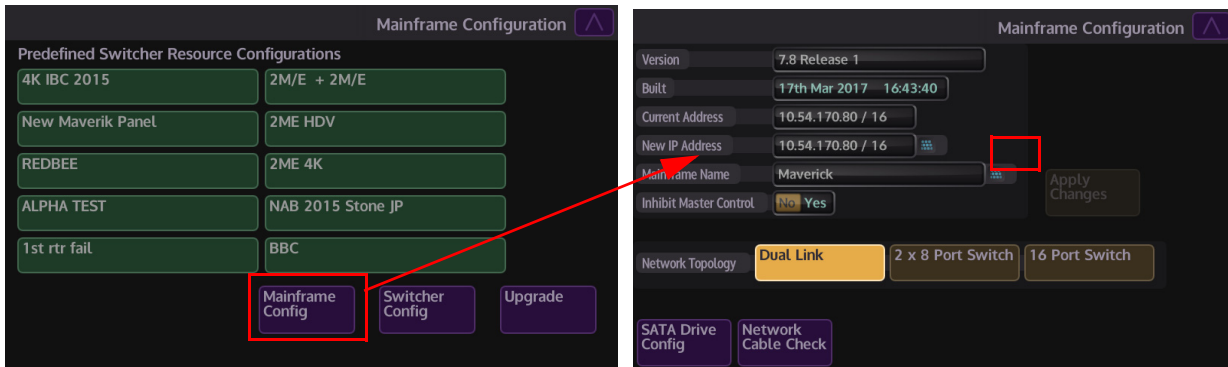
Mainframe IP Address

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.

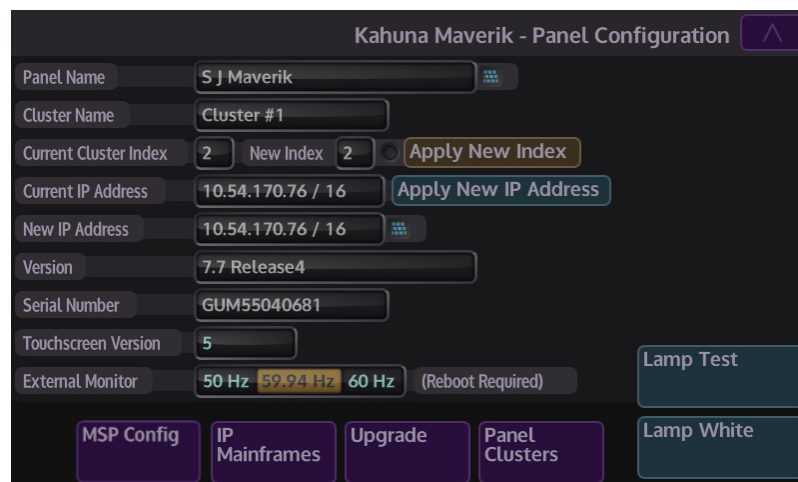


At this point, the mainframe and the panel/panels will be able to communicate with each other.

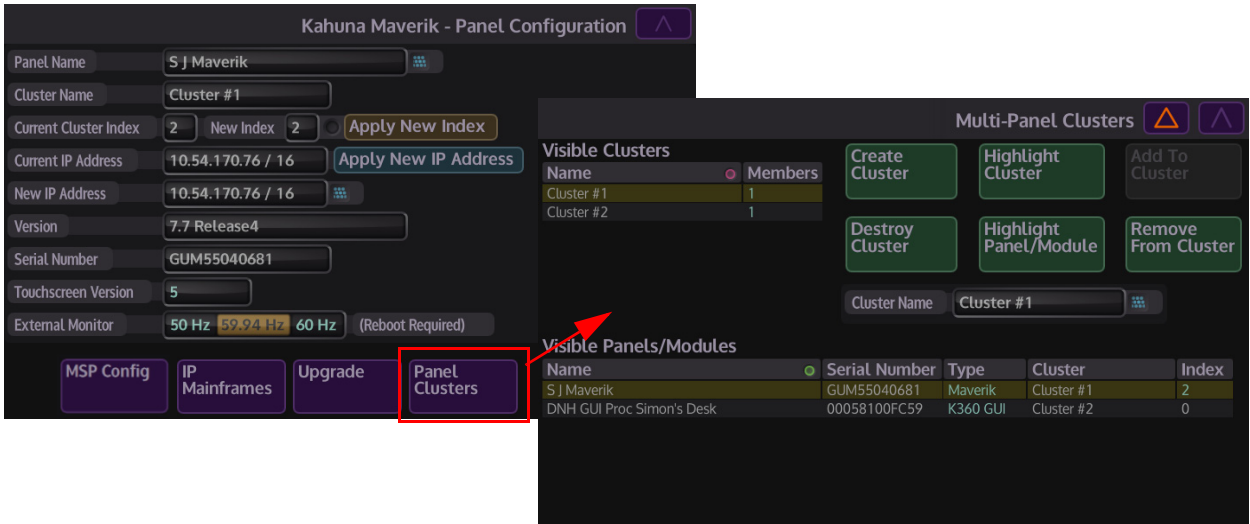
Step 2 - Creating a Cluster

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.



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



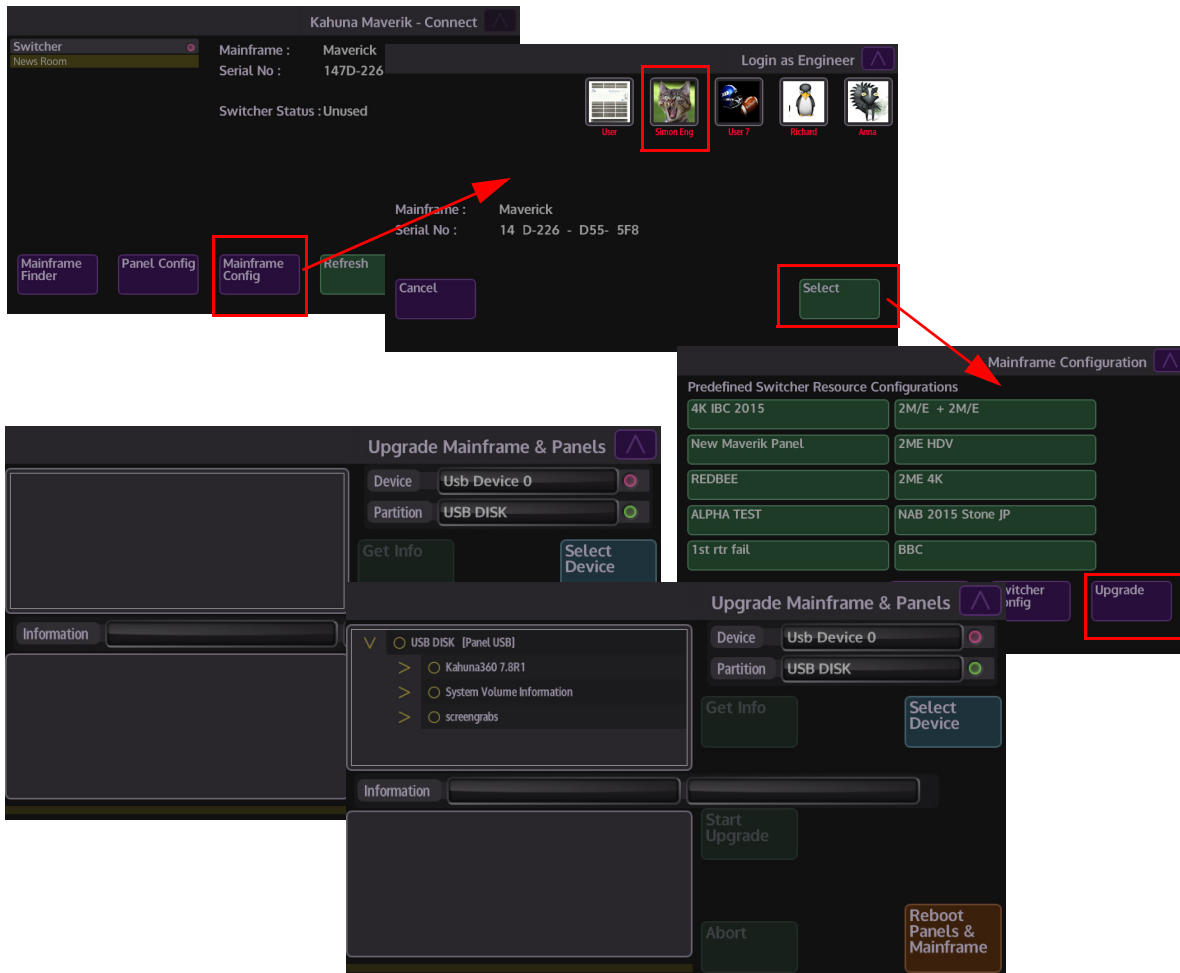
The **Multi-Panel Clusters** menu will then be displayed as shown above.

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.

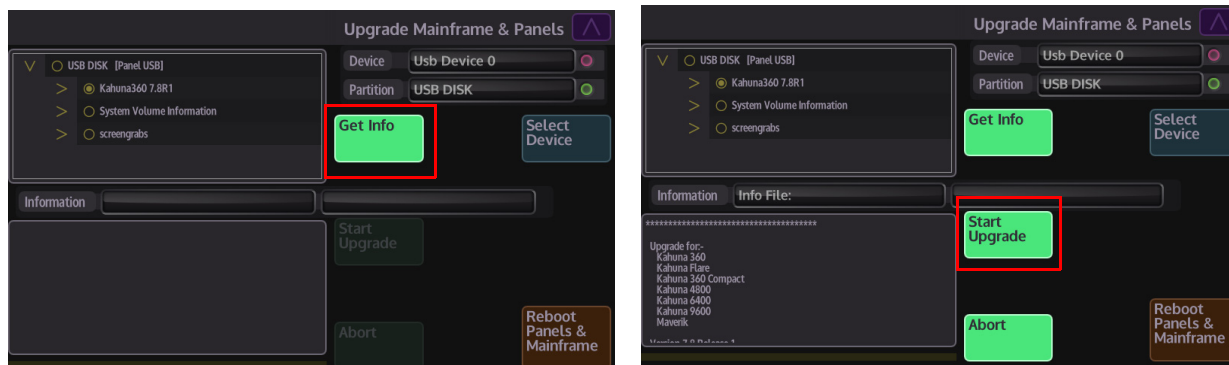
Step 3 - Update the Software

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.

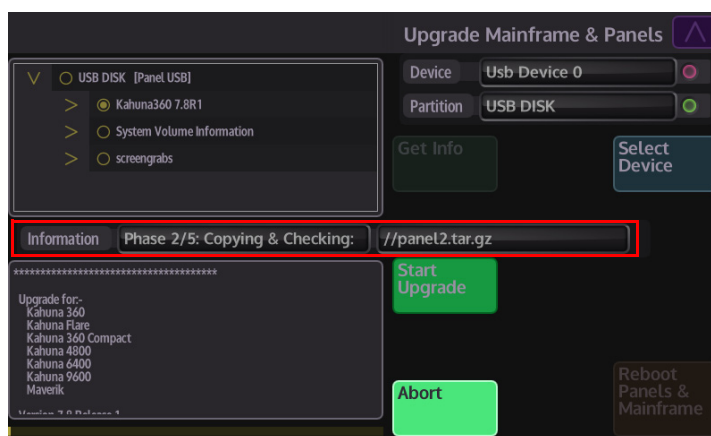


In the “**Connect**” menu, press the **{Mainframe Config}** button, then in the Login as Engineer menu, select an engineer login and then touch the **{Select}** button. The Mainframe Configuration menu will be displayed. In this menu, touch the **{Upgrade}** menu link button. Use the “**Device**” parameter 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.

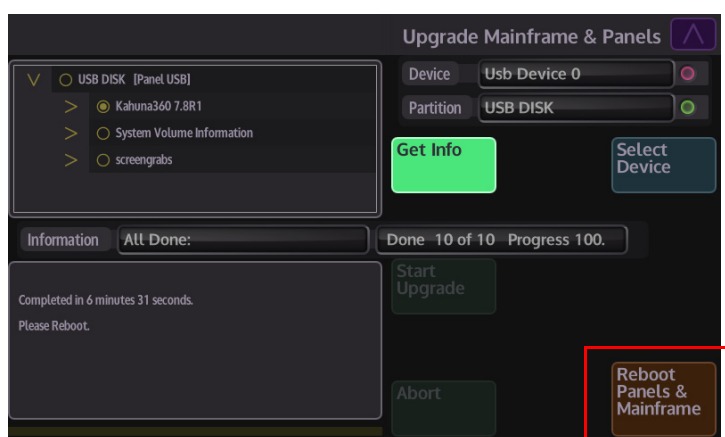
Touch the lit **{Get Info}** button and information related to the selected software from the software.txt file will be displayed in the information area. When happy that the correct software has been selected, touch the **{Start Upgrade}** button.



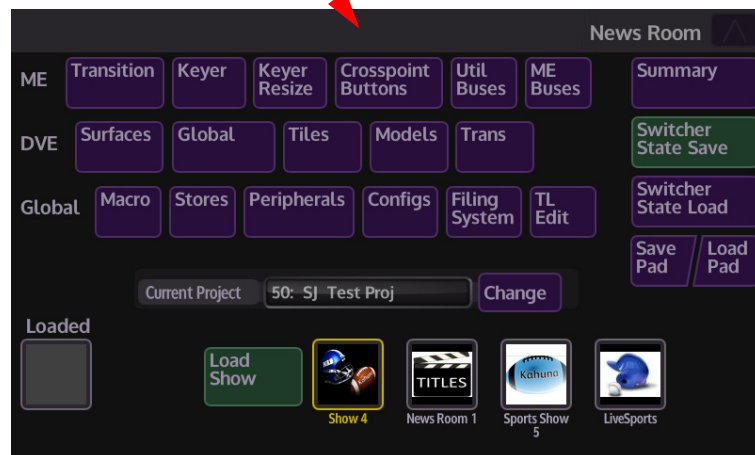
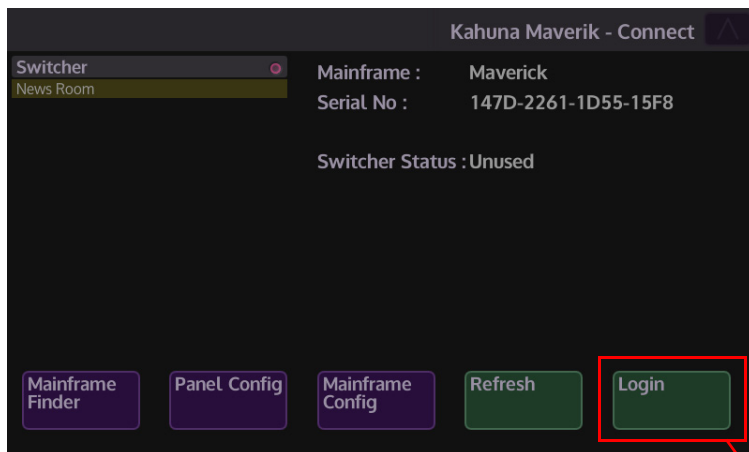
The progress of the upgrade is displayed in the Information bar.



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.



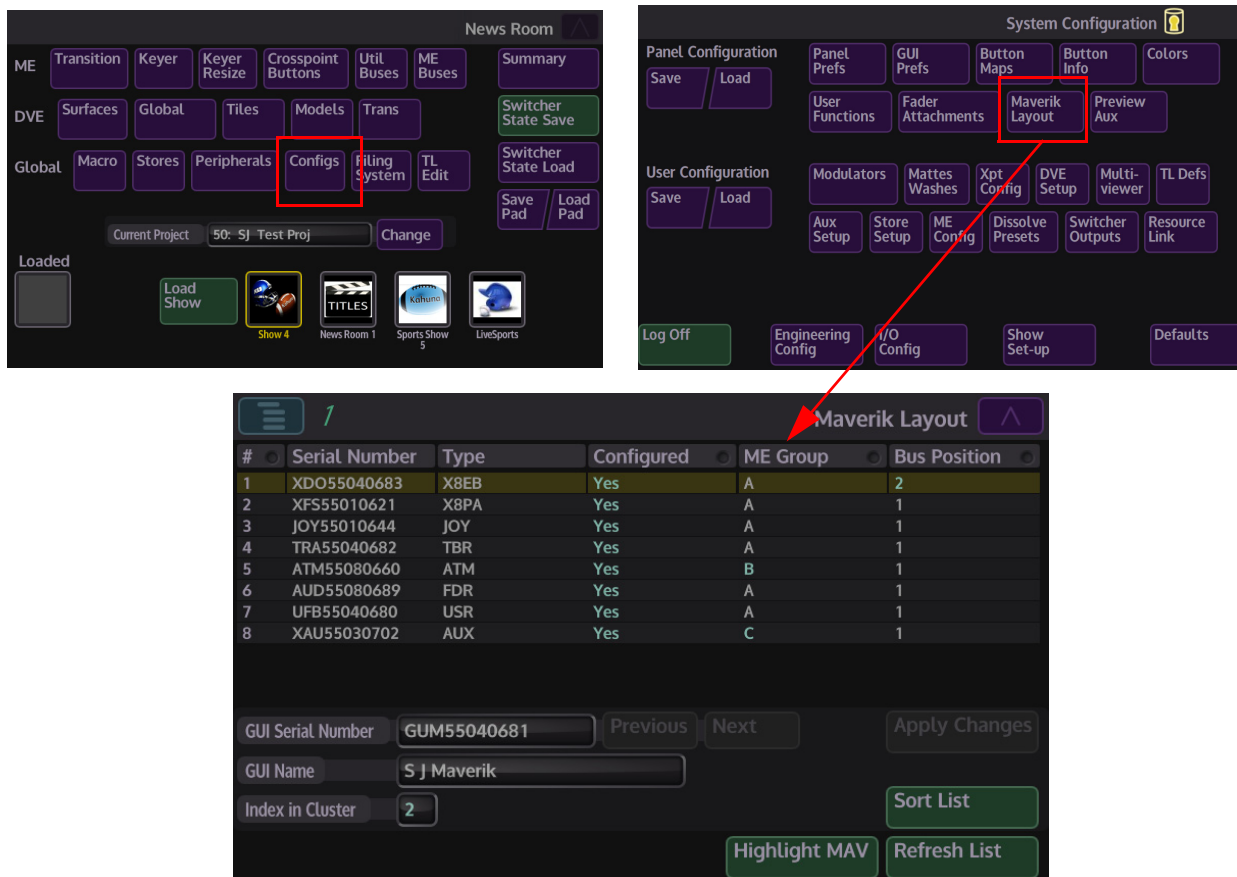
MAV-GUI logged in menu

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.

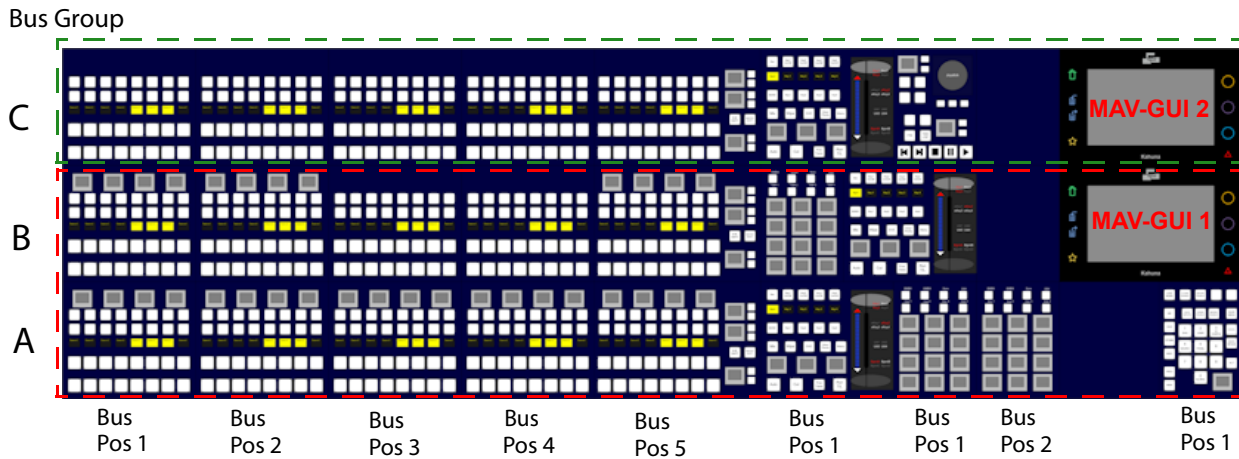
It is vital to set the layout of MAV Xpt modules correctly to make sure that the crosspoints run in the correct numbered sequence.

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.

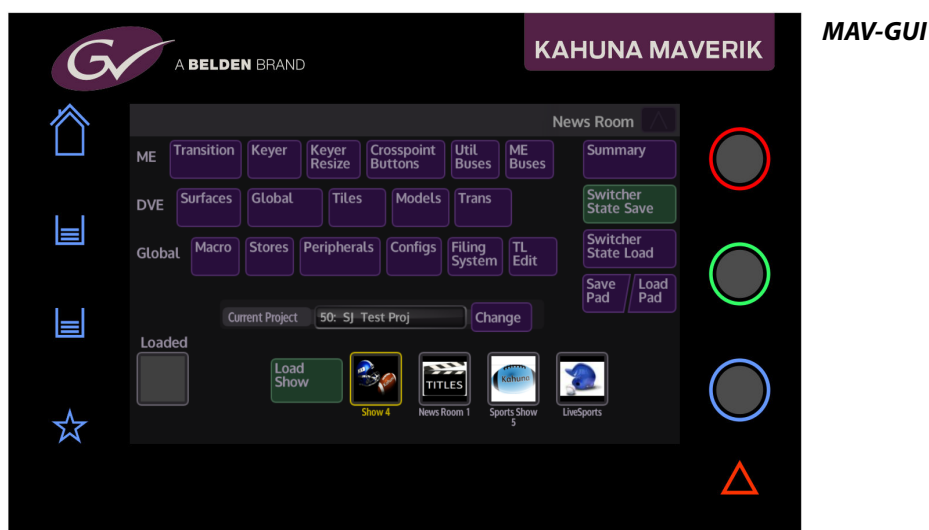
Note: If any MAV Xpt modules are removed or their position changed and the system is re-booted the module layout will be lost.

3

MAV-GUI Operation

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.



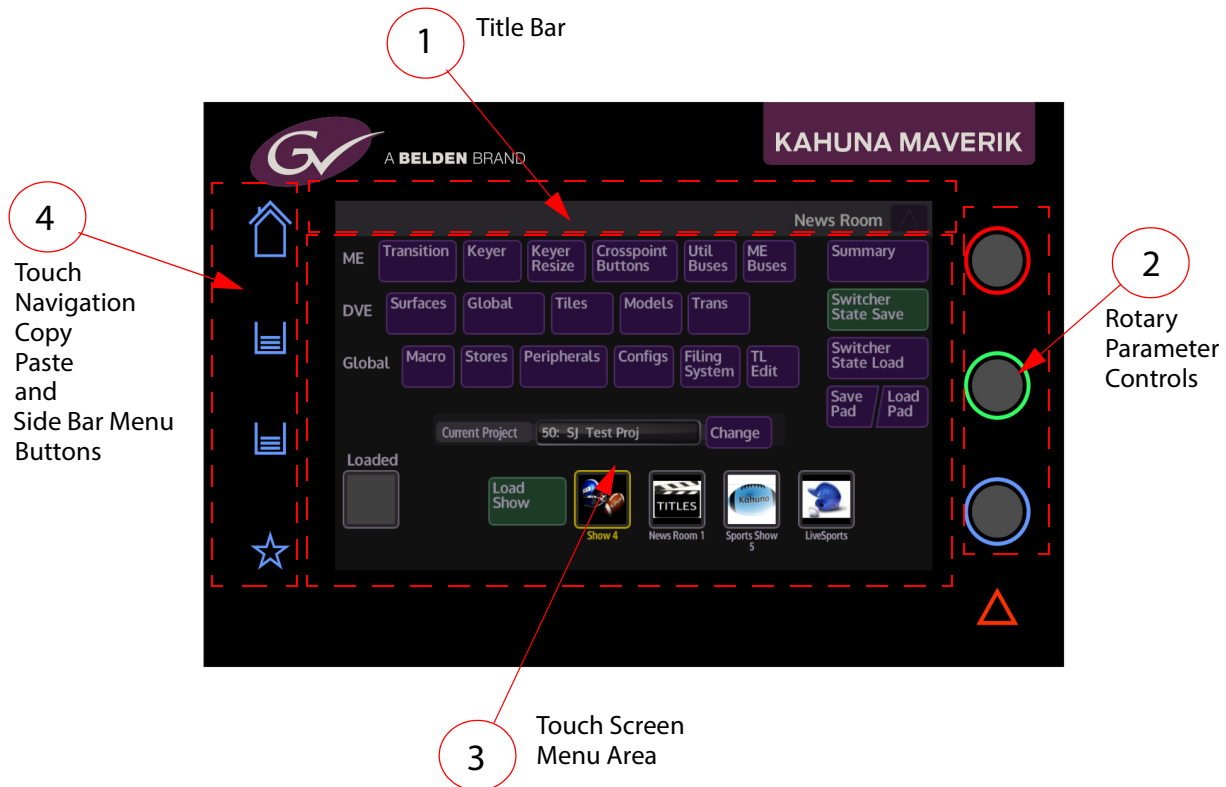
Note: Throughout this manual, where brackets around text like this “[TRANS]” or {Input Setup...} are displayed, this means that a button in a menu or on the Control Surface is meant to be pressed.

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.

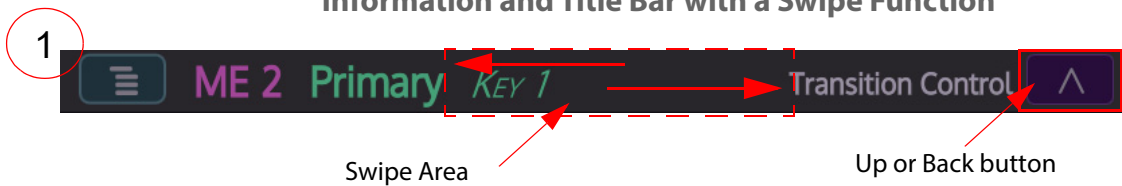
The MAV-GUI

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.



Information and Title Bar with a Swipe Function



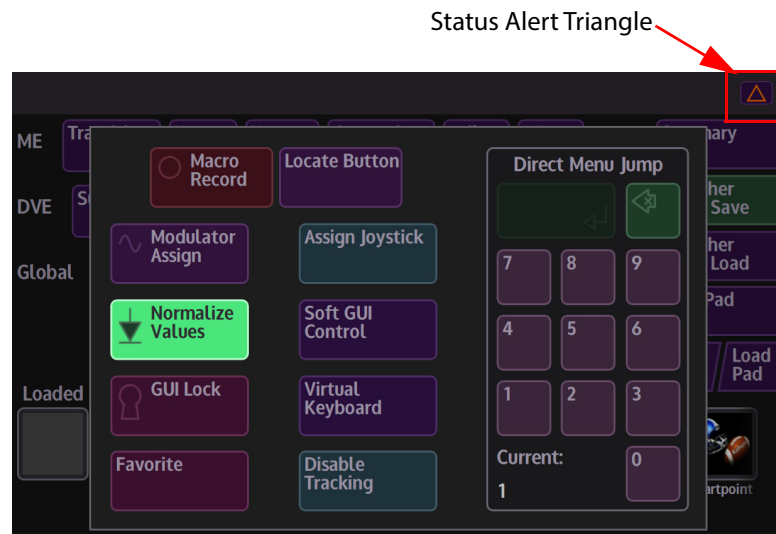
The Title Bar displays the M/E, Background or Key the menu is controlling and the functional title of the current menu.

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.

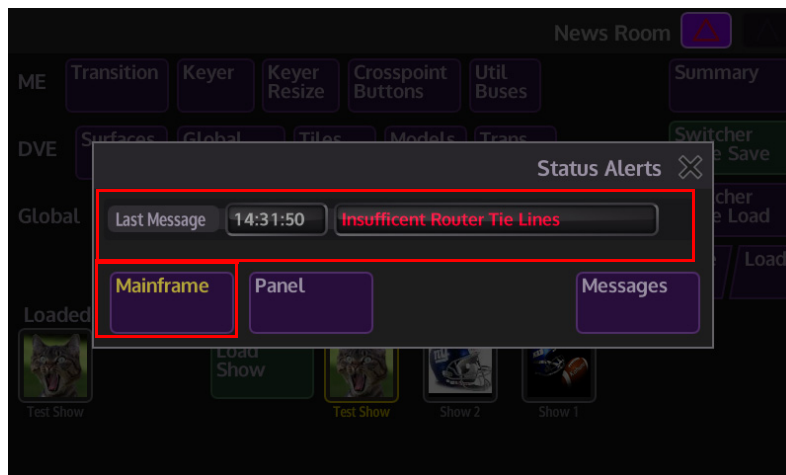
There is also an "Up" or "Back" buttons that will back to the previous menu.

Status Alert Triangle

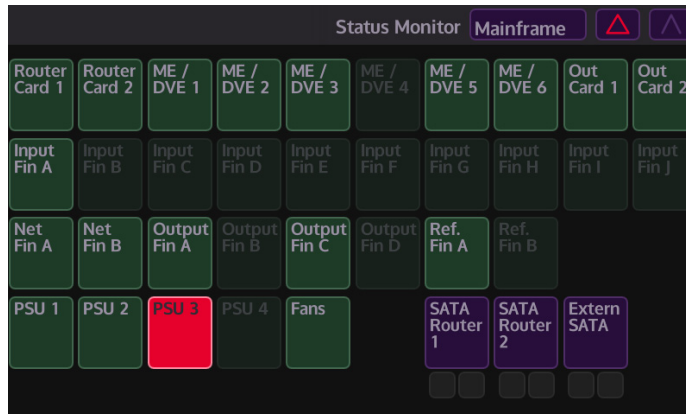
An **"Status Alert Triangle"** may be displayed in the information bar, as shown below. This is to alert the user to a possible problem that may have occurred.



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.



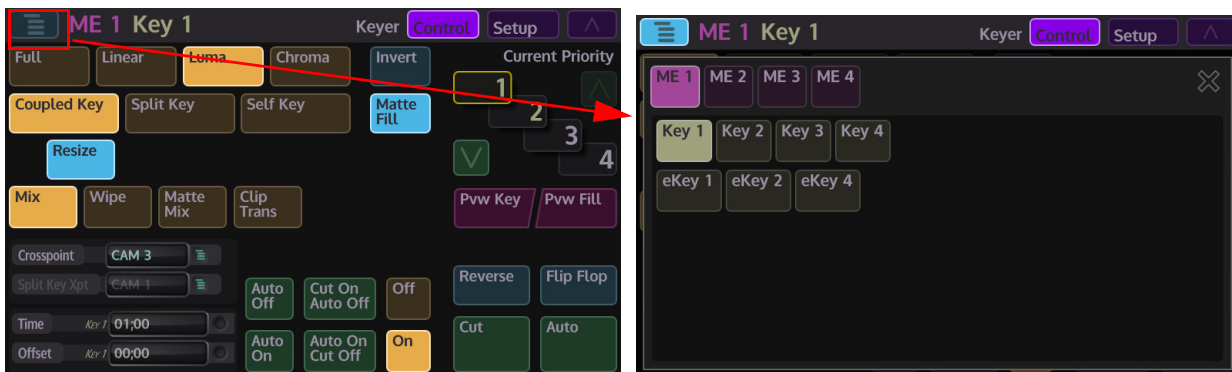
There are 3 menu link buttons in the menu, if the name text on the menu link buttons is a yellow color, it indicates that there is a problem within that menu. Touch the button to display the cause of the alert.



In the “**Mainframe**” menu, the menu is displaying a fault with “**PSU3**”.

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.



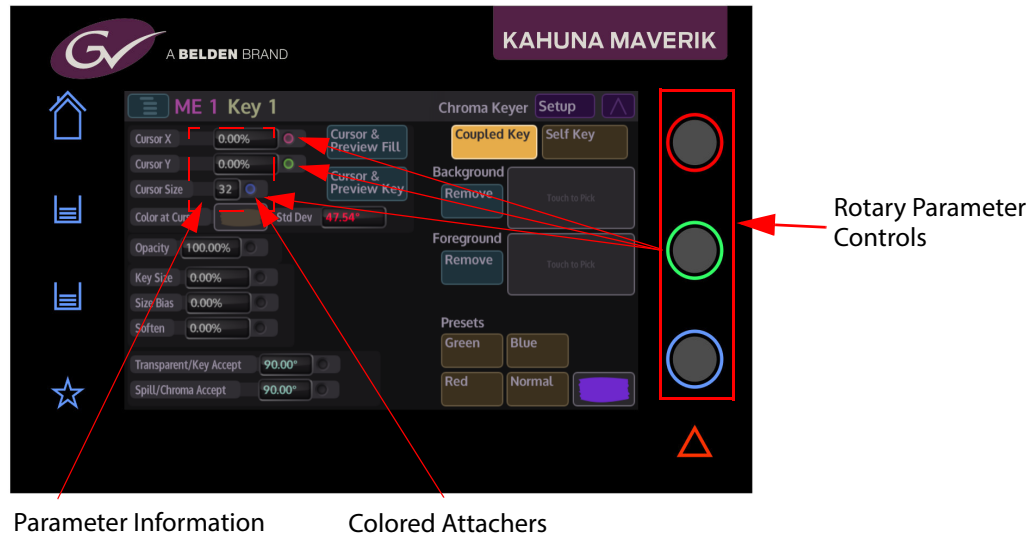
Delegates will in some menus also include “Partial Delegates”, this are italicized - small caps on the title bar of some menus, and this partial delegate is repeated on the label of each relevant value strip. Changing delegates will sometimes alter the contents of a menu.

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

2

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.

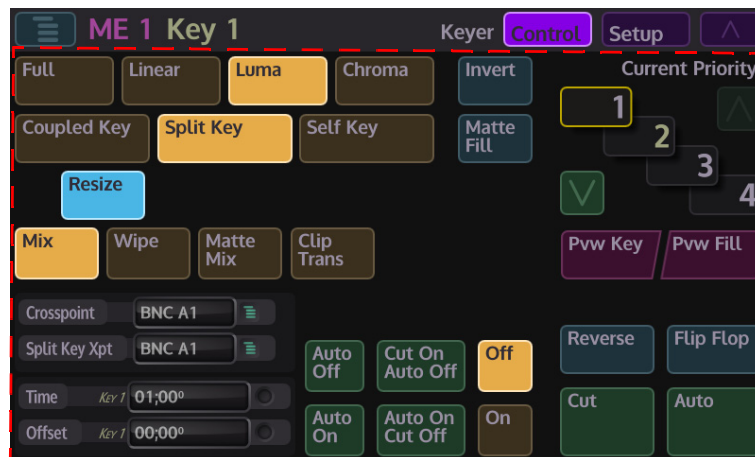


Note: The Colored Attachers will be explained in full later in this section.

Touch Screen Menu Area

3

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.

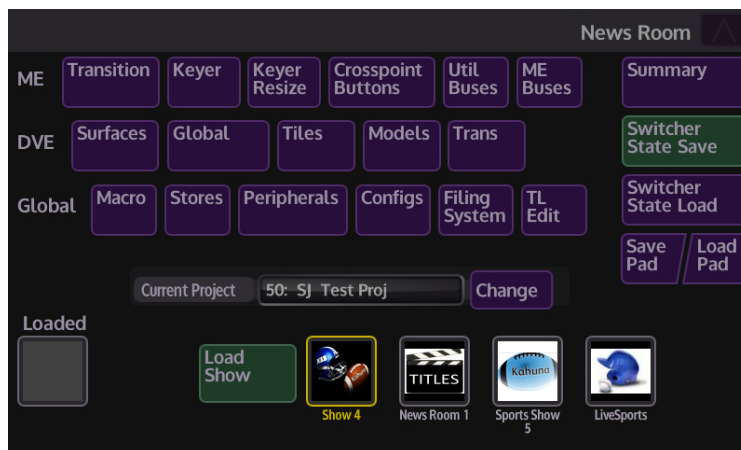
4

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

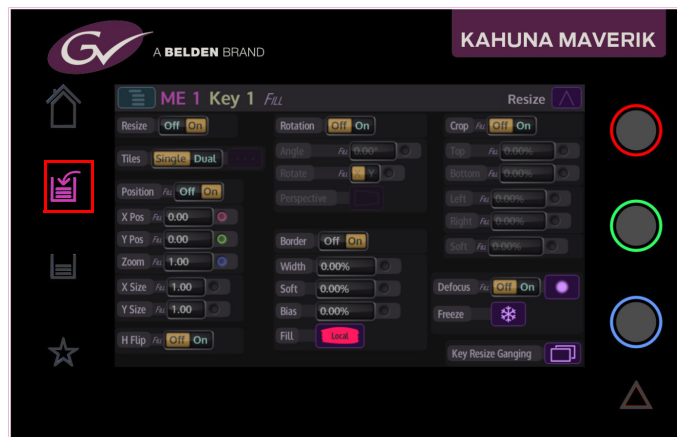
The **Paste Clone** button - the button is blank as a default, when touched the button will turn a purple color and flash, indicating that it is ready to paste the copied function. It allows the user to paste the copied functionality (mentioned above) onto a User Function button. Notice that the copy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

How to Copy and Paste

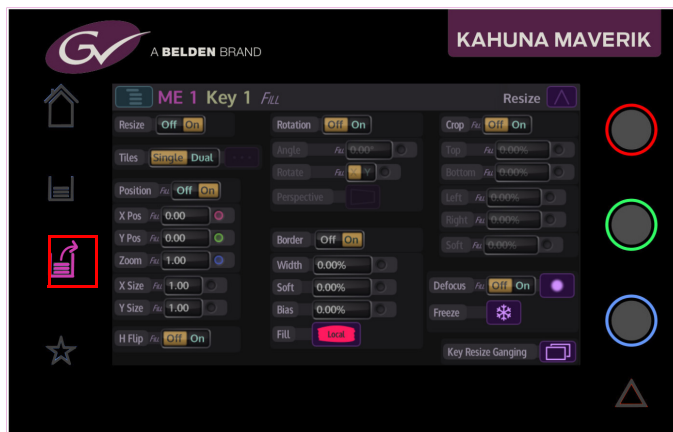
There are several ways the user can copy and paste button functions, parameters, modules or Key layers using the MAV-GUI or the Soft MLC GUI.

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.

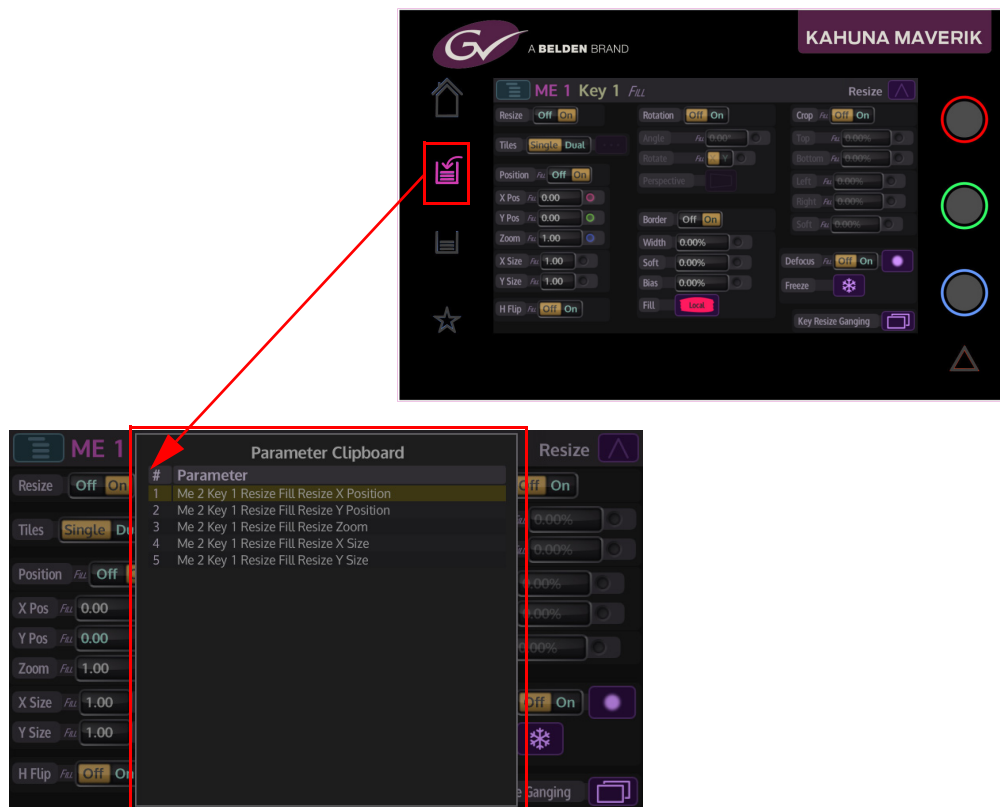
There are two ways to start the copy process, the user can either press the **“Copy”** button on the MAV-GUI (shown below left), or press the **{COPY CLONE}** button on the Soft MLC GUI (shown below right).



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.



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.

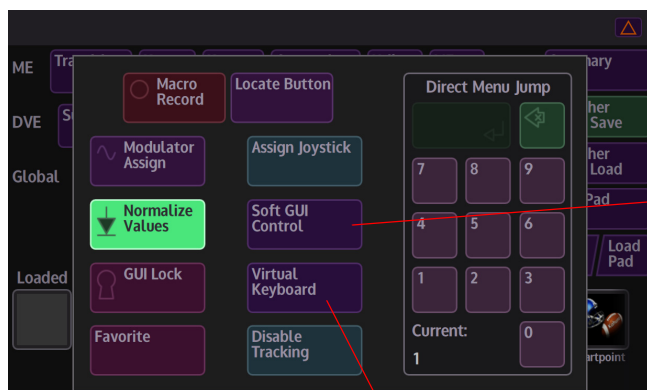


To attach the copied parameters, use the **{Up}/{Down}** buttons to select a parameter in the **"Parameter Clipboard"** table. When selected, touch a **{Snap Norm}** button to attach the copied parameter.

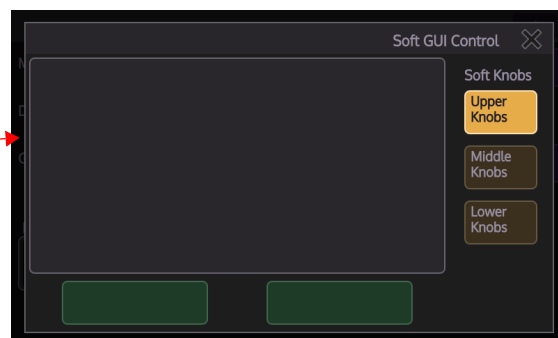


Star Navigation Button

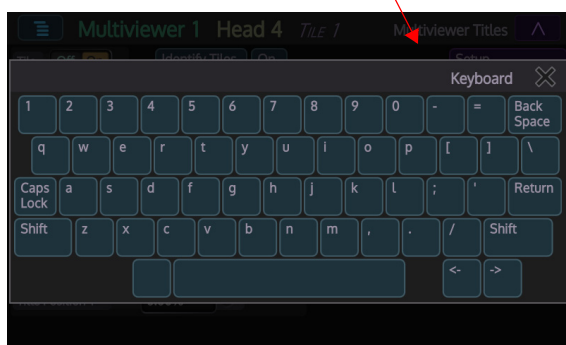
The **Star** button - the button is blank as a default. Touch and hold the button, the button will turn purple and a side bar menu will appear in the current menu (as shown below) with options which include: Macro Record/Quick Macro, Normalize Values and set a Favorite menu. Touch and hold the lit star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



Soft GUI Control (see Soft MLC GUI Control)

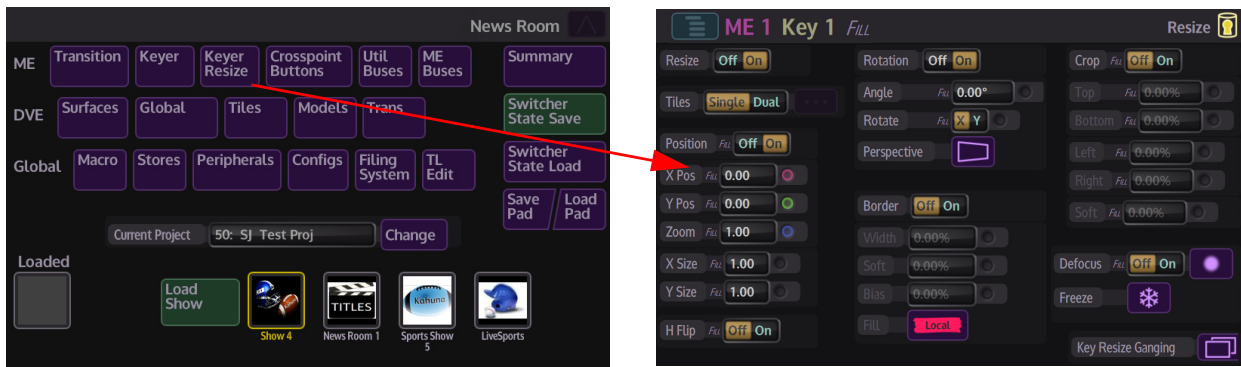


Virtual Keyboard



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.

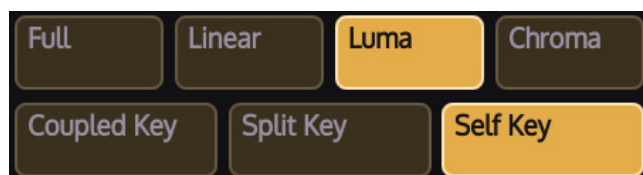
Menu Buttons, Controls and Gesture Controls

Menu Link Buttons



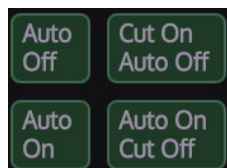
Menu Link buttons are dark when off and a blue color when selected. Touching a menu link button will open a different or sub menu with more parameter options. There is no set location in the menu for these buttons and may be placed anywhere within a menu. Menu Link buttons are different to "Menu Expander"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

Action Buttons



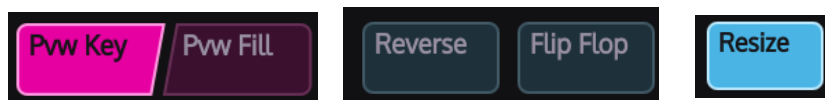
Action buttons are brown color. When an action button is touched (selected), the button will turn an orange/yellow color.

Toggle Buttons



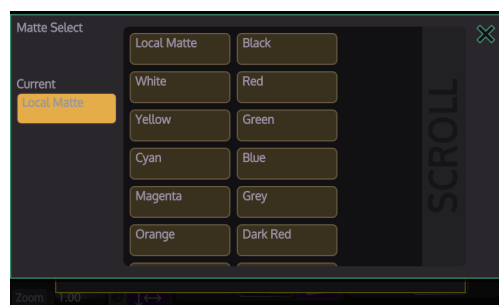
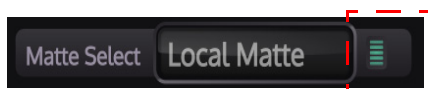
Toggle buttons will toggle **On** then straight away go **Off** when touched. The border around the button will light up a bright green color, and stay lit until the user's finger is taken off the button.

On/Off Buttons



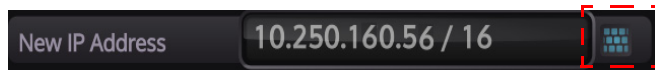
When pressed, these buttons will switch the selected function On or Off.

Option List Select Button

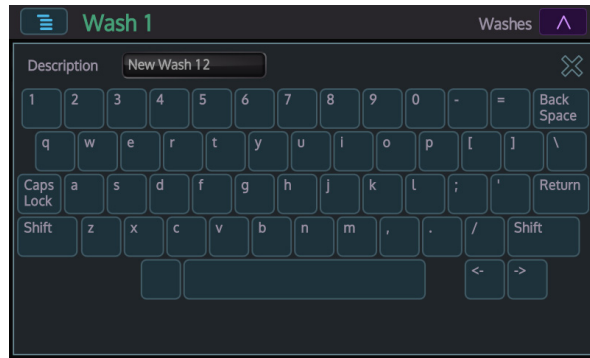


Some parameters will have a green **Option List Select** button at the end of the parameter. Touching this button will open an options menu, allowing the user to quickly select one of a number of options available to them.

Keyboard Select



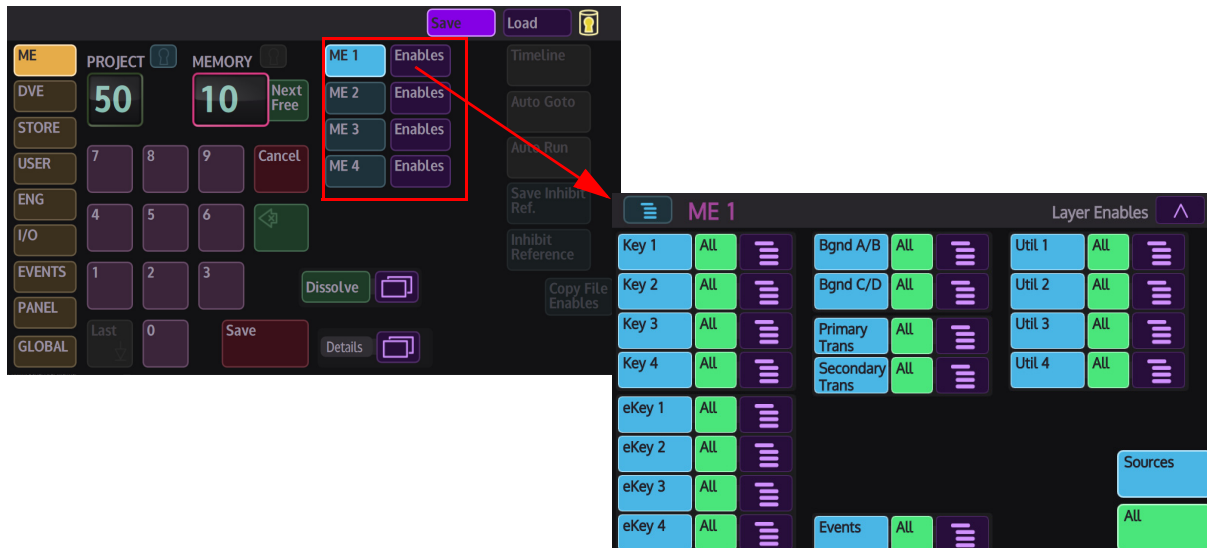
Some parameters will have a blue keyboard symbol at the end of the parameter (as shown above). Touching the keyboard symbol twice will display an on-screen QWERTY keyboard. While entering text using the keyboard, the text being entered is displayed above the keyboard, when finished press the **{Return}** 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.



Shift Button

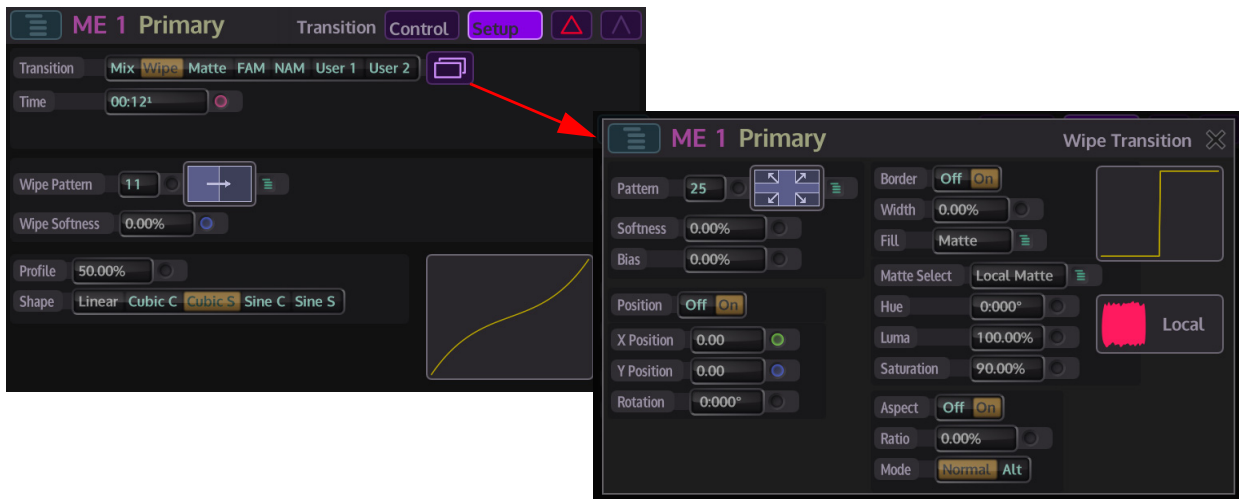
Currently in the **Save Pad** menu, there is a **shift "Enables" button**. When pressed and held, it will cause some buttons to change state and become menu link buttons. Pressing one of the menu link buttons will then open a different menu with enables options specific to the function in the menu link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

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

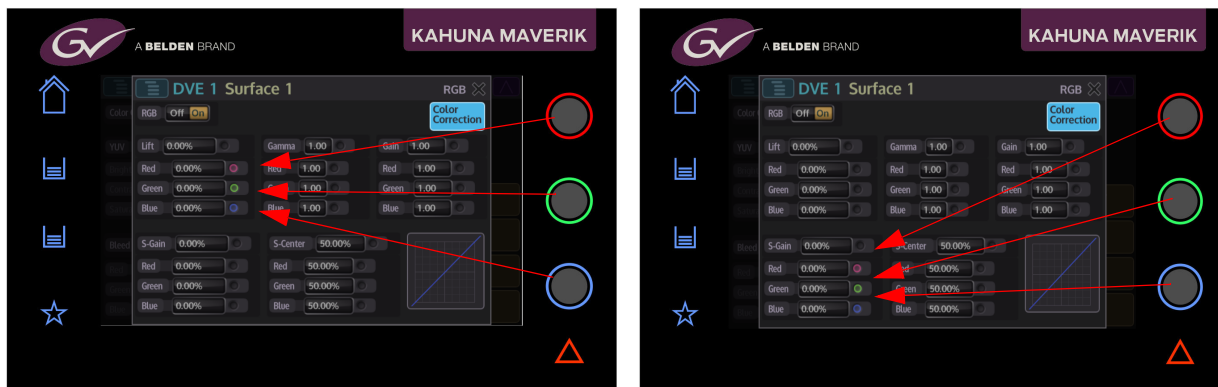


Menu Expanders

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



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.

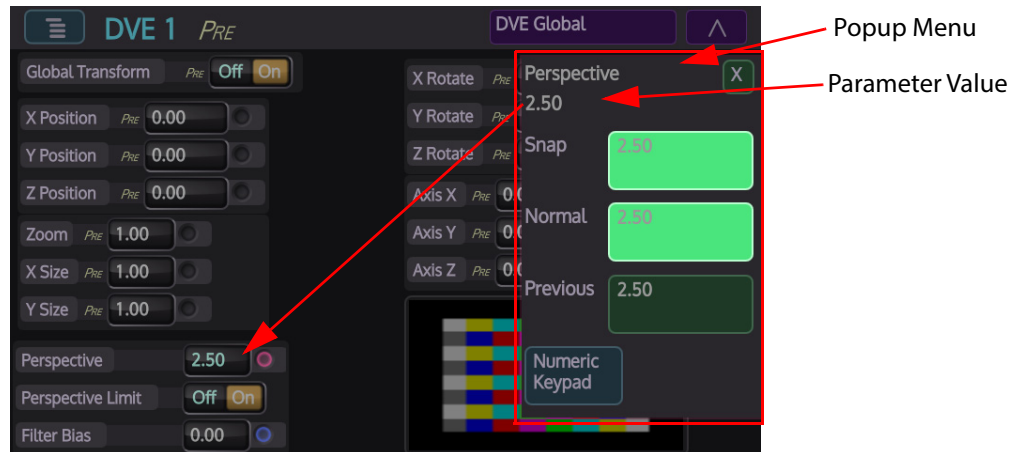
If a rotary knob is pressed and held down, all other colored attachers are cleared or turned off. If a parameter is now touched whilst still holding down the rotary control, it will be attached to the selected parameter. Any rotary control can be attached to any attacher.

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.

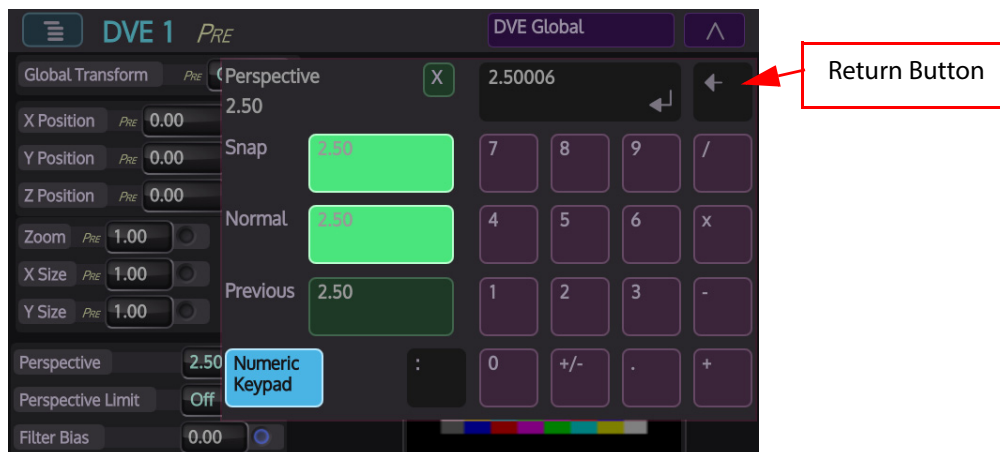
Previous - this will return the parameter back to a previous user defined state.

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.

Scrolling Gesture Controls



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.

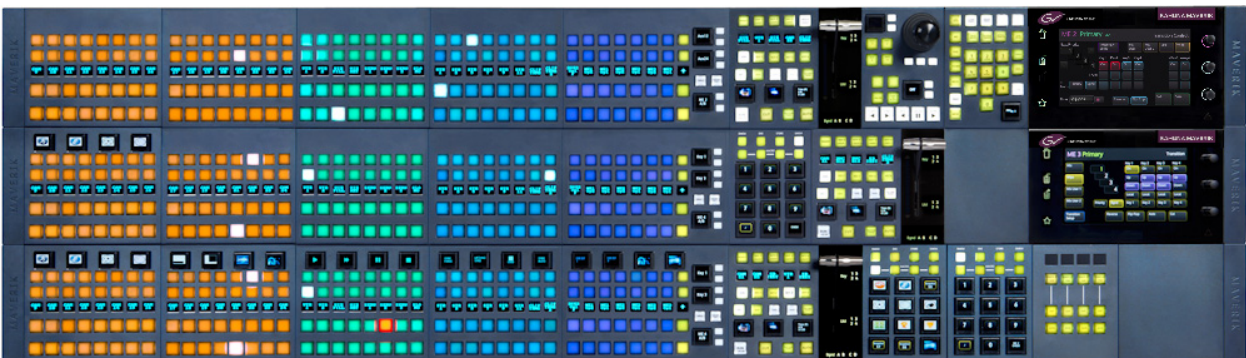
4 Kahuna Maverik Control Surface

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



Music



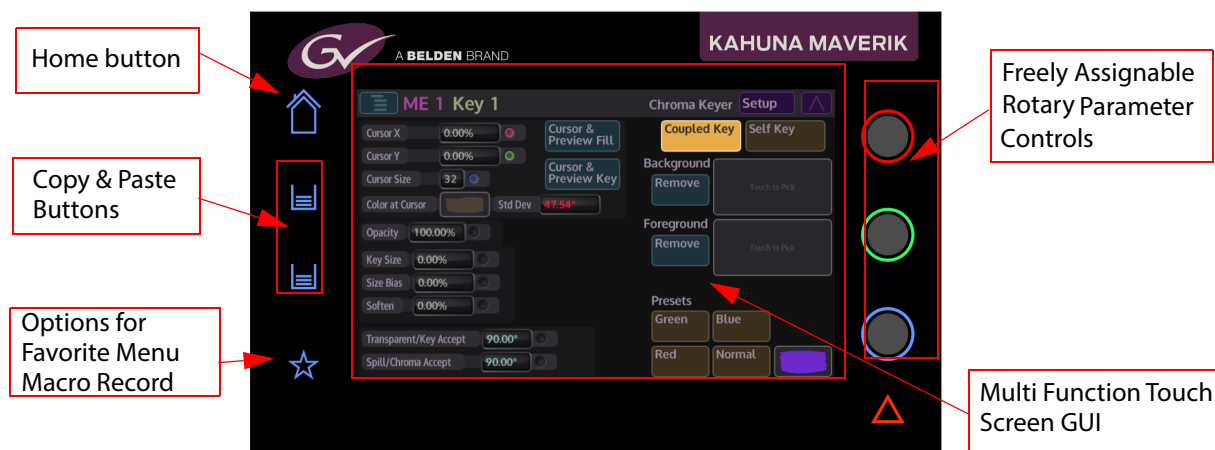
News



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

Kahuna Maverik MAV Module Overview

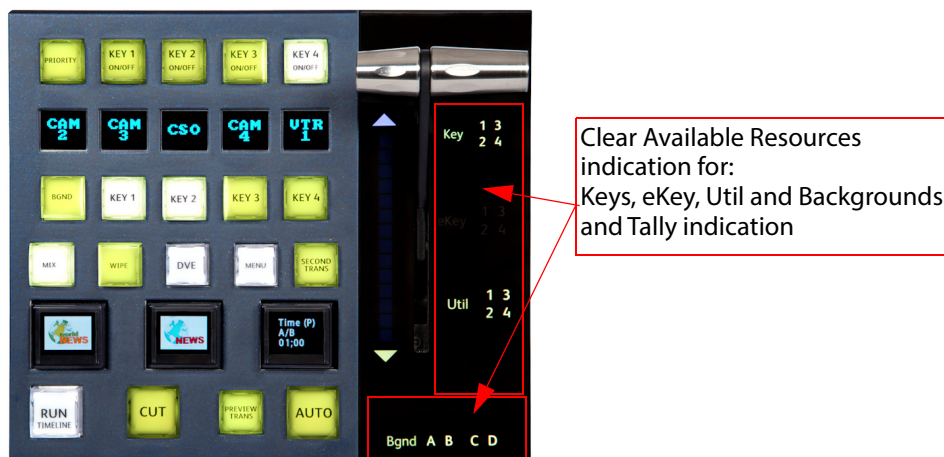
MAV-GUI



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.

MIX

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

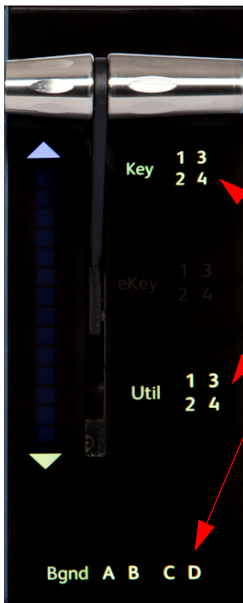
Allows the next transition to be previewed on the preview monitor without affecting the program output.

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.

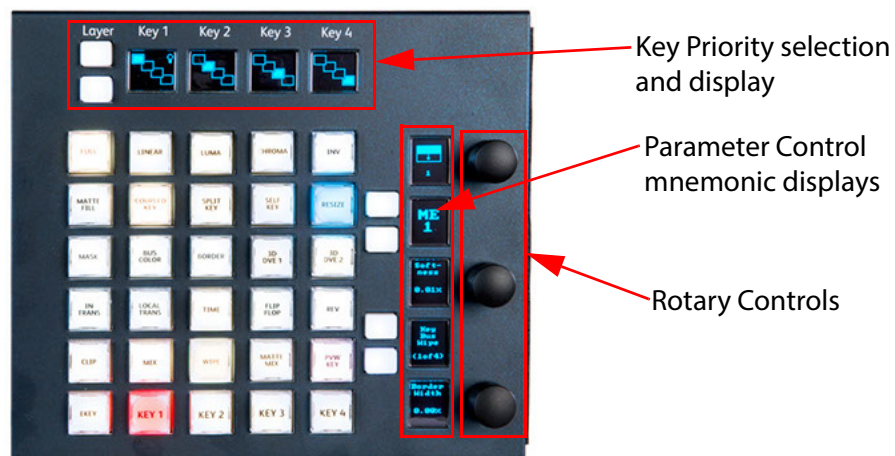


The area around the T-Bar displays the resources available on the selected M/E, they are highlighted down the right side and at the bottom of the T-Bar (as shown in the diagram).

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 MAV-module. 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.

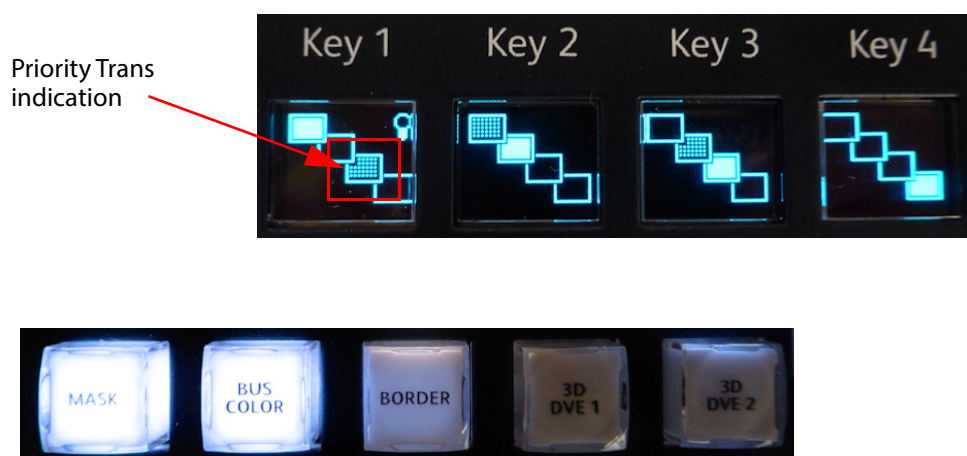
RESIZE - Selects the resize options X/Y and Zoom position of the selected Key. Stepping Up/Down through the bottom two toggle buttons next to the rotary controls, will display Key Resize menu (2 of 2), where the user is able to use the X/Y Size and H-Flip parameters. To select the **Resize X Pos**, **Y 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 of 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

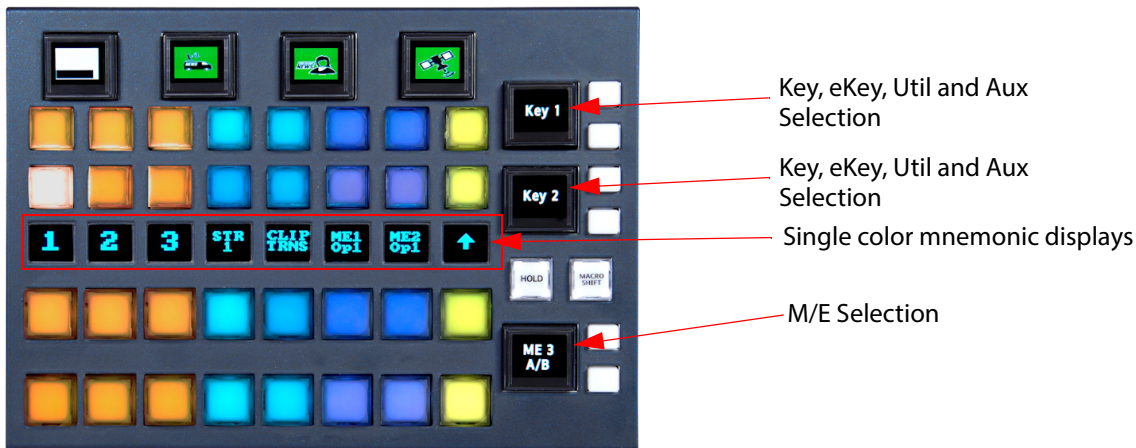


Working in SuperKey mode

eKey - Press and hold and select one 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

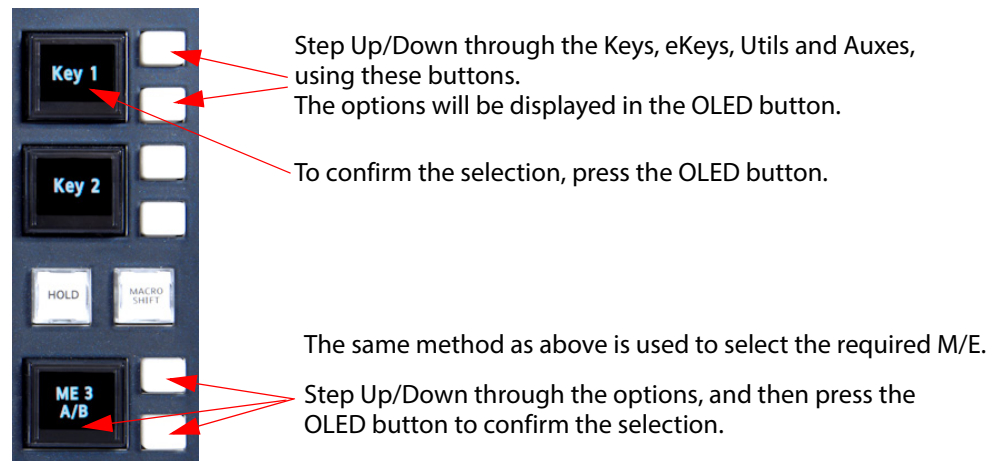
MAV-8Xpt-Del-OB



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.



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.

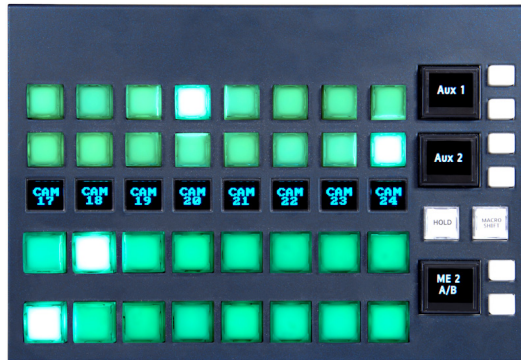
This would be useful for example, if the user wanted a Key layer, from one M/E to work and follow the actions from a Key Layer on another M/E.

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



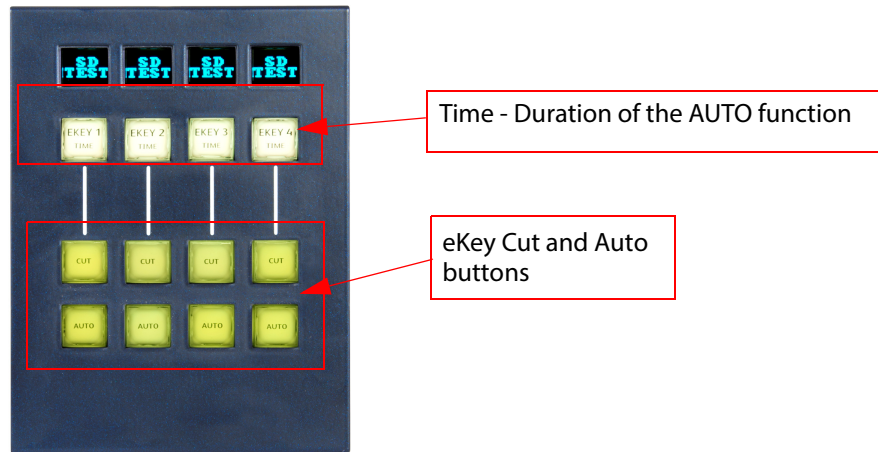
An 8 crosspoint MAV module with programmable OLED buttons.

MAV-8xpt-FS



An 8 crosspoint MAV module without programmable OLED buttons.

MAV-DSK

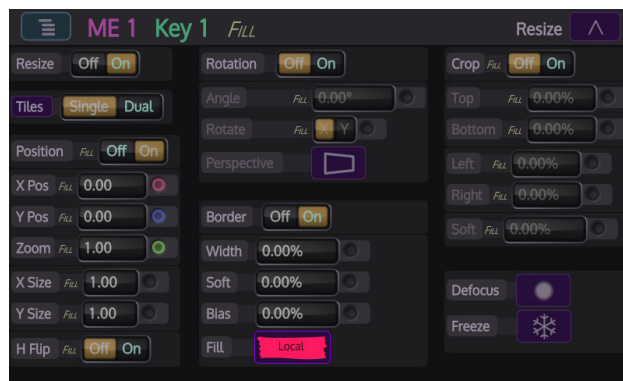


Down Stream Keyer (DSK) control module for eKeys.

MAV-JOY



Example of a menu that a joystick can be used with



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 user to pick the parameters 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.

OVERRIDE 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.

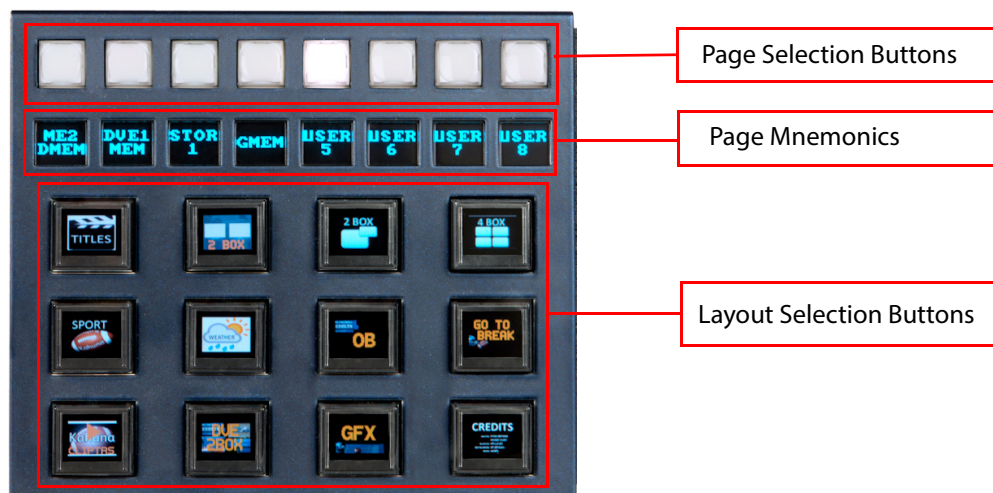


Macro - the macro User Function Buttons are setup and programmed by the user, so are empty until macros are loaded into them.

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.

MAV-AUTO



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.

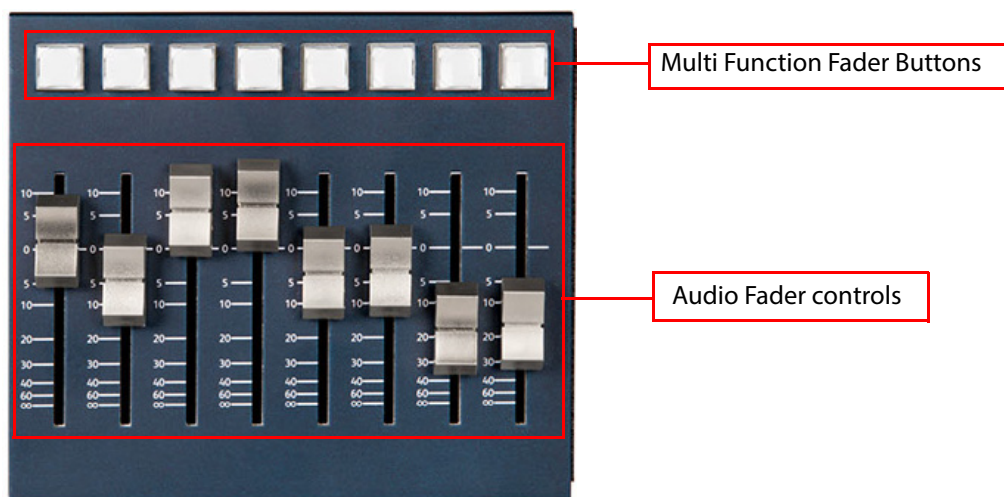
GMEMs are slightly different, the user does not have to enter the M/E as GMEM's are global and will affect the whole control surface.

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:

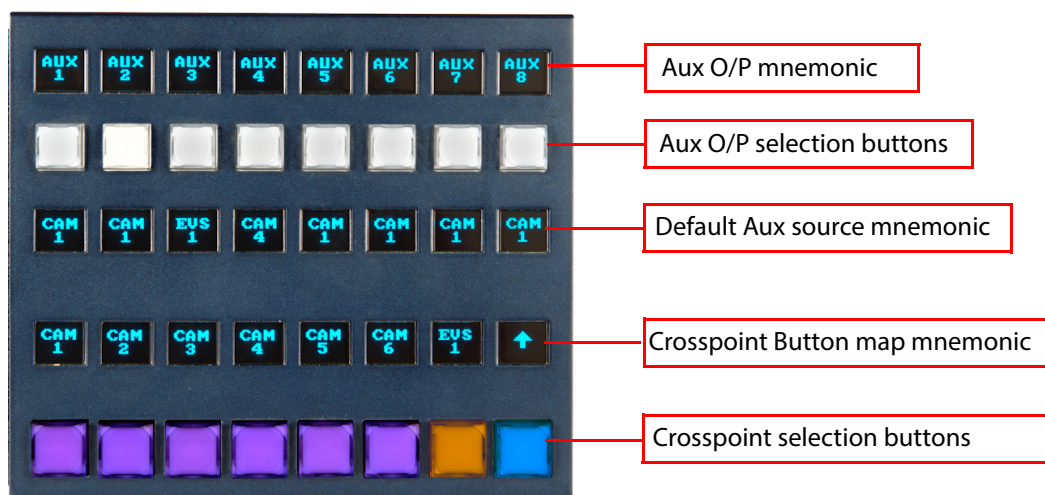
The fader Buttons can be set to 3 different options; Cut, PFL and AVFO.

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:

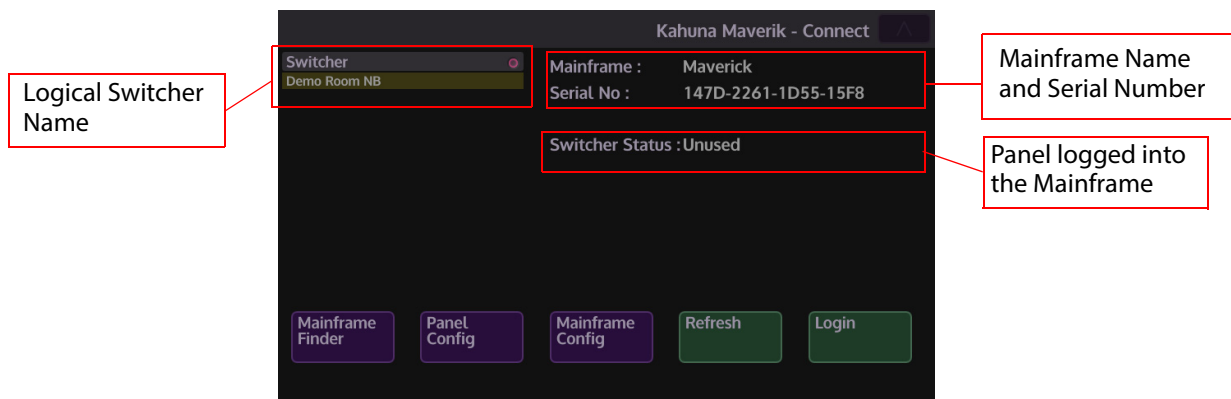
Aux Output Designation Mnemonic - Aux output selection, the Auxes can be renamed as required in the User Config - Aux Setup menu.

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.

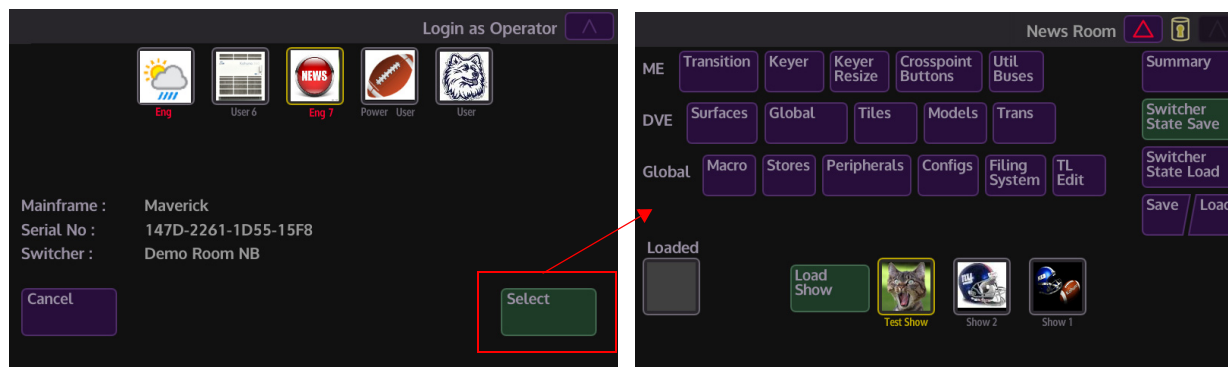
Note: If this menu does not display the Mainframe Name or Serial Number, then touch the {Panel Config} menu link button and check that the IP Address and Cluster settings are correct.

Connect

Connect - Mainframe and Panel (MAV-GUI) Setup

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 been setup for them that has limited access to Engineering or User Configs.



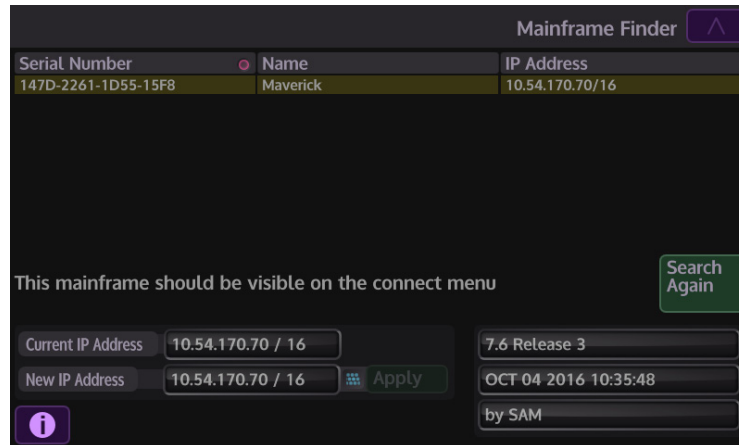
To login to the mainframe, in the Connect menu, press the **{Login}** button and then select a User Account from the list and press the **{Select}** button.

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.

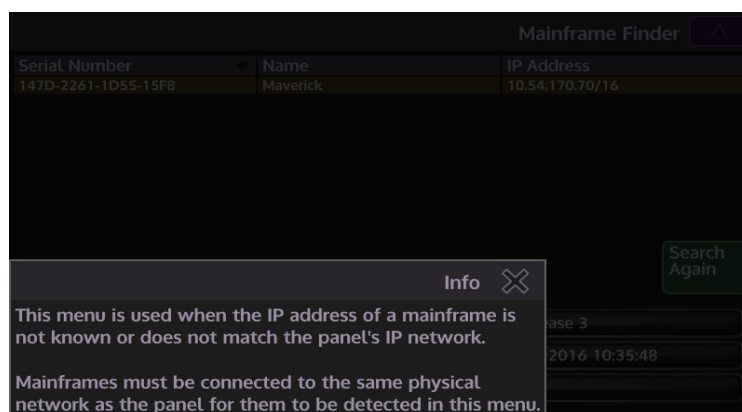


To find a mainframe on the network, enter the mainframe IP address into the **"New IP Address"** parameter box, then touch the **{Apply}** button. The mainframe serial number, name of the mainframe and IP address will be displayed at the top of the menu.

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.

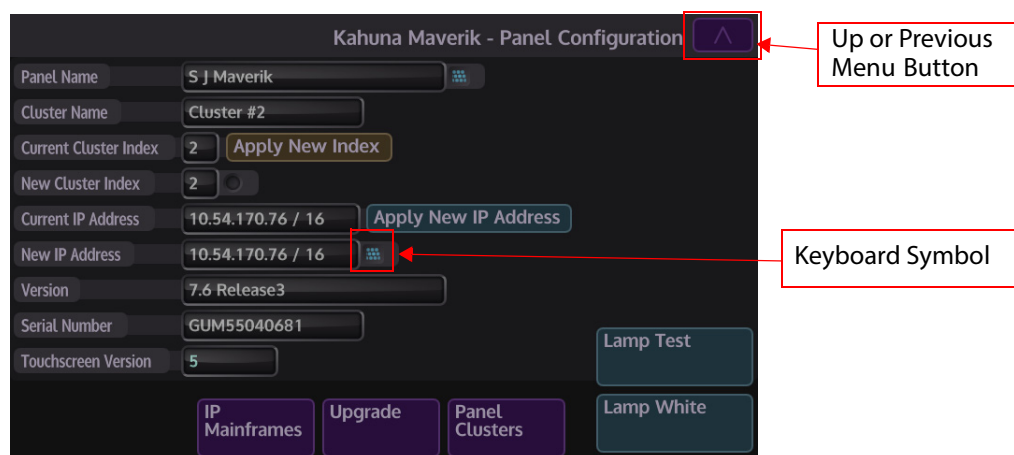
Touching the "i" information button, will display a message about the menu. As shown below.



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.

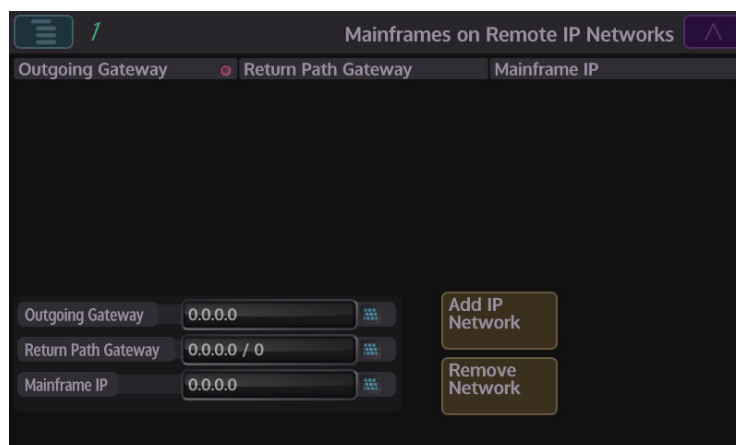
To change the IP Address (make sure that a USB Keyboard is attached to the MAV-GUI), touch the Keyboard symbol and a cursor line will flash in the **New IP Address** box, then type the new IP Address into the text box and then press the **{Apply New IP Address}** button.



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.



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.

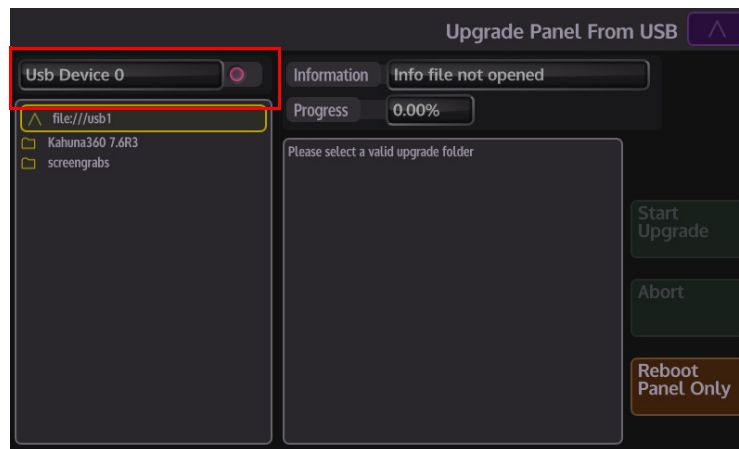
Touch the on-screen keyboard button at the end of the Return Path Gateway parameter. Enter the return path gateway IP address from the network you are trying to connect to.

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

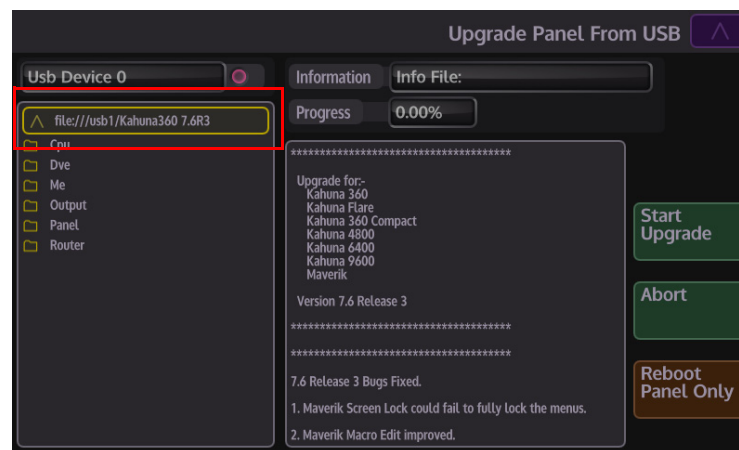
The mainframe will be displayed at the top of the menu and when back in the “Connect” menu, the mainframe will be displayed in the “Switcher” list ready to select and log into.

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.

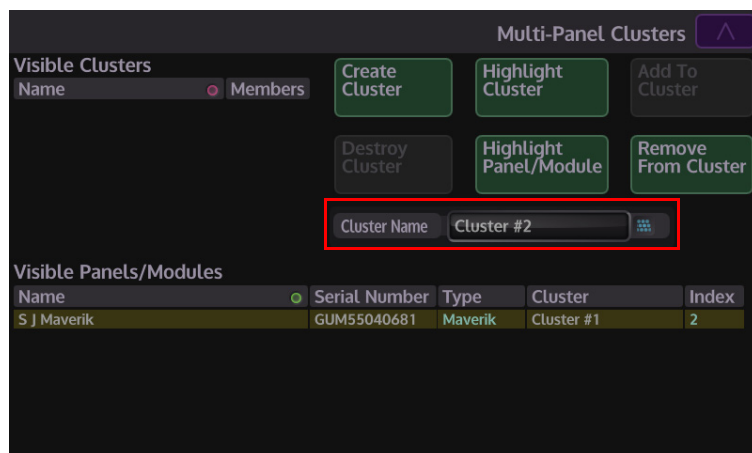


Touch the selected software displayed on the left hand side of the menu. The details of the software are displayed in the middle section of the menu as a scrolling text file. Touch the green **{Start Upgrade}** button and the software upgrade process will start, this will take a few minutes.

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

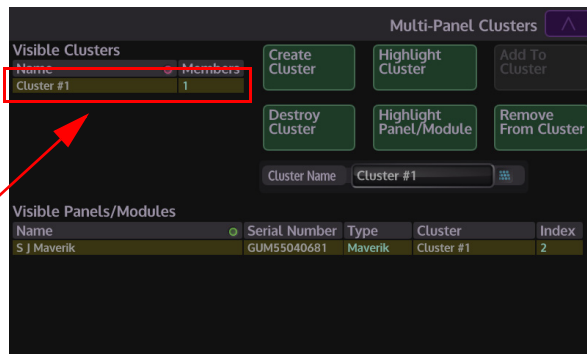
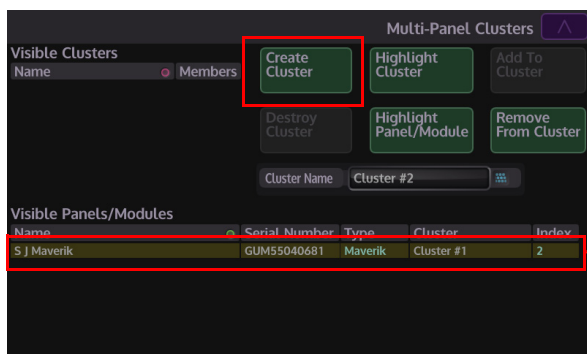
The Panel Clusters menu allows the user to bring MAV-GUI or MAV-GUI's into a visible cluster so that the mainframe knows how many MAV-GUIs there are connected within a control surface.



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.



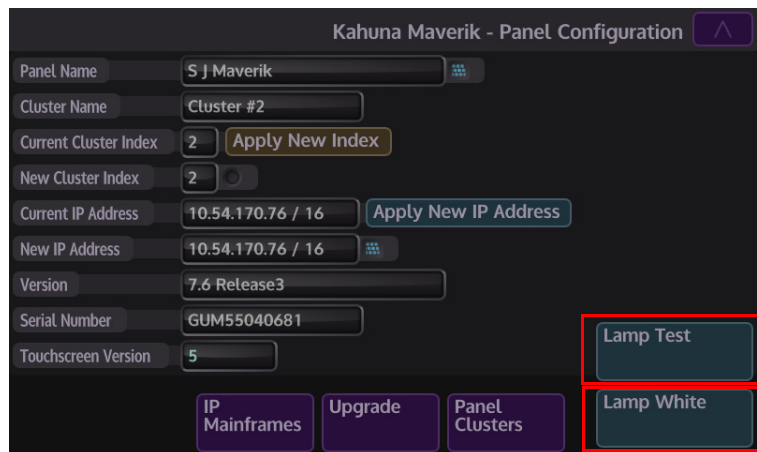
The MAV-GUI will then be part of a "Visible Cluster". Do the same for all other MAV-GUIs that are required in the cluster.

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.

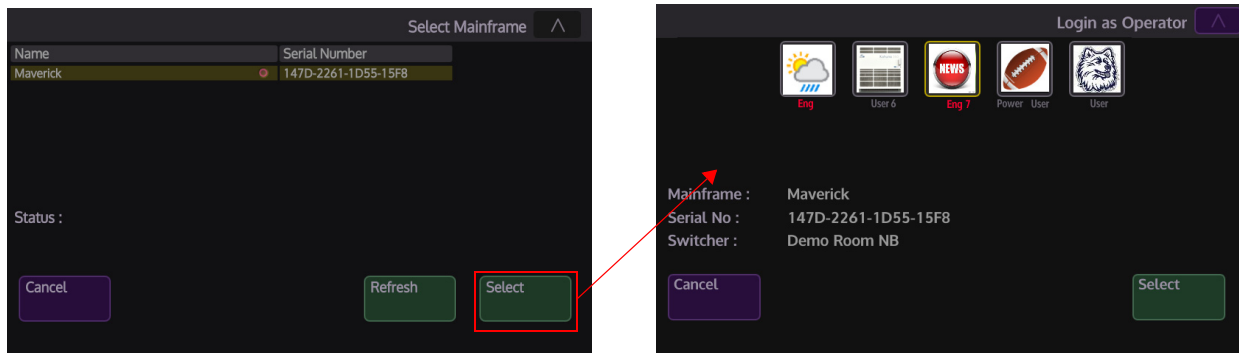


Lamp Test - On/Off button, tests the different color values of the LEDs under the buttons on the controls surface.

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

Mainframe Config

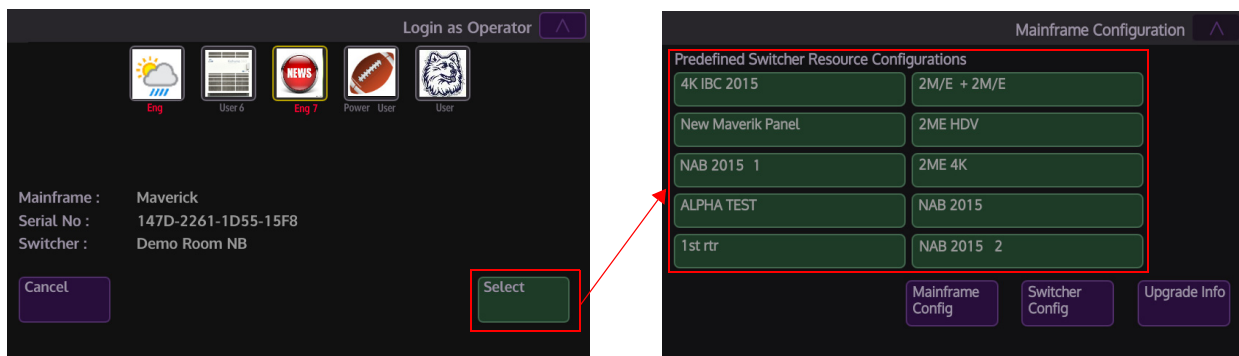
The Mainframe Config button will display the **"Select Mainframe"** menu. This menu as the name suggests is where the user is able to select a mainframe and then get access to the **Mainframe/Switcher Config** menus.



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.

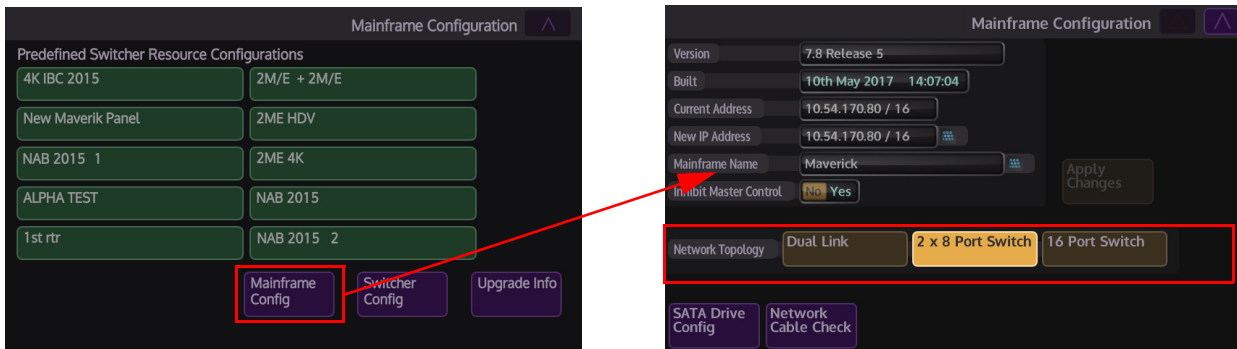
The **Refresh** button will refresh the menu and display any new logical switchers.

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.



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.



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.

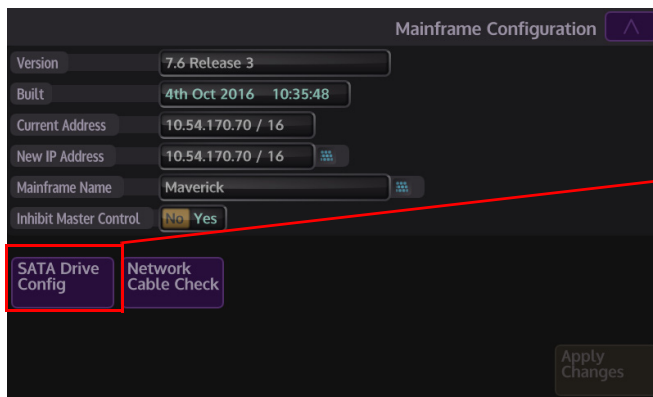
Note: **Caution** - Do not connect two MAV-GUIs in a cluster across the two separate Net Fins.

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

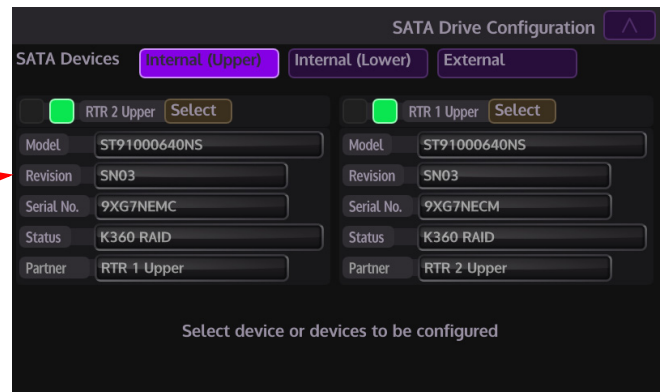
The Kahuna mainframe has SATA hard drives installed on the Control Cards in the mainframe. They are shown as RTR 1 and RTR 2 in the menu, depending on the system setup, the mainframe may contain 2 SATA hard drives (RTR 1) or 4 SATA hard drives (RTR 1 and RTR 2).



The Mainframe Configuration screen displays various system parameters. A red box highlights the 'SATA Drive Config' button, and a red arrow points from it to the SATA Drive Configuration screen.

Parameter	Value
Version	7.6 Release 3
Built	4th Oct 2016 10:35:48
Current Address	10.54.170.70 / 16
New IP Address	10.54.170.70 / 16
Mainframe Name	Maverick
Inhibit Master Control	No Yes

Buttons: SATA Drive Config, Network Cable Check, Apply Changes

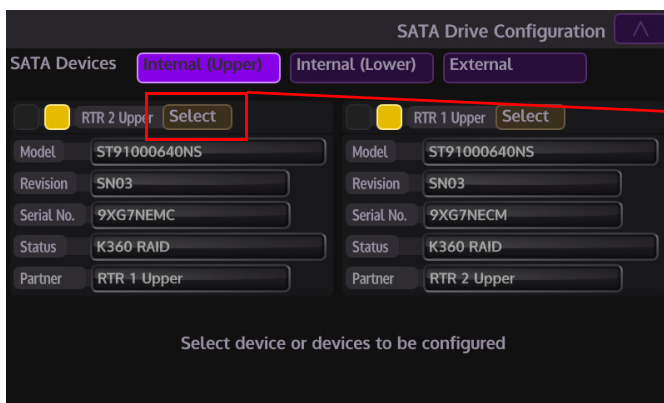


The SATA Drive Configuration screen shows details for two drives: RTR 2 Upper and RTR 1 Upper. Both are selected and show 'K360 RAID' status.

Device	Model	Revision	Serial No.	Status	Partner
RTR 2 Upper	ST91000640NS	SN03	9XG7NEMC	K360 RAID	RTR 1 Upper
RTR 1 Upper	ST91000640NS	SN03	9XG7NECM	K360 RAID	RTR 2 Upper

Select device or devices to be configured

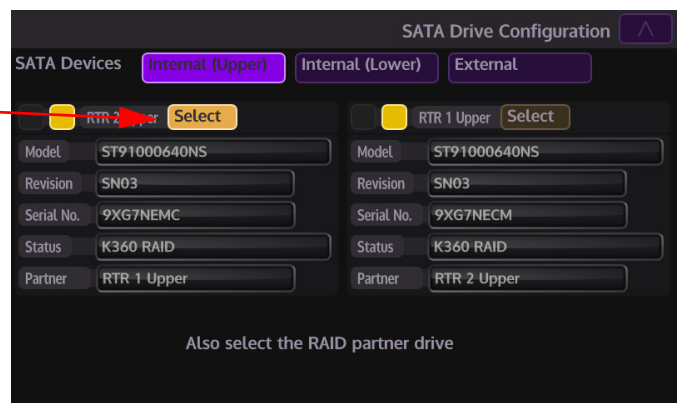
Two of the SATA drives (in this case, RTR 1 Upper and RTR 2 Upper) are the System drives containing saved information such as Projects and Stills/Clips, its status in the menu is displayed as "K360 System RAID", the two SATA drives work together as a RAID pair; allowing faster access to information on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



The SATA Drive Configuration screen shows the 'RTR 2 Upper' drive selected. A red box highlights the 'Select' button, and a red arrow points from it to the next screen.

Device	Model	Revision	Serial No.	Status	Partner
RTR 2 Upper	ST91000640NS	SN03	9XG7NEMC	K360 RAID	RTR 1 Upper
RTR 1 Upper	ST91000640NS	SN03	9XG7NECM	K360 RAID	RTR 2 Upper

Select device or devices to be configured



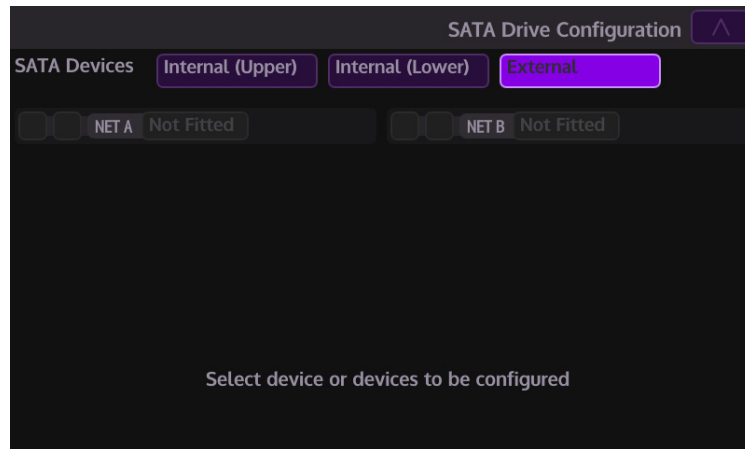
The SATA Drive Configuration screen shows the 'RTR 1 Upper' drive selected. A red arrow points from the 'Select' button of the previous screen to this one.

Device	Model	Revision	Serial No.	Status	Partner
RTR 1 Upper	ST91000640NS	SN03	9XG7NECM	K360 RAID	RTR 2 Upper
RTR 2 Upper	ST91000640NS	SN03	9XG7NEMC	K360 RAID	RTR 1 Upper

Also select the RAID 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



The hard drives can be in one of four states -

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

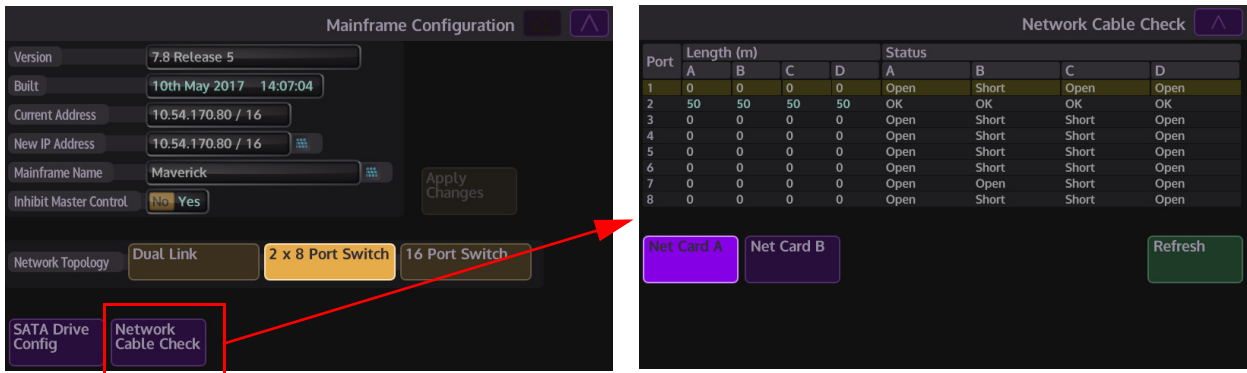
The disks can be converted between these states in this **SATA Drive Configuration** menu. In addition, one independent K360 disk or one RAID'ed pair of disks are marked as the system drive for the mainframe.

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

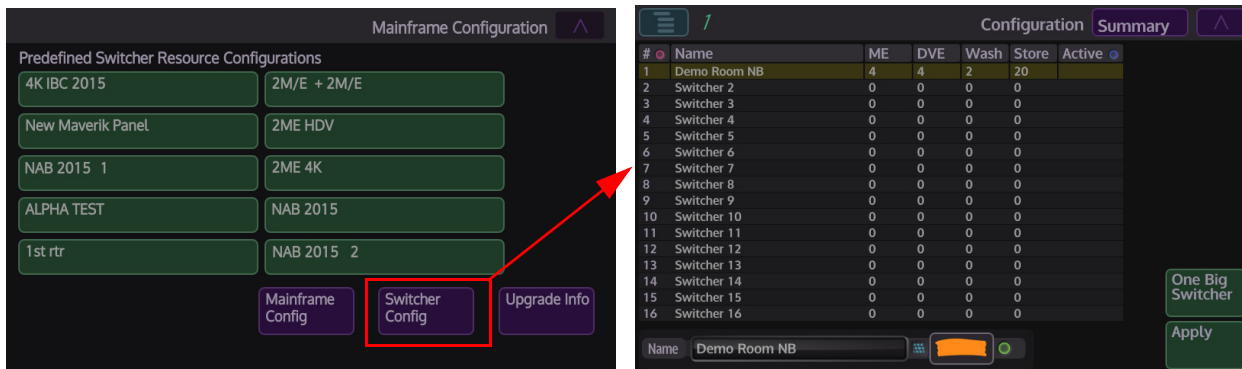
The purpose of the Network Cable Check menu is to check the status of the ethernet cables that are connected to the Ethernet ports on the NET Fins at the back of the mainframe. There are 1 or 2 NET Fins connected at the back of the mainframe depending on the type of mainframe or the number of Router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



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.

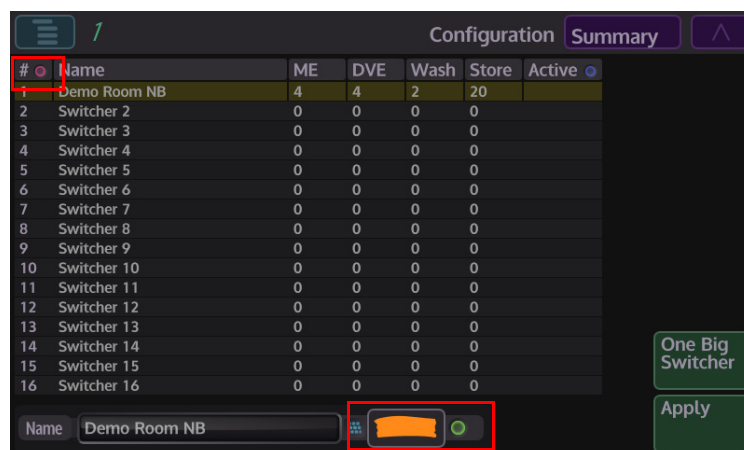
Switcher Config

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



Summary

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

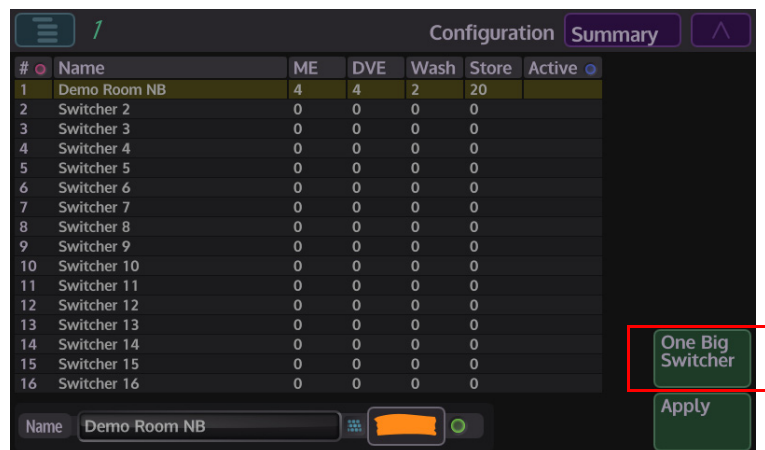


The resources allocated to each individual switcher are shown in the columns. The Name attacher can be used to give each switcher a name.

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.



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™

The MEs menu is where all the resources are assigned to the logical switchers using the Make ME™ 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 menu, 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 image shows two screenshots of the ME configuration interface. The left screenshot shows the 'Summary' menu with a table of 16 logical switchers. The right screenshot shows the 'ME' menu with a table of 16 logical switchers and a 'Config Menu' dialog box. Red arrows point from the 'Summary' menu to the 'ME' menu and from the 'Config Menu' dialog box to the 'ME' menu.

Summary Menu Table:

#	Name	ME	DVE	Wash	Store	Active
1	Demo Room NB	4	4	2	20	Active
2	Switcher 2	0	0	0	0	
3	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	0	0	0	0	
9	Switcher 9	0	0	0	0	
10	Switcher 10	0	0	0	0	
11	Switcher 11	0	0	0	0	
12	Switcher 12	0	0	0	0	
13	Switcher 13	0	0	0	0	
14	Switcher 14	0	0	0	0	
15	Switcher 15	0	0	0	0	
16	Switcher 16	0	0	0	0	

ME Menu Table:

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

Annotations:

- M/Es allocated to each logical switcher (points to the ME column in the ME menu table)
- M/Es shared on M/E cards (points to the ME 1, ME 2, ME 3, ME 4 buttons in the ME menu table)

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).

The image shows two screenshots of the ME configuration interface. The left screenshot shows the 'ME' menu with a table of 16 logical switchers. The right screenshot shows the 'ME' menu with a table of 16 logical switchers. Red arrows point from the 'ME' menu to the 'ME' menu and from the 'ME' menu to the 'ME' menu.

ME Menu Table (Left):

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

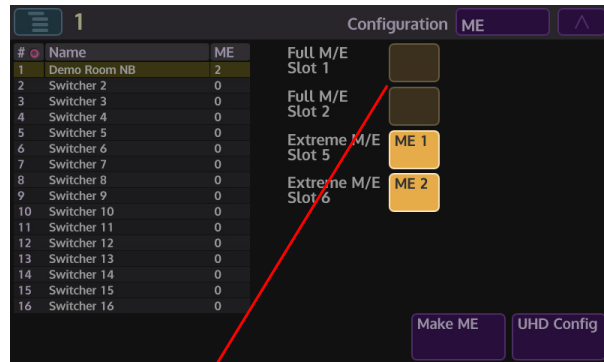
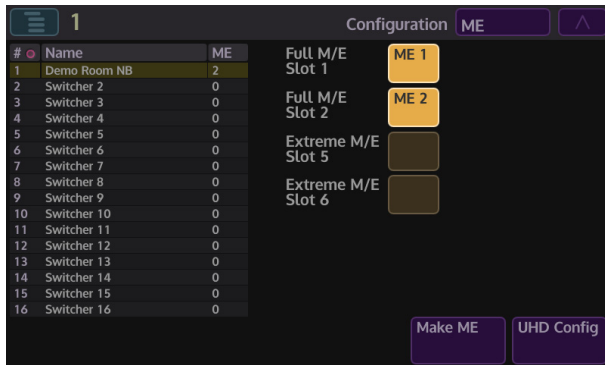
ME Menu Table (Right):

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

Annotations:

- Showing allocated Resources (points to the ME 1, ME 2, ME 3, ME 4 buttons in the ME menu table)
- Resources not allocated to M/Es (points to the empty slots in the ME menu table)

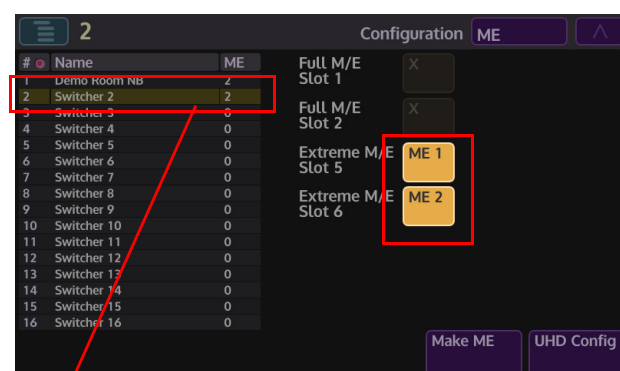
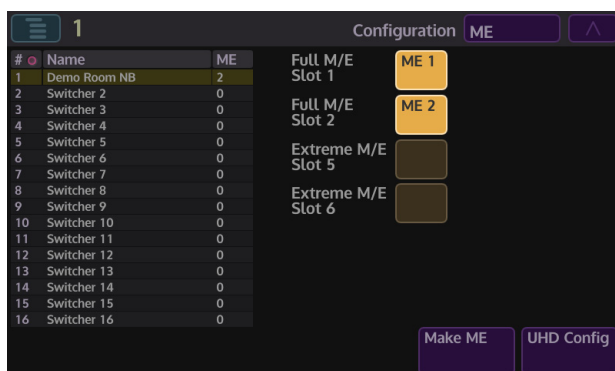
As mentioned earlier the user can touch the M/E allocation buttons to turn the M/Es On and Off. Turning them Off will allow the user to change the order of the M/Es, it will also allow the M/Es to be allocated to a different logical switcher.



M/Es turned Off can 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/E 2 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:



M/Es allocated to a different Logical Switcher

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.

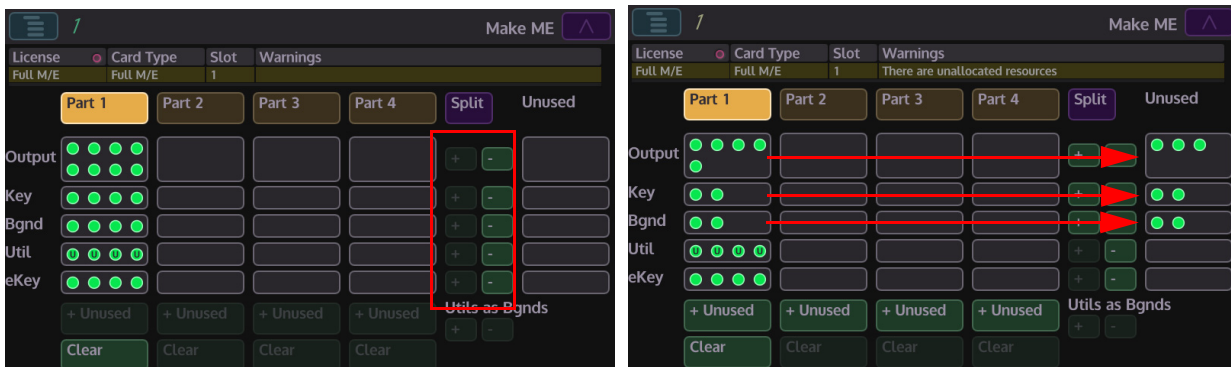
Allocating Resources to M/Es

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.

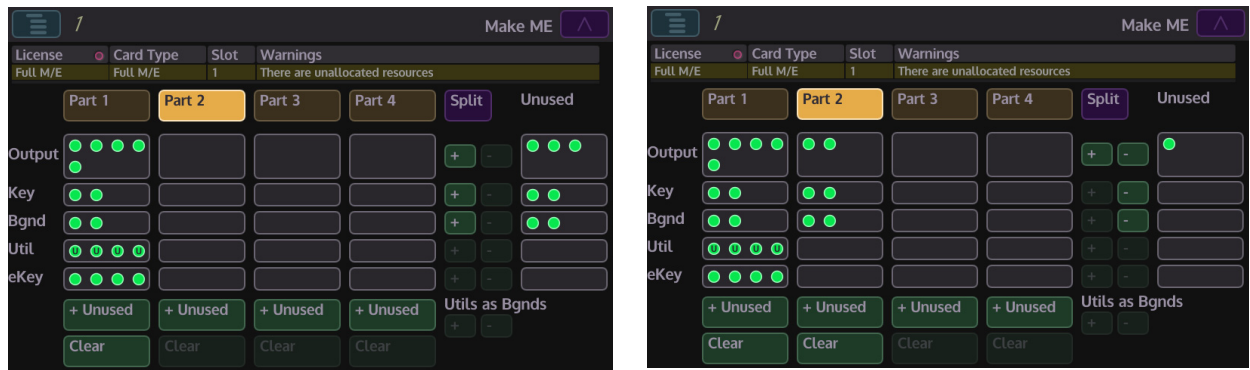
Select a card using the red parameter and now the user can start allocating resources to M/Es.



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**.



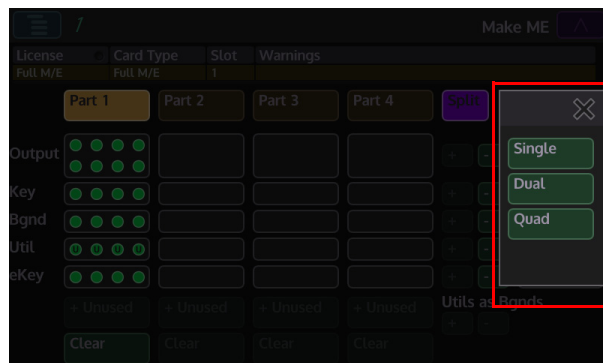
Pressing the {**Clear**} button will move all resources from the selected Part into the Unused Resources column.

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.

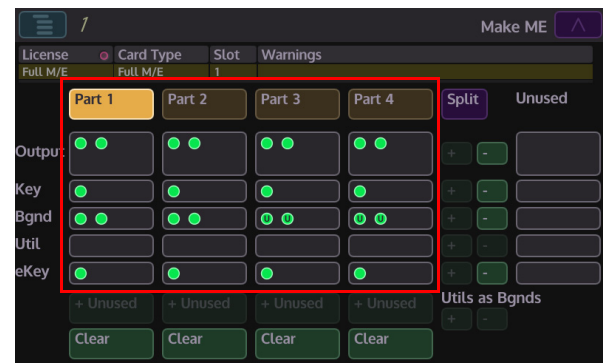
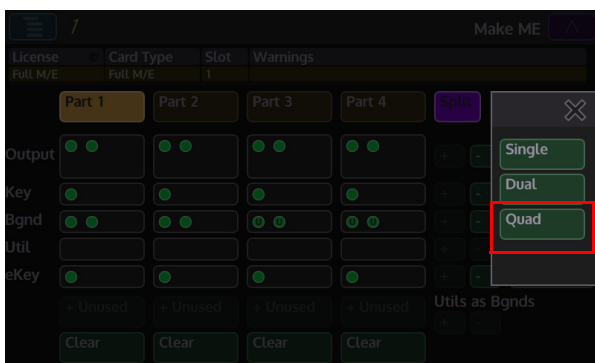
Note: The maximum number of M/Es that can be created for a logical switcher is 6 (as shown below), this does not mean that all the resources on the cards in the mainframe would be used. The remaining resources can be shared between other logical switchers.



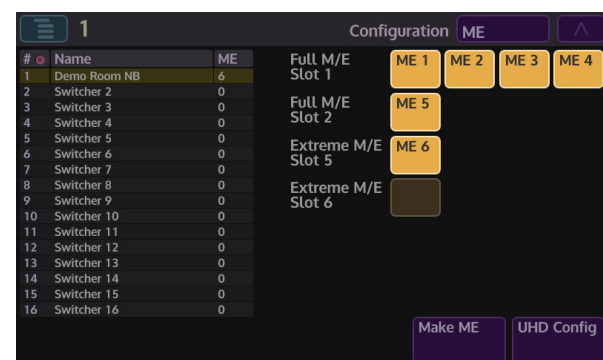
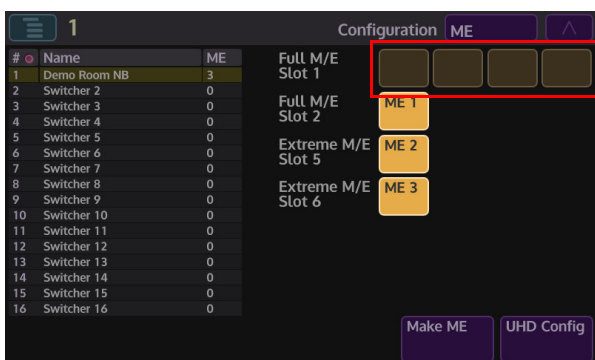
A quick method of assigning resources across an M/E and creating multiple M/Es in a slot on a single card is by using the **{Split}** function.



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.



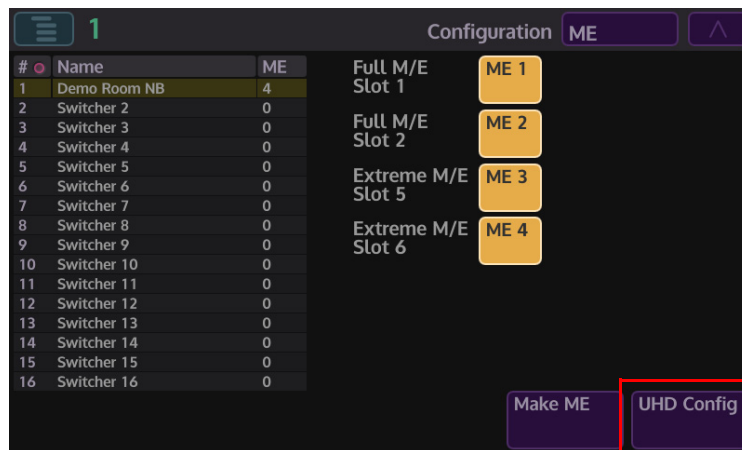
When leaving the ME menu, the user will be prompted by a dialog box to “**Save**” or “**Discard**” the new setup.

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™ and UHD

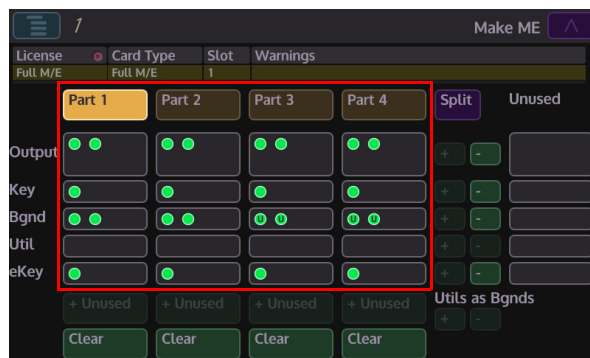
The unique MakeME software of Kahuna allows the user to allocate resources to a UHD and a SD/HD/1080p logical switcher setup. The mixture of a UHD and SD/HD/1080p setup can either be for a single broadcast studio setup or split across a number of studios. Allowing one studio to broadcast in SD/HD/1080p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

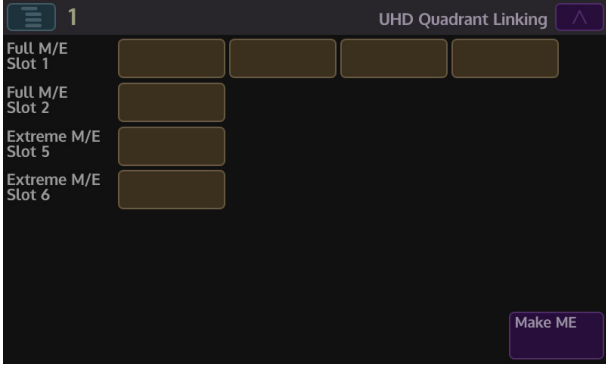
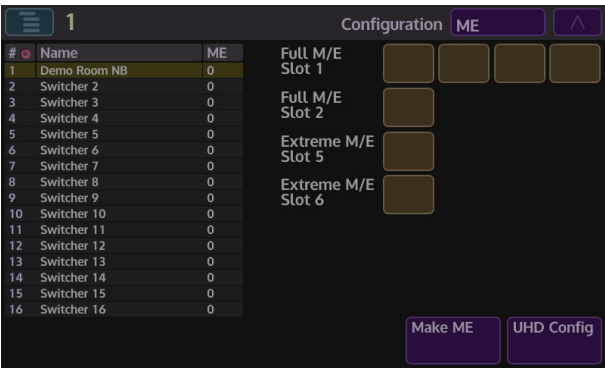
Selecting the **"Quad"** resource split would eventually divide the resources for the 4 quadrants split over 1 M/E card.

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

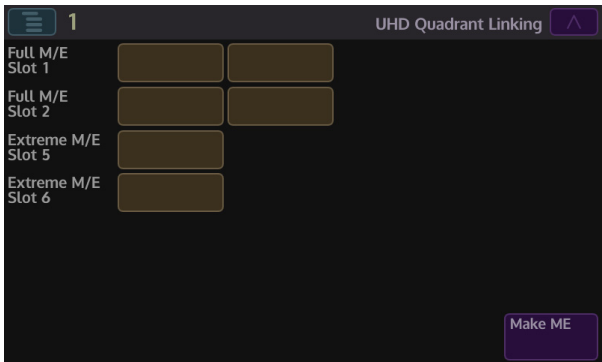
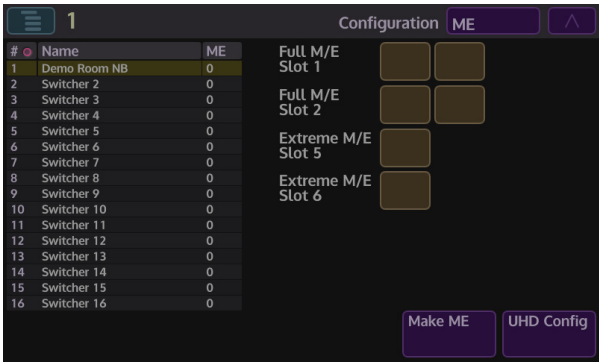
In the **"MEs"** menu, touch the {UHD Config} menu link button to open the **"UHD Quadrant Linking"** menu.

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.

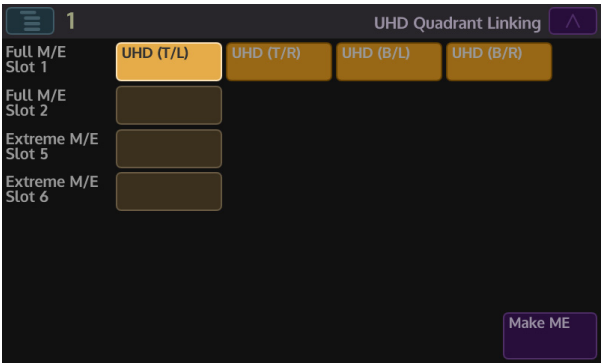


If the user selected “Dual” split in the MakeME menu, then the ME menu and the UHD Config menu will look like the menus shown below.
The M/E cards in “Slot 1 and Slot 2” are now both split, which means that the in the UHD Config menu, the 4 UHD quadrants are allocated over the 2 M/E cards as well.

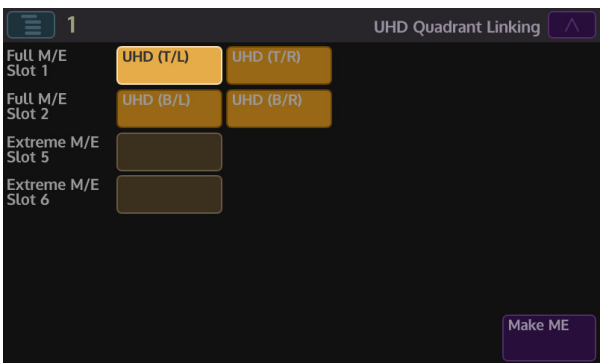


To set the UHD quadrants, touch the **first or top left quadrant** blank button and the first quadrant will light. This will be the **UHD (T/L)** top left quadrant, now touch the other blank buttons in sequence and the remaining quadrants are assigned (as shown below), UHD (T/L), UHD (T/R), UHD (B/L)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

Quad Split UHD setup



Dual Split UHD Setup

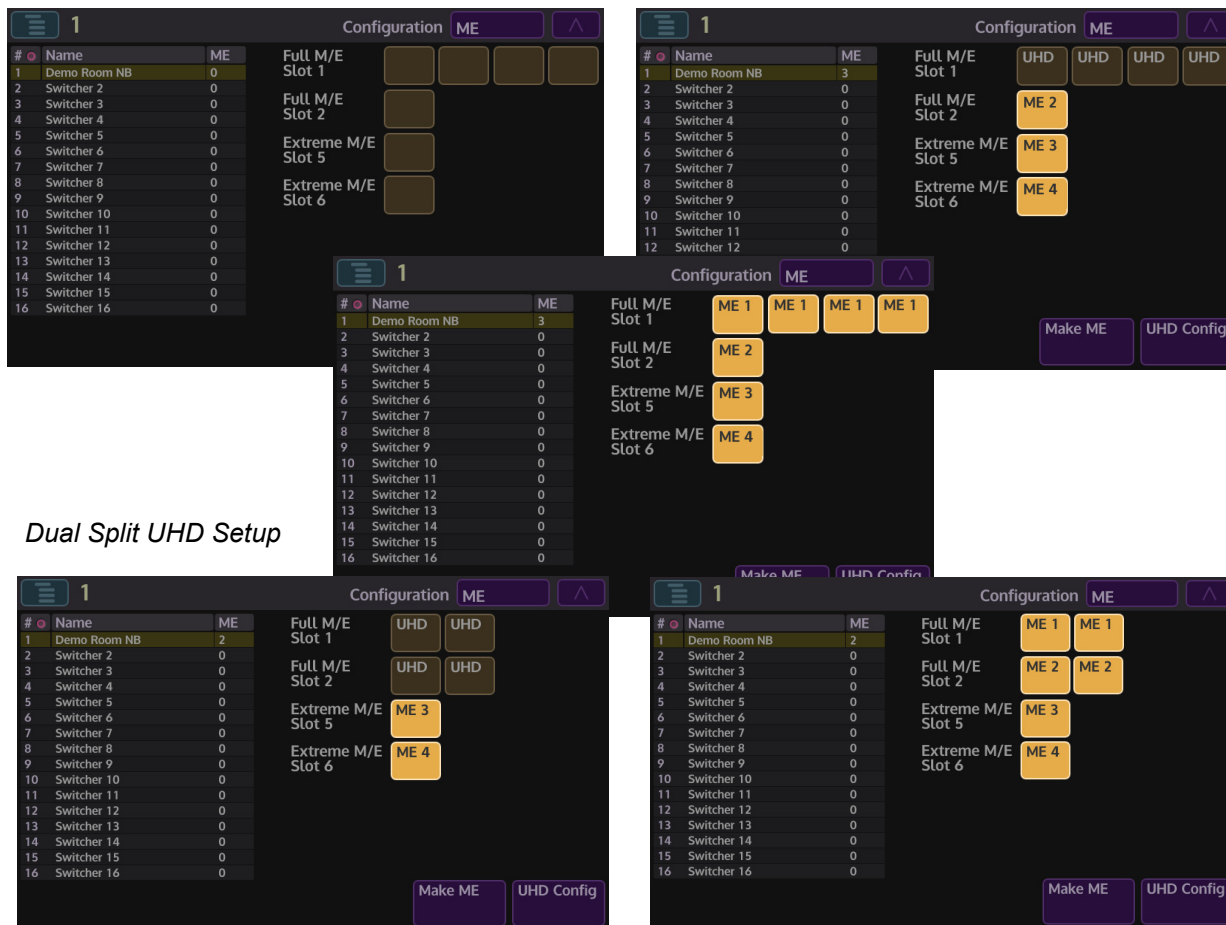


Touch the **{MakeME}** menu link button to go back to the “MEs” menu. The M/Es now have to assigned in the M/E card slots.

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!

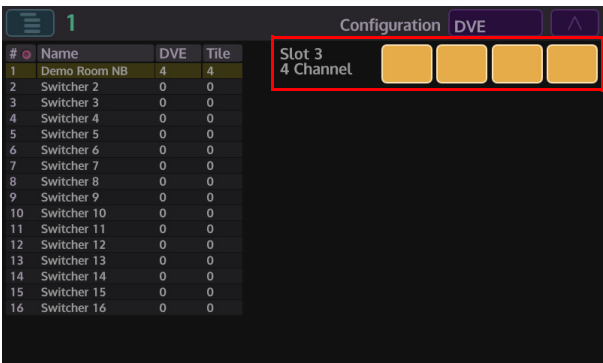
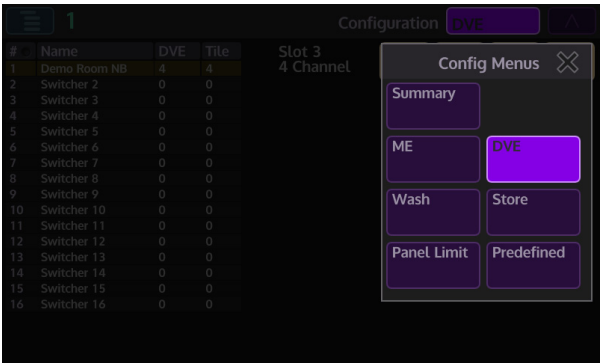


The UHD setup in these menus is now complete and ready for the user to log into the system and complete the UHD system setup.

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.

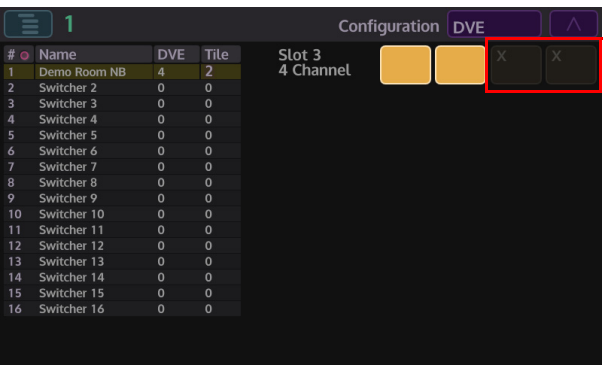
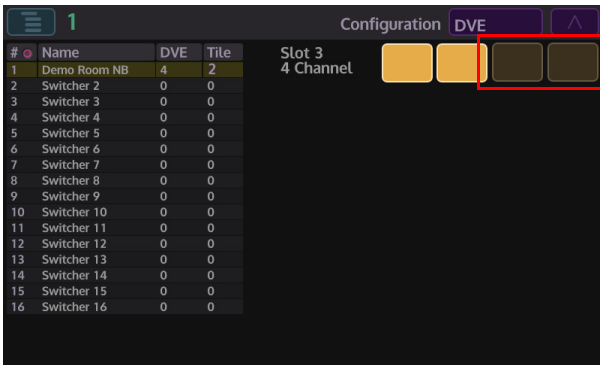
DVEs

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.



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.

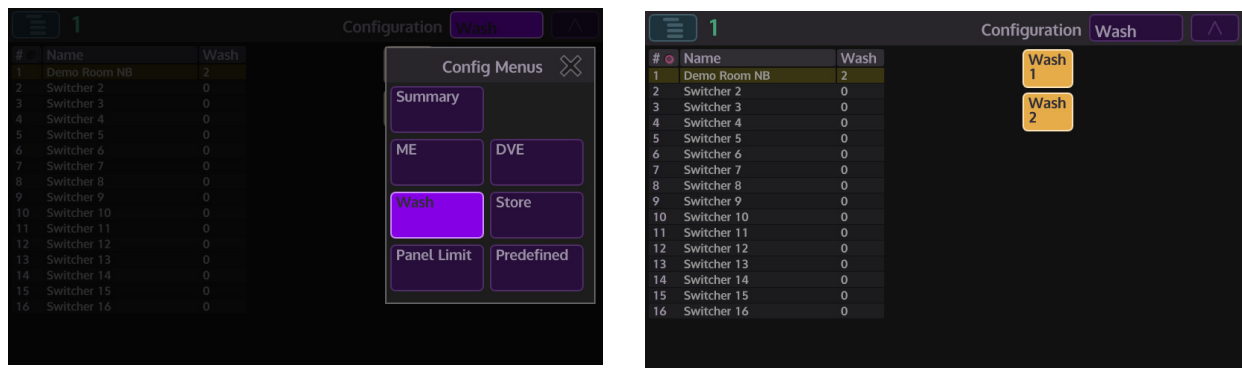


If the DVE tile button is brown and has a cross on it, this means that the DVE tile is assigned to another logical switcher.

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.

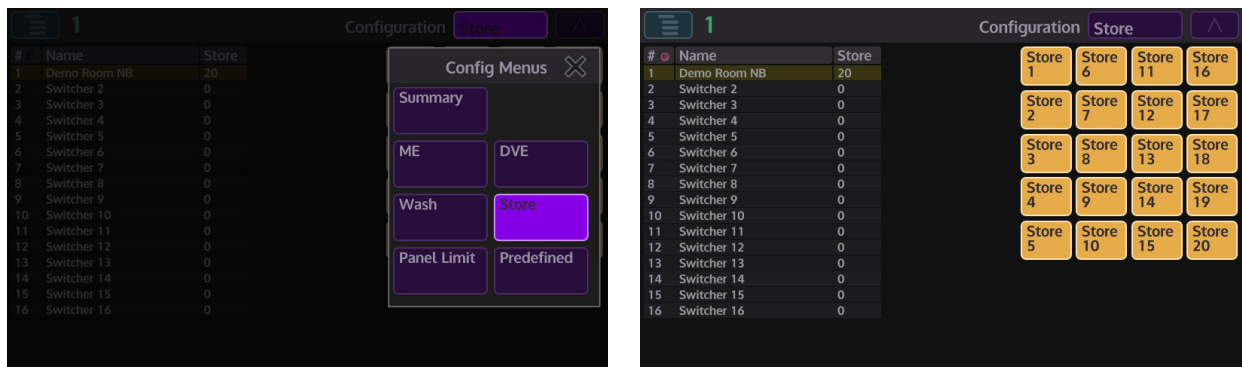
Washes

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 as 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.



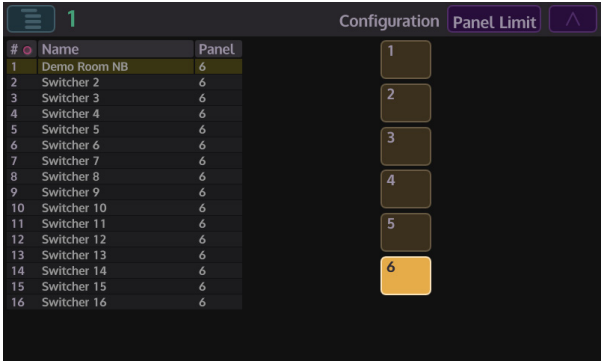
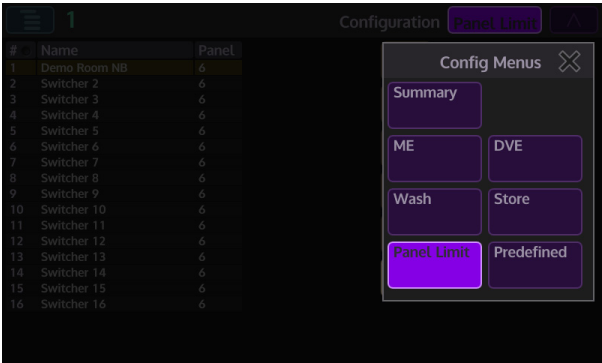
Panel Limit

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.

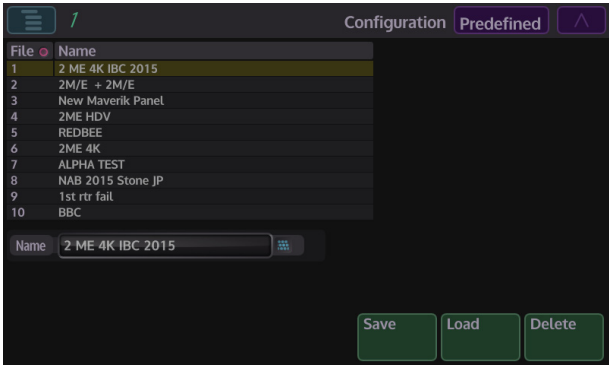
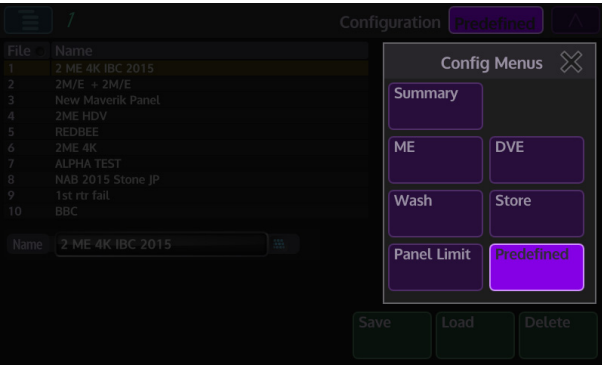


Predefined

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

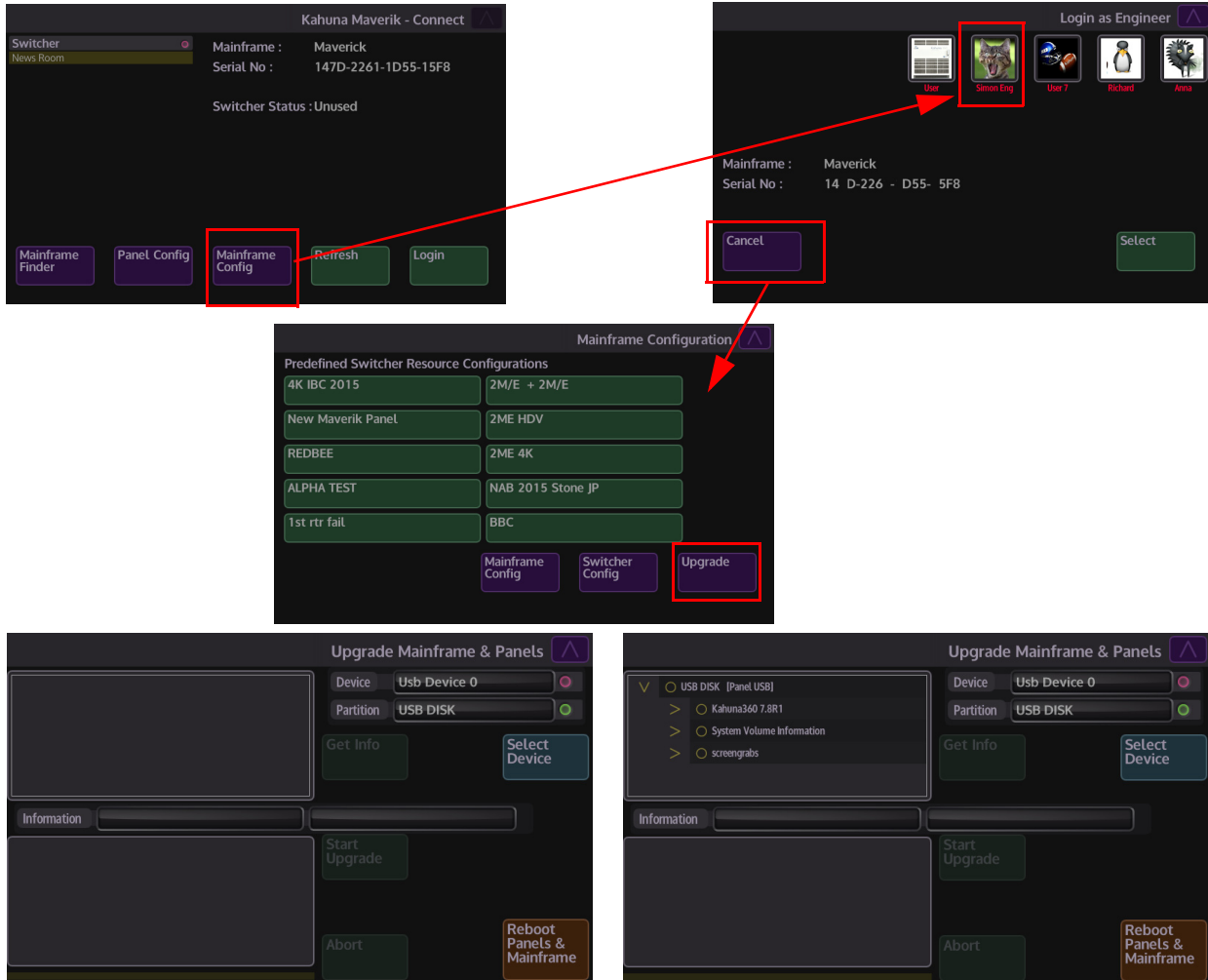
Predefined Config menu allows the user to create up to 10 predefined switcher configurations. The logical switcher configurations will have been setup and resources allocated in the previous menu's. In this menu the user has the ability to save a configuration and then access that configuration to add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



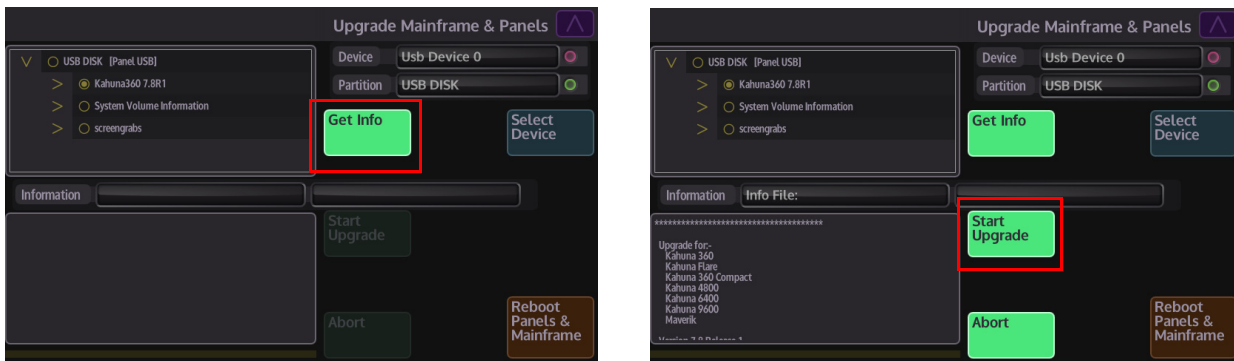
Upgrade

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.

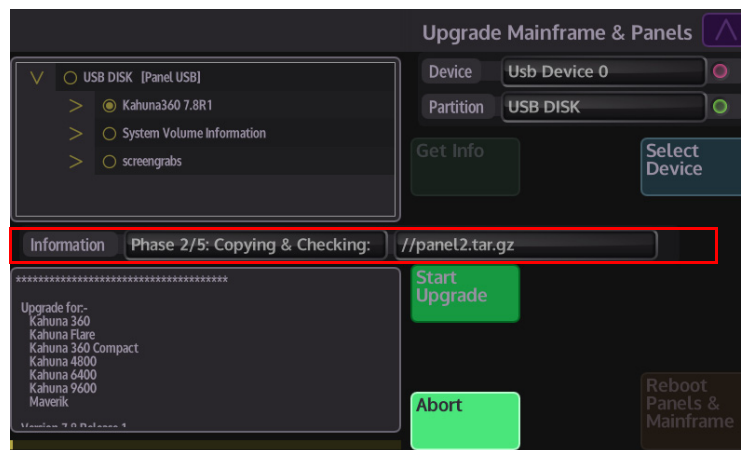


In the "Connect" menu, press the **{Mainframe Config}** button, then in the Login as Engineer menu, select an engineer login and then touch the **{Select}** button. The Mainframe Configuration menu will be displayed. In this menu, touch the **{Upgrade}** menu link button. Use the "Device" parameter to 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.

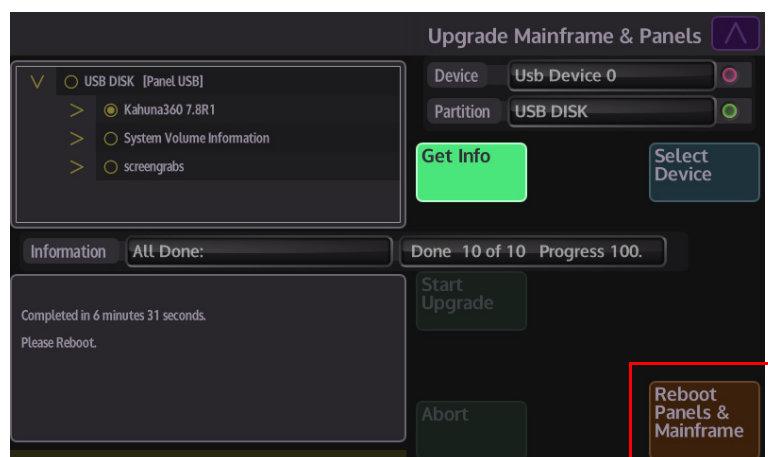
Touch the lit **{Get Info}** button and information related to the selected software from the software.txt file will be displayed in the information area. When happy that the correct software has been selected, touch the **{Start Upgrade}** button.



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

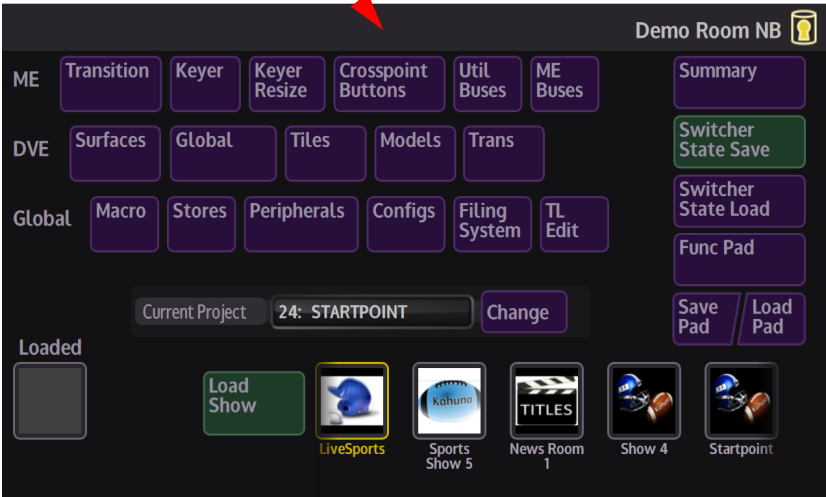
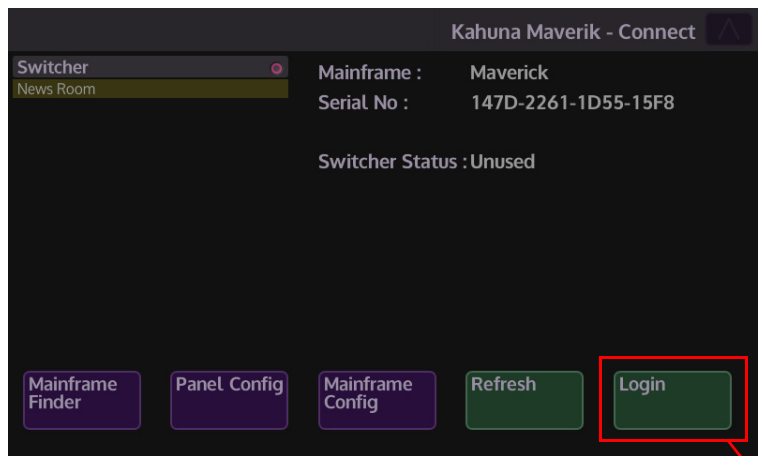


Once complete, touch the **{Reboot Panels & Mainframe}** button, a dialog box is displayed asking the user if they want to reboot.



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

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



MAV-GUI logged in menu

6 Home Menu, Defaults and Shows

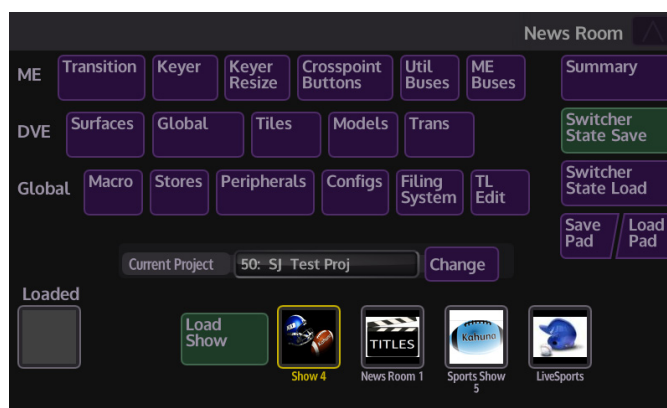
Overview

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.

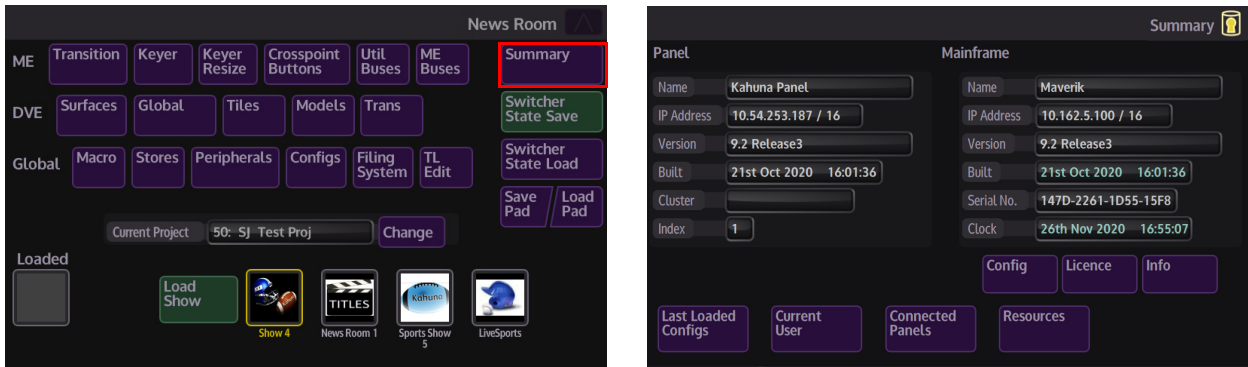


Depending on the number of shows created, the menu can only display 5 show shows at a time, the user is able to touch one of the shows and swipe horizontally left or right to scroll through the shows until the required show is displayed.

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

Summary

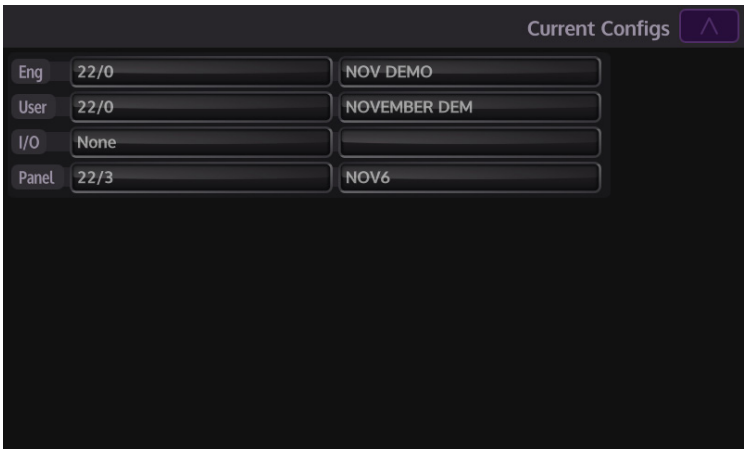
The Summary menu allows the user to see information about the overall setup of the mainframe and control surface.
The user is able to setup “Control Rights” and setup passwords, but all the other menus are just a quick view summary.



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.

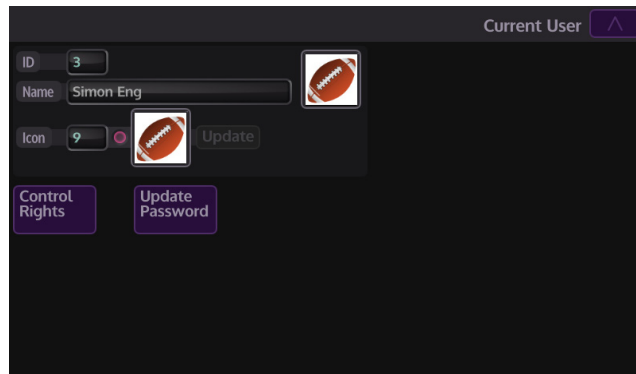
Current Configs

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



Current 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.



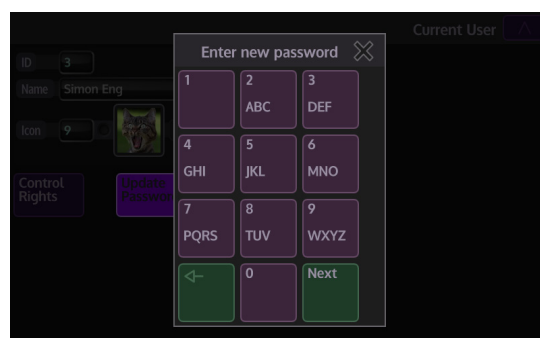
The menu will also allow the user to set Control Rights over their profile and set a (PIN number) password over their own profile to limit access into their own setup.

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



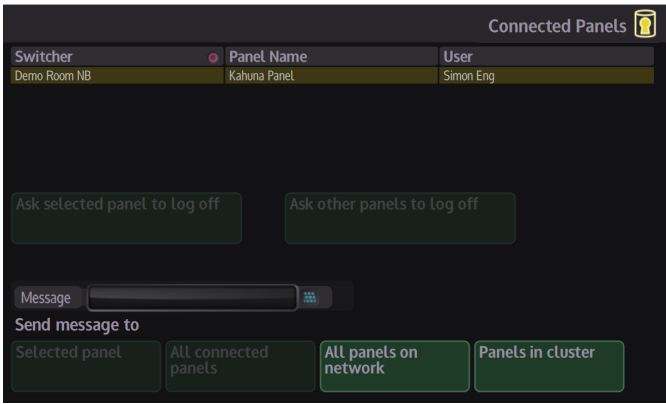
This is useful if an administrative user wanted to limit the control for example, of contract staff, limiting there ability to change configuration setups.

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.



Connected Panels

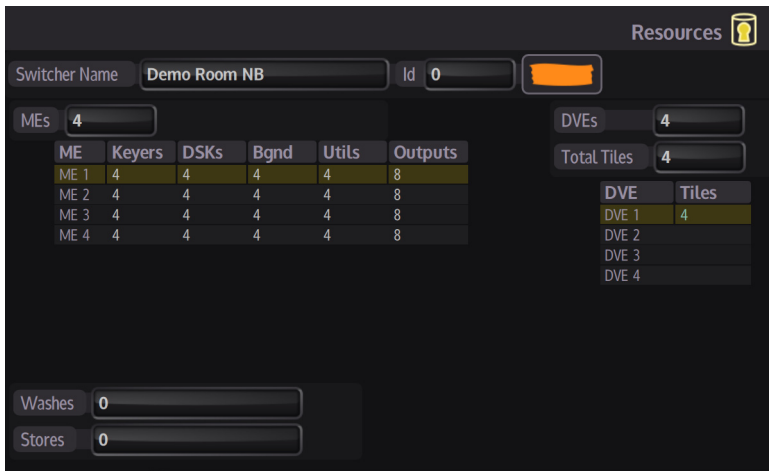
This menu displays all the control surfaces/MAV-GUIs that are connected to the mainframe. As can be seen below, the top of the menu displays the name of the logical switcher, the “**Panel Name**” and the current user.



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.



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.

1

Configuration

Summary

^

#	Name	ME	DVE	Wash	Store	Active
1	Demo Room NB	4	4	2	20	
2	Switcher 2	0	0	0	0	
3	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	0	0	0	0	
9	Switcher 9	0	0	0	0	
10	Switcher 10	0	0	0	0	
11	Switcher 11	0	0	0	0	
12	Switcher 12	0	0	0	0	
13	Switcher 13	0	0	0	0	
14	Switcher 14	0	0	0	0	
15	Switcher 15	0	0	0	0	
16	Switcher 16	0	0	0	0	

Name

Demo Room NB

1

Configuration

DVE

^

Slot 3

4 Channel

1

Configuration

ME

^

Full M/E Slot 1

ME 1

Full M/E Slot 2

ME 2

Extreme M/E Slot 5

ME 3

Extreme M/E Slot 6

ME 4

Make ME

1

Configuration

Store

^

Store 1

Store 6

Store 11

Store 16

Store 2

Store 7

Store 12

Store 17

Store 3

Store 8

Store 13

Store 18

Store 4

Store 9

Store 14

Store 19

Store 5

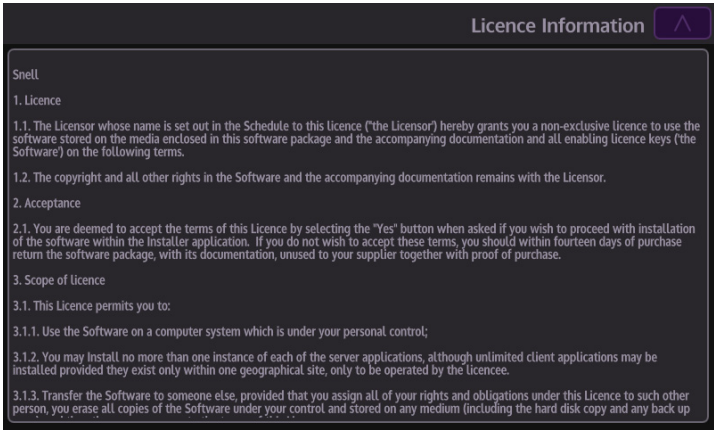
Store 10

Store 15

Store 20

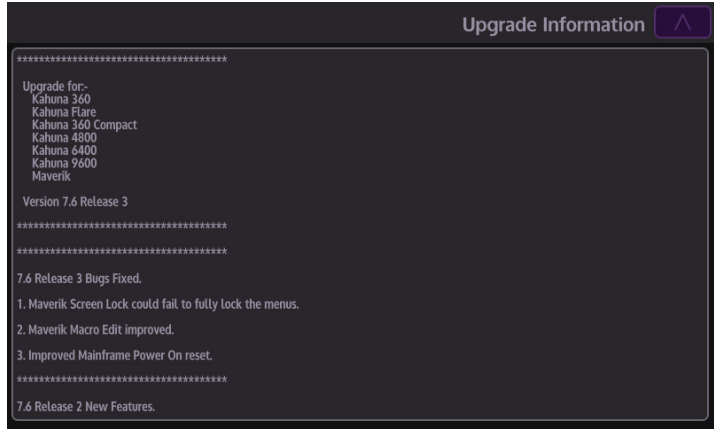
License

This menu displays the product software and hardware licensing information, which the customer is obliged to read and adhere to.



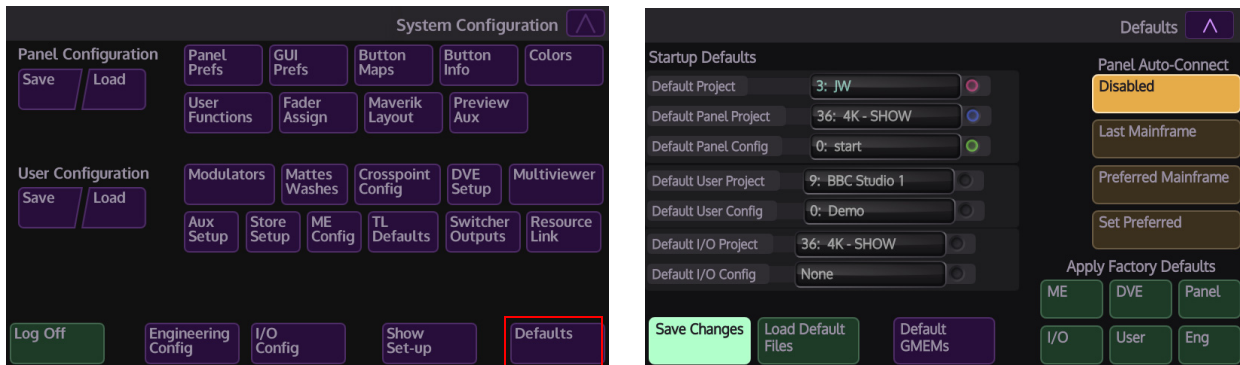
Info

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.

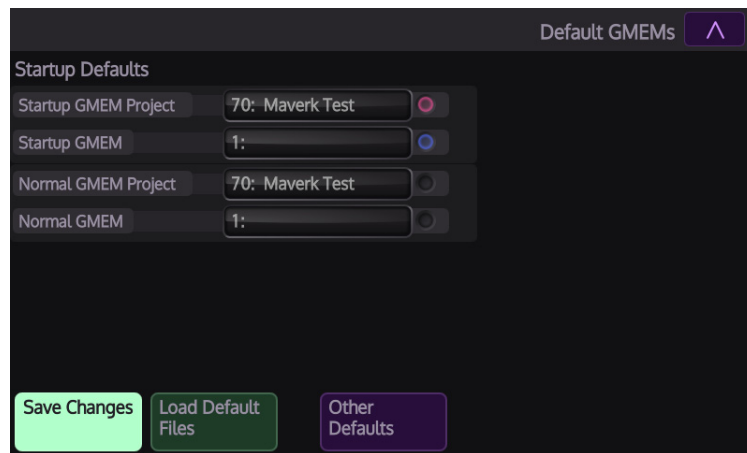


On the left hand side of the menu under the Startup Defaults heading there are three sets of attacher boxes. Touch the top attacher box to change the Default Project, Default Panel Project and Default Panel Config. The next attacher down is the Default User Project/Config and Default I/O Project and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

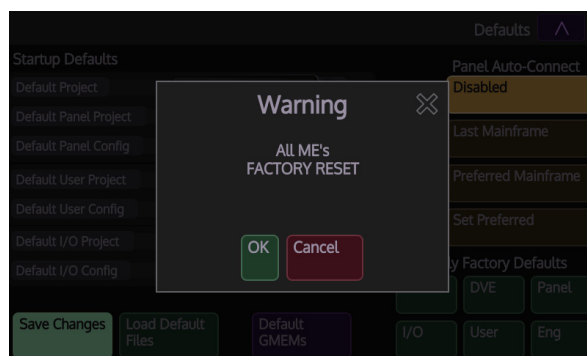
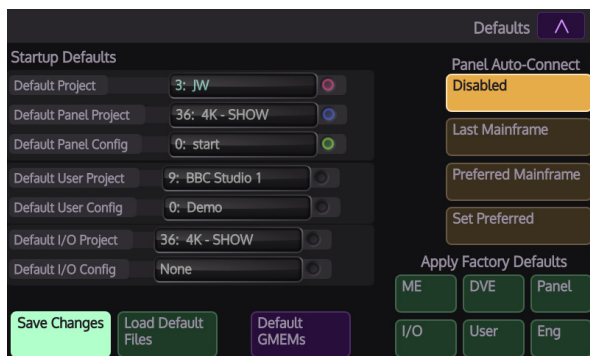
Note: The Startup GMEM loads when the mainframe is powered up. Normal GMEM is used when any GMEM is set to use normal values when saved.



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.

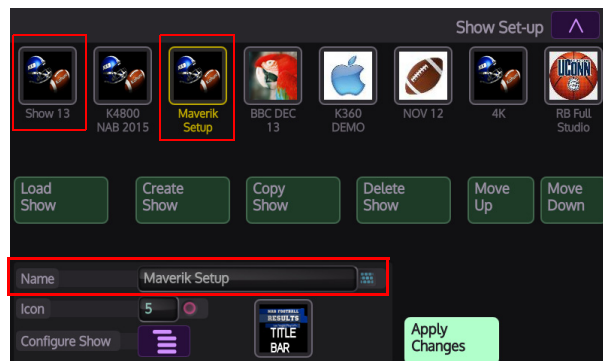
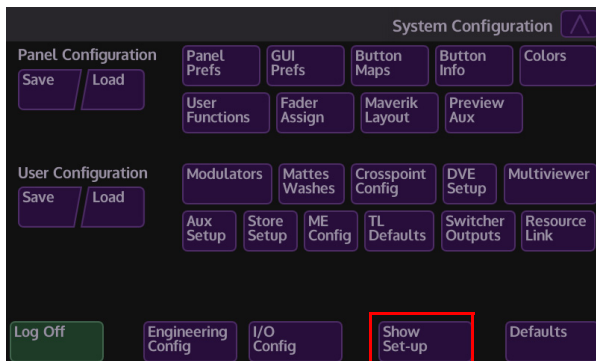
Pressing one of the Apply Factory Defaults buttons will not erase the startup files stored in mainframe hard drive, it will only step out of the default startup files that are currently loaded. The pre-saved startup GMEM/Config files may be accessed at any time. A warning dialog box will be displayed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



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.

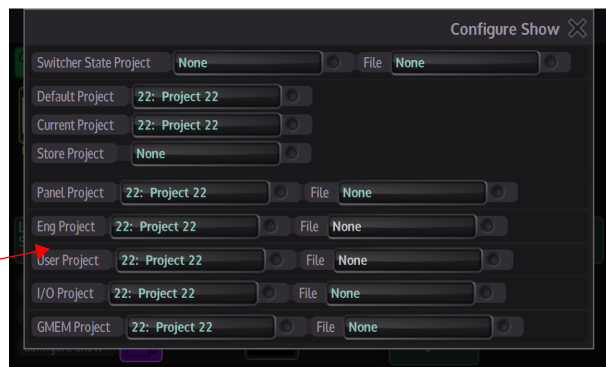
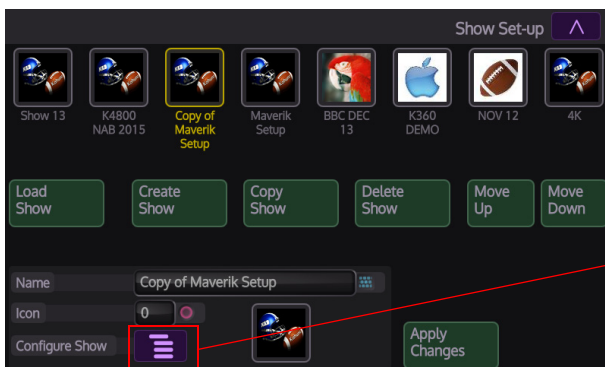
Creating a Show

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.



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.

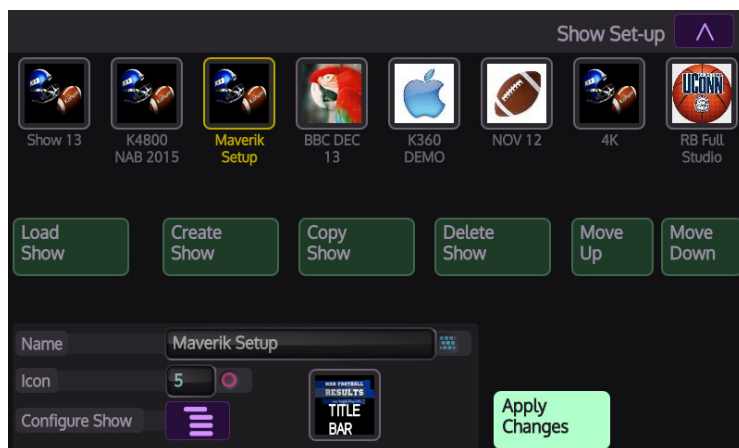
New shows can be renamed by touching the keyboard symbol at the end of the **"Name"** parameter, then touch and hold the **"Star"** button on the MAV-GUI surface to open a side menu. Touch the **{Virtual Keyboard}** button to display the on-screen keyboard. Type in the new name for the show and press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

7 Save Pad and Other Save Menus

Save Pad

Note: This section will mention:

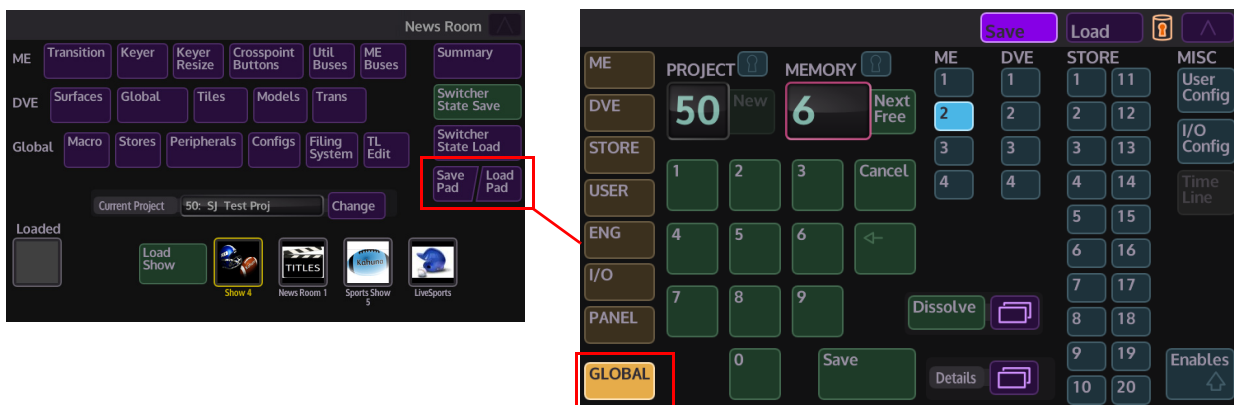
Global memory files (GMEMs - Global memory), these save and load the state of the entire control surface.

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** (GMEMs), 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 as one of the rotary controls on the MAV-GUI, allowing the user to scroll.

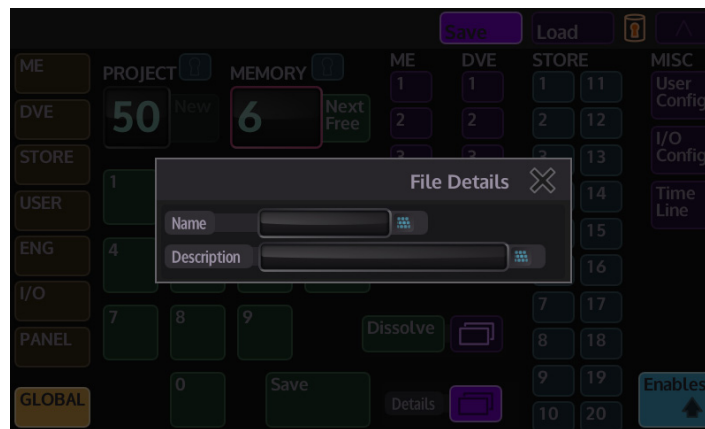
In the GMEM menu, there is a **shift “Enables” button**. When touched, it will cause some buttons to change state and become menu link buttons (they will turn a dark blue/purple color). Touching one of the menu link buttons will then open a different menu with enables options specific to the function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

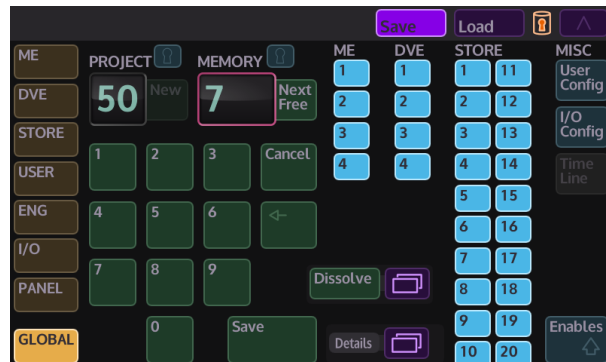


Touch the menu expander button and the above menu will appear. Pressing the keyboard symbol twice will open an on-screen keyboard allowing the user to give the project a name and description, enter the text and press “Return” on the on-screen keyboard. When finished press the **“X”** to go back to the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

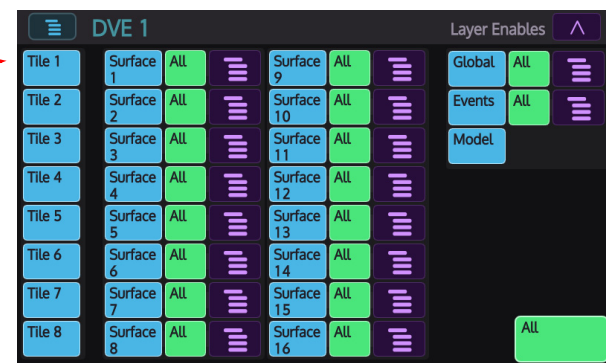
Saving a GMEM

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 a 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.

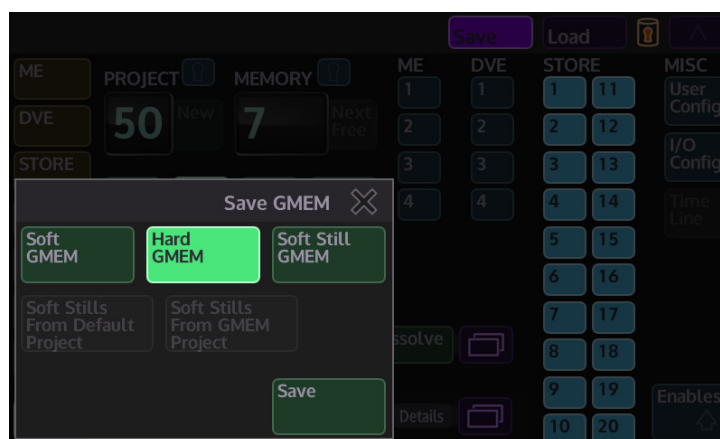
If a project is locked, the "Keyhole" symbol will be lit light blue. Next, select an existing **Memory** file, using the rotary control with the same highlighted color to select the memory position, or select the next free memory file by touching the "Next Free" button. Then select what M/E, DVE, Stores, 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.

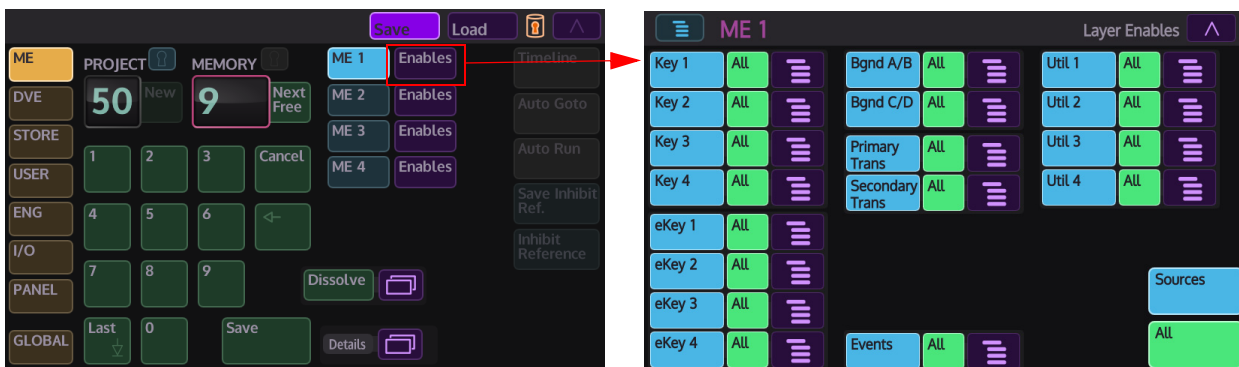
Saving a DMEM

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

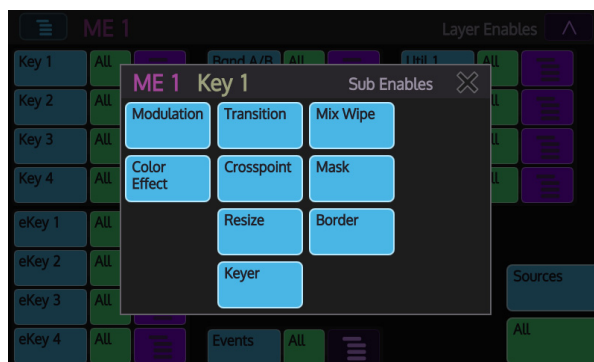
- Bus set-up (Crosspoints, Keyers, Wipes, Transitions)
- Color Effects
- Key Layer Priorities
- Masks, Crops, Borders

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.





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

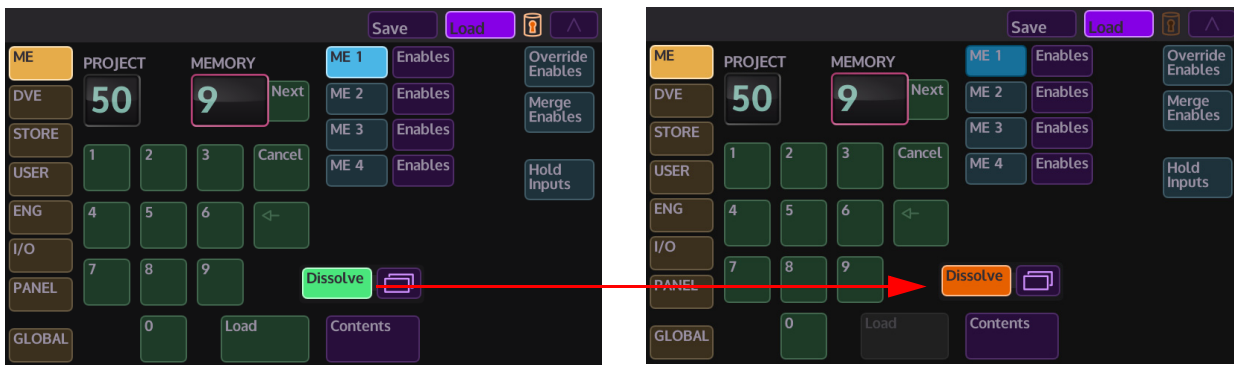
Late - Changes the state of all state-change variables at the end of the dissolve

Duration - Sets the overall duration of the dissolve.

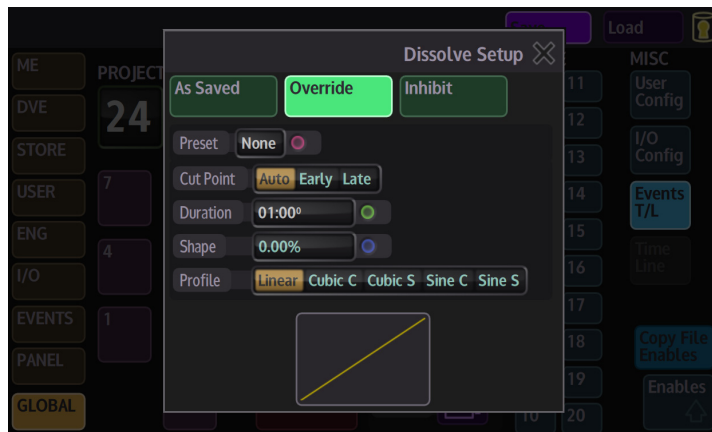
Shape - Controls the shape of the chosen dissolve profile.

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.

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:

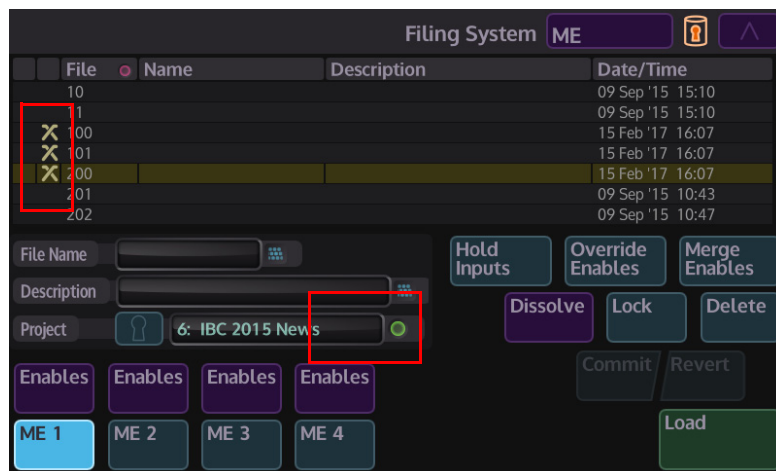
As Saved - the dissolve uses the settings from the original file

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 will stop the dissolve. A progress indicator and Stop button also appear in the message box at the top of the Legacy GUI.

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.



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

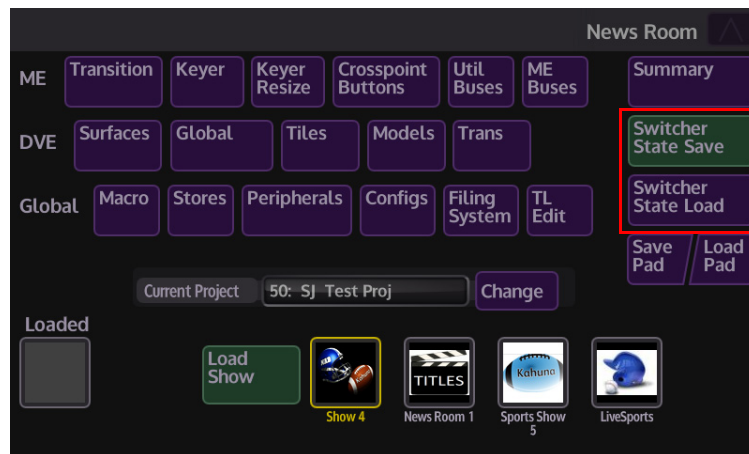


There is a dedicated Effects Dissolve button on the top right of the number pad. This button can be selected when loading a memory in order to apply an Effects Dissolve to the load. The button will flash during an active dissolve and pushing the button will stop the dissolve. Pushing, and holding the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

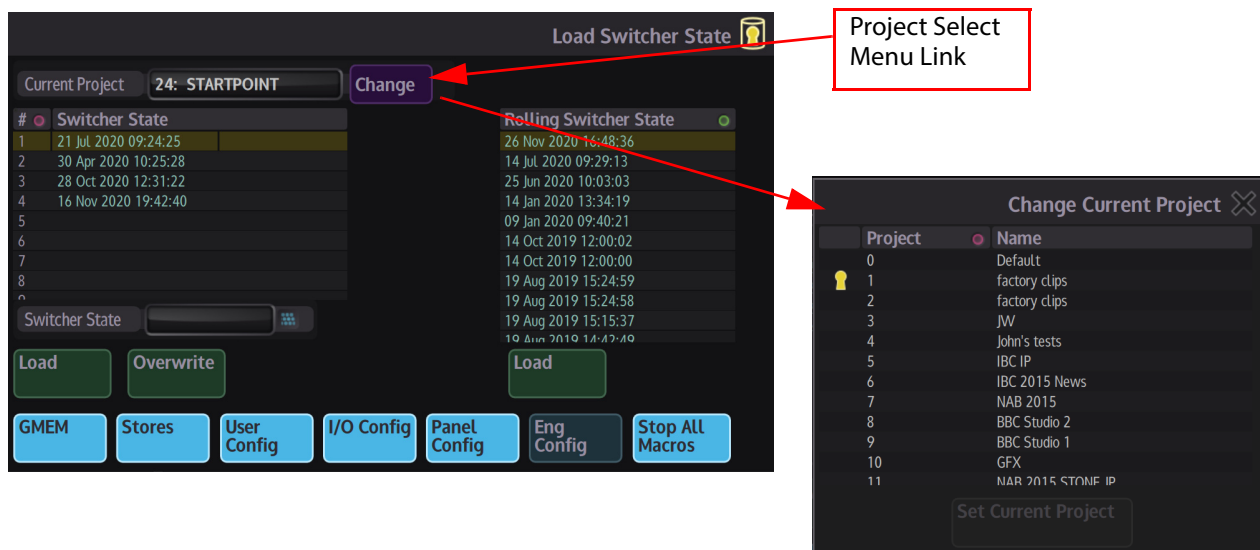
During a dissolve operation, the progress of the dissolve is displayed on OLED "Take" button, bottom right. Any further file operation during an active dissolve will remove this figure from the display, and the button will display the file load operation in the normal manner.

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.

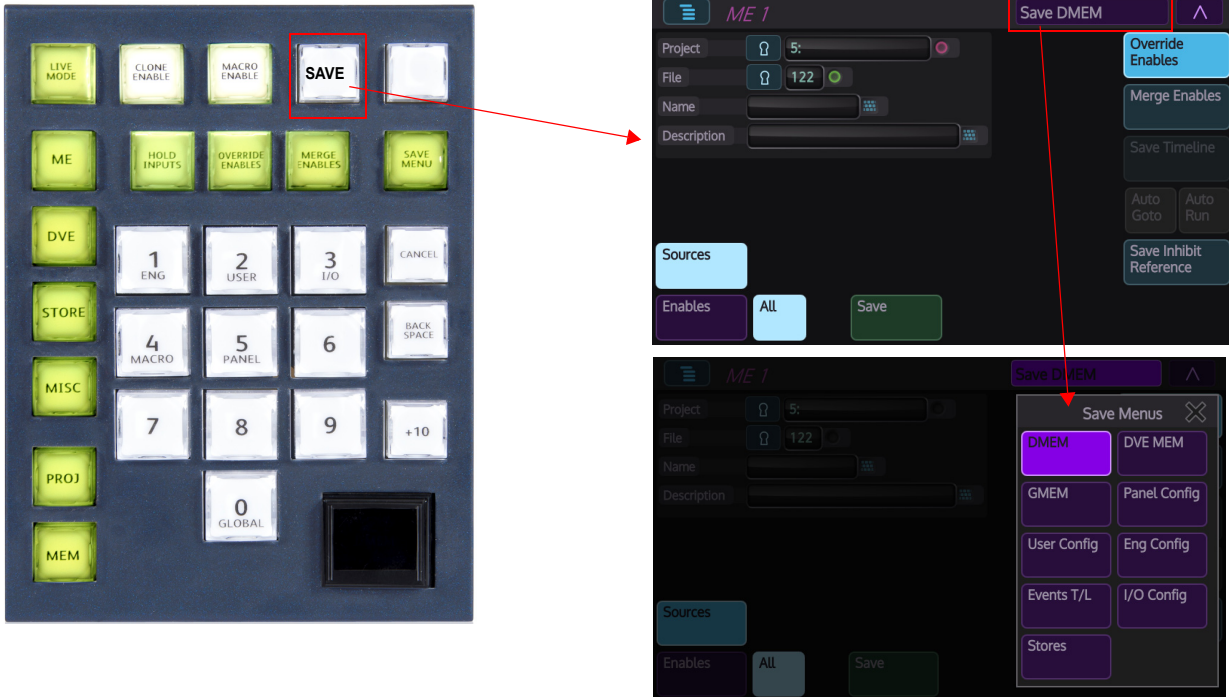
The menu also allows the user to disable Stores, GMEM's and Configs etc. as required before recalling the snapshot.

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.

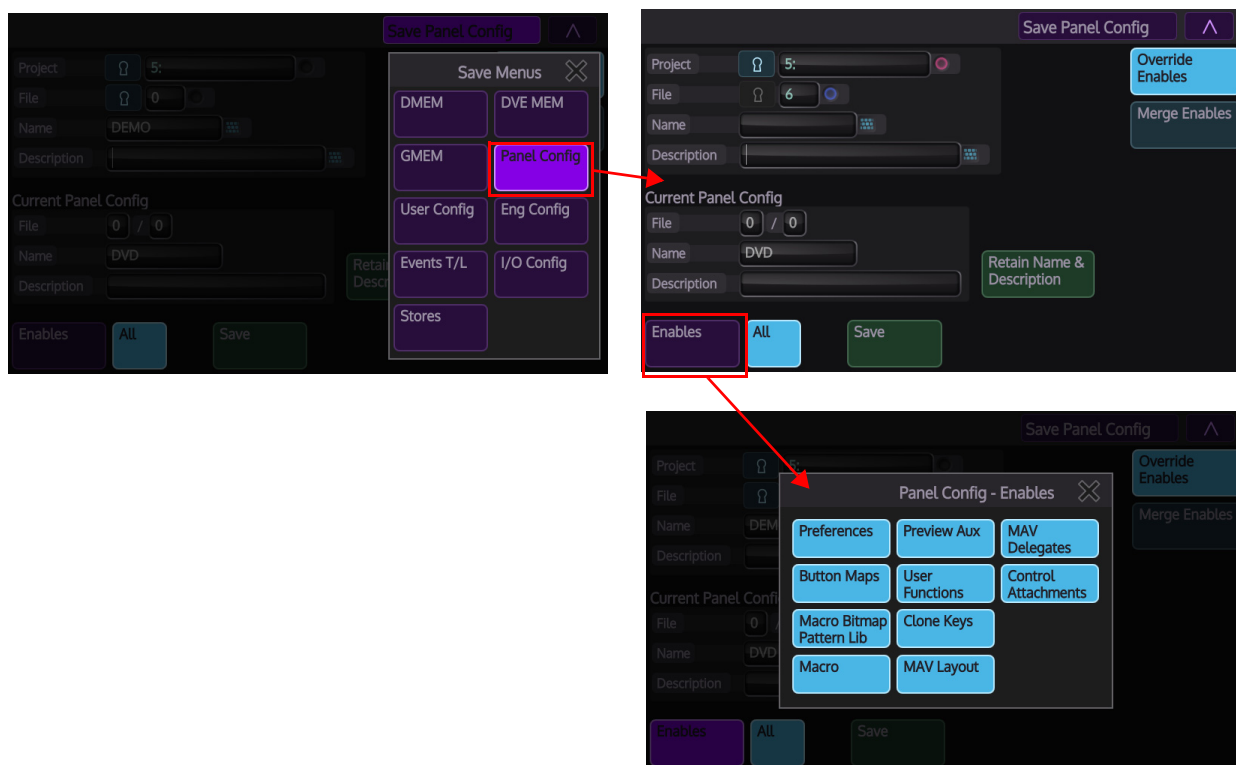
On the next page is an example of the **Panel Config Save** menu and how to use the save function.

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.

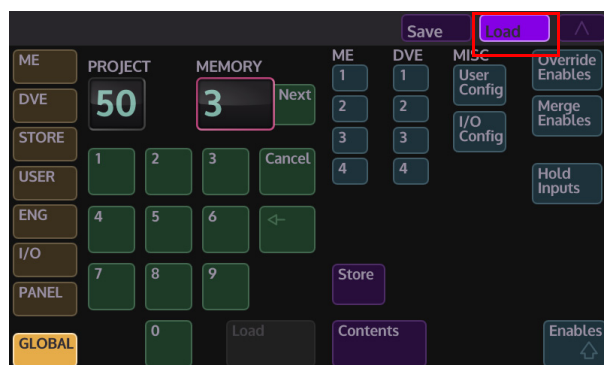
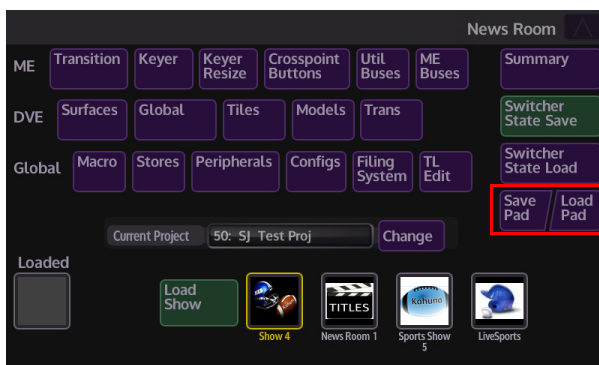
Merge Enables - this function merges the enables currently set in the switcher with the enables saved in the file is being loaded (a 'logical OR' of the enables).

8 Load Pad

Using the Load Pad

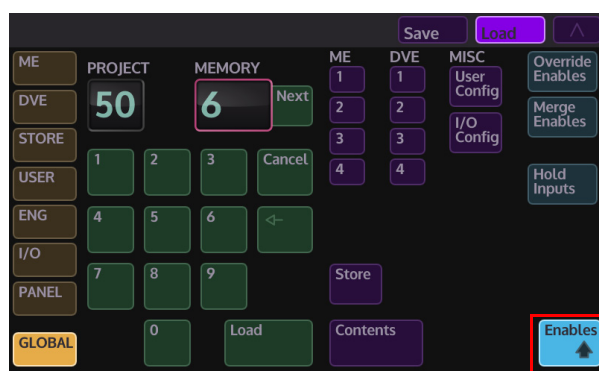
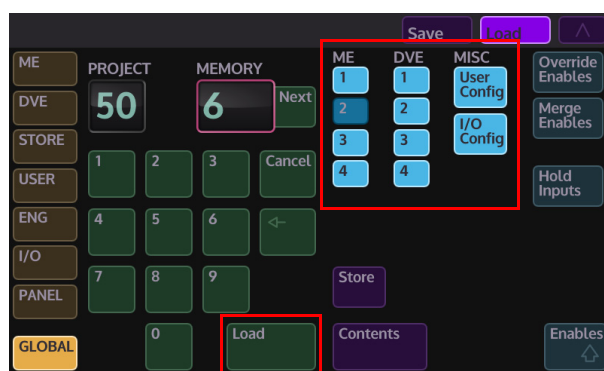
Loading files is done in a similar manner to saving files. The **“Load”** menu is accessed through the **Save Pad** menu, as shown below.

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.

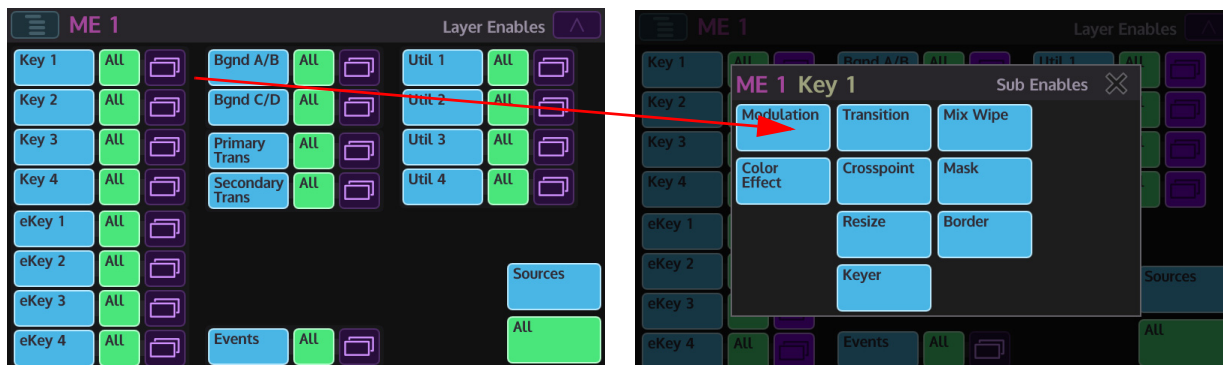
If the project and memory numbers are valid, the **{Load}** button will light up green and the GMEM can be loaded.



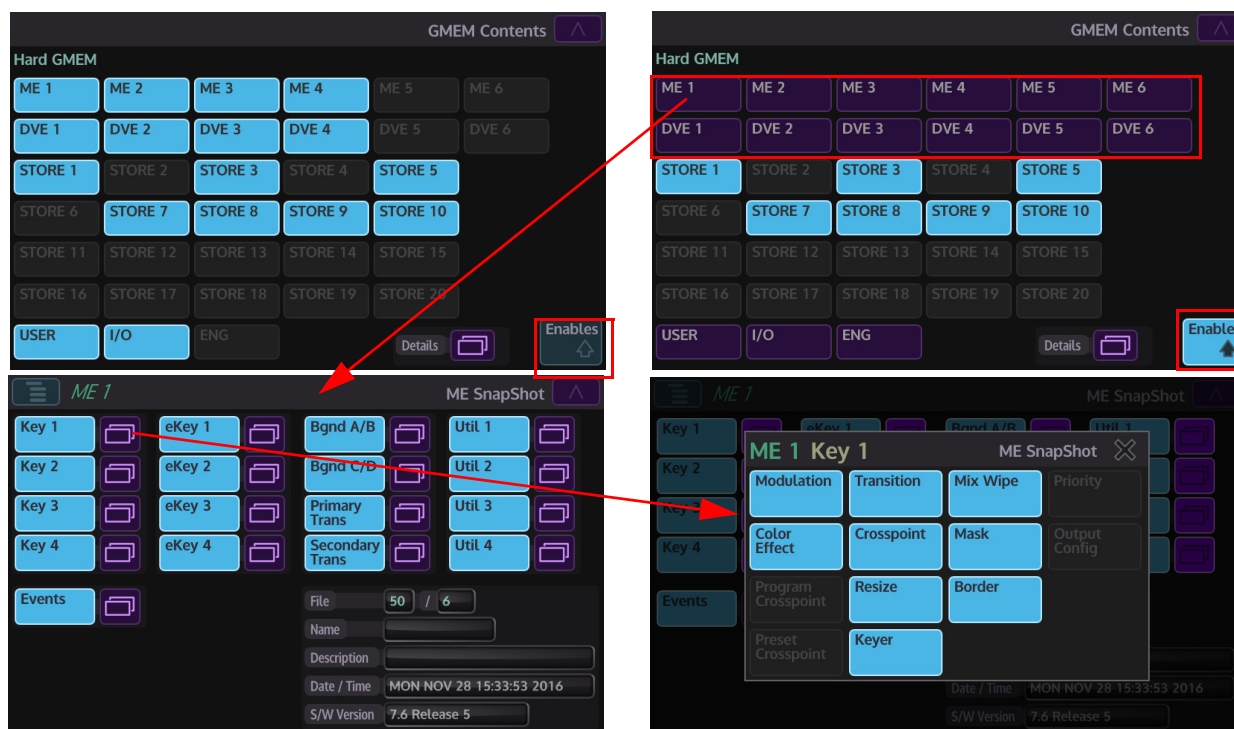
When the GMEM was saved, the user would have included M/Es, DVEs, Stores and Configs. In the menu above, the user selected saved functions can be clearly seen as they are lit light blue, so, when the GMEM is loaded, all of the selected functions will be included. Before loading the GMEM, the user can 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.



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.

9

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.

Touch the Delegate Button

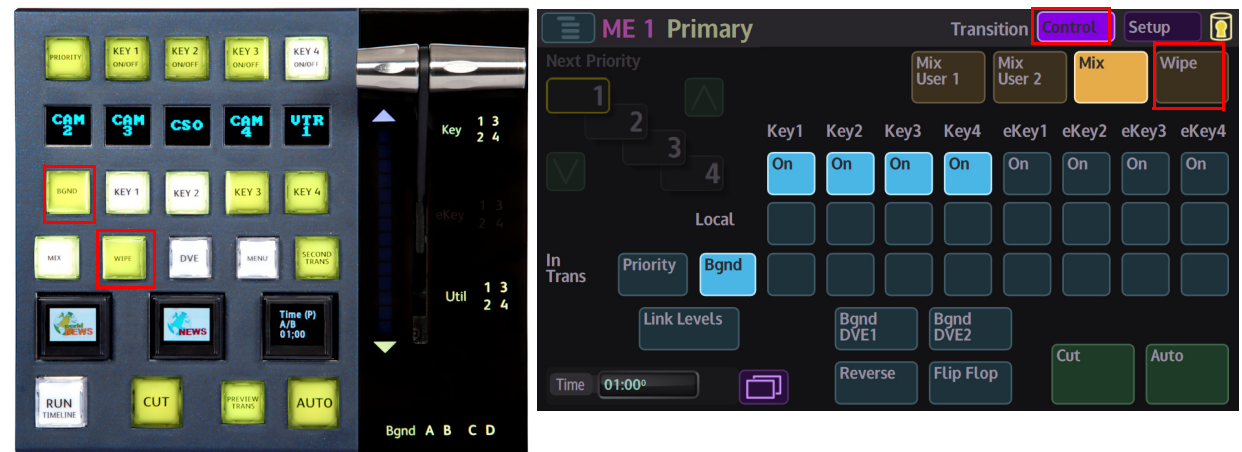


Delegates menu



Setting Basic Transitions

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



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

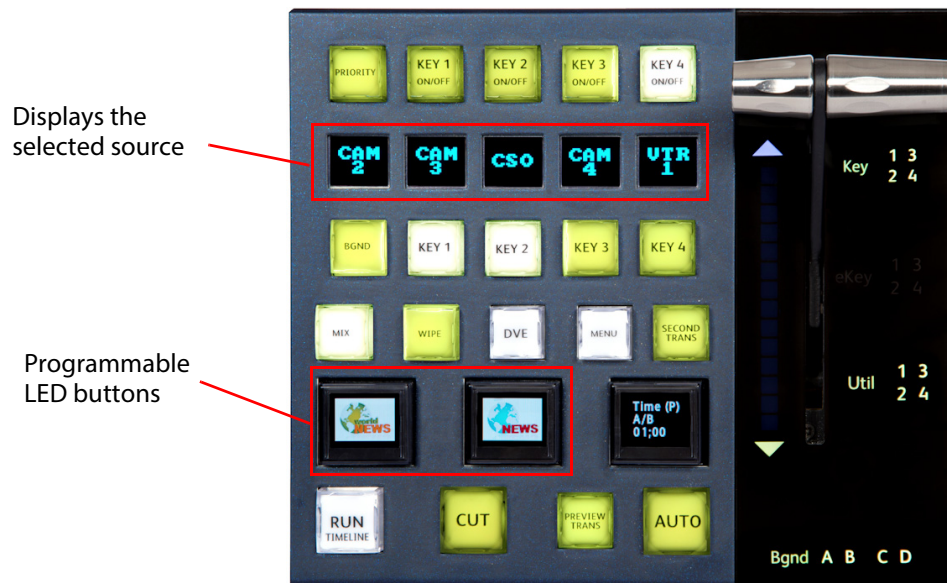


Select the Key or Keys on the MAV-Trans or in the menu, press the **{Transition Setup}** button to go into the **Transition** menu, then touch the **"Delegates"** button. Select the Key or Keys required for the transition, and then touch the menu outside the delegate area to go back to the **Transition** 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:

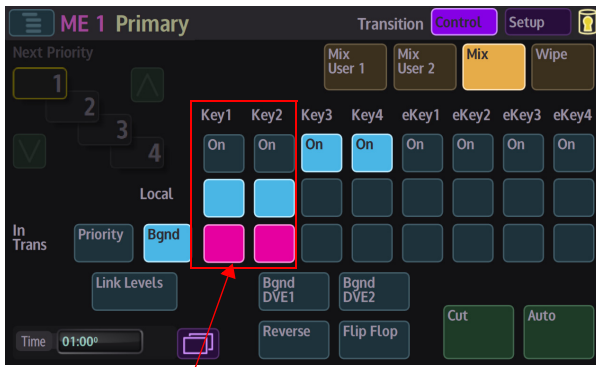
- Off - The Key layer is off.
- White - The Key layer is on but not contributing to the program or M/E output.
- Red - The Key layer is on and contributing to the program or M/E output.

By pressing one of these buttons the following will happen:

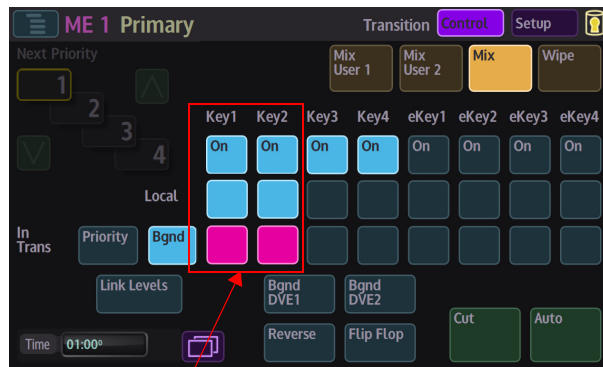
Press once and the Key layer is on but will only contribute to the programme or M/E output if set to contribute.

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.

MIX

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

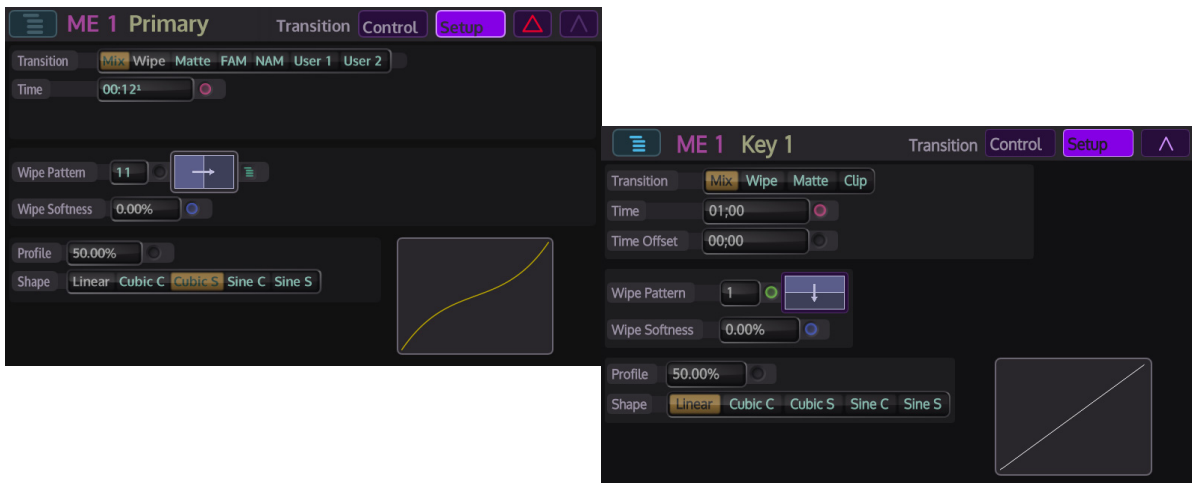
Allows the time for an auto transition to be set from the number pad and the rotary control.

T-Bar

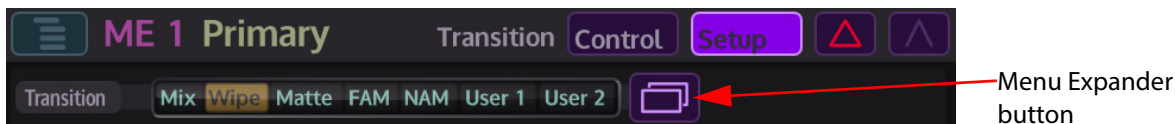
Performs a manual transition using whatever transition types have been selected for the layers included in the transition.

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.

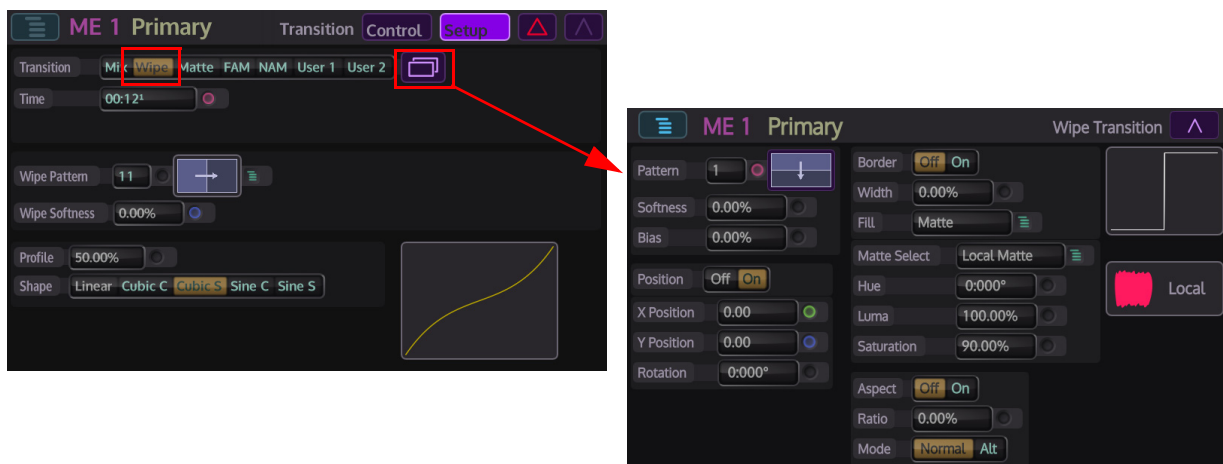


When selecting the type of transition, i.e Mix, Wipe, Matte, FAM, NAM or User 1/2, the selected transition may have sub menus, accessed by touching the “menu expander button”. Allowing the user greater control.



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.

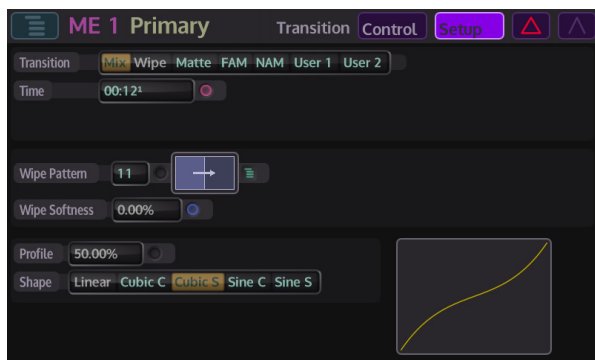
To access the sub-menus, touch the blue menu expander button to open a new menu that will only display the parameters for the selected function.



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 effect 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:

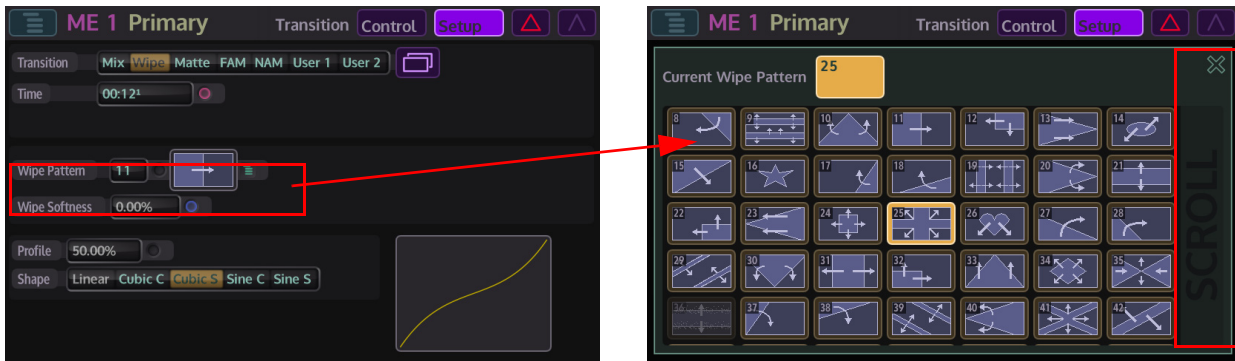
Linear - constant transition, no change in transition acceleration

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 patterns 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:

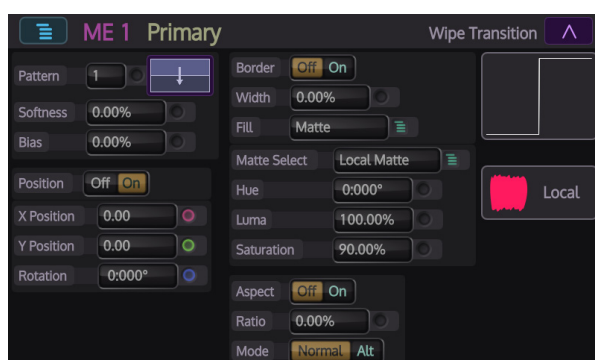
Linear - constant transition, no change in transition acceleration

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

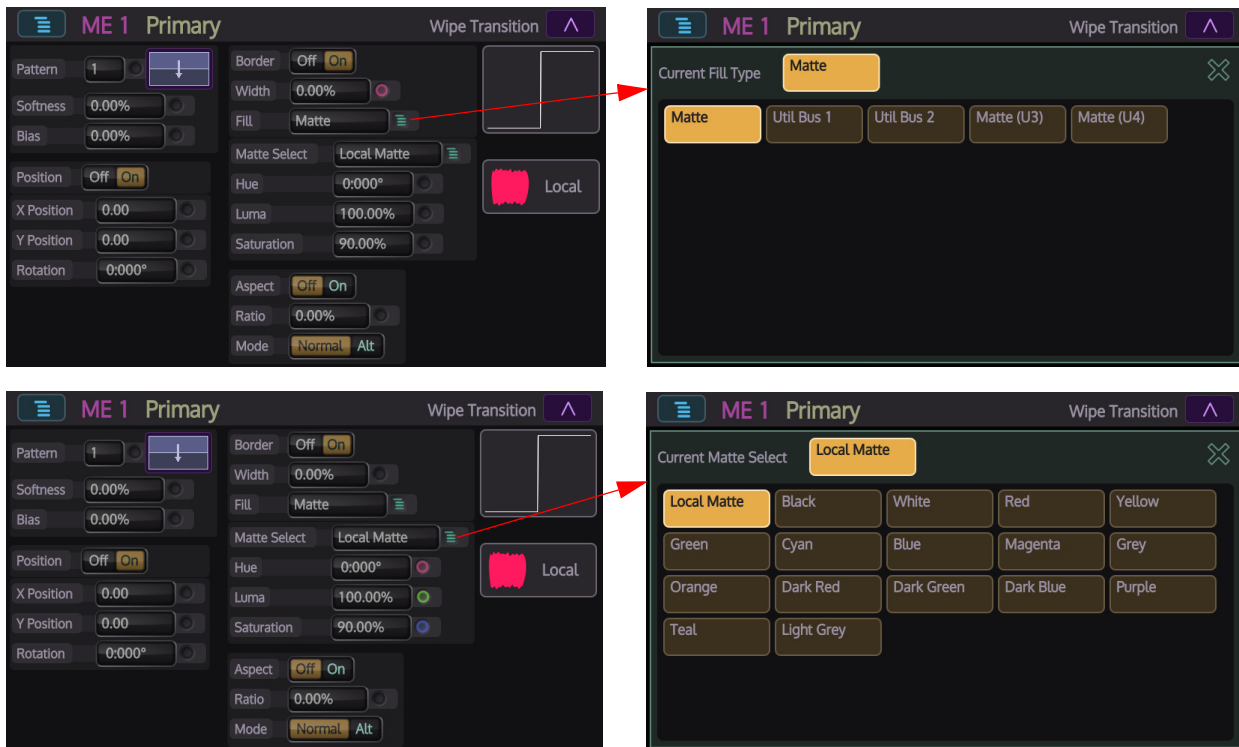
The Wipe Transition menu allows the user to adjust the position the wipe transition starts at or finishes at, allows a border to be added to the wipe and allows the aspect of the wipe pattern to be changed.



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.



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.

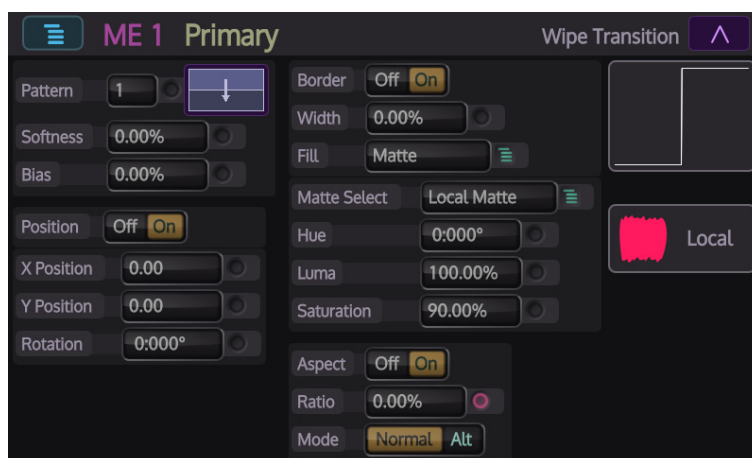
Adjusting the Width parameter will adjust the width of the border. Then either touch the menu expand button or touch the menu link button to display the full wipe border menu.

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**.

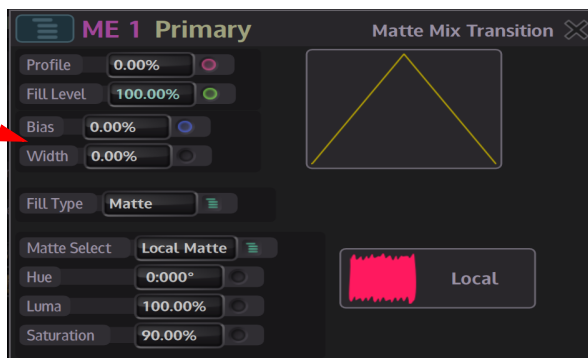
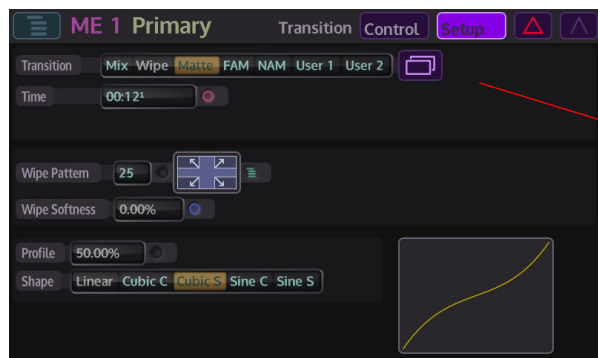
Aspect

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).



Transition Matte

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



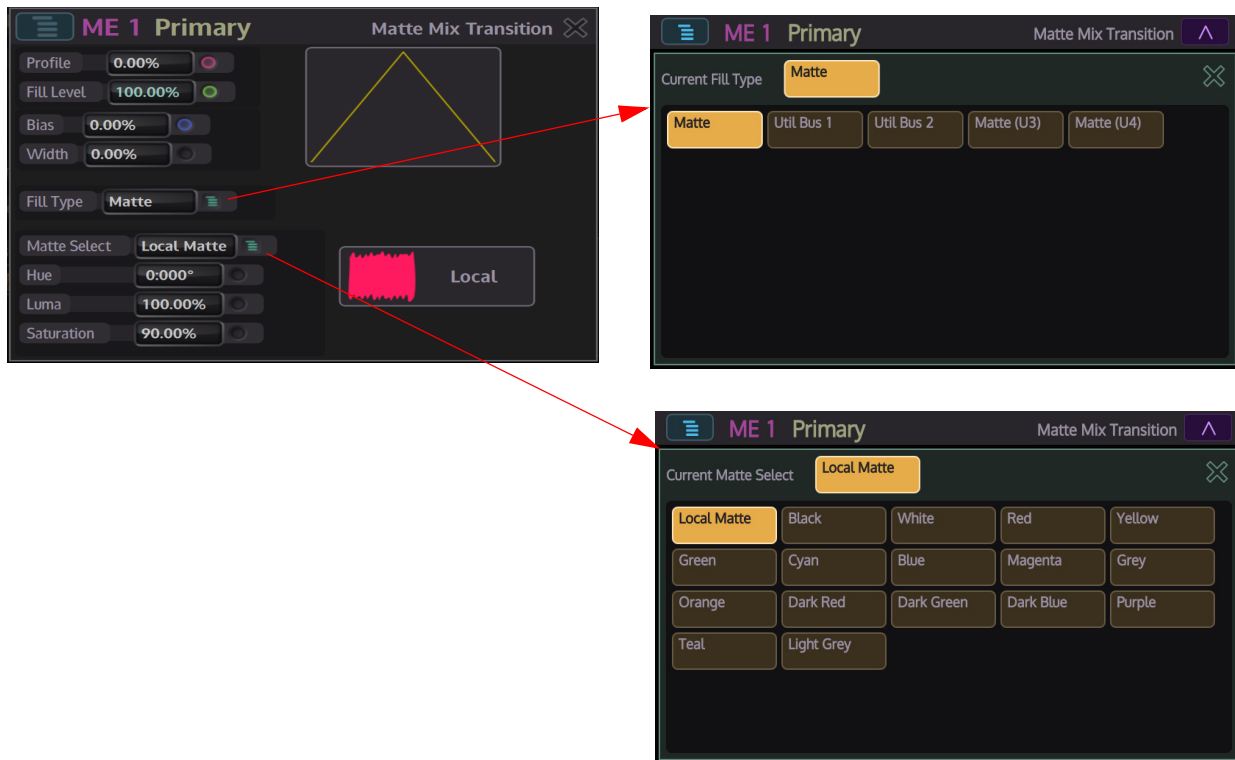
Profile - This is where the output passes through the matte mix color between the two transition sources. This menu sets the amount of Matte Fill in the transition,

Fill - 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.

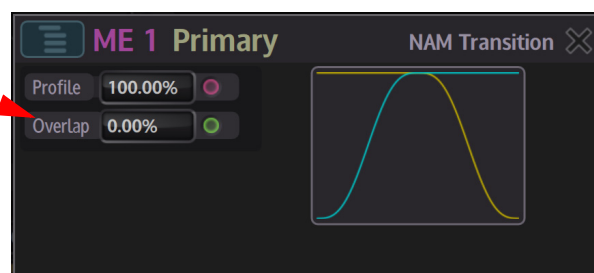
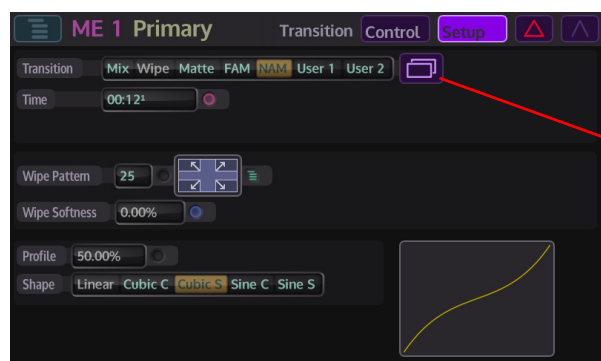
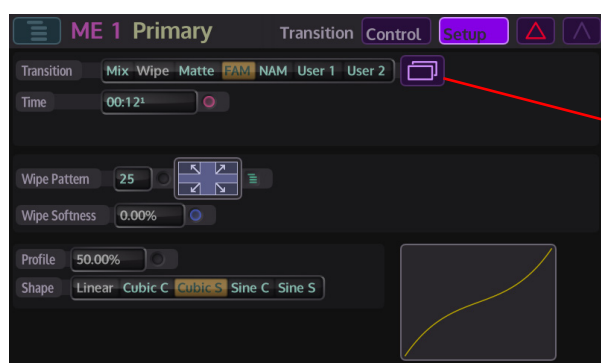


Transition FAM/NAM

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%.

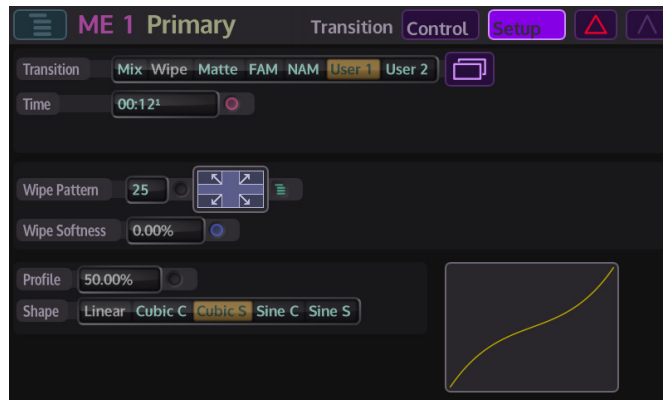
NAM - This is where the brighter parts of either source are more prominent than the darker parts during the transition. Thus the brighter parts of the fading out source are apparent for longer than the darker parts. A normal mix will fade out equally across all brightness levels. The NAM profile control 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.



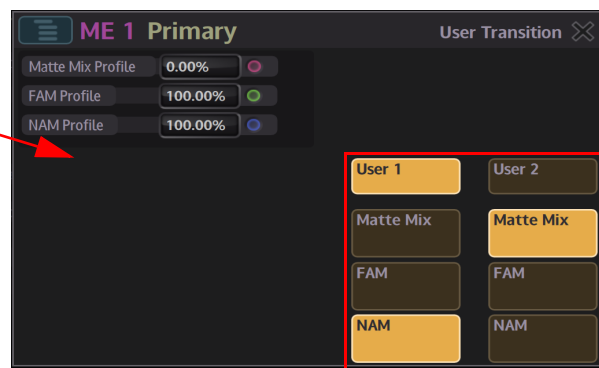
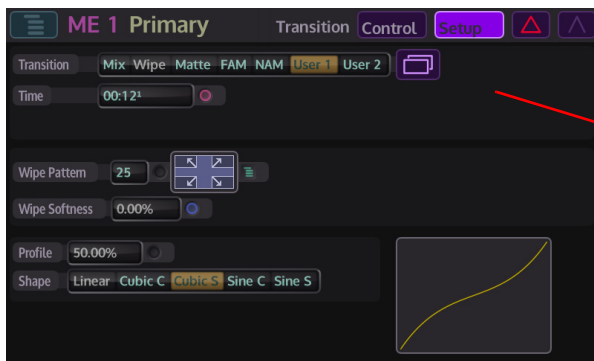
Transition User 1/2 Mix

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

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



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 effect 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 patterns 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.

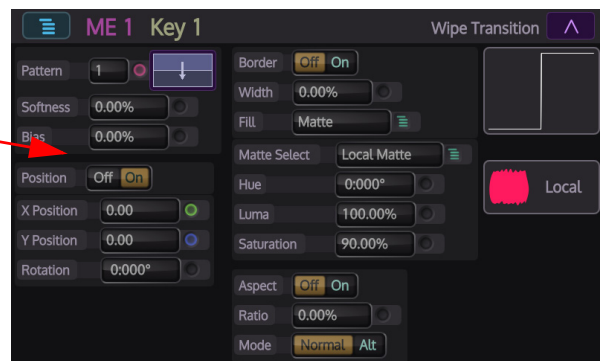
Key Transition - Wipe

Select **Wipe** and then press the **Transition** menu link button.



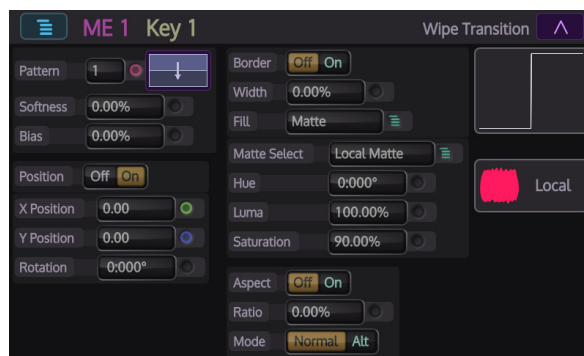
Pattern - Scrolls through the available wipe patterns (wipe patterns are displayed in the "Transition" menu on the GUI).

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

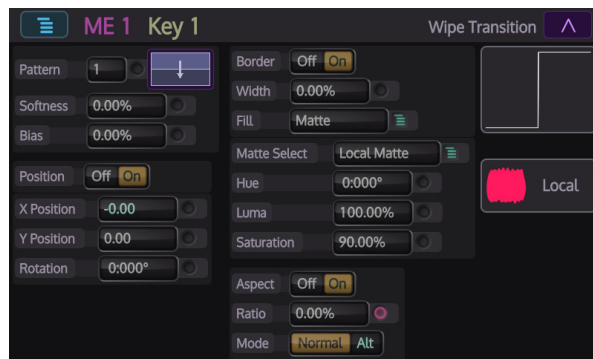
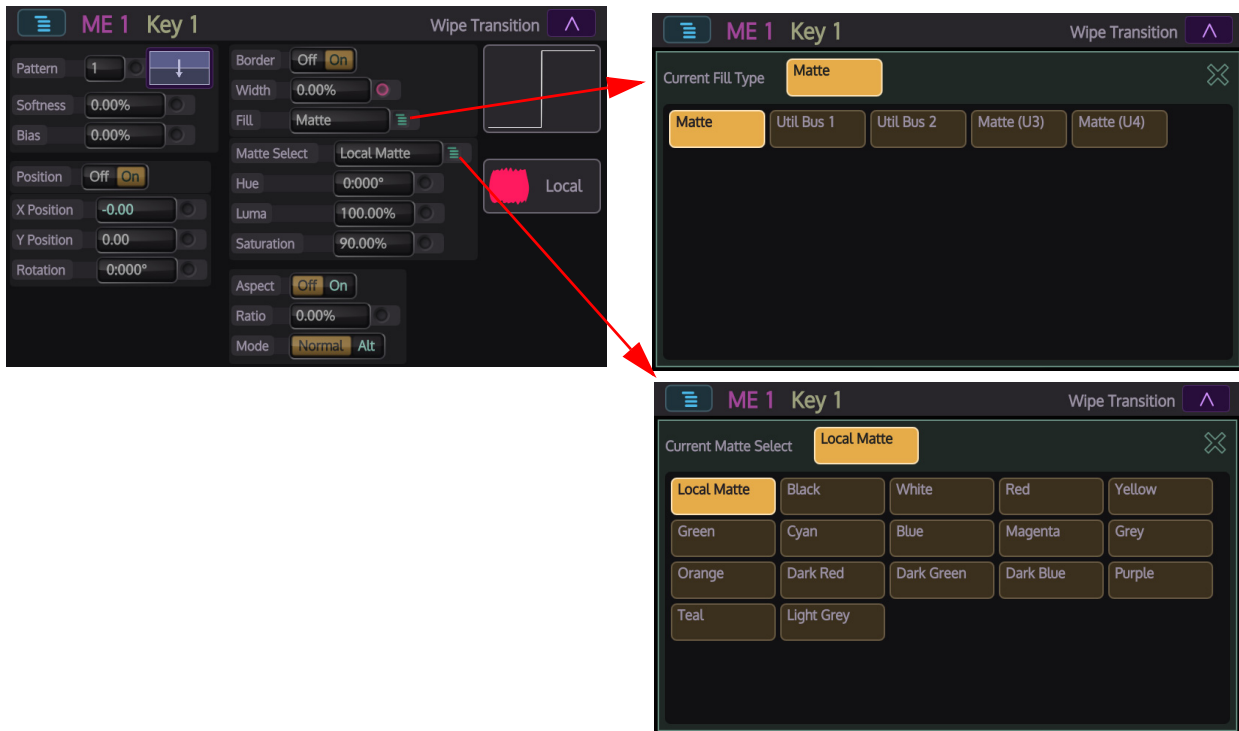
This menu will add a border on or around a wipe pattern.

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**.

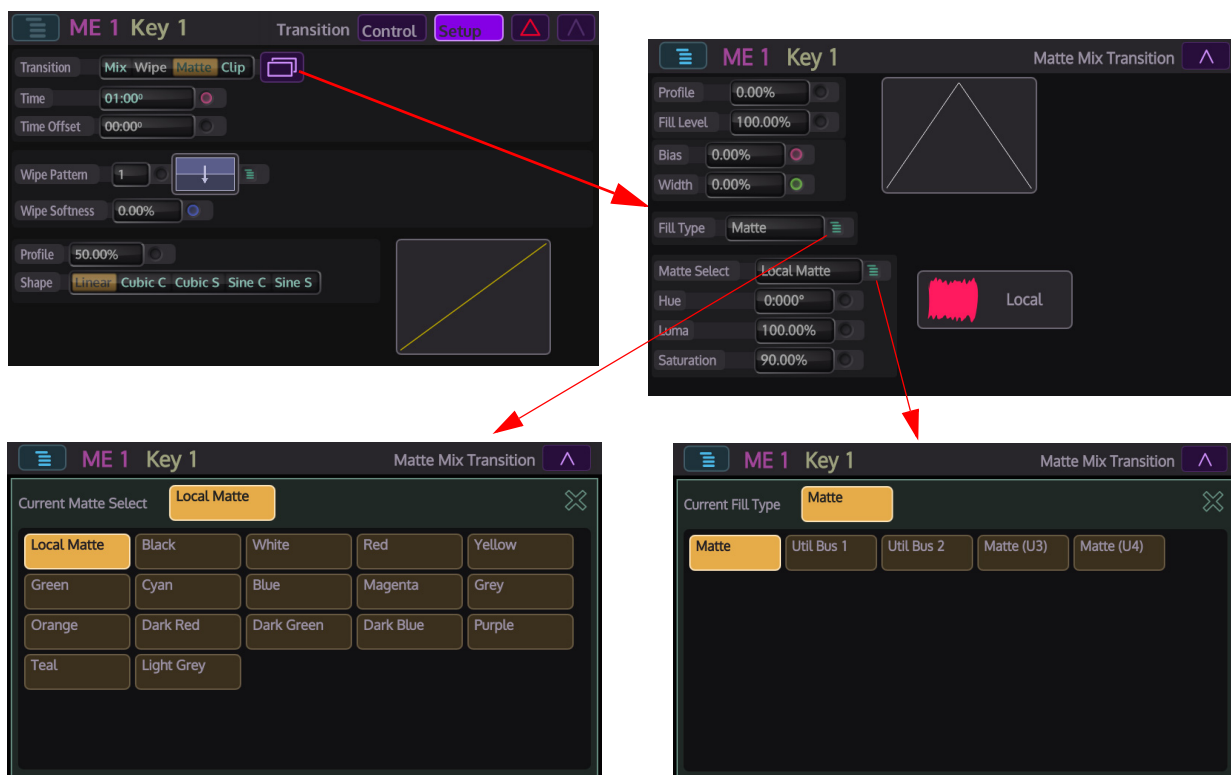


Aspect

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 then 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.

10

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.

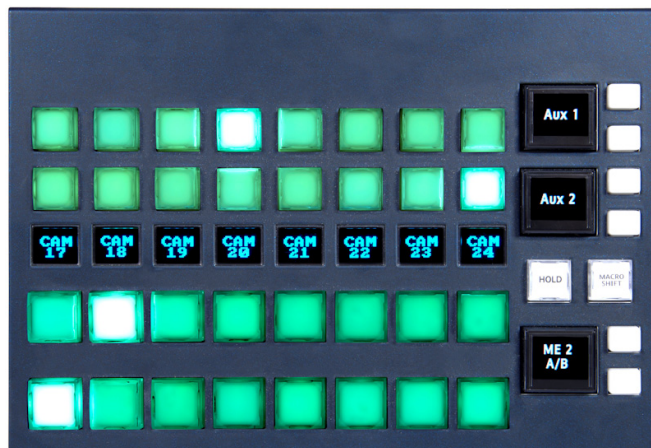
Each SuperKey layer is independent and may have a totally different set-up.

eKeys

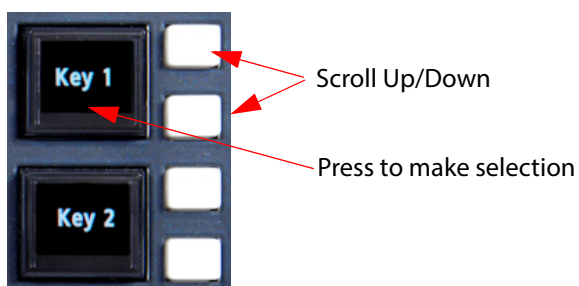
Kahuna has 8 Key layers per M/E made up of 4 SuperKey layers and 4 extra Key layers that are called “**eKeys**”. Each M/E will have 2 permanent eKeys and 2 eKeys that are derived from Util buses, Background buses or SuperKeys that may not be required for a production from another M/E. This is done in 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).



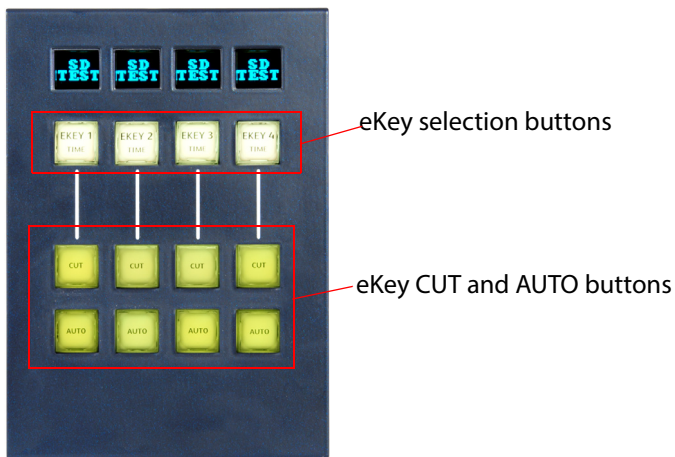
Selecting one of the Keys or eKeys is a simple process, use the Up/Down buttons next to the OLED button to scroll through the options and then press the OLED button to make the confirmation.



Note: eKey Bus 1 to eKey Bus 4 are only available if the system has been setup correctly in the **MakeME™** 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).

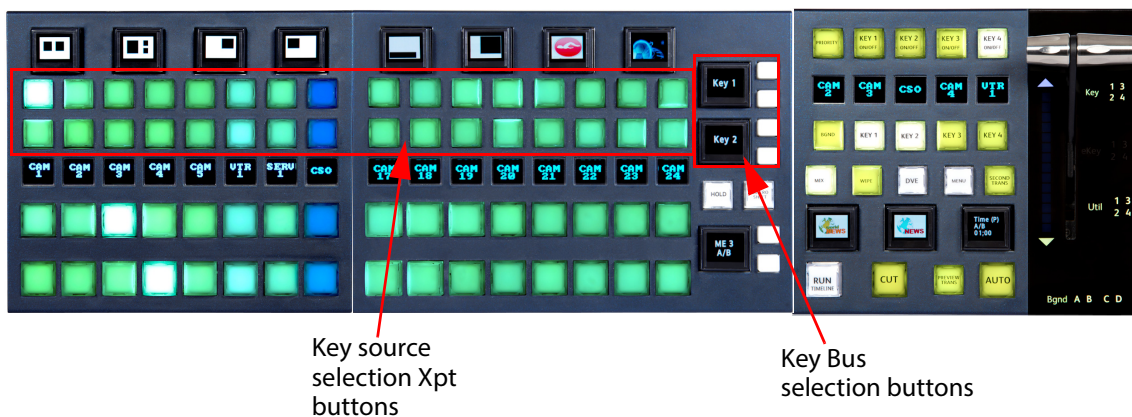
Selecting eKeys 1, 2, 3 and 4 on the Control Surface

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.



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.



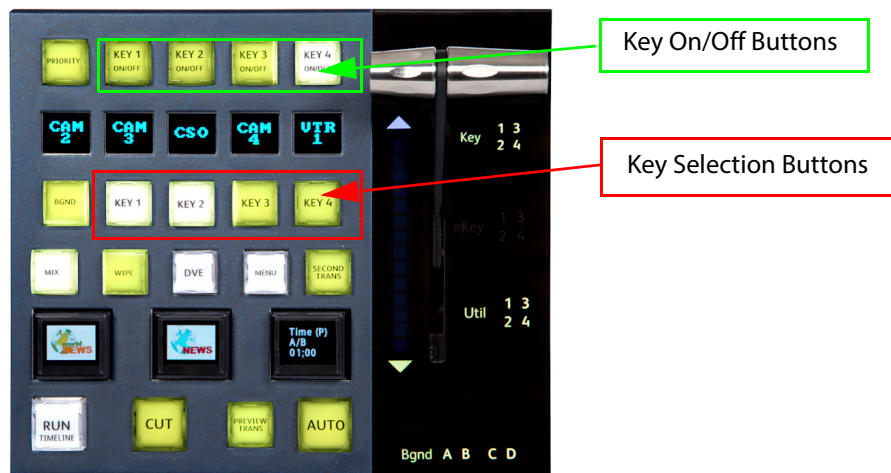
The Key Layers can then be cut to the source output using the Transition Control area of the control surface.

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.

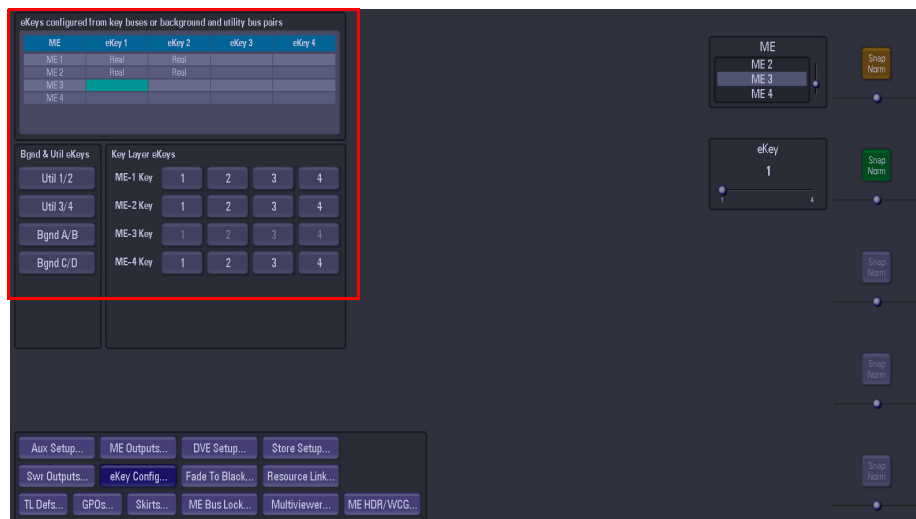
The color of the buttons may vary depending on the user defined button color scheme.



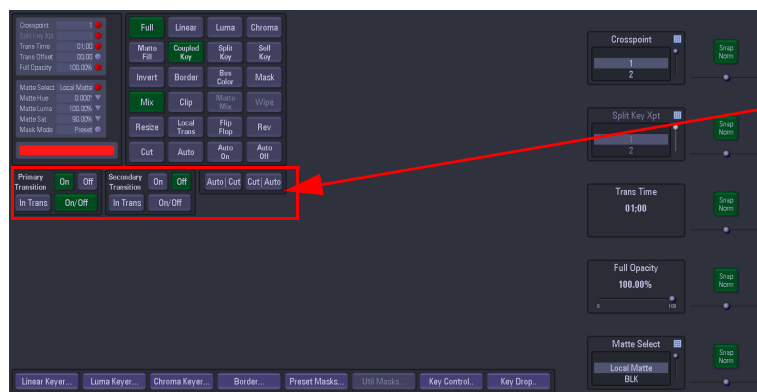
Taking an eKey to an Output

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.



Buttons used to turn the eKey Layer On/Off



Scroll trough the options select the required eKey and then press the OLED button to make the selection

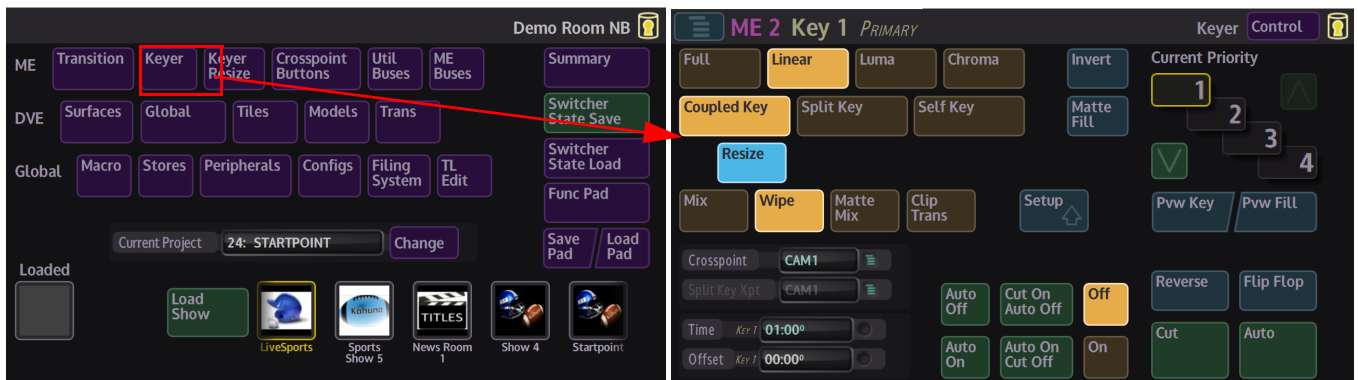
Then to take the eKey to an output press either the **{Cut}**, **{Auto}** or **{On}** buttons in the menu. The eKey layer is now contributing the output.

Key Control

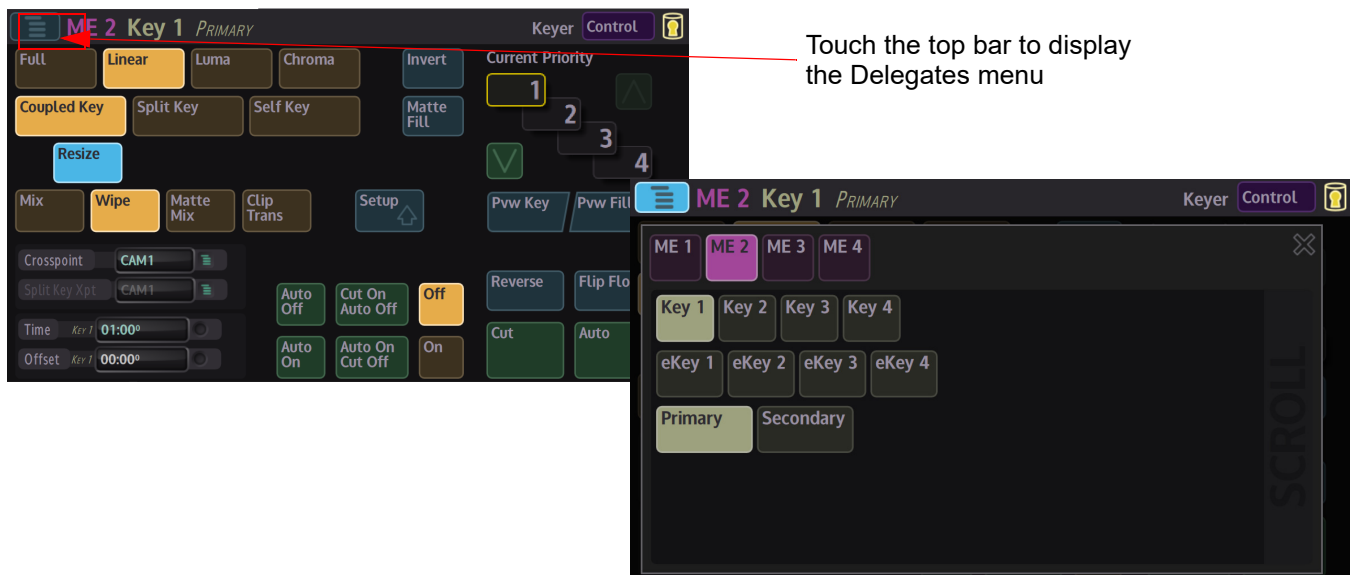
Note: Key Control functions in the following Key Control menus can also be selected using the MAV-KEYER module (if purchased with the Maverik Control Surface).

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.

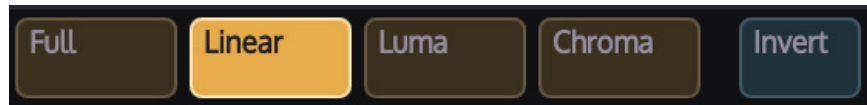


In the Keyer Control menu, touch the “Delegates” button will display the “Delegates” menu, in this menu the user can select the required M/E and the Key type.



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.

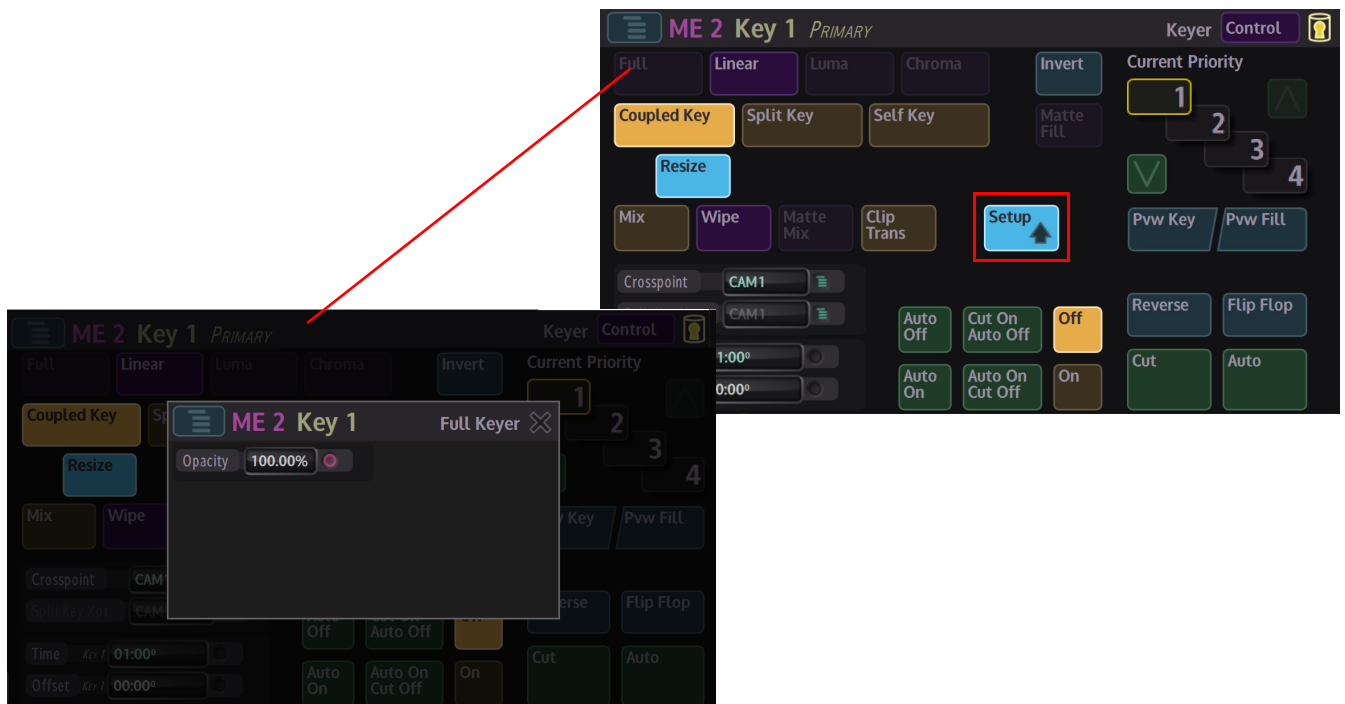
Luma - Selects a Luma Key.

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 {^} {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.

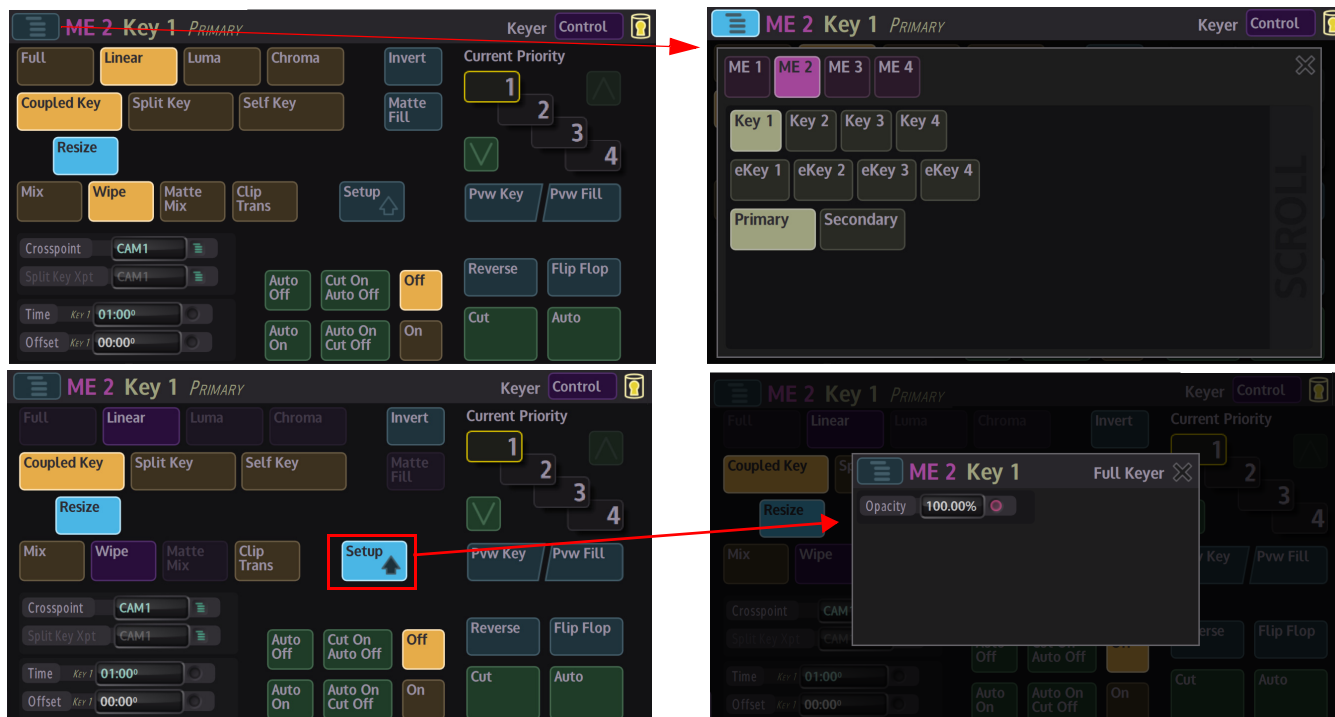
Resize - turns the Resize function On

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.

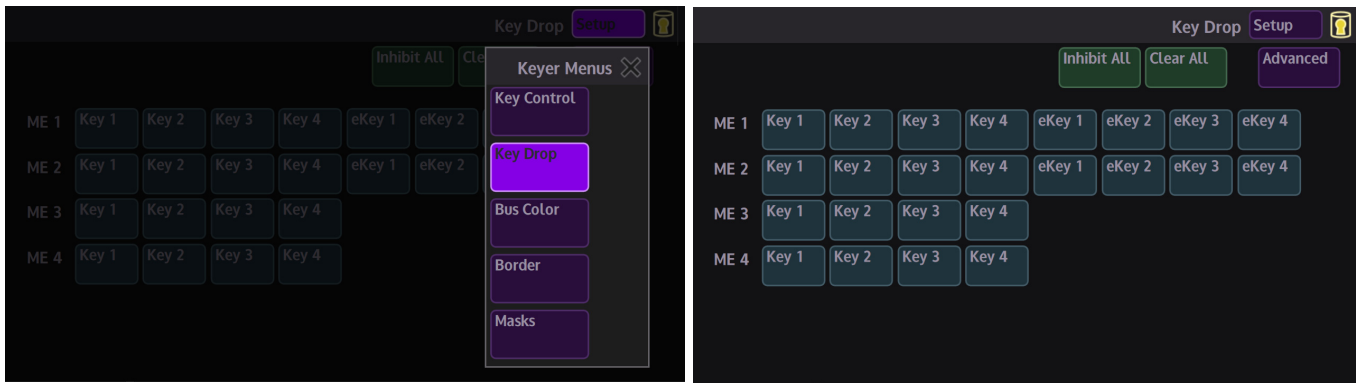
Linear - Selects a Linear Key. Linear Keying is used where the Key signal is already Keyed, i.e., the area outside the required video is at black level.

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.



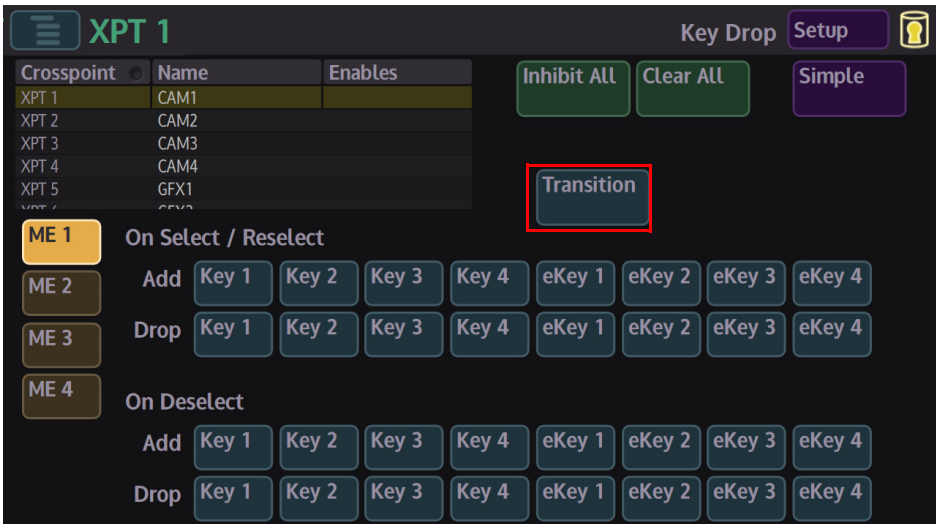
In this top menu or “simple” menu, the user can select a Key, from the list of available M/Es (the selected Key will turn blue).

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.



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.

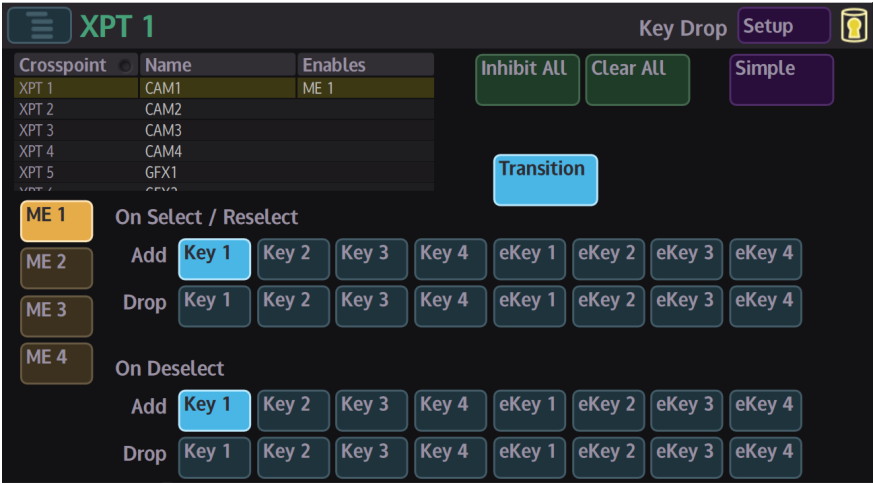
The Inhibit All and Clear All functions for Key Drop can also be found on these menu pages. Each source can have rules set to Add or Drop a specific Keyer on each ME whenever that source is selected on the Program or Bgnd A Bus of that ME.

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.



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.

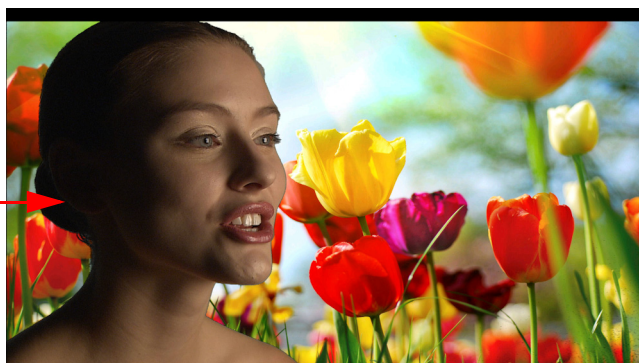
Keying for a live or moving environments usually more involved and requires additional work as it is more difficult to control color and light.

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



Result after chroma Keying

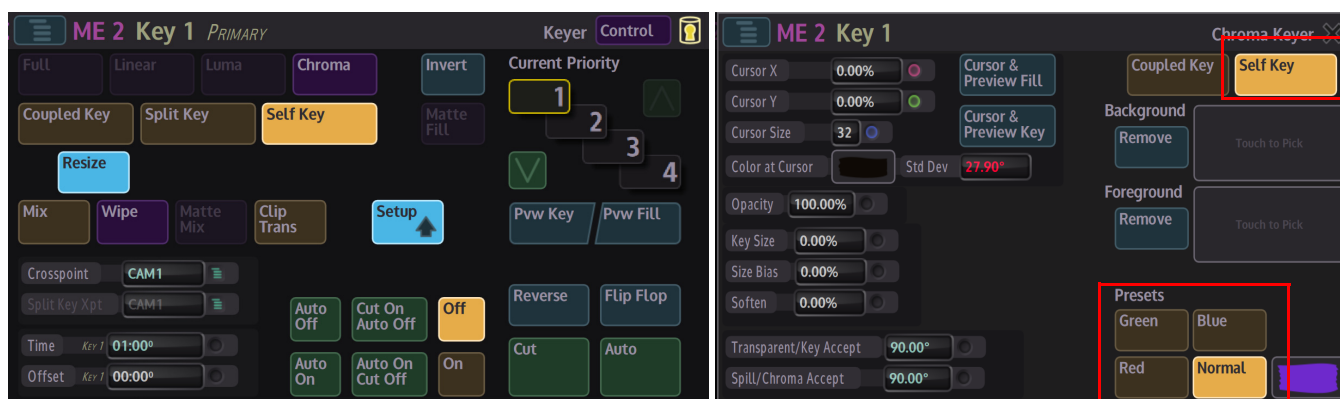
Note: When starting to setup a chroma Key, before making any adjustments, press the {Normal} button to normalize all the parameter controls. This is because the current default GMEM may be a user defined default GMEM, not a factory default GMEM.

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,

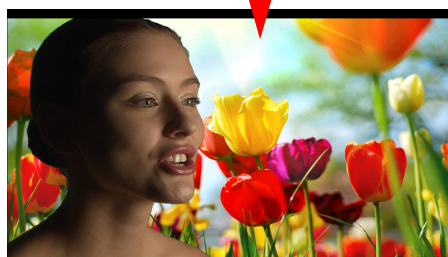
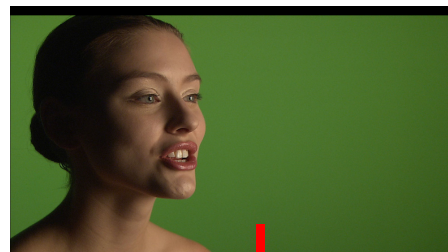
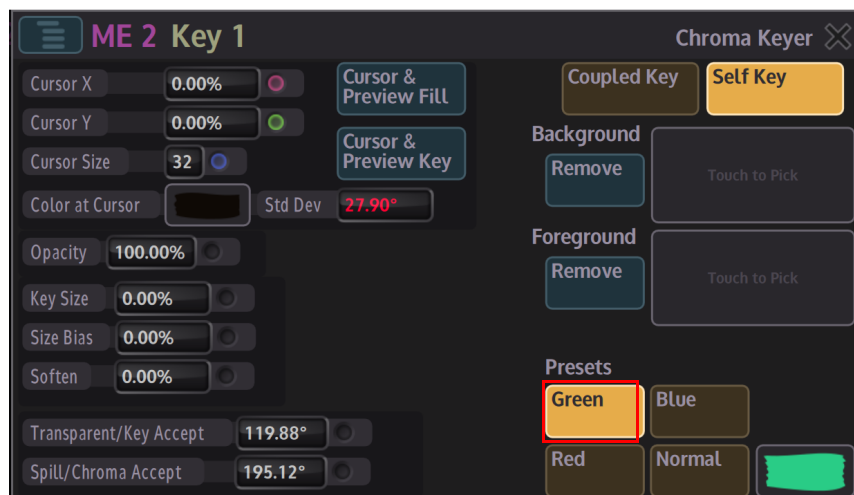
The **{Chroma}** and **{Self Key}** are enabled (for normal Keying)



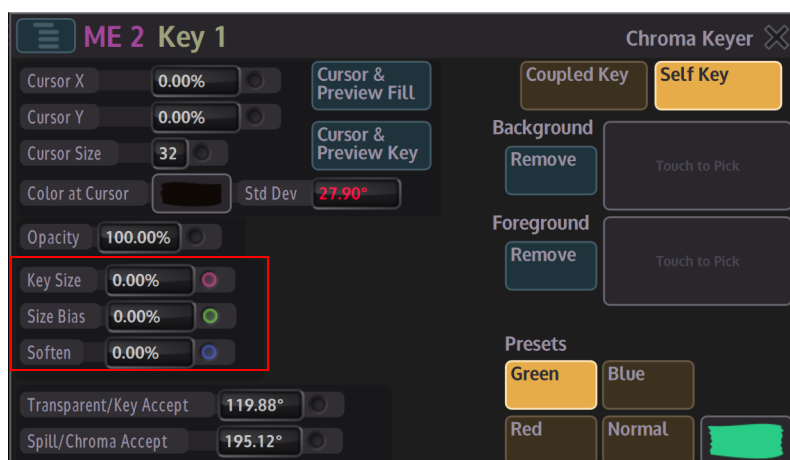
The **Chroma Keyer** menu is designed to tackle the majority of chroma Key source material, most of the required adjustments to make a very good chroma Key can be made in this menu. The **Green, Blue and Preset** buttons are where the user should start to chroma Key. The presets will achieve a good chroma 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!

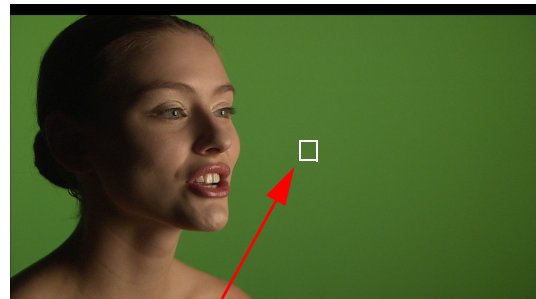
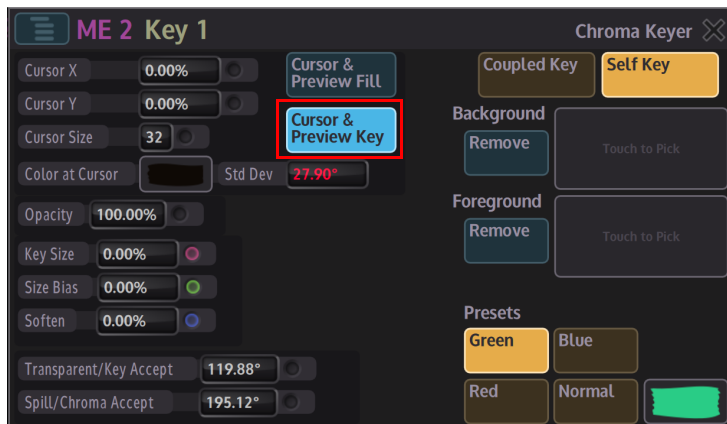


If the subject being chroma Keyed has a hard edge (a hard dark/light edge) around it, adjust the **Key Size** parameter in a negative direction, which will shrink the **Key Size** horizontally in steps as shown in the menu below.



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.

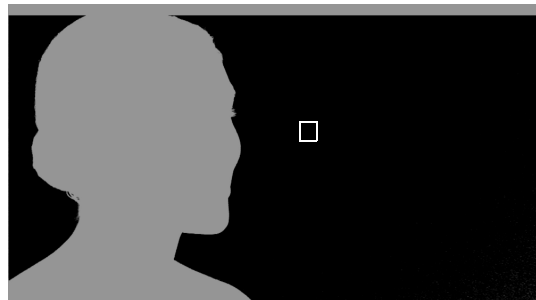
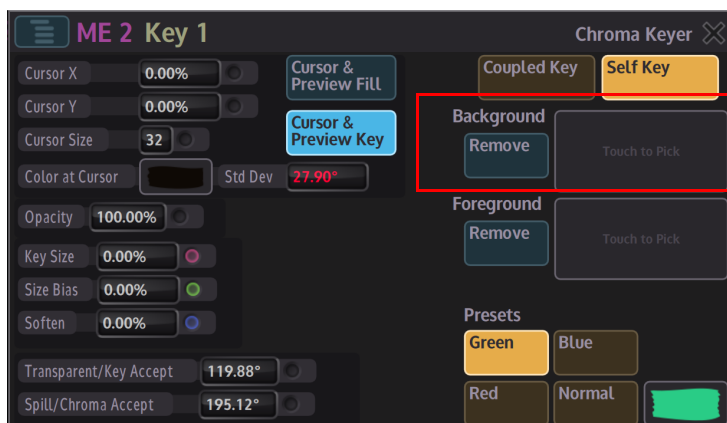
With the source material on the PVW monitor, press the **{Cursor...}** button, this will bring the chroma picker cursor onto the PVW monitor.



Cursor

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.



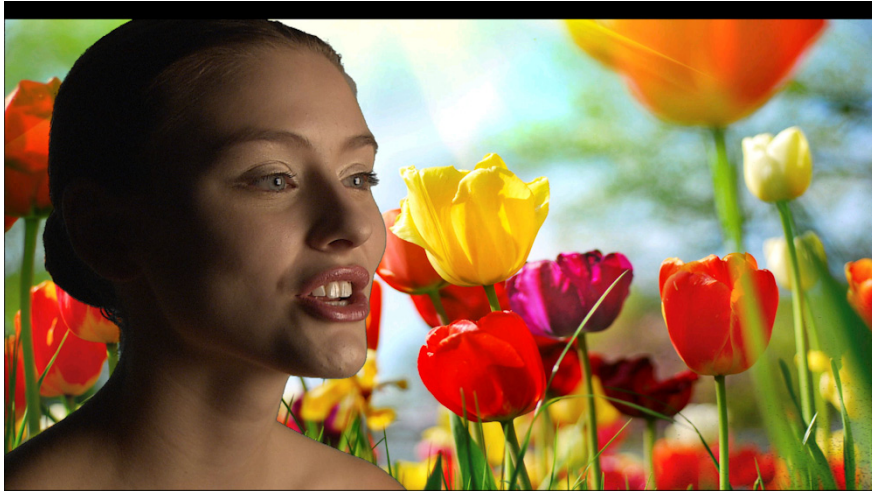
Press the **{Cursor...}** button to display the Key signal, if there is any background breaking through into the Key signal other than the subject being chroma Keyed then move the cursor over the affected area and press the **Background - {Touch to Pick}** button once again, the Key signal will have 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 be described.

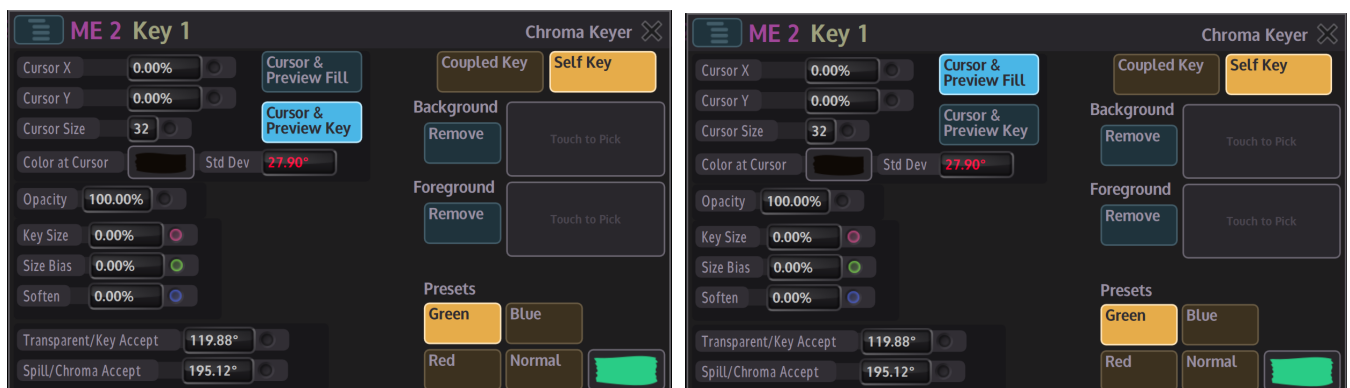


Background/Foreground (color picker) - this sets the Hue, Saturation and Luminance automatically, Key and Chroma Acceptance angles will also be set. Allows the user to select areas of the background and foreground to remove any unwanted breakthrough. Pick Background and Foreground buttons:

- **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

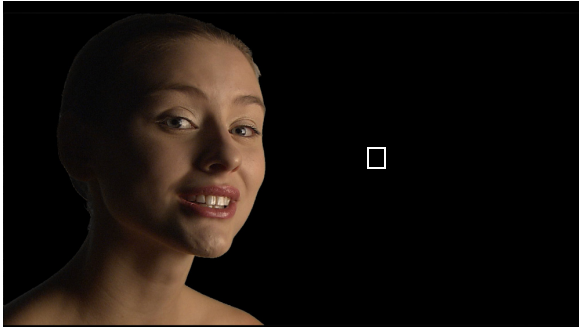
PVW Cursor

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.



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

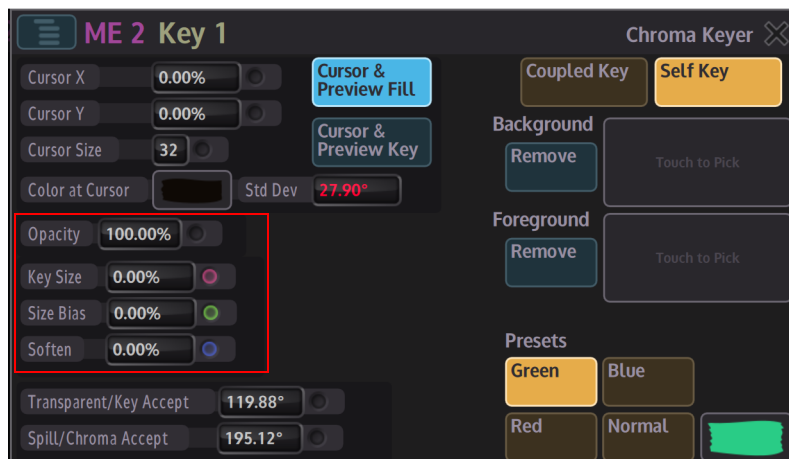


Cursor - PVW Key



Cursor Size - adjusts the size of the cursor

Opacity - this controls the opacity of the Key signal

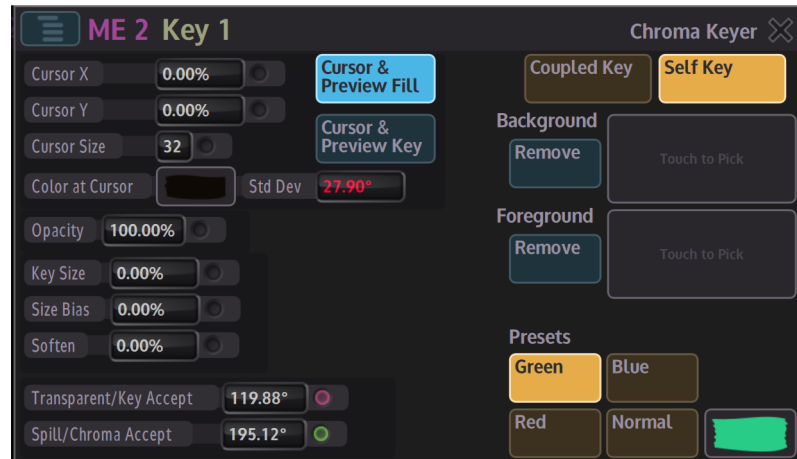


Key Size - will shrink or grow the Key edge horizontally left or right in steps

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.

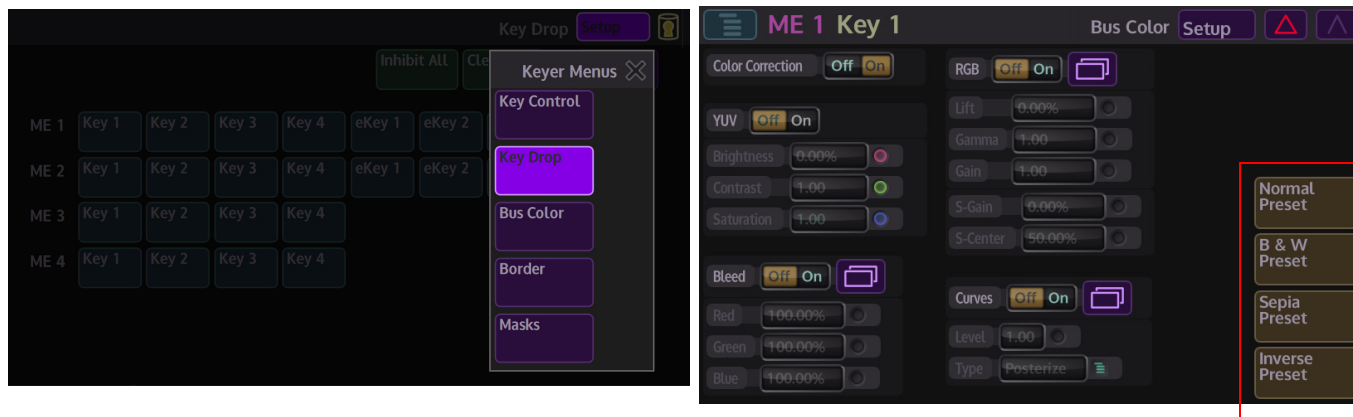


Transparent/Key Accept - if opened wide enough allows foreground objects to become transparent. The lower the acceptance angle the less transparent the object being Keyed is. In this way Key Acceptance Angle is also a transparency control.

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.



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.

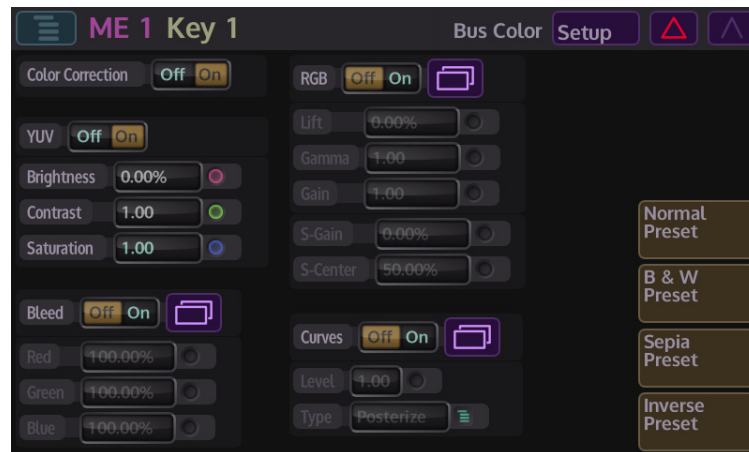
Normal - is the original color levels of the crosspoint source; without any color correction adjustments.

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.

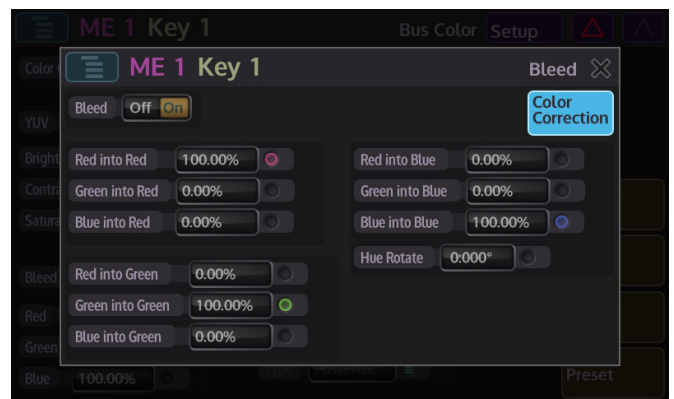
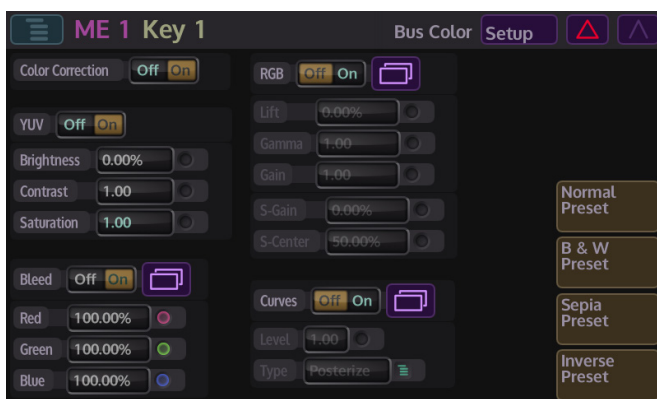
Bus Color- YUV



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



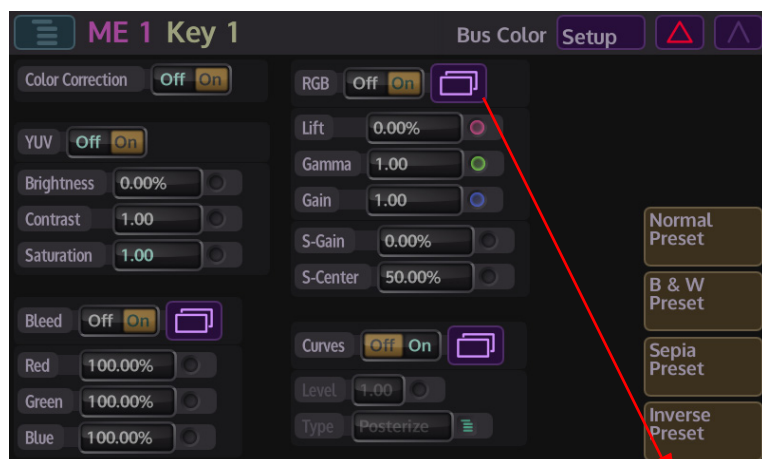
Color bleed is a situation where a single color will over power the other colors in the RGB signal. By using the bleed function the stronger color can be softened to make the color more natural, or adjusted to suit a specific need.

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.

Bus Color - RGB



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.

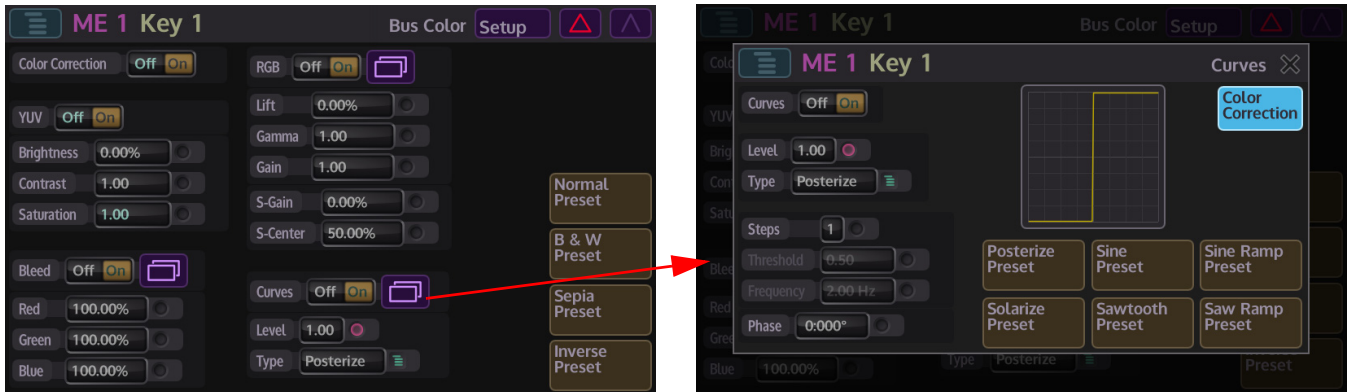
Gamma - parameters adjust the levels between dark/shadow and the mid tones, where the mid tones become brighter or darker; depending on the adjustment made.

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



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.

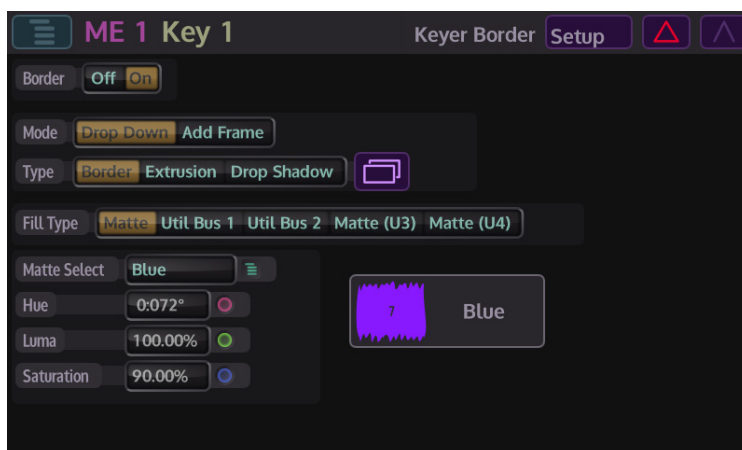
Threshold is used to change the shadow and highlight values of the selected preset curve,

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.



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

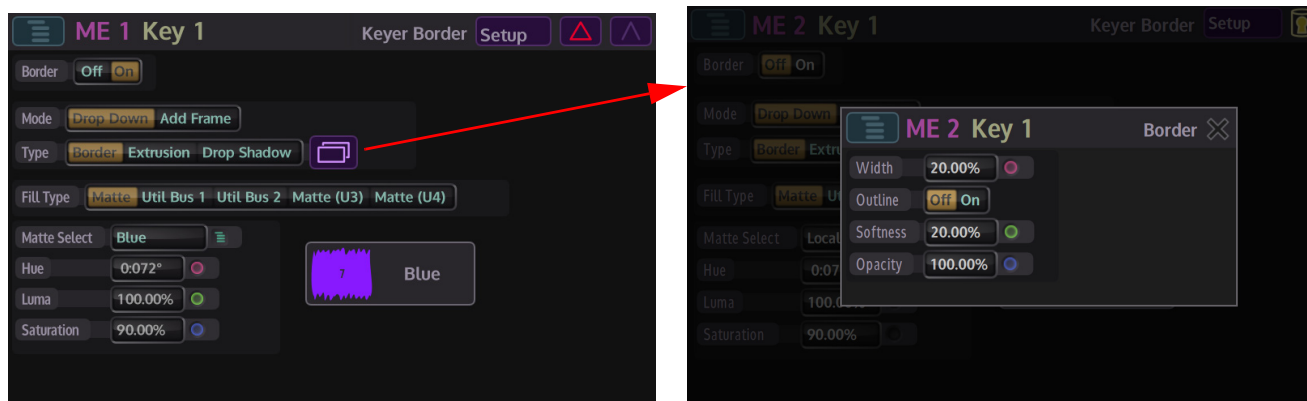
Softness - makes the outside edge of the border softer, the default setting is 20%

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



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**.

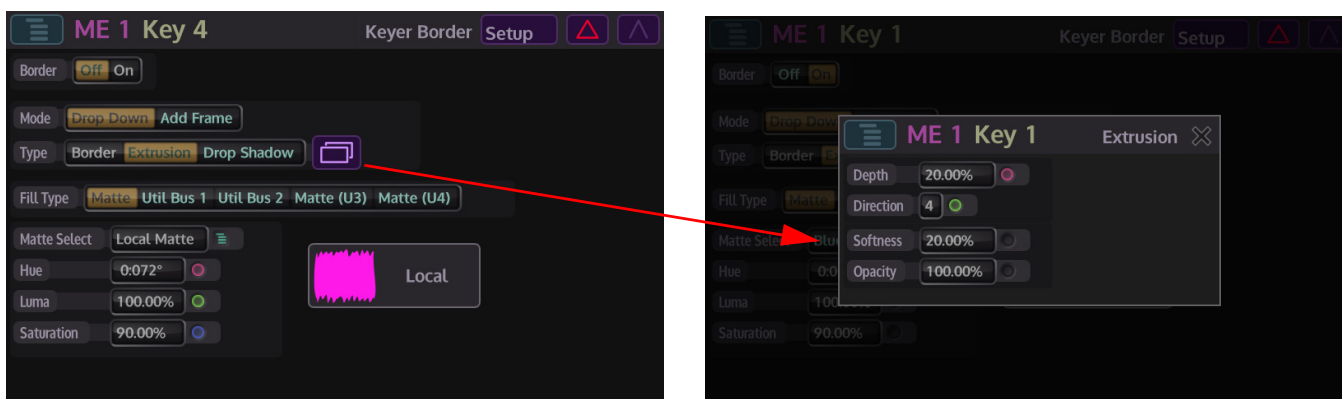
Fill Type - selects between Matte and Util Bus, which is used as the border, extrusion or shadow

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%

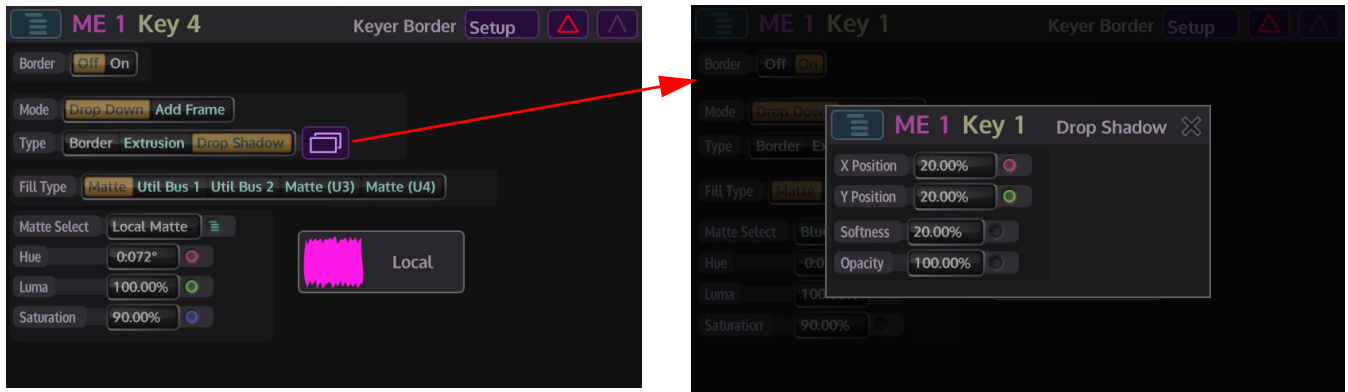
Direction - moves the extrusion around the edge of the Key layer, the default is set to the bottom edge of the Key layer.

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.



Parameter Controls

X Position - moves the shadow horizontally, default setting is 20%

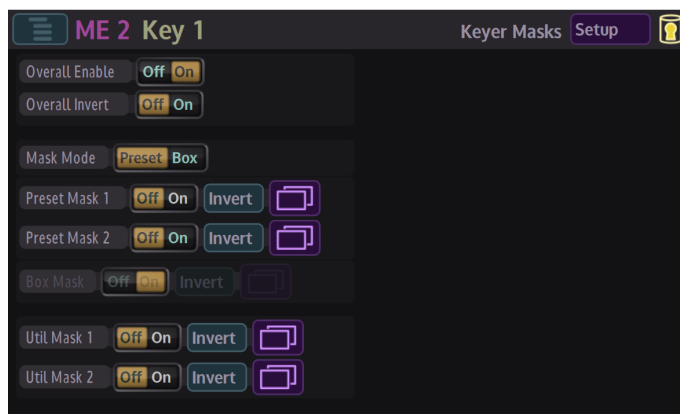
Y Position - moves the shadow vertically, default setting is 20%

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

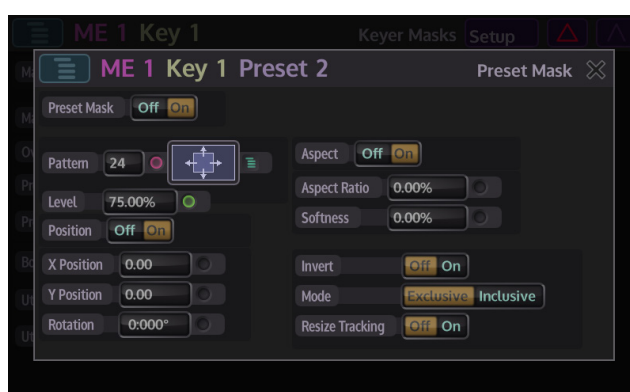
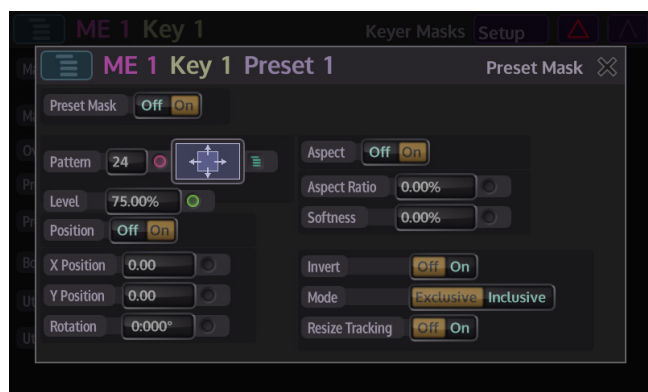
Preset Masks allow the Key layer to be masked; they do this by using a pattern to Key through to the background layer. There are two Preset Mask options, both are identical in operation and both can be applied to a single Key layer. Box mask uses a mask shape to mask away the Key layer revealing the Background layer.



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



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



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

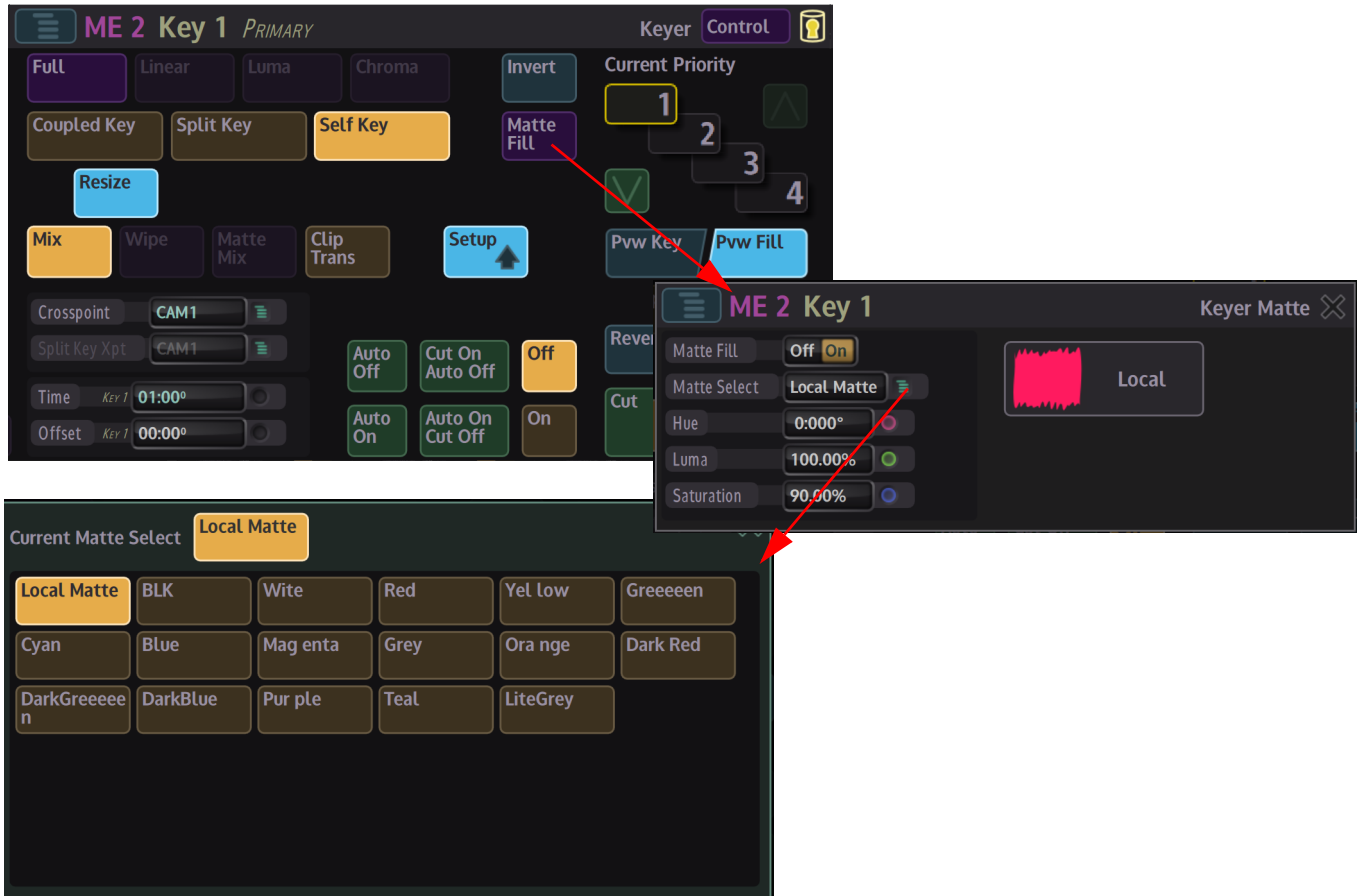
Gain - affects the sharpness of the clip point

Mode - selects between Inclusive and Exclusive

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

Keyer Matte Fill

Matte Fill is used as a fill for the Masks function.



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.

11

ME - Keyer Resize

Overview

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

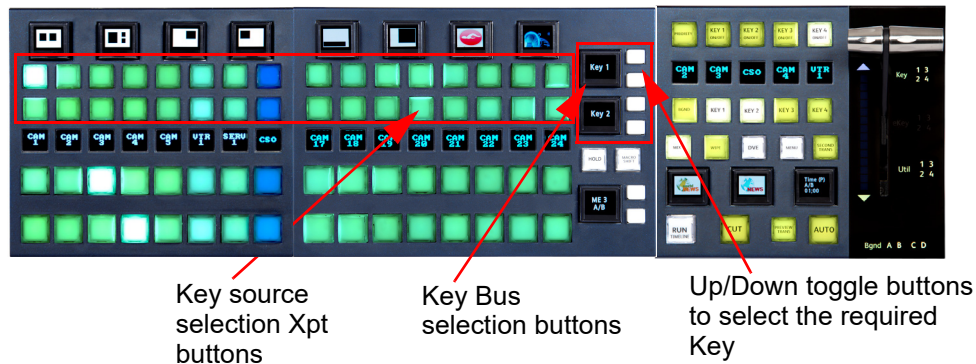
The Resize function allows the user to manipulate Key layers using the Kahuna Resize Engines. The user is able to resize the Key layer using Zoom, move position of the Key layer using the X/Y parameters, add borders or crop edges. These are just some of the many functions within Resize.

Note: Before describing how to use the Resize functions, the user will need to add a Key layer onto a background.

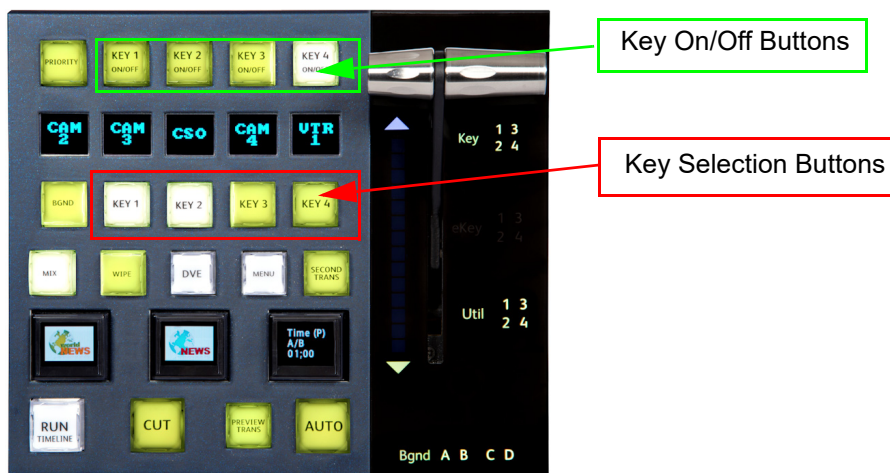
Note: The mainframe should have also had the inputs, outputs, M/Es, crosspoints and stores setup.

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.

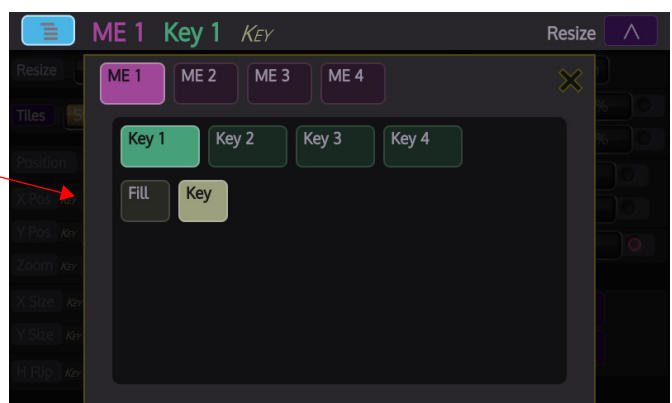
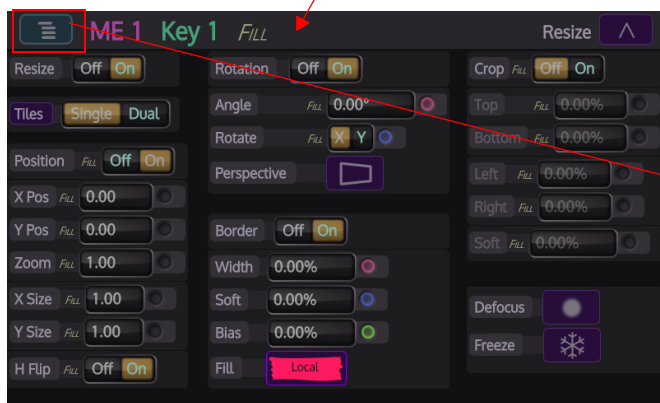
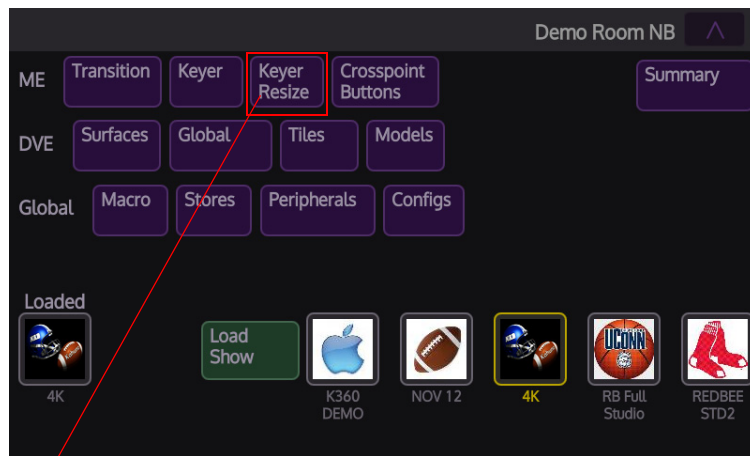
Note: White = off air, Red = tallied on air and contributing to the programme output.

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.

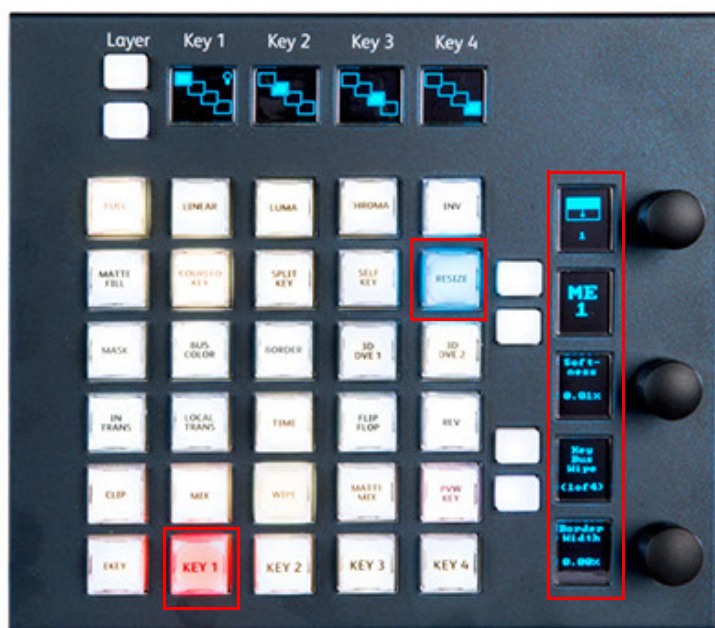
Touching the top bar of the menu will display the “Delegates” menu, in this menu the user can select the required M/E and the Key.



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 MAV-module.



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.

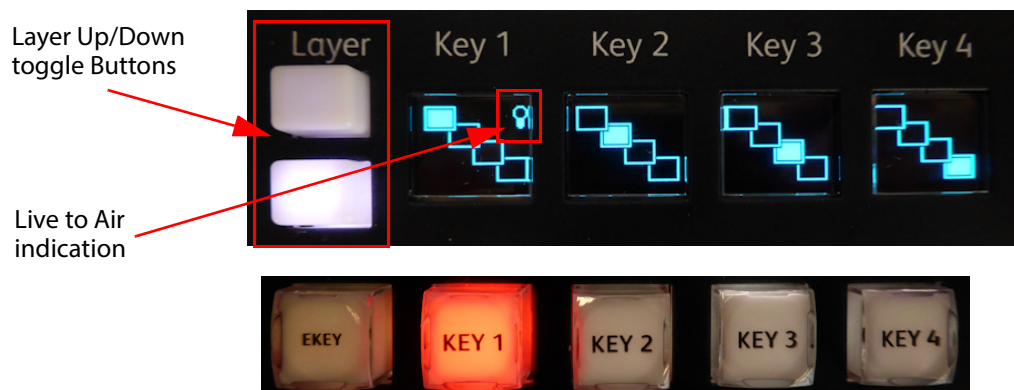
SPLIT Key - By selecting a Key (1 - 4) then holding down the [**SPLIT Key**] button, the two Key bus selection buttons will display for example "**Key 1 Fill**" on the top Key bus button and "**Key 1 Key**" on the bottom, the user is also able to see which source crosspoint buttons are selected for the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

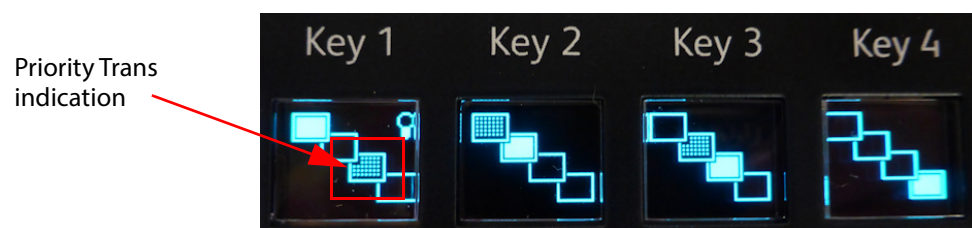
RESIZE - Selects the resize options X/Y and Zoom position of the selected Key. Stepping Up/Down through the bottom two toggle buttons next to the rotary controls, will display Key Resize menu (2 of 2), where the user is able to use the X/Y Size and H-Flip parameters.

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 of the mnemonic display.

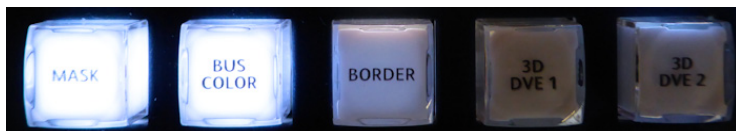


When the [**PRIORITY**] Transition Control button is **On**, the **Key Control Priority** symbols in the mnemonic displays will display the next Key transition priority and will shown as a "**Box Grid**" instead of a solid box. The Up/Down toggle buttons move the selected "Priority Transition" Key layer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



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

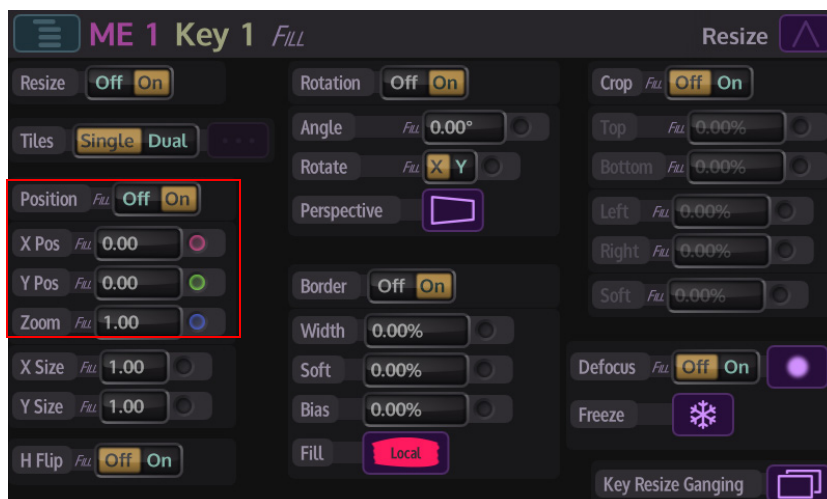


Working in SuperKey mode

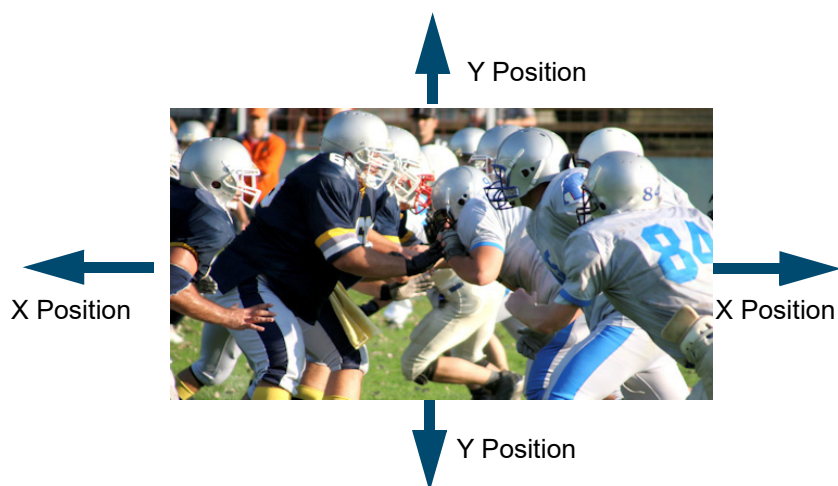
EKey - Press and hold and select one of the **[Key 1]** - **[Key4]** buttons, selects eKey 1 - 4 (if available).

Key1 to 4 - Selects the SuperKey layer that will be affected by the Key Control buttons

Keyer Setup- Resize Position

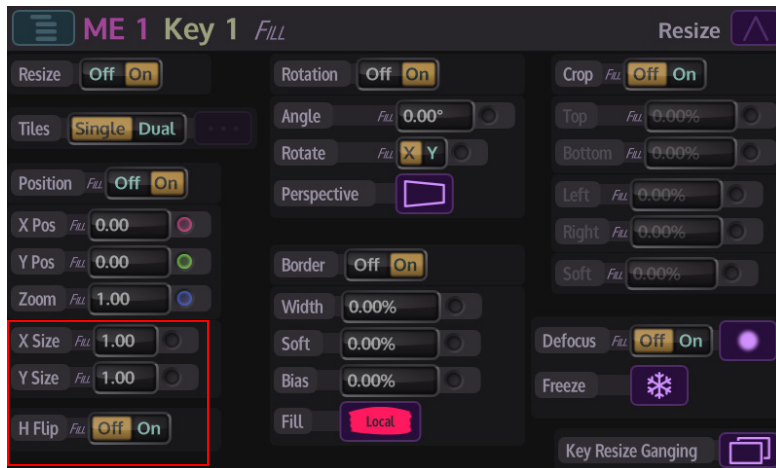


X/Y Position - Parameters are used to move the position of the Key layer around the monitor screen as shown below.



Zoom - Parameter is used to zoom the Key layer in and out.





X/Y Size - Parameter is used to increase or decrease (stretch) the width or height of the Key layer.

X Size

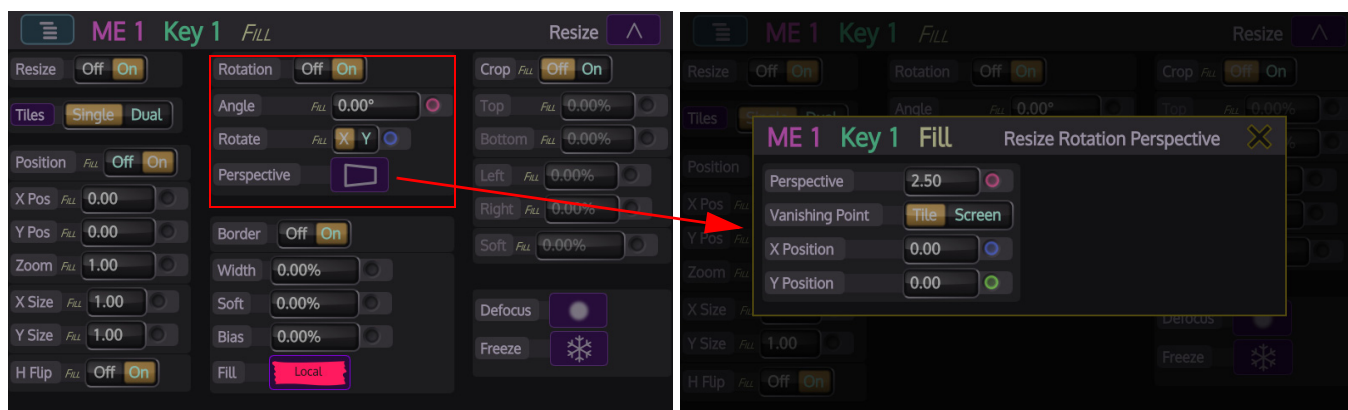


Y Size

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.



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

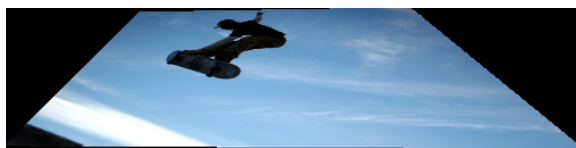
Perspective - touch the **Perspective** icon to open the "Resize Perspective Rotation" menu, this will move the perspective point on the Key layer



Angle Rotate X (positive)



Angle Rotate Y (positive)



Angle Rotate X (negative)

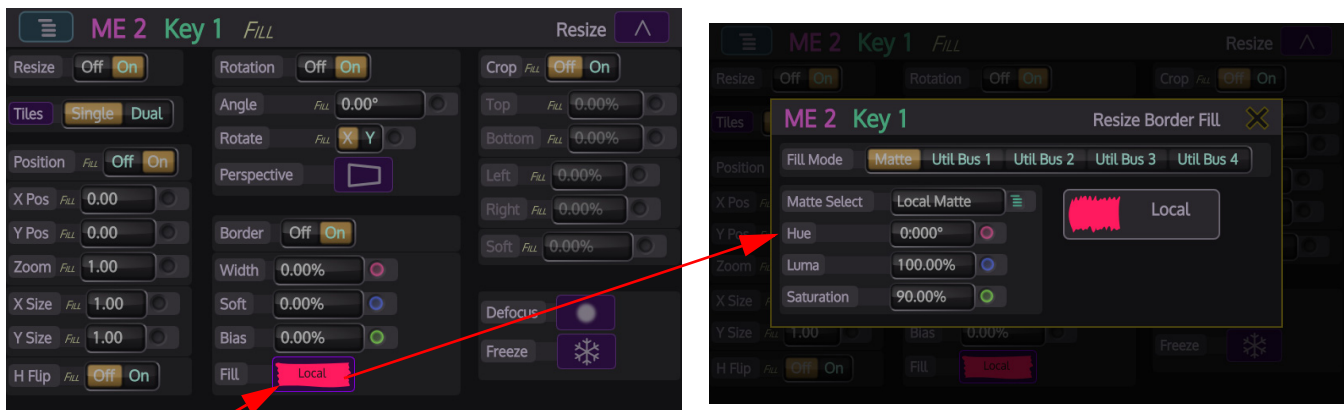


Vanishing Point - in **Tile** mode, the vanishing point is placed on the center of the Key layer, so the dimensions of the Key layer will always be the same where ever it is placed in the viewing area. Selecting **Screen** will give a more true 3D DVE effect and will naturally distort the Key layer as 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.



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

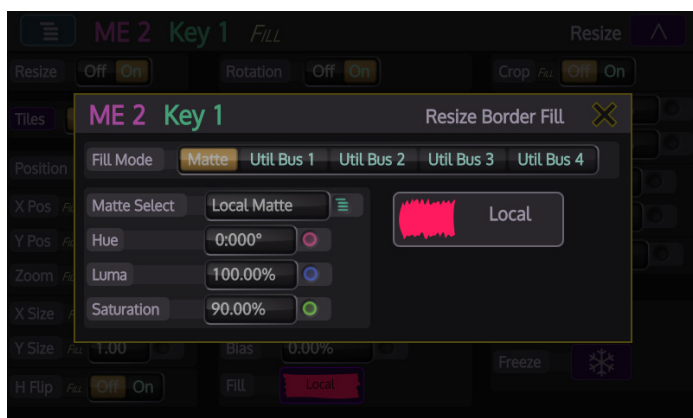


Negative Bias

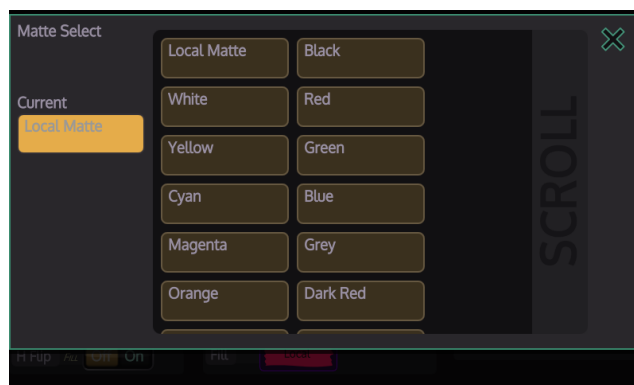
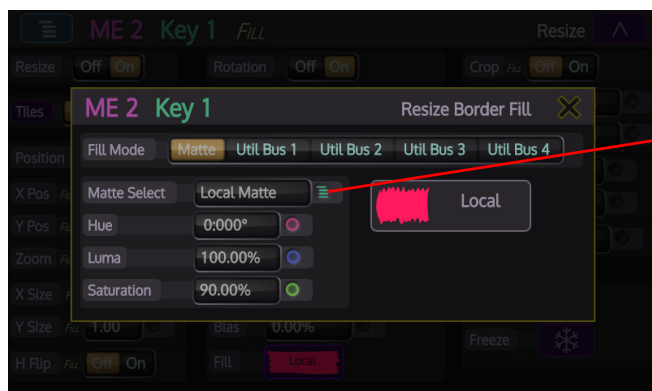


Positive Bias

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.

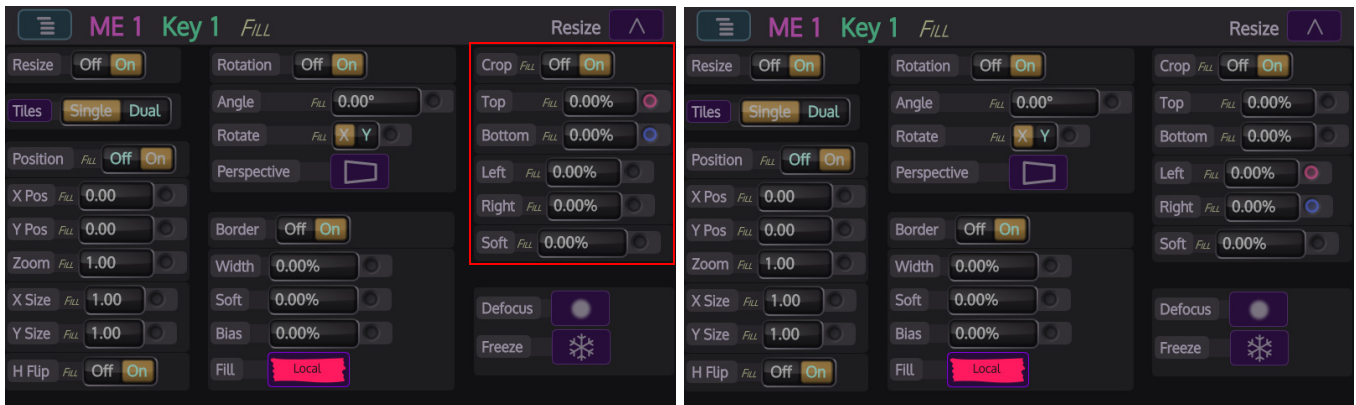


The **Matte Selector** and **Hue**, **Luma** and **Sat** parameters are used to adjust the color of the border around a Key layer when the option is selected in the Border Fill parameter. The user is able to select one of 16 preset Mattes, or create a user defined color for the border using the Hue, Luma and Sat parameters.



Keyer Setup - Resize Crop

As the menu suggests, the parameters allow the user to add a crop to a Key layer.



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



Bottom Crop



Left Crop



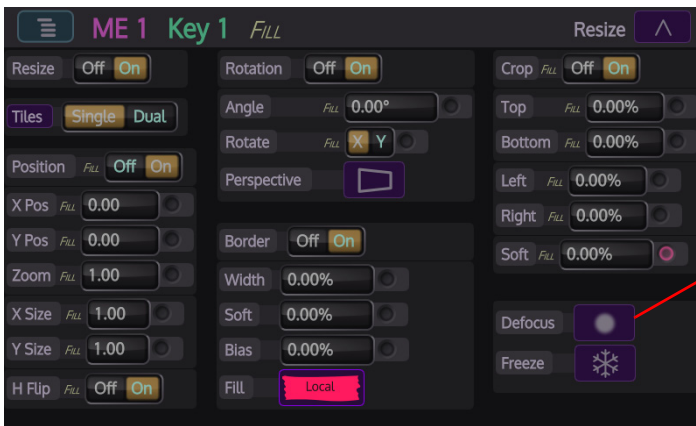
Right Crop



Top Crop

Resize - Defocus

This will add a user defined defocus adjustment to a Key layer.

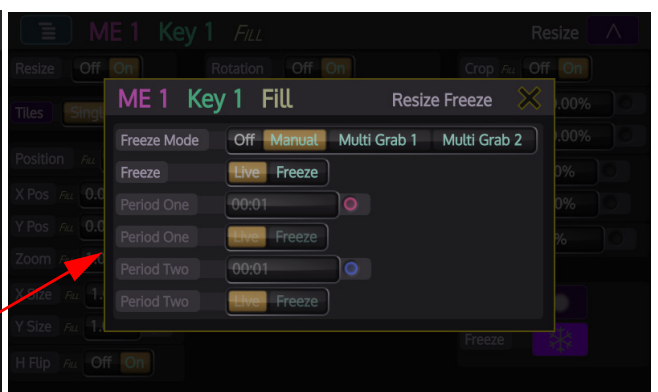
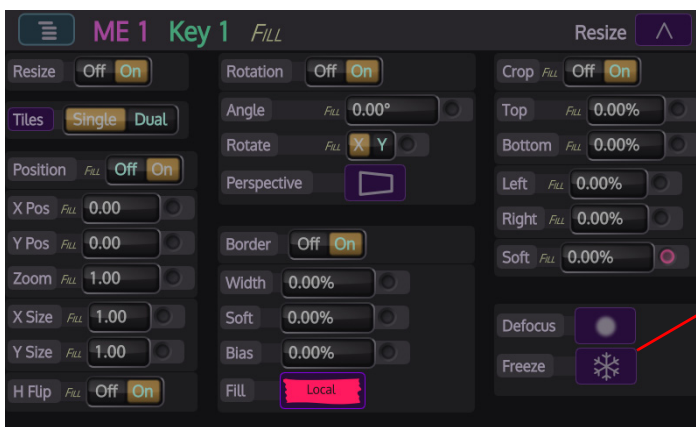


Level - This adds the amount of defocus to a Key layer, where 0.00 is no defocus and 100.00 is full defocus.

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.

Multi Grab 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.

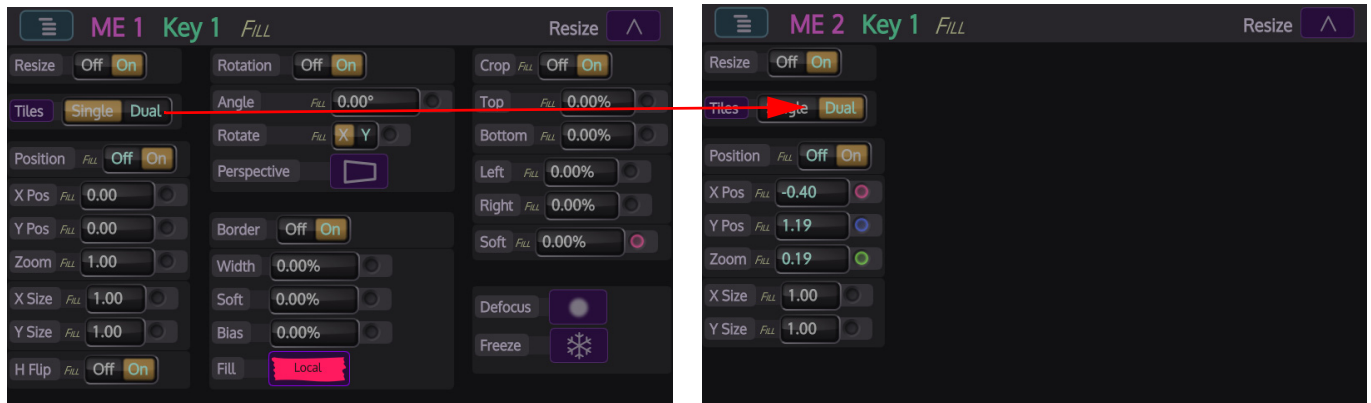
Period Two -- this determines the duration of the second period of the freeze.

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.



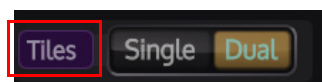
To use this function, bring a SuperKey layer onto a monitor (for this example M/E2 Key 1) and use the Resize controls to Zoom down the Key layer.

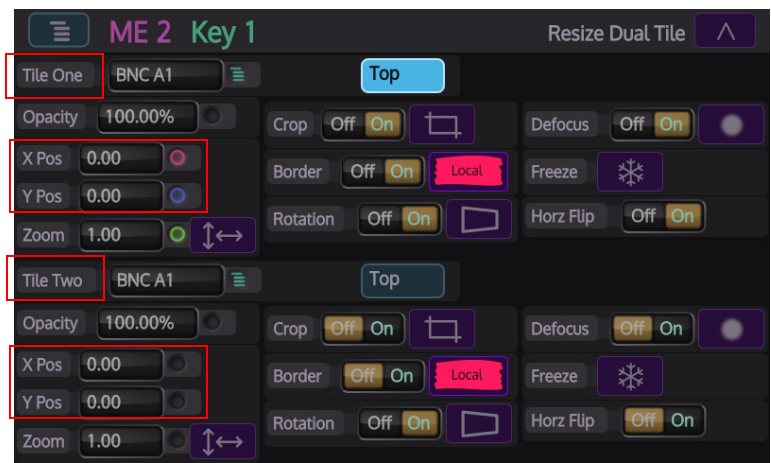


M/E2 Key 1 Layer Over
a background

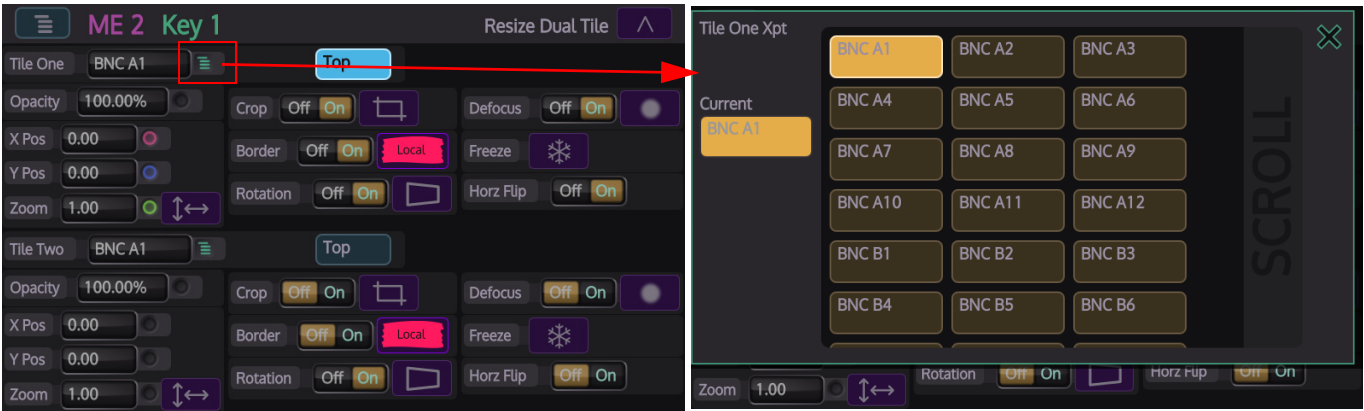
Turn On **"Dual"** in the Resize menu, at first only 1 tile can be seen, the tile is full screen over the background, use the **"Zoom"** parameter to zoom down the tile. The two tiles will be separated in the next menu

Press the **{Tiles}** menu link button to open the **"Resize Dual Tile"** menu.



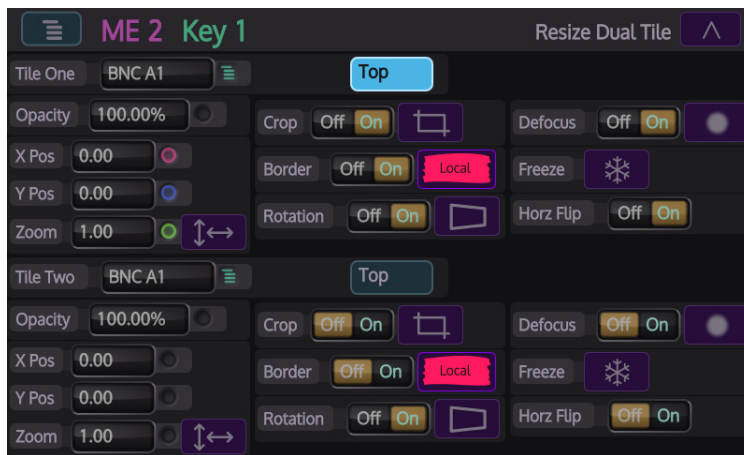


By default **Tile 1** is on top and will obscure **Tile 2**, touch the **X/Y Pos** and **Zoom** parameters and use the attachers to separate and position the Tiles.
By default, both of the tiles will have the same source applied them. To change the source, In the **Resize Dual Tile** menu (see below), 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.



The two tiles are now separated and have different sources.





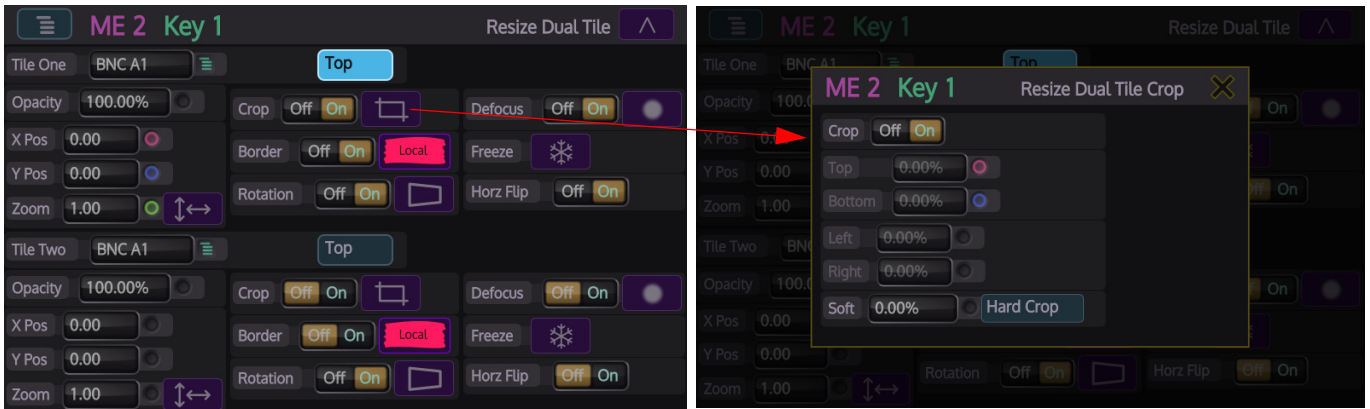
Opacity - controls the transparency of the Tile.

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.



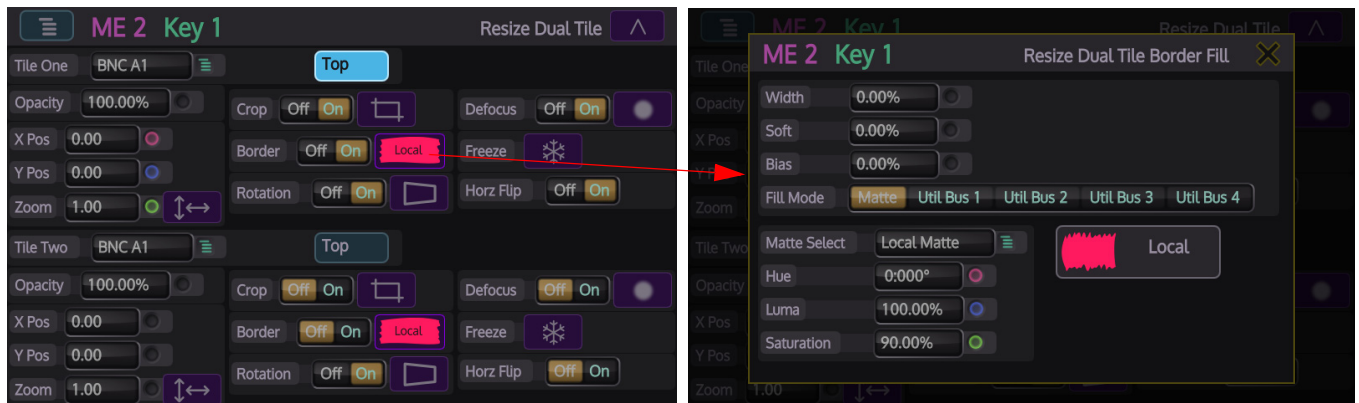
Crop On/Off - Switches the crop facility On or Off, press the On/Off buttons in the parameter control area of the menu.

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

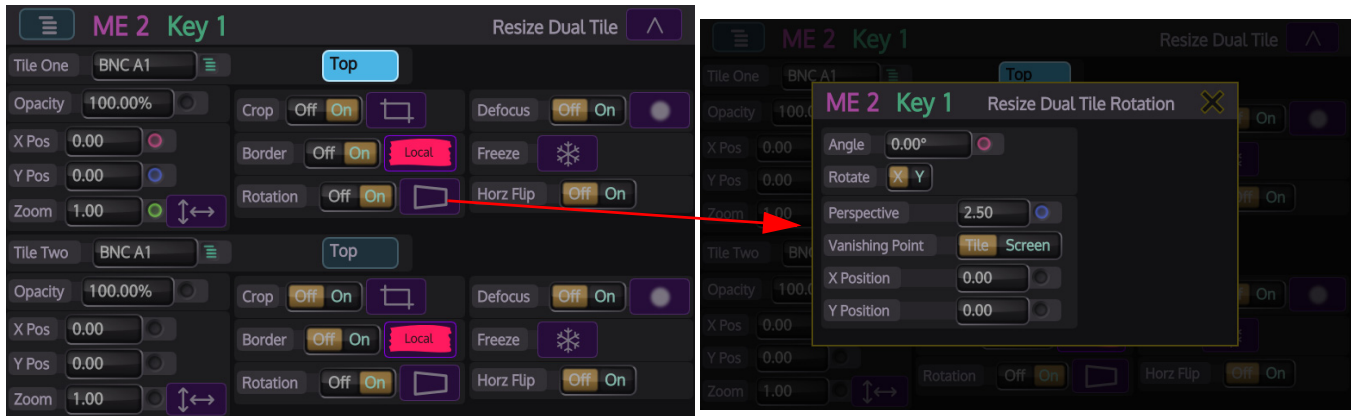
The **Matte Selector** and **Hue, Luma** and **Sat** parameters are used to adjust the color of the border around a Tile when the option is selected in the Border Fill parameter. The user is able to select one of 16 preset Mattes, or create a user defined color for the border using the Hue, Luma and 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 adjust 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.



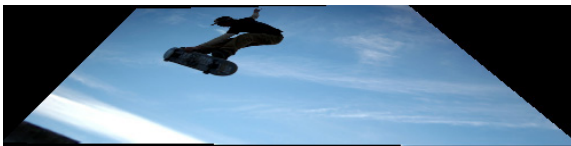
Some examples of the 2D DVE effects on a Key layer below:



Angle Rotate X (positive)



Angle Rotate Y (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

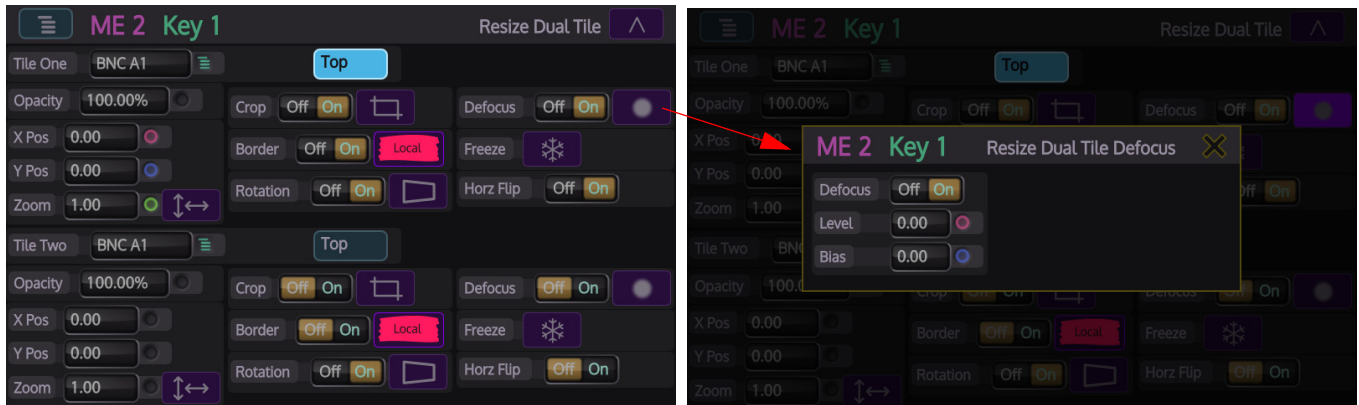
Perspective - touch the **Perspective** icon to open the **"Resize Perspective Rotation"** menu, this will move the perspective point on the Key layer

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.

Resize Dual Tile Defocus

This will add a user defined defocus to a Tile.

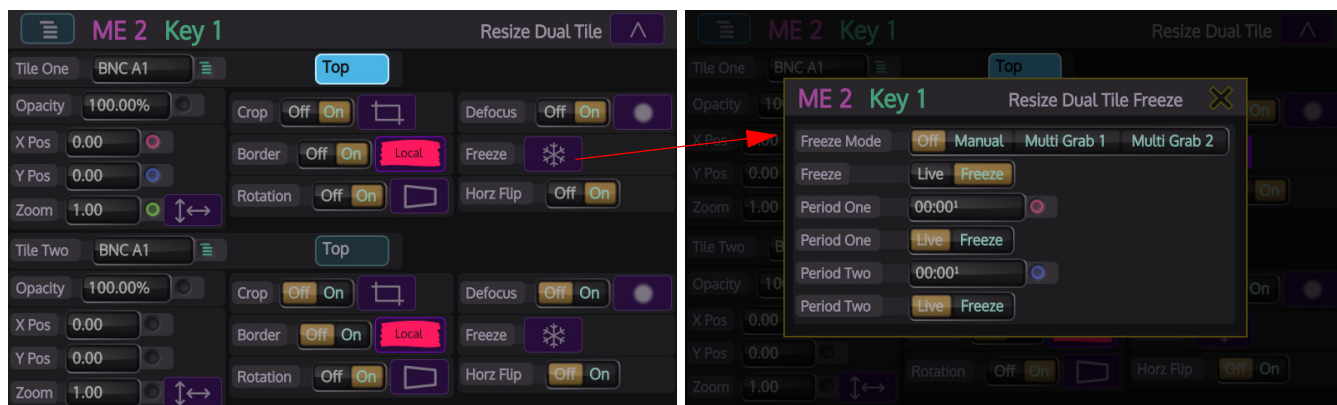


Level - This adds the amount of defocus to a Tile, where 0.00 is no defocus and 100.00 is full defocus.

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.



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

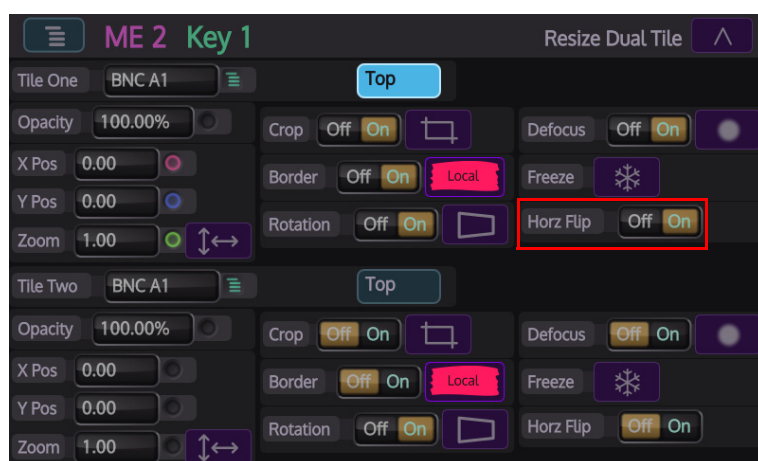
Multi Grab 1 - in this mode a freeze of a pre-determined duration can be applied, this will freeze the video source for the set period of frames or time, whilst the video is still playing.

Multi grab 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

Resize Dual Tile - Horizontal Flip



Horiz Flip - as the function suggests, will horizontally flip the source on the Tile.

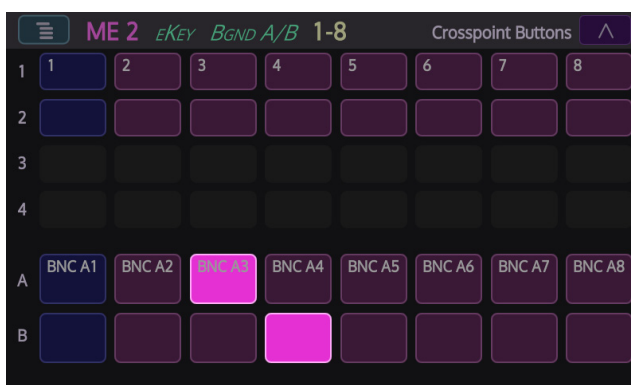
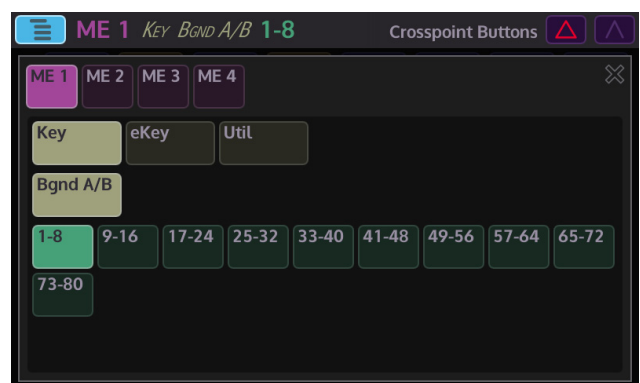
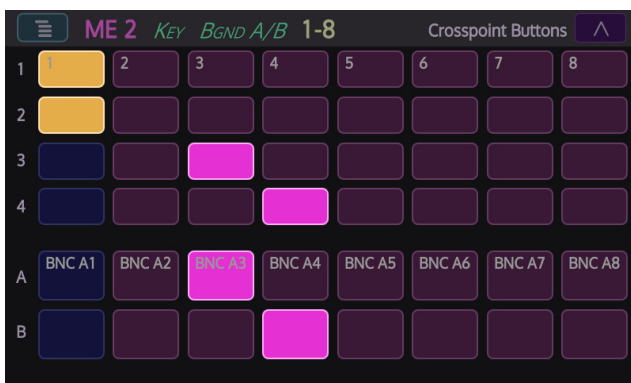
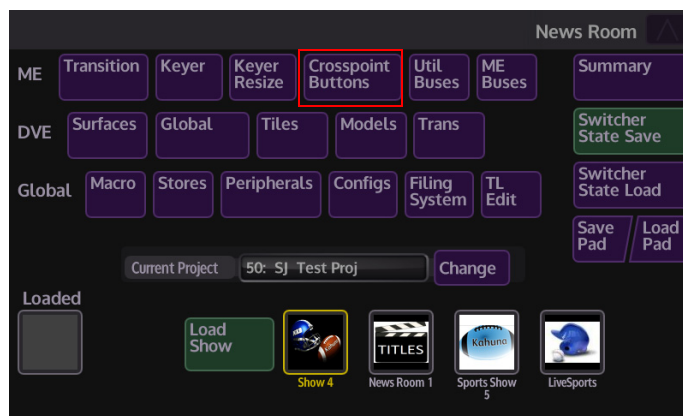
12

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.

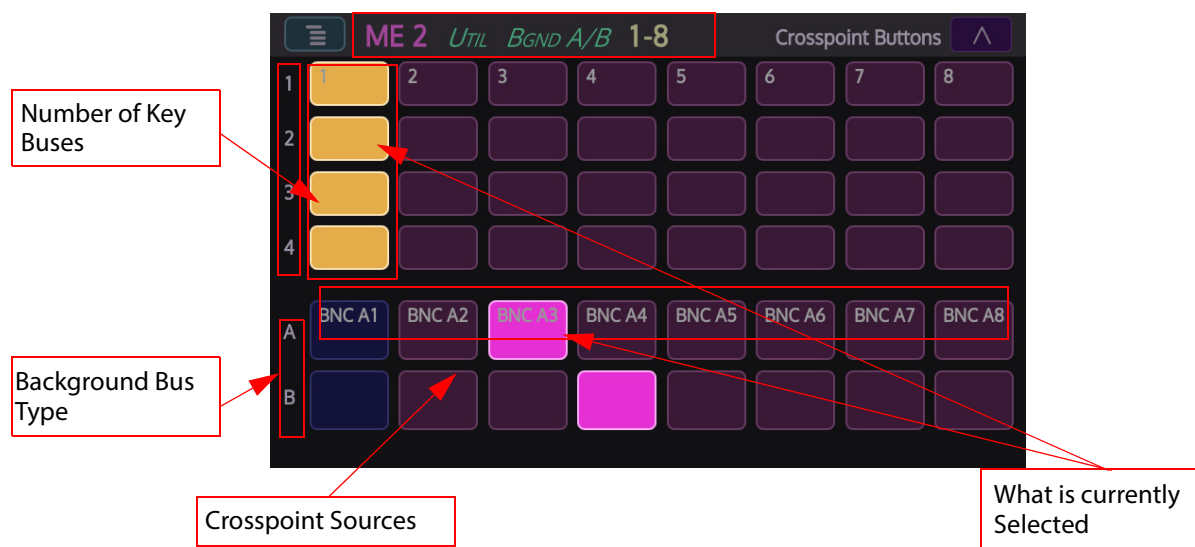
The Crosspoint Buttons menu on the MAV-GUI allows the user to see the setup of the of the crosspoint buttons for the Primary/Secondary Background Buses, Key and eKey Buses and Util Buses. Crosspoints and Buses can be selected by simply touching the required button in the menu.



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.



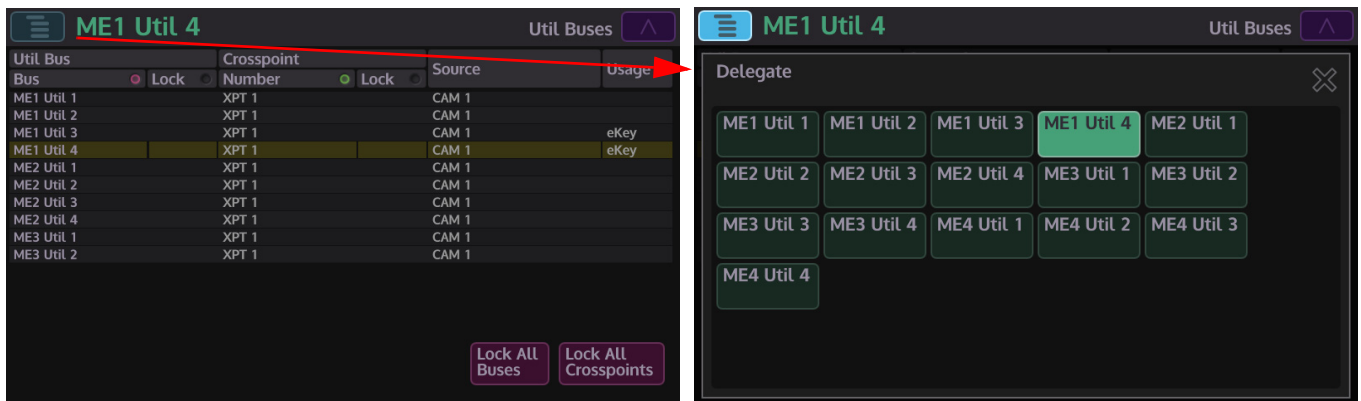
The menu can also be used to select sources, a sort of soft selection for the crosspoints.

13

ME - Utility Bus

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.



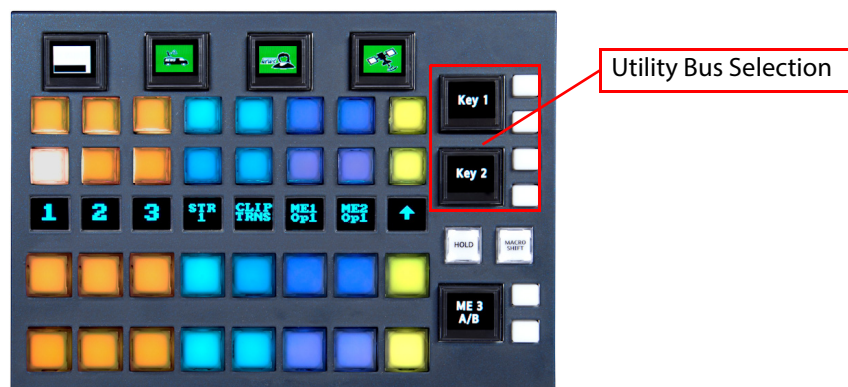
The menu above displays a system with 4M/Es (M/E1 to M/E4), the user can select the M/E by touching the M/E row in the table (if there are more M/Es than displayed in the table, use a finger to slide the table upwards), or use the {Delegate} button to open the M/E list then touch an M/E to select.

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.

14

DVE - Surfaces

Introduction to DVE

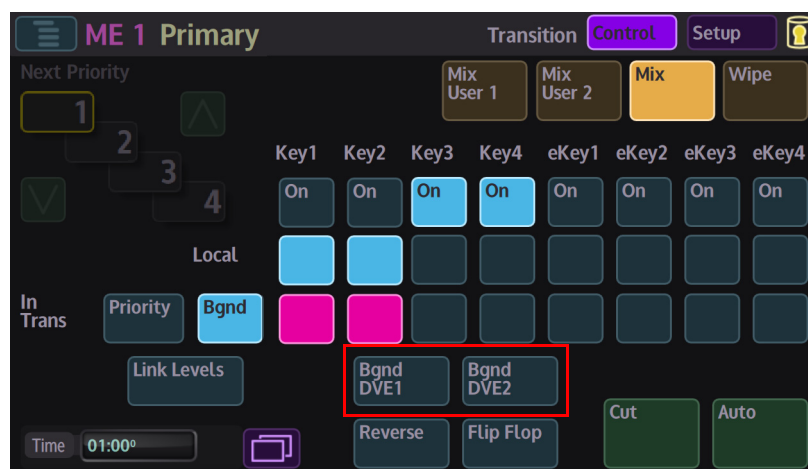
The Kahuna mainframes can support up to 5 DVE cards that will offer the user a range of visual effects suitable for use in either 1080p, HD or SD formats.

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.



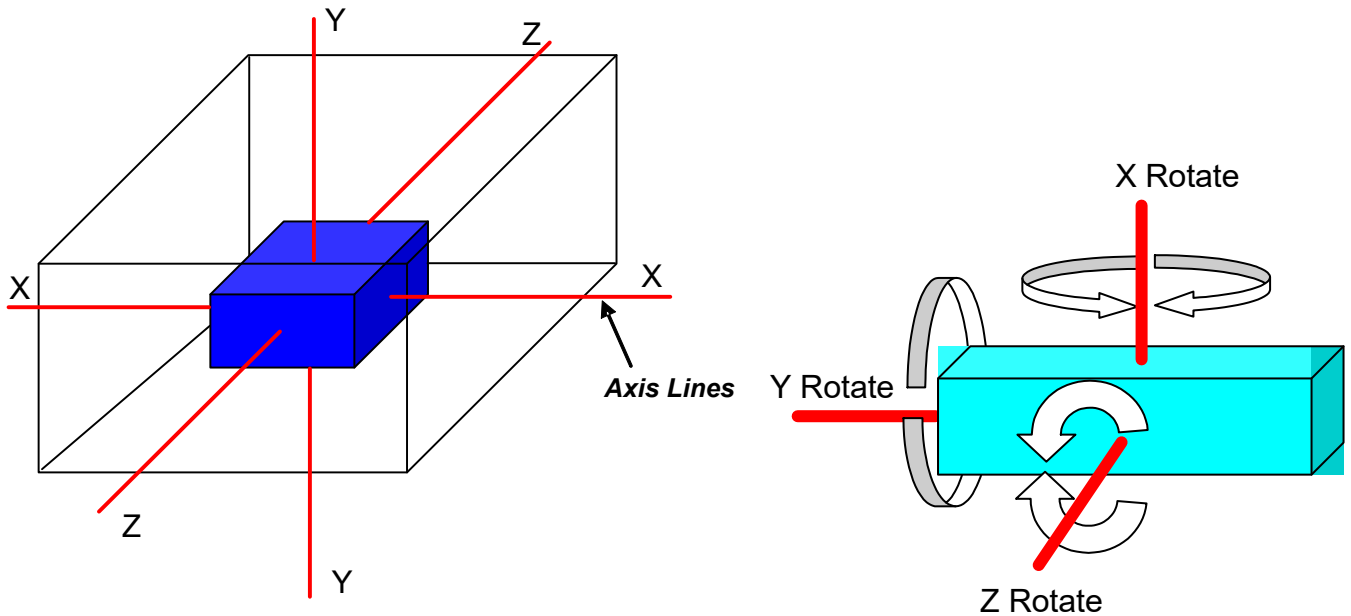
These can be differentiated between, by the point at which the DVE enters the switcher.

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.



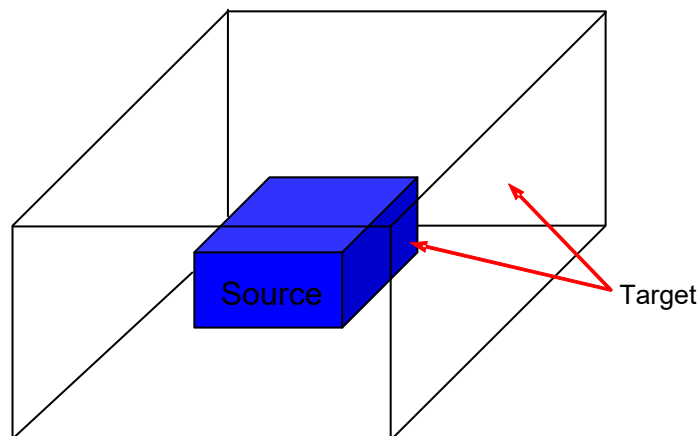
Source and Target Adjustment

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.



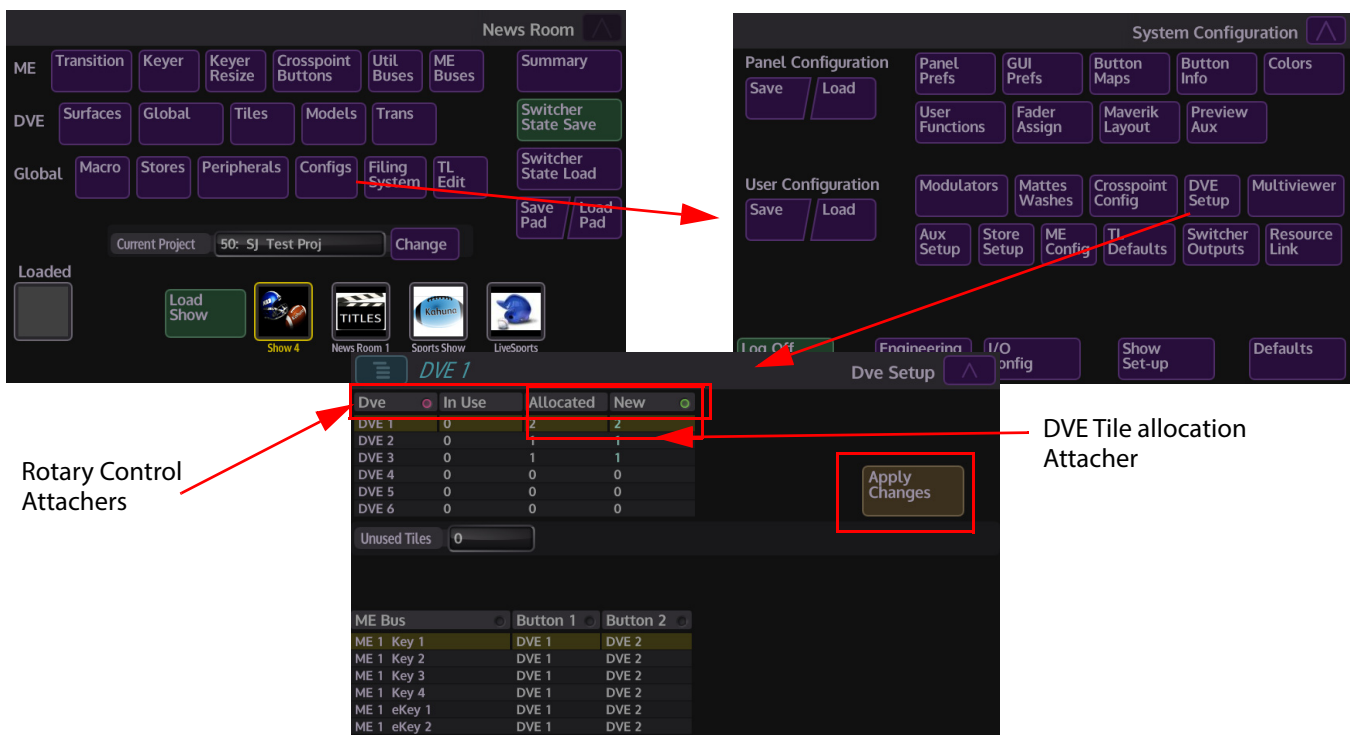
Important Information between Logical Switchers

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}**.

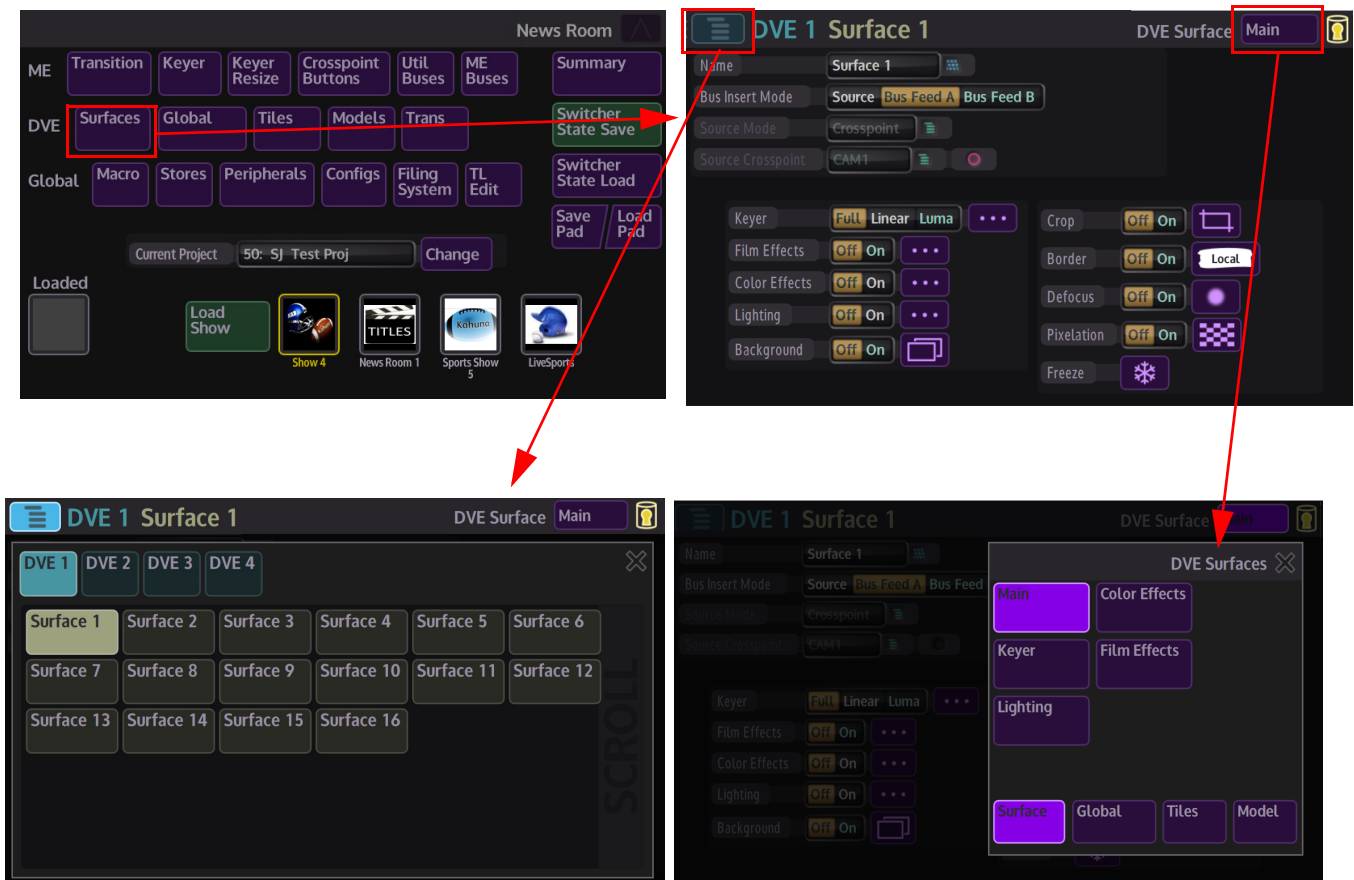
Any unused DVE Tiles will be displayed in the "**Unused Tiles**" window.

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:

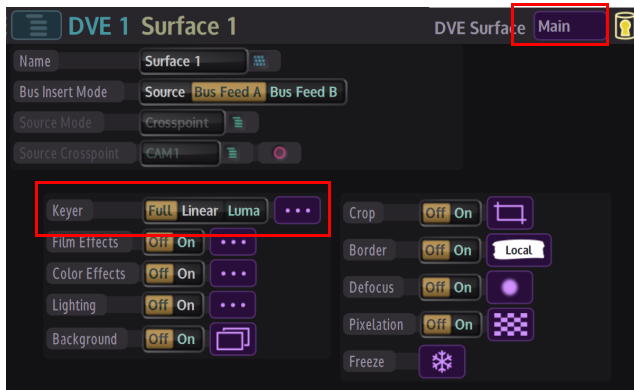
To create DVE transition effects in **Bus Insert Mode**, on the MAV-GUI, in the Transition Control menu, touch the **{Bgnd DVE1}** button to turn it on (lit blue). Then select between **Bus Feed A** or **Bus Feed B**. **Source Mode** allows a single source to feed the tile surface. **Bus Feed A** or **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).



{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.



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).

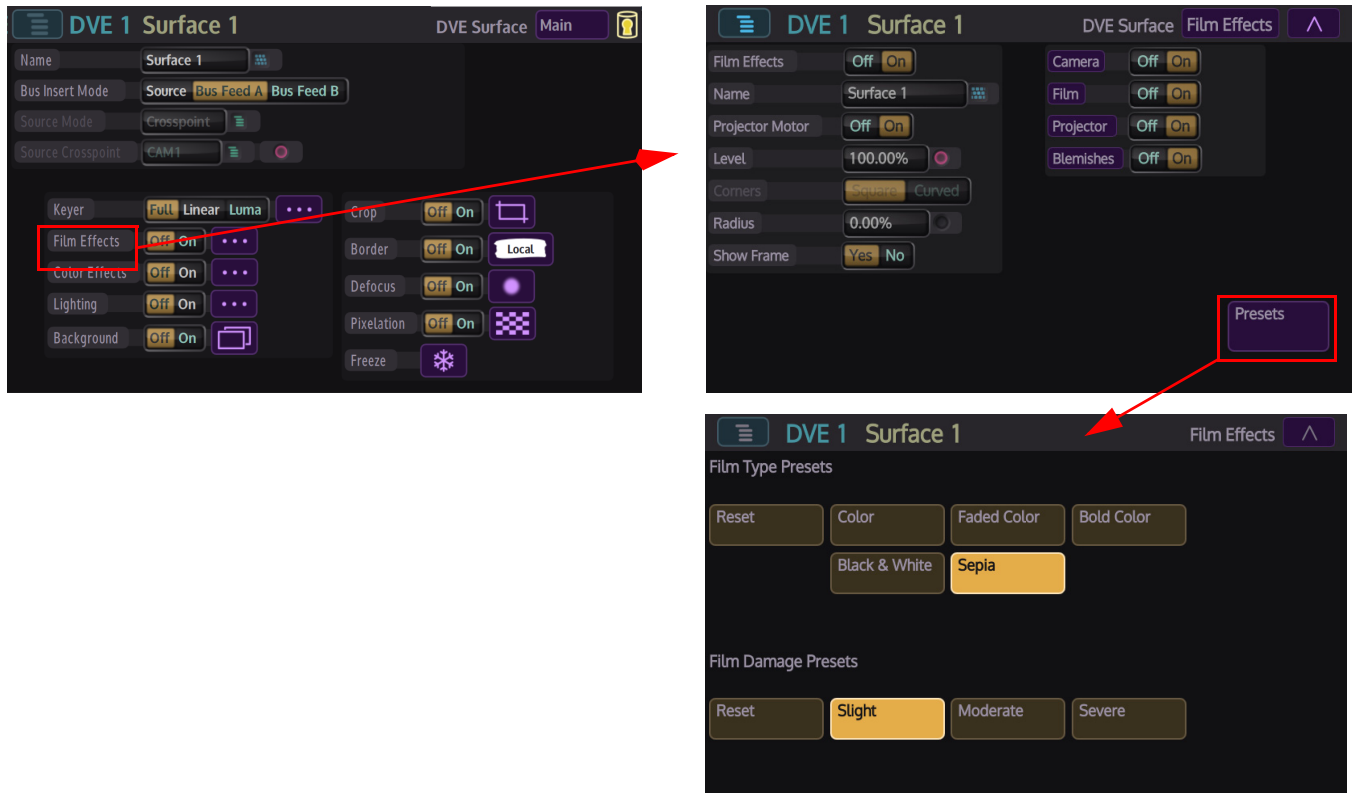
When using sources that are not pre-Keyed, such as those from a camera, the Key cut signal is generated from the video signal using lift and gain controls. The portions of the signal that are greater in luminance than the lift level cut the hole in the background.

DVE Surface Effects - Film Effects

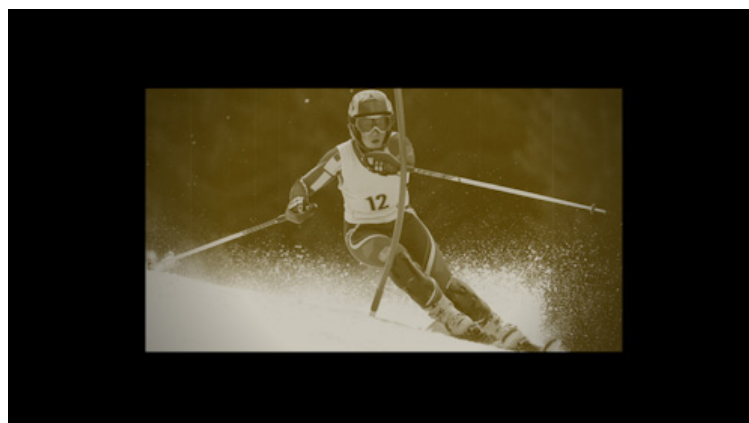
Film Effects is a DVE Tile or Model surface effect that allows DVE surfaces to have different types of "Film Effects" applied to them. Film effects would be used for example to make a new piece of video footage look old and damaged.

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.

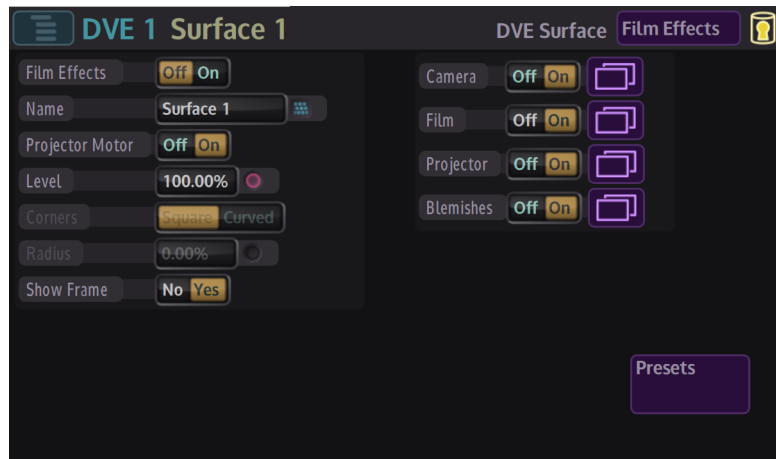
To get to the Film Effects menus, press the {Film Effects} menu link button or press the menu link button at the top of the menu and select {Film Effects}.



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 be 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

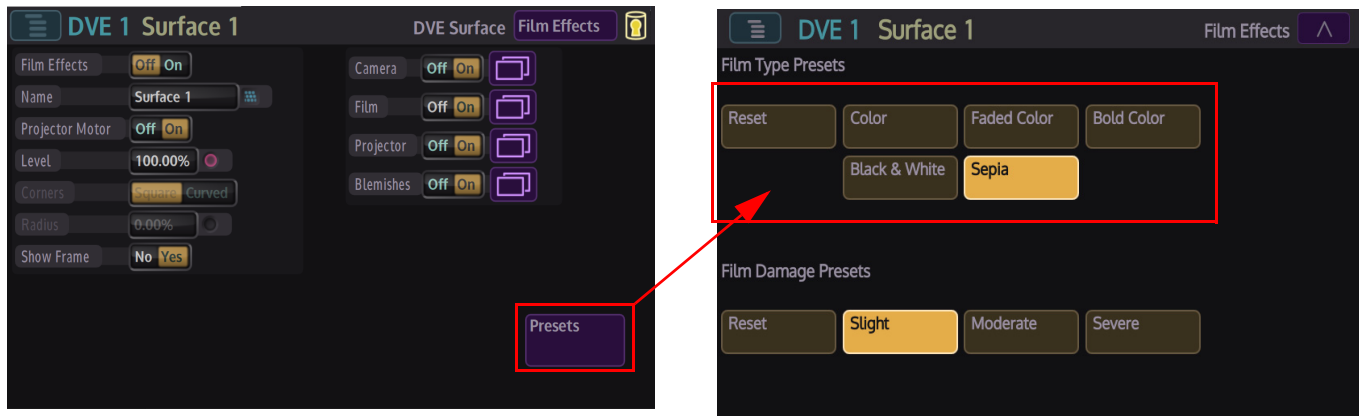
Corners and Radius - Curved corners can be added to a DVE tile using the parameters in the above menu. Change the corners of the tile by touching the {Curved} button, then adjust the "Radius" of the corner.



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:



Color Preset



Sepia Preset



Faded Color Preset



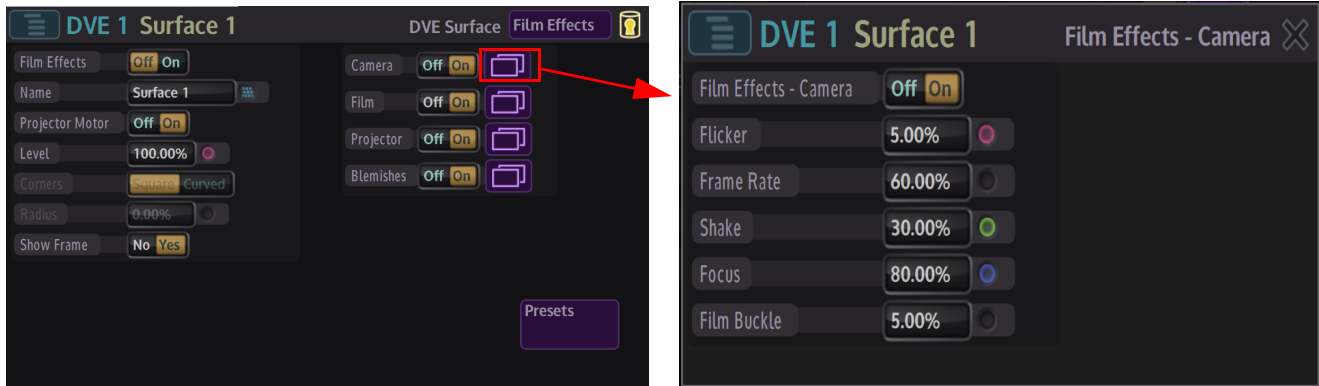
Bold Color Preset



Black & White 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 - 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

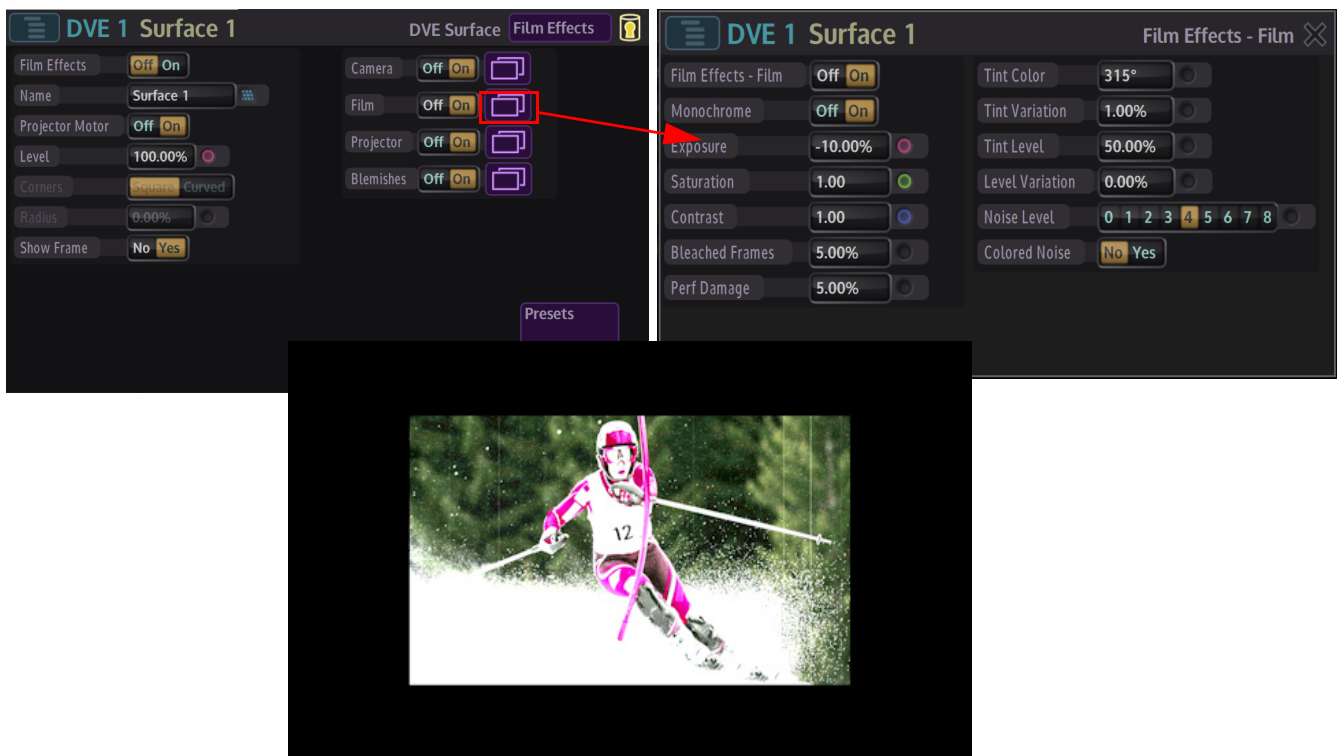
Frame Rate - this simulates slower frame-rate film, at 100% the effect causes the film to run at current standard (i.e. no effect). 0% causes the film rate to run slowly.

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.

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.

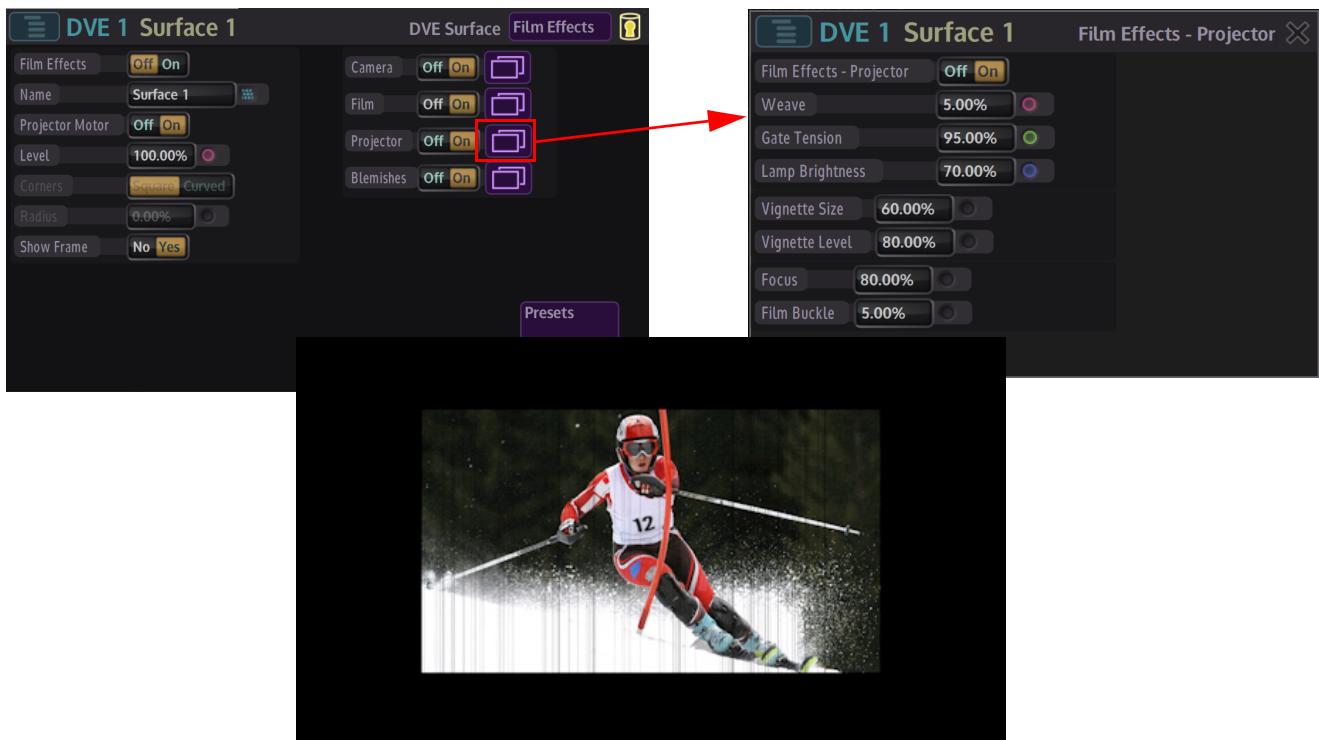
Level Variation - Sets how the tint level will randomly vary

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.

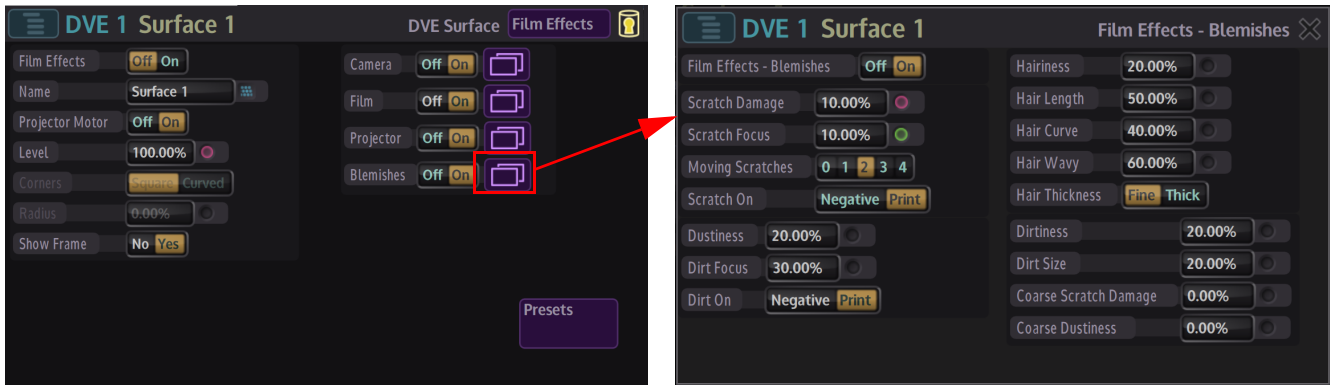
Vignette Size - this controls how far into the frame the light fall-off begins, when simulating dark edges/corners of the picture due to a poor lens.

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.

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.

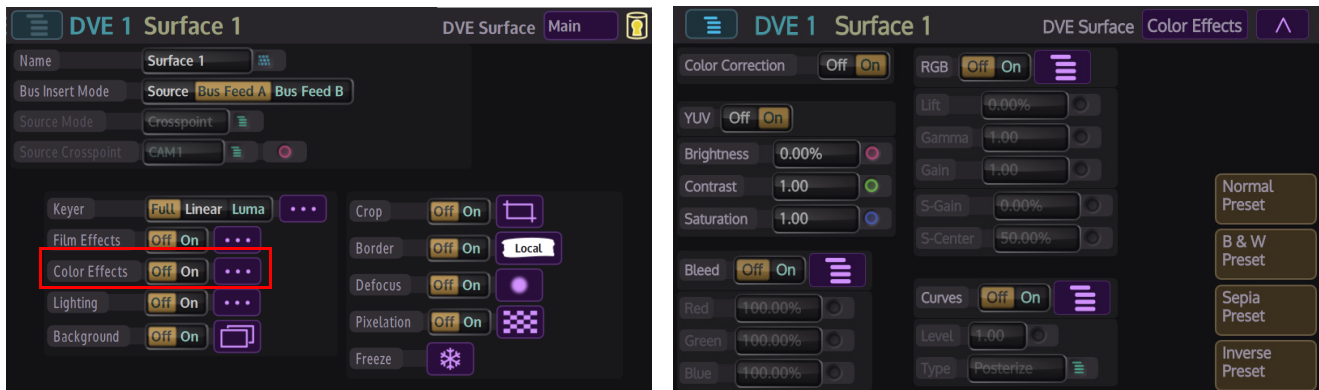
Coarse Scratch Damage - extreme version of Scratch Damage, this is able to be smoothly transitioned in or out. 100% is gives near-total coverage of Scratch levels.

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.



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.



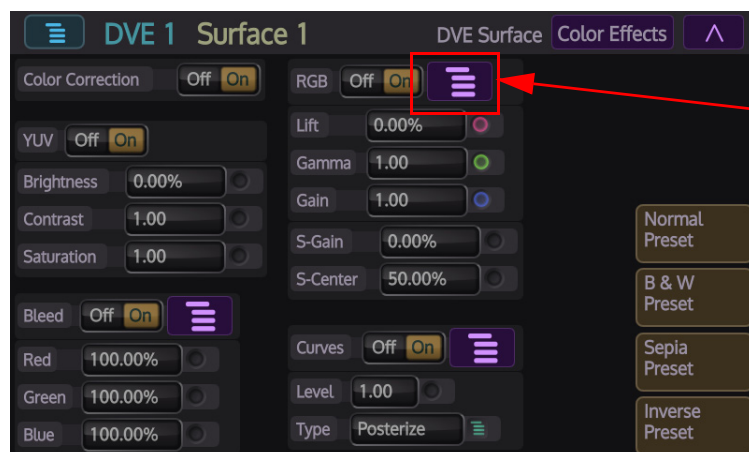
Brightness default value is 0.00%, and the range is from -10% to 100%

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

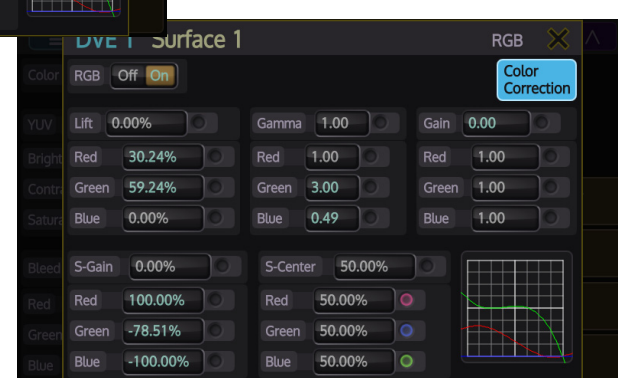
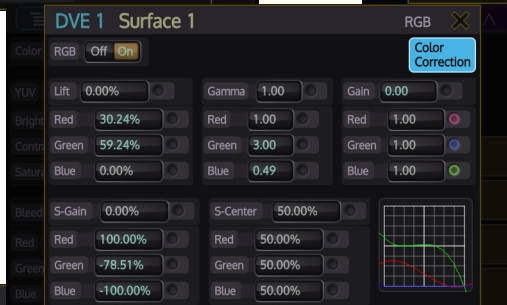
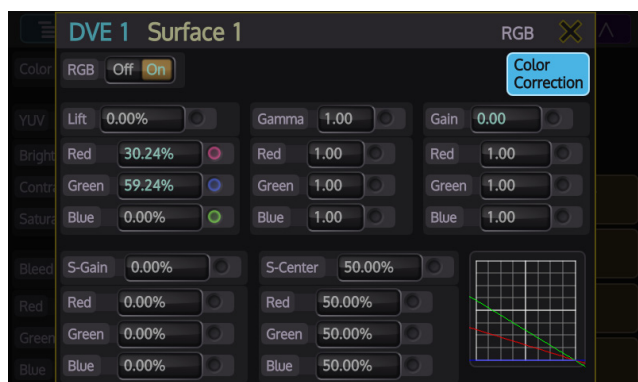
DVE Surface - RGB

Press the {RGB...} menu link button.



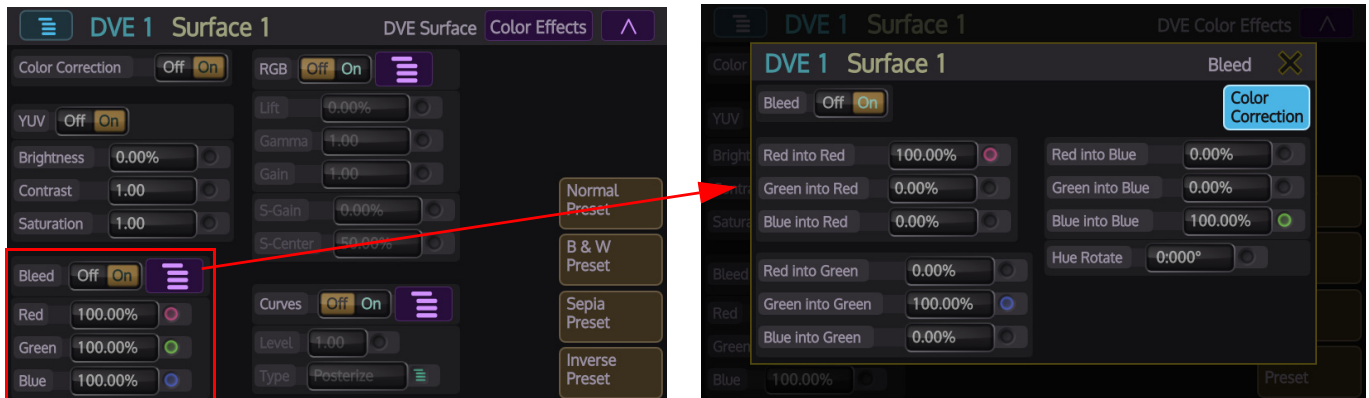
Opens the RGB advanced parameter menus

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.



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

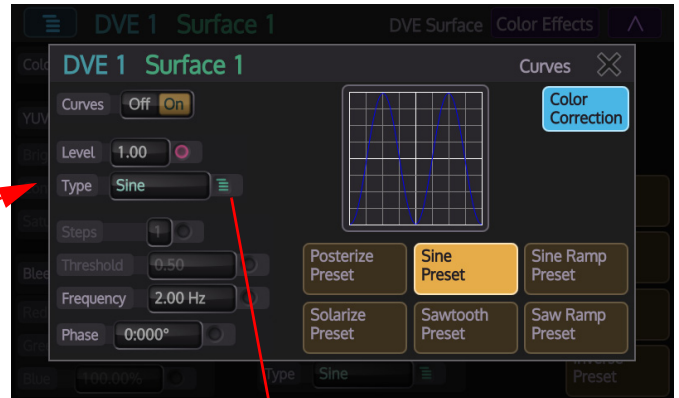
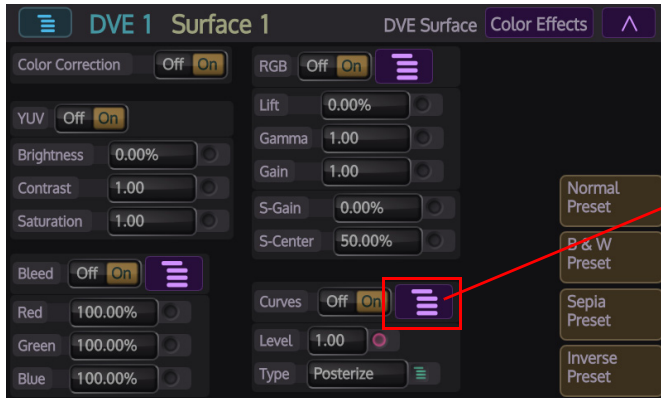
Touch the menu link button (shown in the diagram above) to enable all the options in that menu, this will allow a detailed adjustment for each of the R, G and B bleed settings. The adjustments are measured on a -100% to a +100% scale. Each parameter menu will adjust a single color, i.e. red into red, green into red and blue into red.



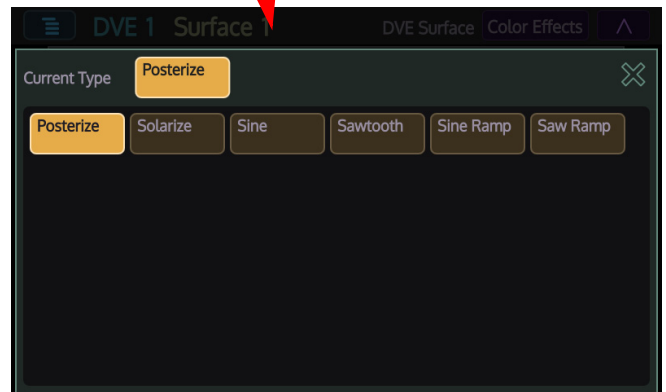
DVE Surface - Curves

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.



DVE Tile with Posterize Effect



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



Solarize 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.

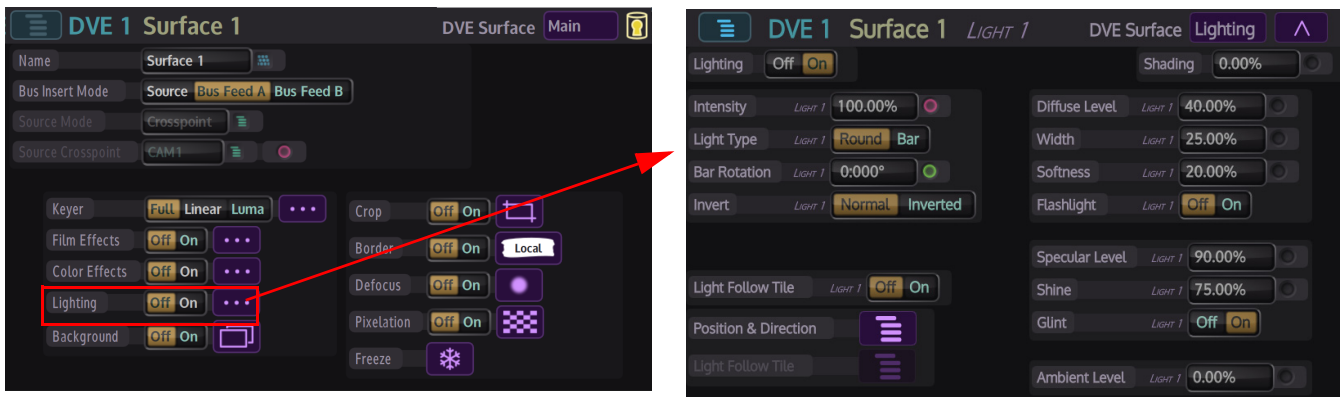
If the **Normal** preset option is selected, then all color correction controls are Grayed out preventing any adjustments. This is to make sure that the original DVE source can be recalled.

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.



In the DVE Surfaces, main menu, touch the **{Lighting}** menu link button to enter the Lighting menu.



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.



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.

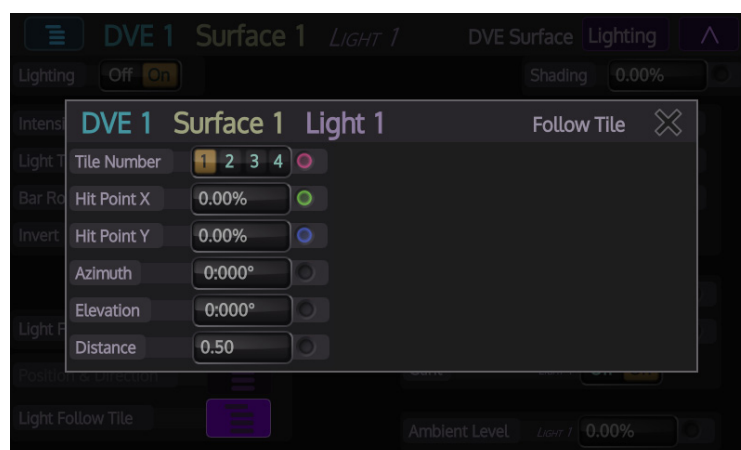
Position and Direction



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



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.

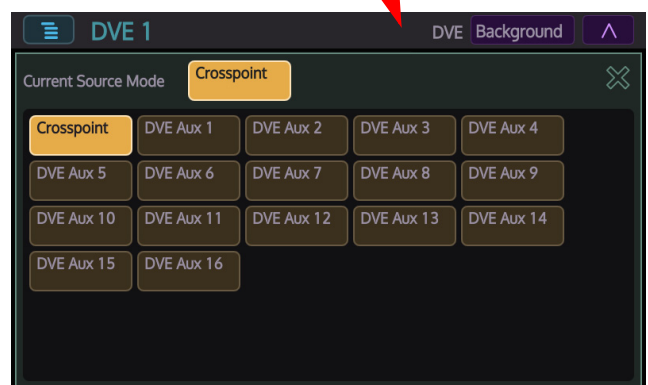
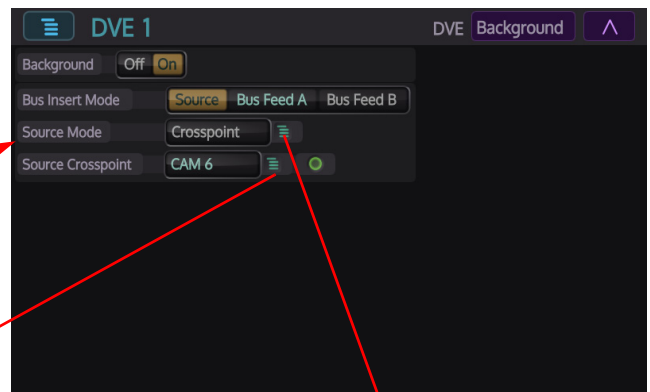
Distance - how far, along the 'line of sight' direction, is the light away from the tile.

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).

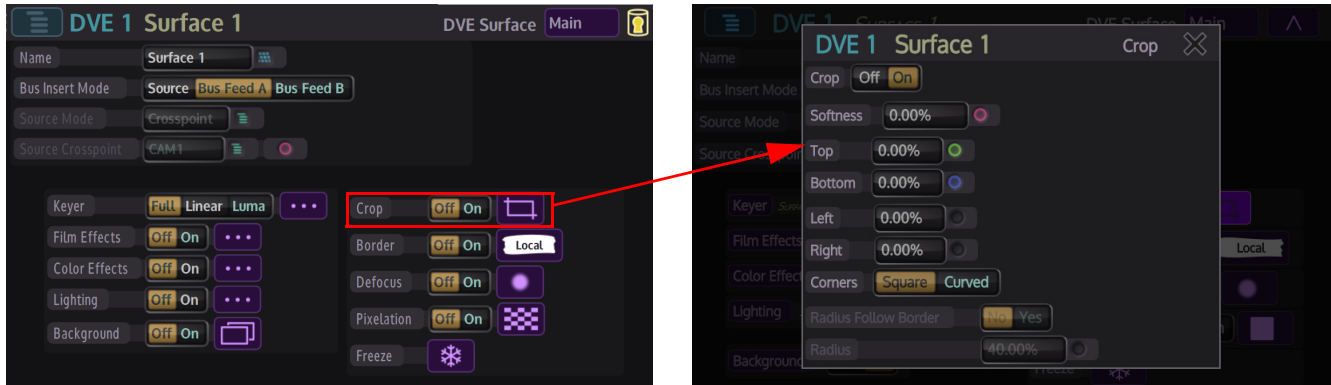


DVE Page Turn Model with DVE Aux feeding the background

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.



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 pre-defined Mattes and user defined Local Mattes.



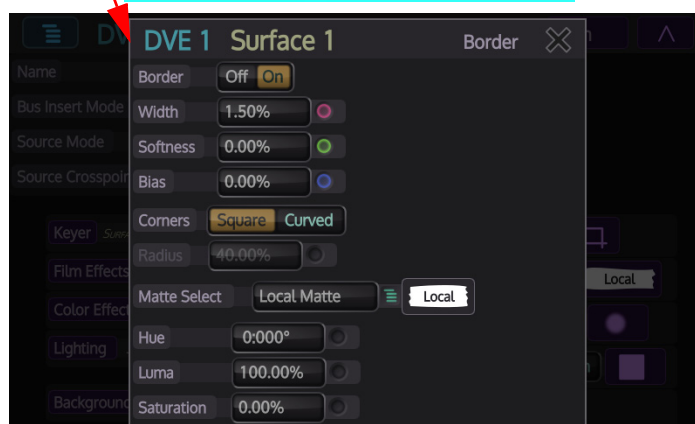
DVE Tile with Border



DVE Tile with Soft outside Edge Border



DVE Tile with Corners on the Border and Crop



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

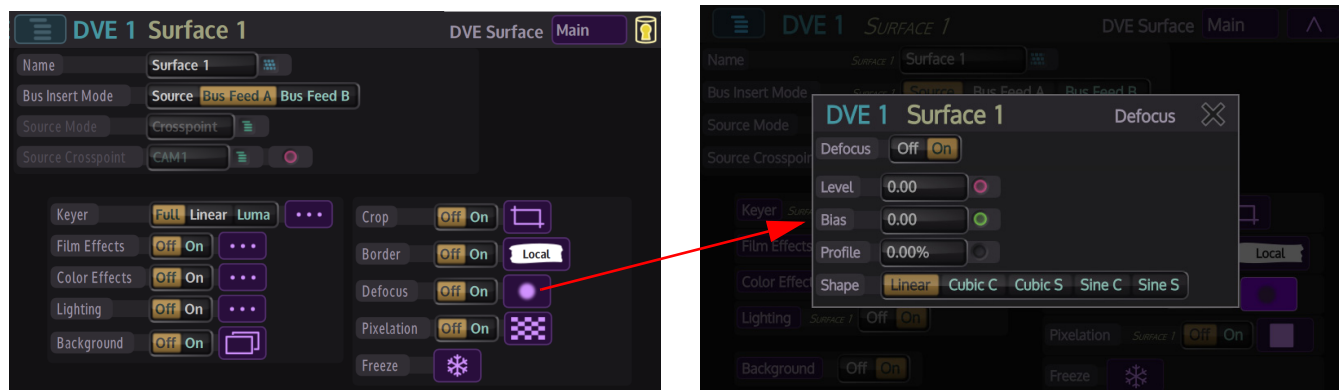
240 = Blue

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.

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.

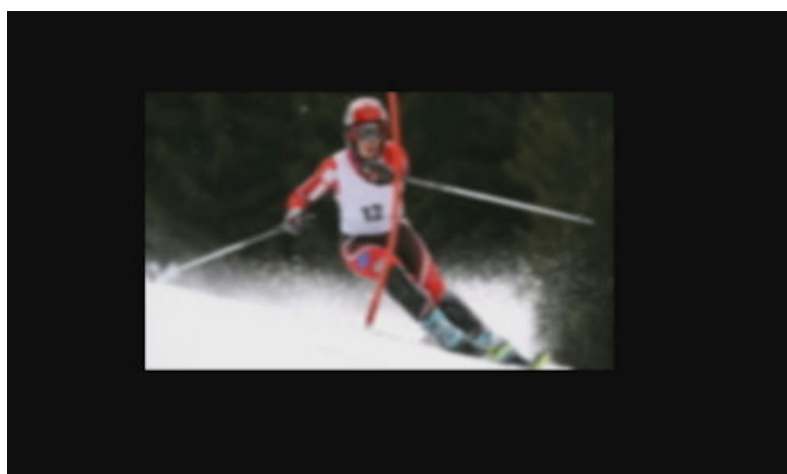
The curve profile can only be used to change the Cubic S/Sin S and Cubic Curve/Sin Curve profiles, which are selected using the Shape parameter control. The Linear profile cannot be adjusted.

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

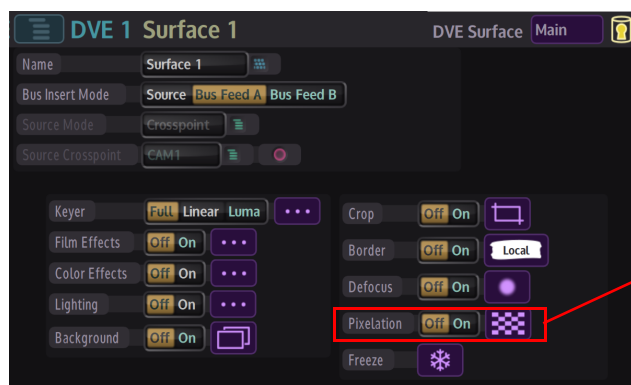
Cubic C and Sin C - these profiles are similar to each other, the default defocus transition will have a fast acceleration at the start and slowdown towards the end.

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.

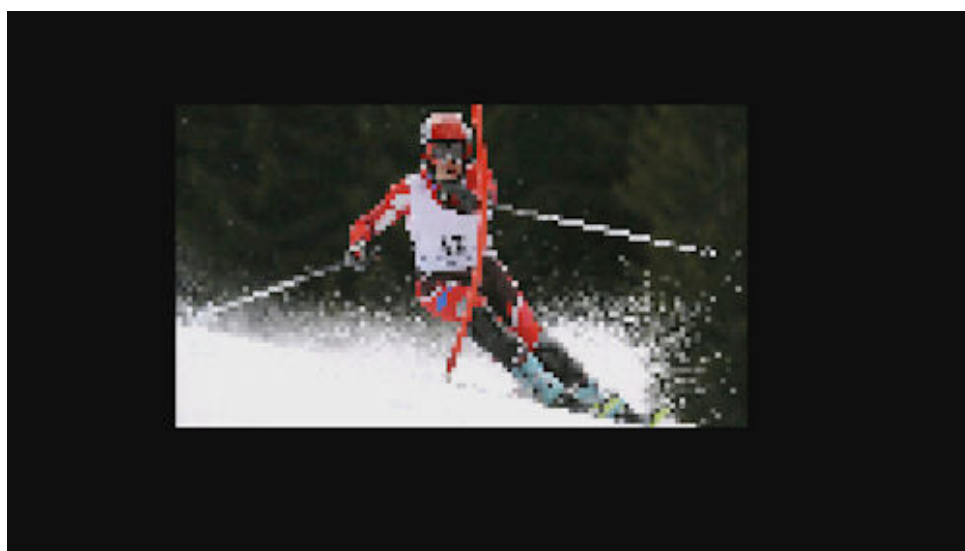
Pixellation - On/Off

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

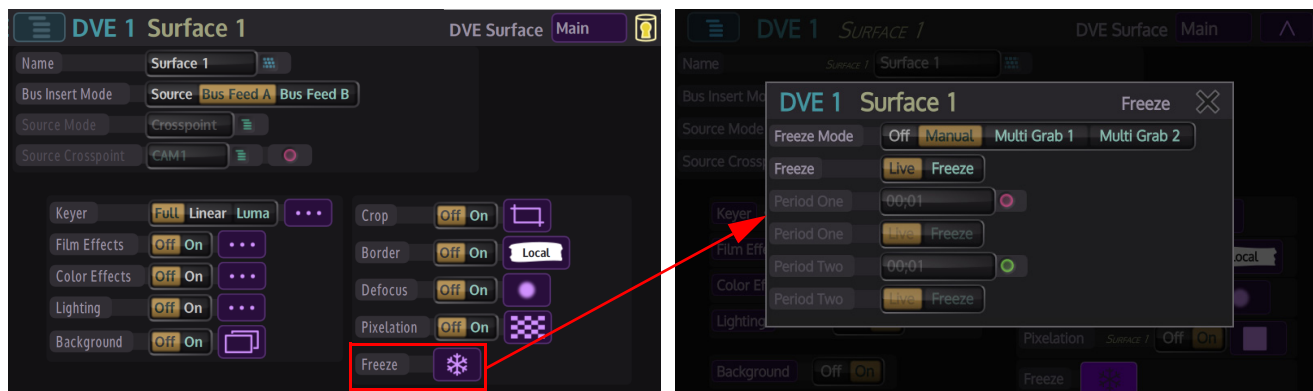
Vertical Center - Changes the pixelation center on the y-axis



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.



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.

Multi Grab 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

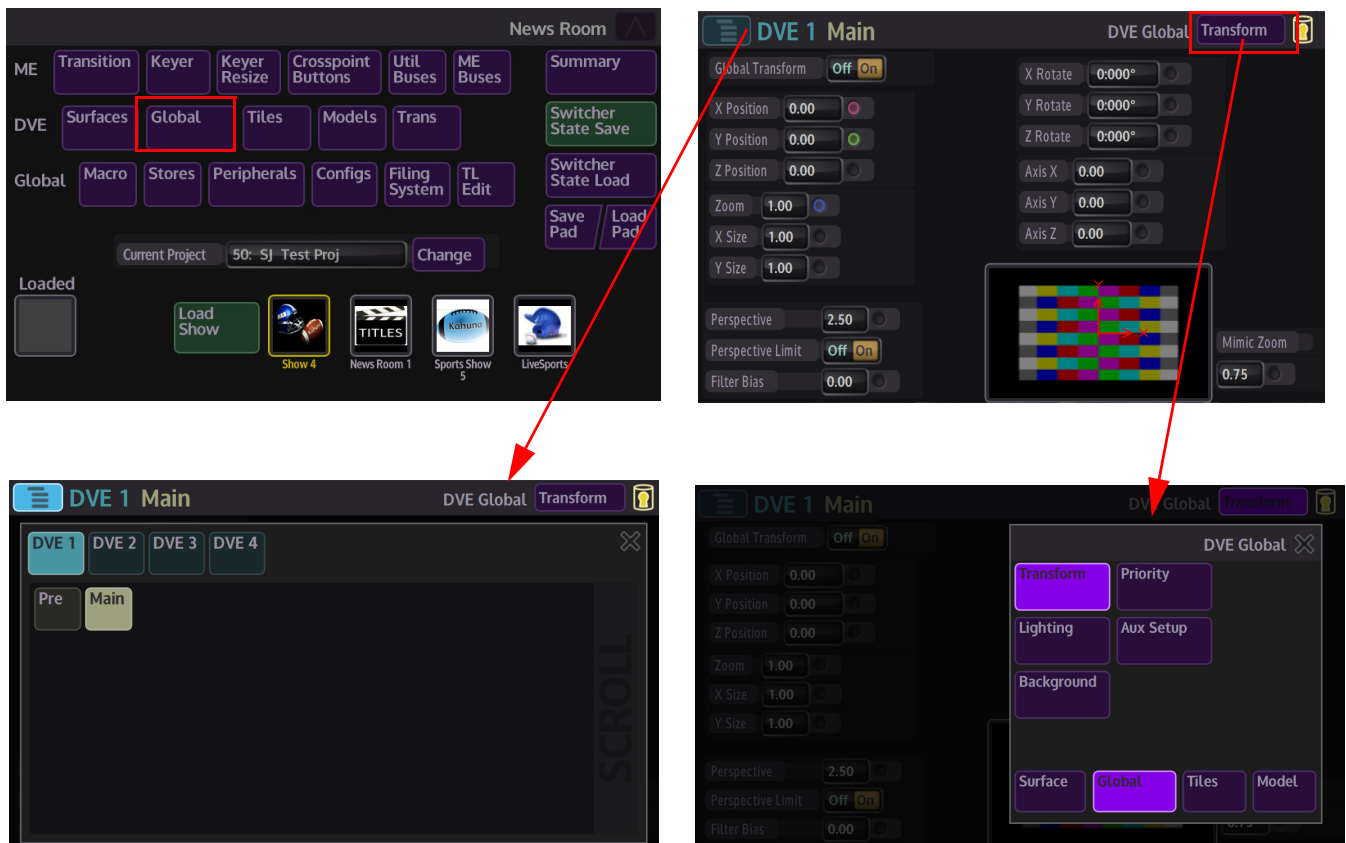
15

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

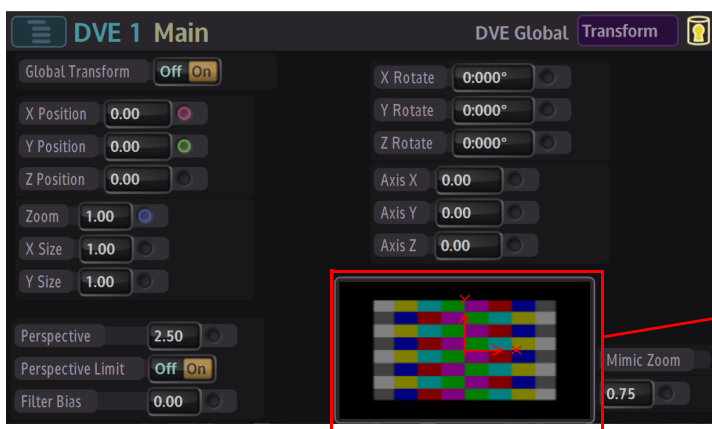
Global Transform is used to size, position and manipulate multiple DVE tiles all at the same time within the Main (global) and Pre (local) settings



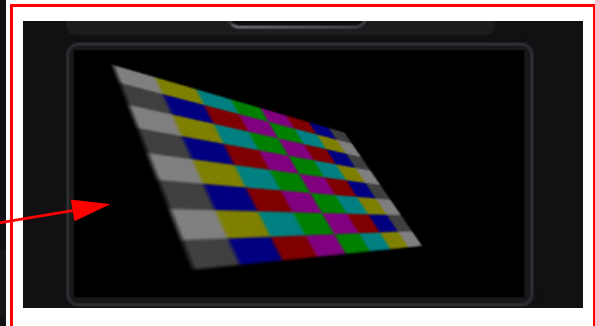
Main - (global) moves the model around as determined by the parameter controls in the attachers.

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.



Notice that the mimic moves as the Global parameters are adjusted



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.

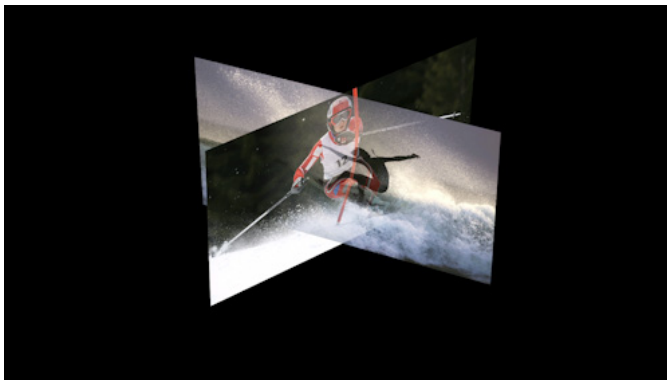
In the DVE Main menu, press the **{Priority}** button.

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%



DVE Tiles Intersecting



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.

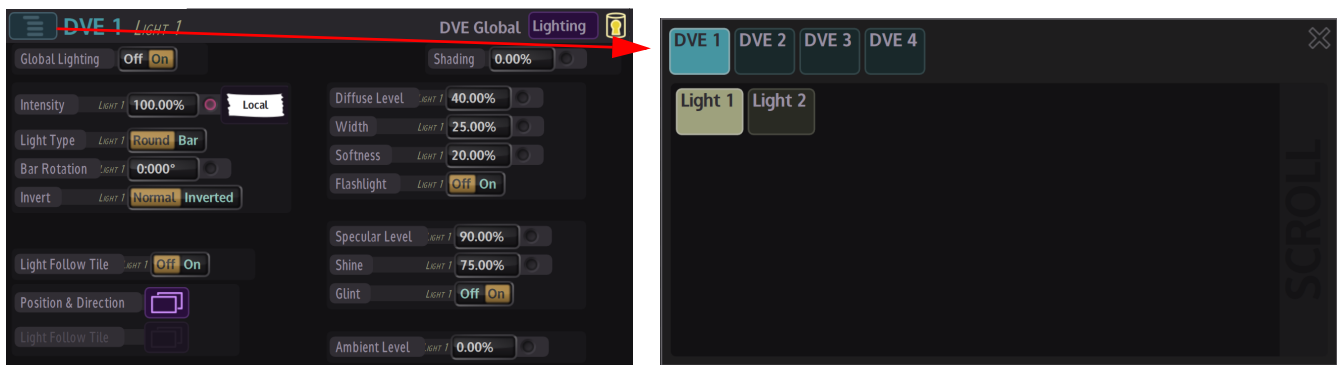
This menu can add two individual light sources to the DVE Tiles or Models, Light 1 adds one light source and obviously Light 2 adds the second.

The two light sources can be moved completely independently of each other.

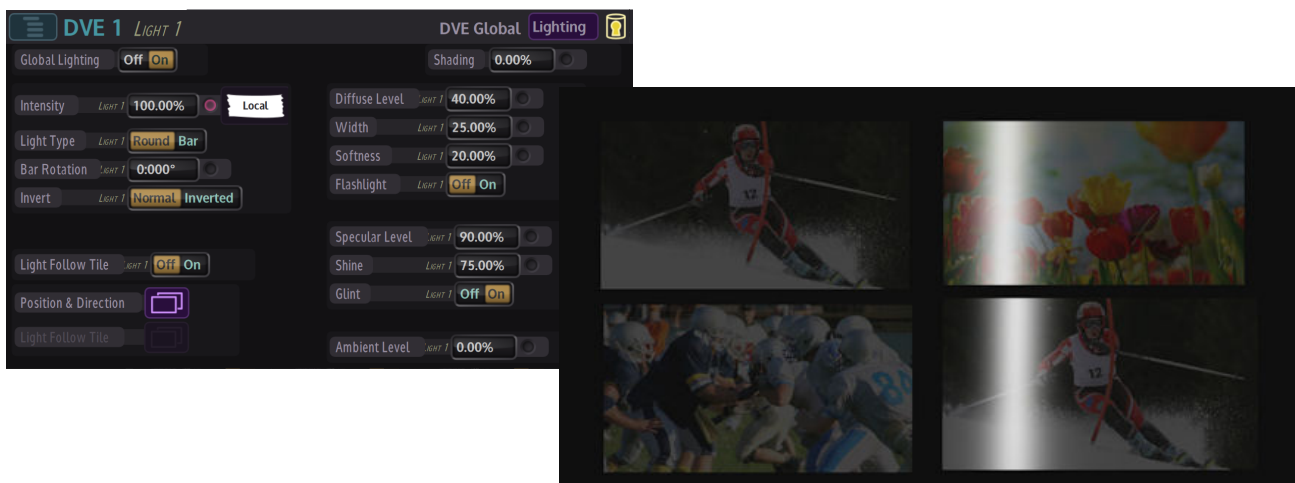
Note: To save repeating information, the information below will describe using Light 1 parameters to control the light source, light 2 has exactly the same controls

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.



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

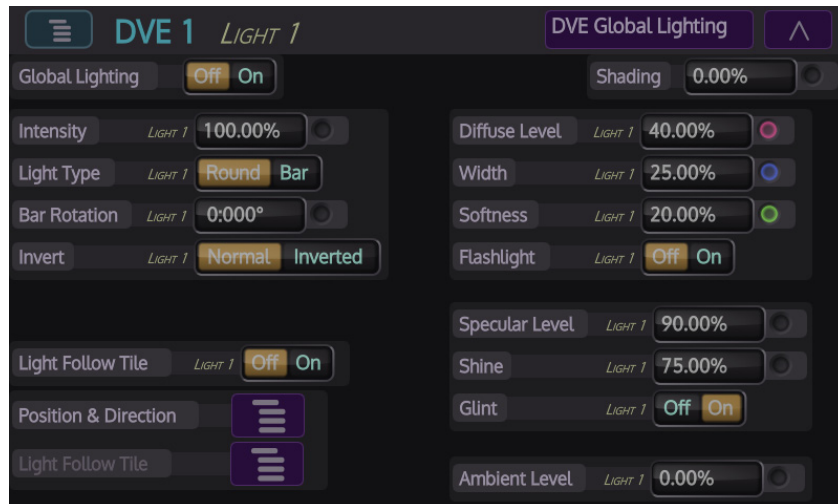
Width - will change the width of the diffused light. Try turning the Softness parameter down to 0%, this will display the outer edge of the diffused light. Then adjusting the width towards 100% will move the outer edge beyond the limits of the monitor.

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

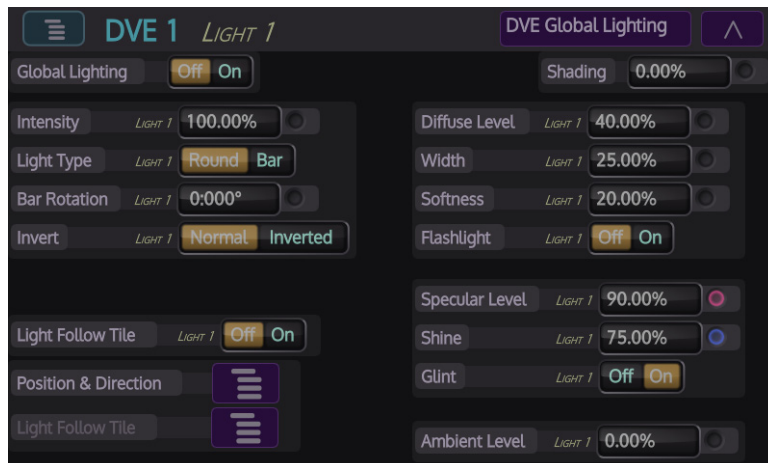
Specular Level and **Shine** - these control the glossy or specular element of the lighting.

Shine - controls the size of specular highlights created, 100% being a high gloss surface.



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.

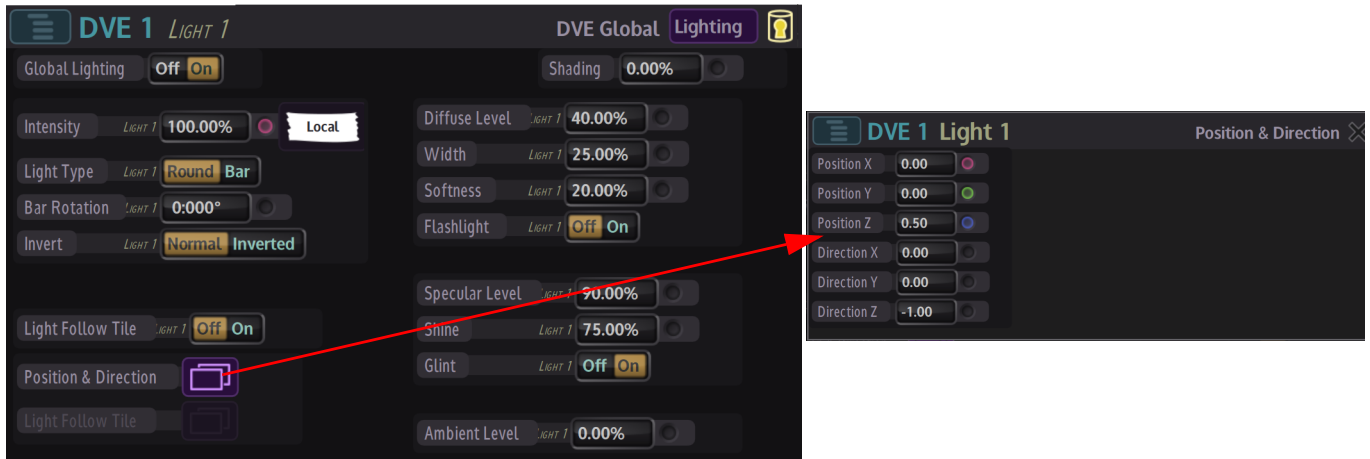
Ambient Level - this controls the 'room' lighting, flooding the whole tile with light.



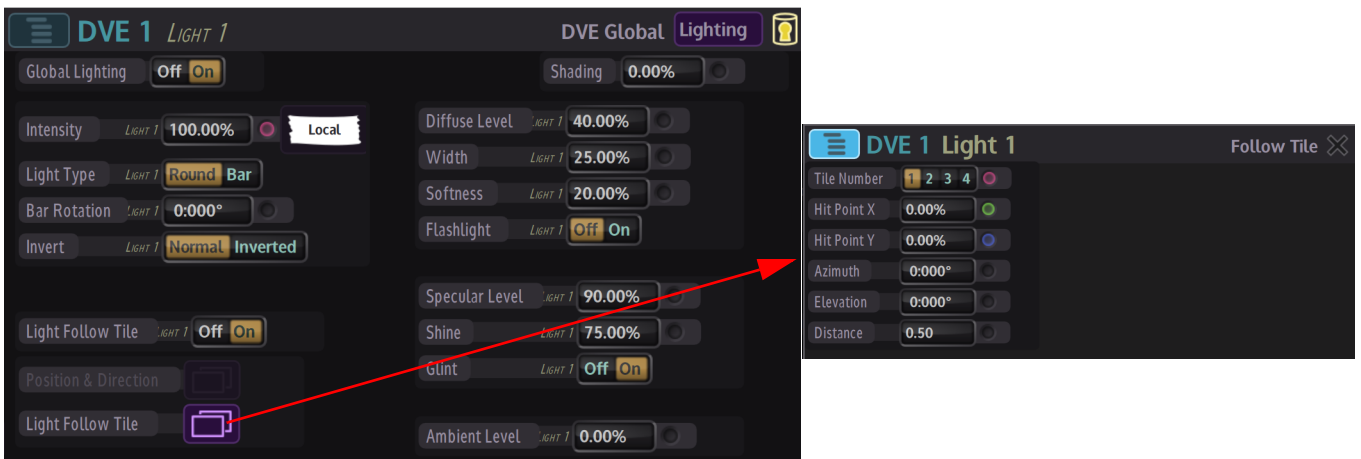
Light Follow Tile - switches the "Follow" function On/Off

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.

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.



Tile Number - selects the tile

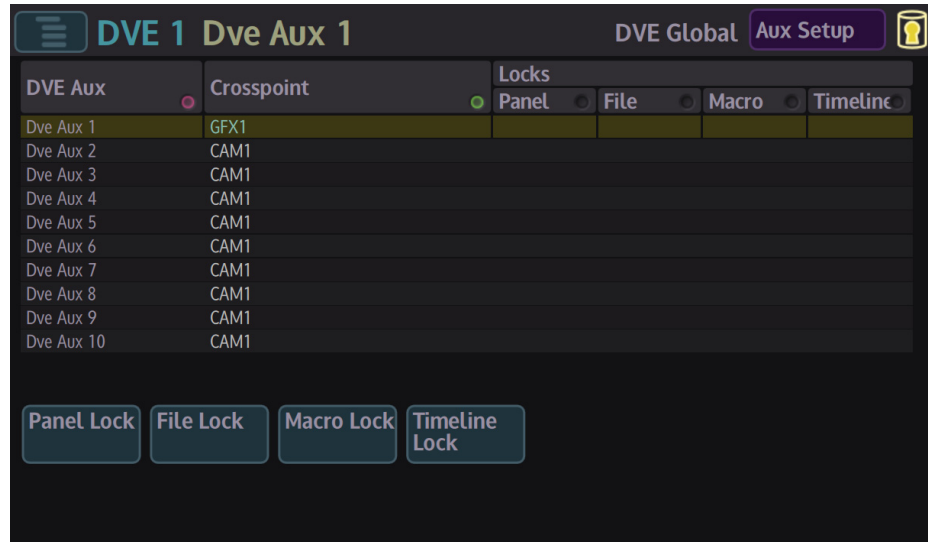
Hit Point X, Hit Point Y - specifies where the 'line of sight' of the light will hit the tile. 100% represents the width of a tile.

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.



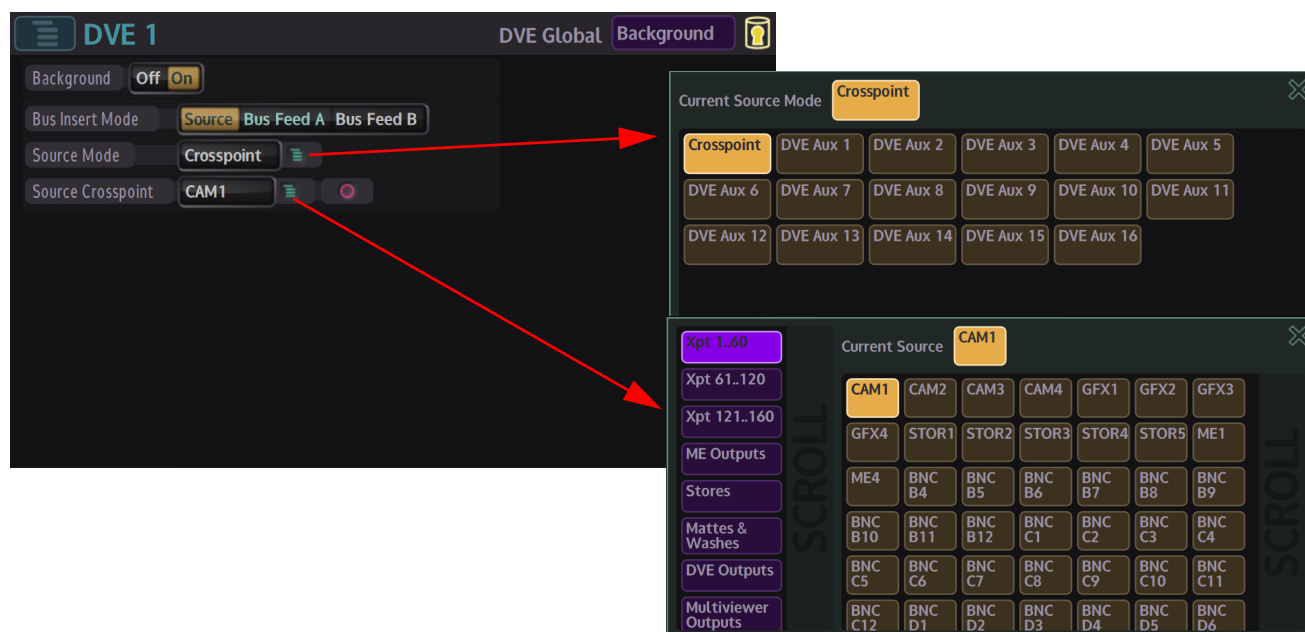
Use the **DVE Aux** parameter to select a DVE Aux, then select a Source for the DVE Aux using the **Aux Crosspoint** parameter, this allows the user to select a source from Xpts, Mattes, Washes M/E outputs, DVE outputs or Stores.

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.



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

16

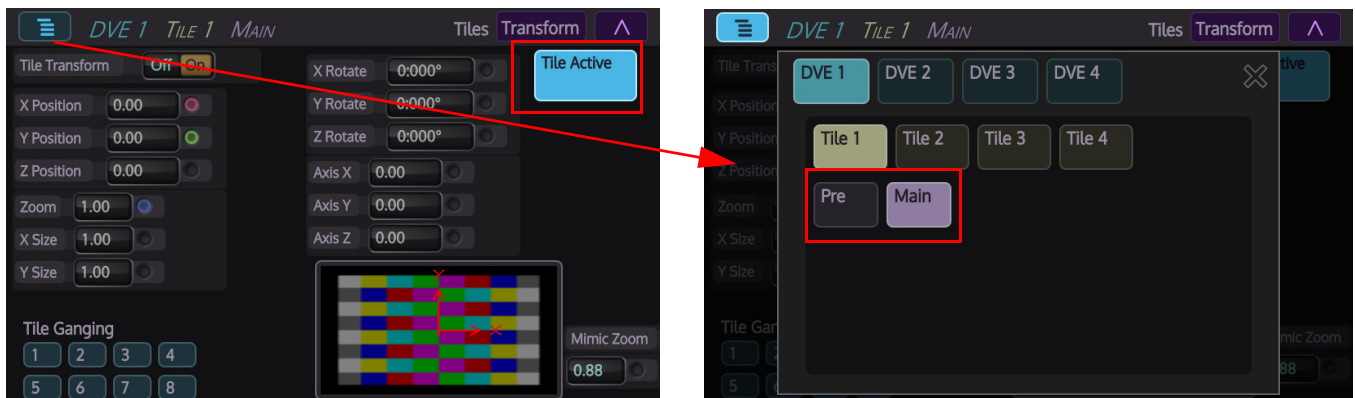
DVE - Tiles

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.

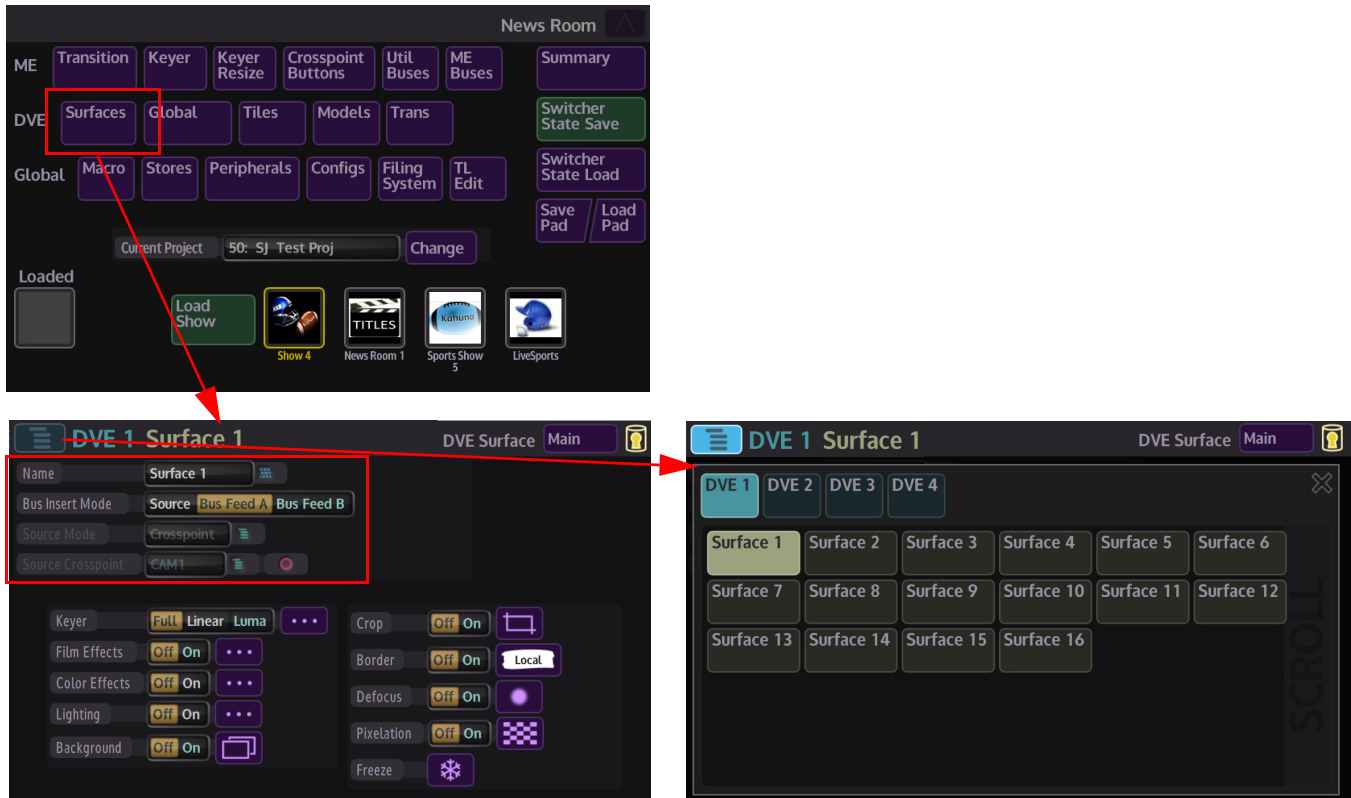
Main Transform (Target) menu, which moves the selected Tile “Globally” around a central point, the tile can be moved away from the central point but will always move around that point, think of it as the Earth being the Tile moving around the Sun, the tile can be moved away but will always move around 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.



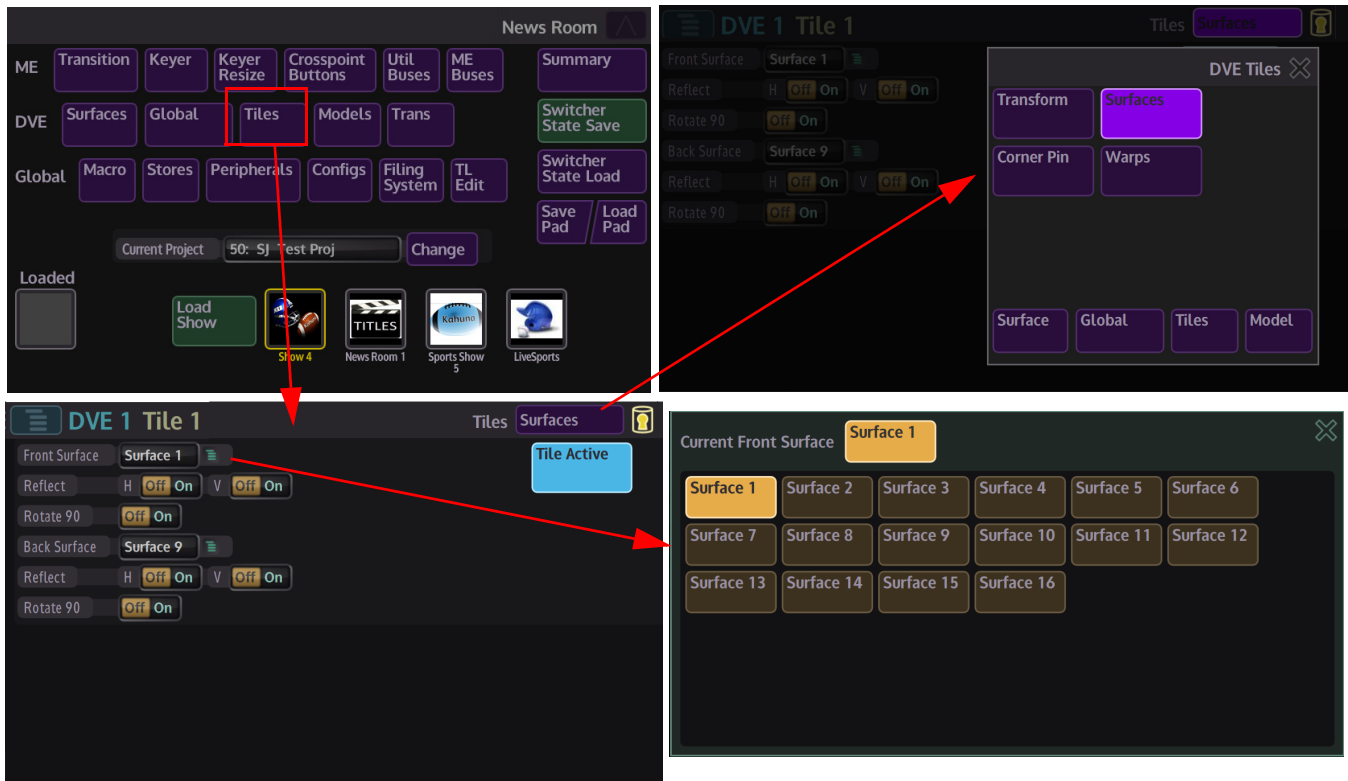
In the Main menu, touch the **{Surfaces}** button to open the DVE Surface menu. In this menu the user can select what mode they wish the DVE to work in i.e. Source or Bus based, for this instance, Source based DVE will be selected and the next few paragraphs will describe how to set sources for surfaces 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.

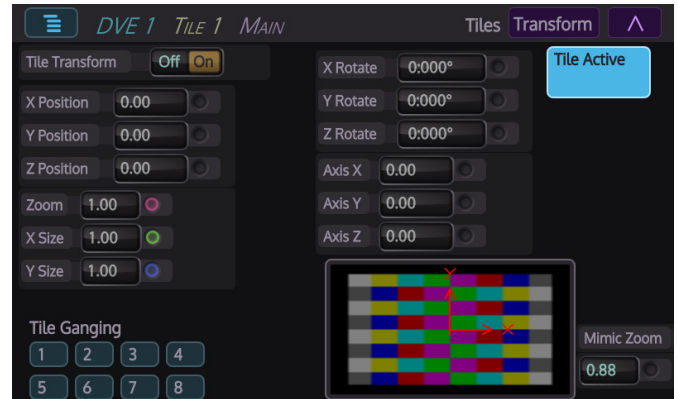
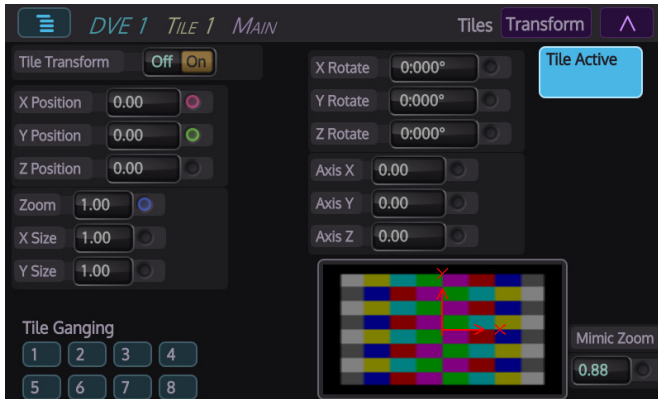
Front/Back H/V Reflect - the source on the front and/or back of the surface may be reflected in the horizontal or vertical direction, this maybe useful when rotating a tile to have the front and rear source in the same orientation.

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.



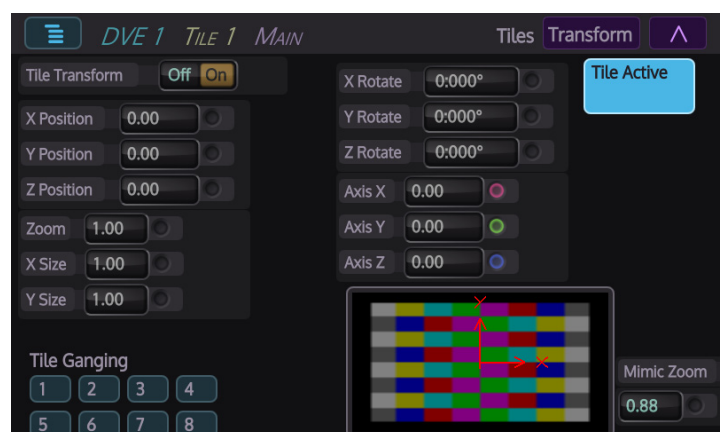
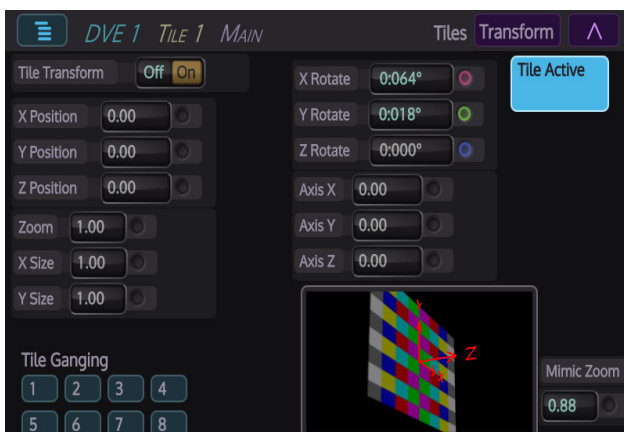
X, Y, Z Position - will move the position of the tile around the center of the axis

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.



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

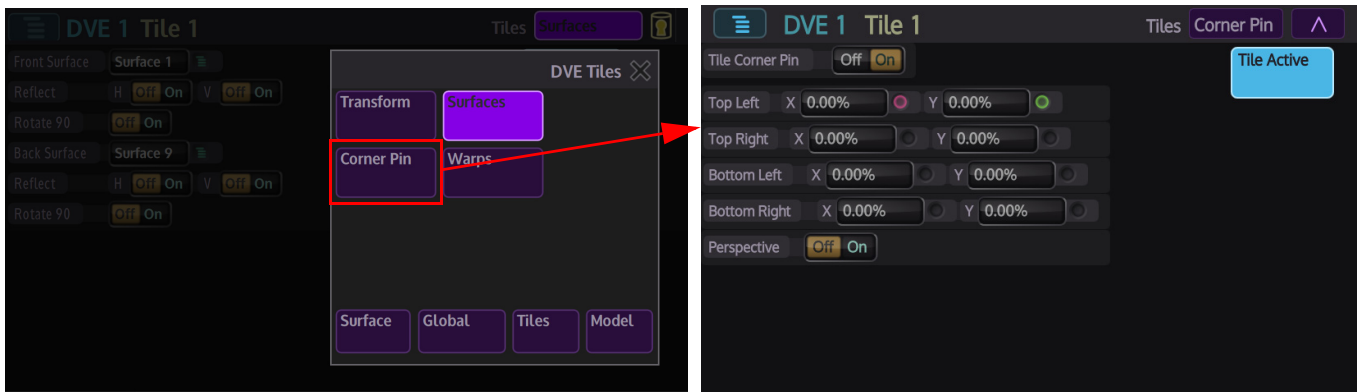
Z Rotate - rotates the tile clockwise/counter-clockwise

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.



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

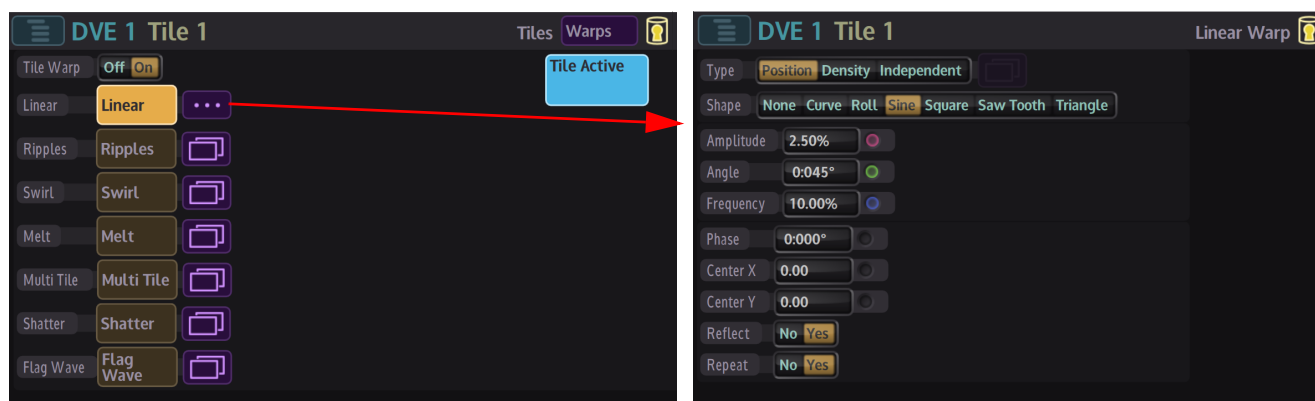


Warp

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.



There are 7 warp 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.



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.

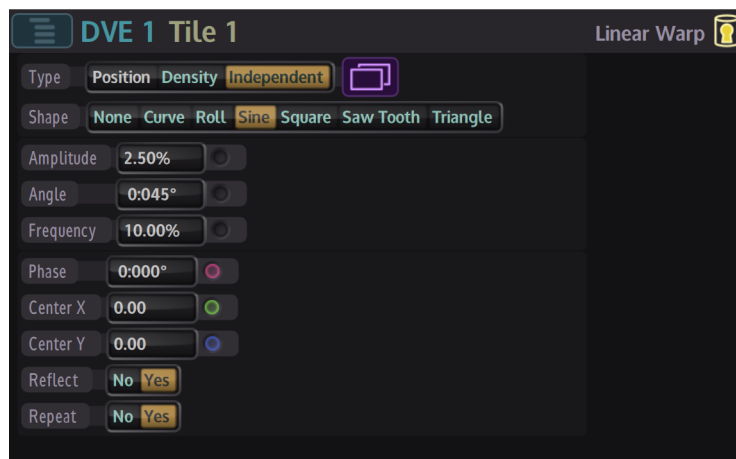
Amplitude - controls the intensity of the 'Shape cycle', the larger the amplitude the more dramatic the warp

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

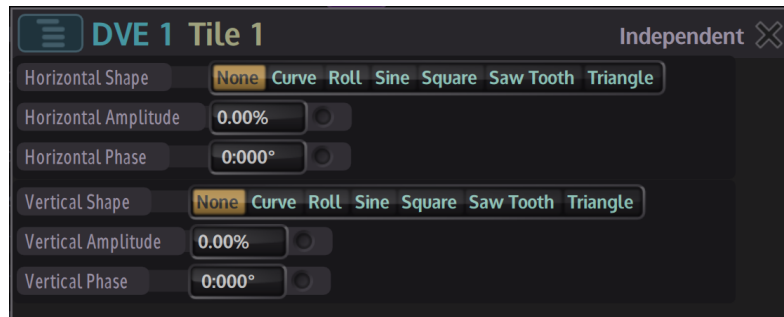
Reflect - when set to Yes applies a warp to the entire tile, when set to No will warp one half of the tile

Repeat - when set to Yes the warp pattern is repeated throughout the tile, when set to No the warp pattern will appear only once.



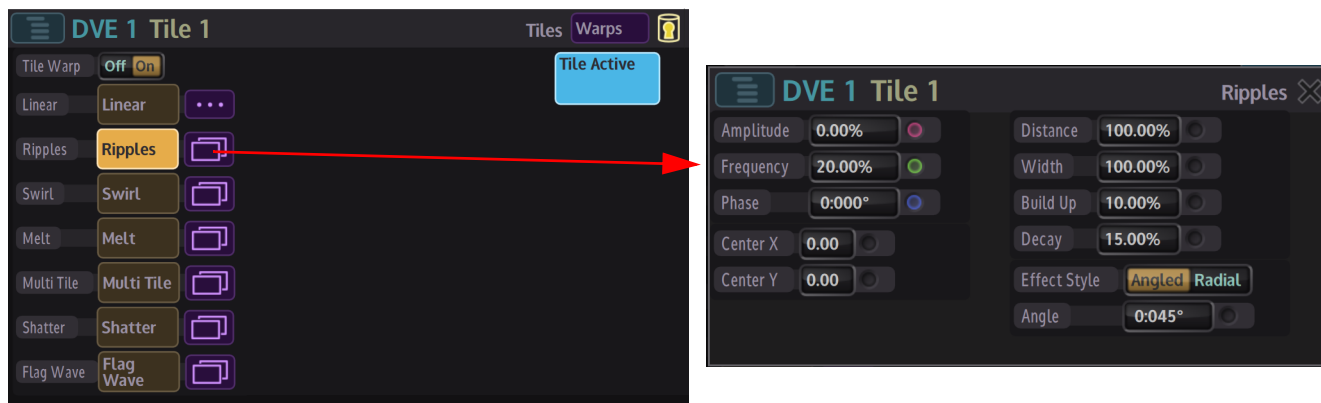
Independent Vertical Warp in Square Shape setting

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.



Ripples

This adds a Ripple effect to a tile.



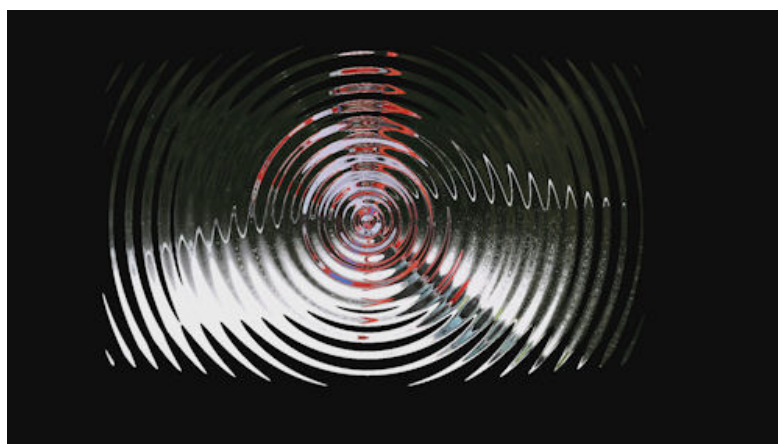
Amplitude - controls the intensity of the 'Shape cycle', the larger the amplitude the more dramatic the Ripple

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

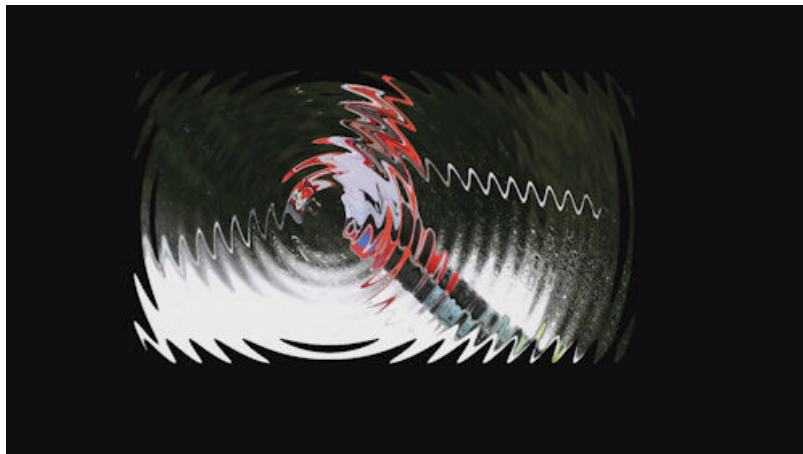
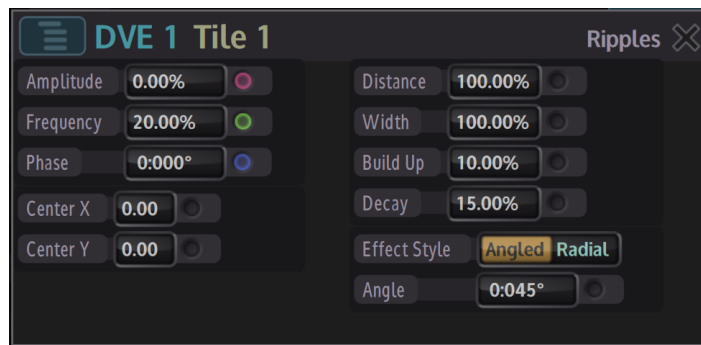
Width - sets the width between the Ripples

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

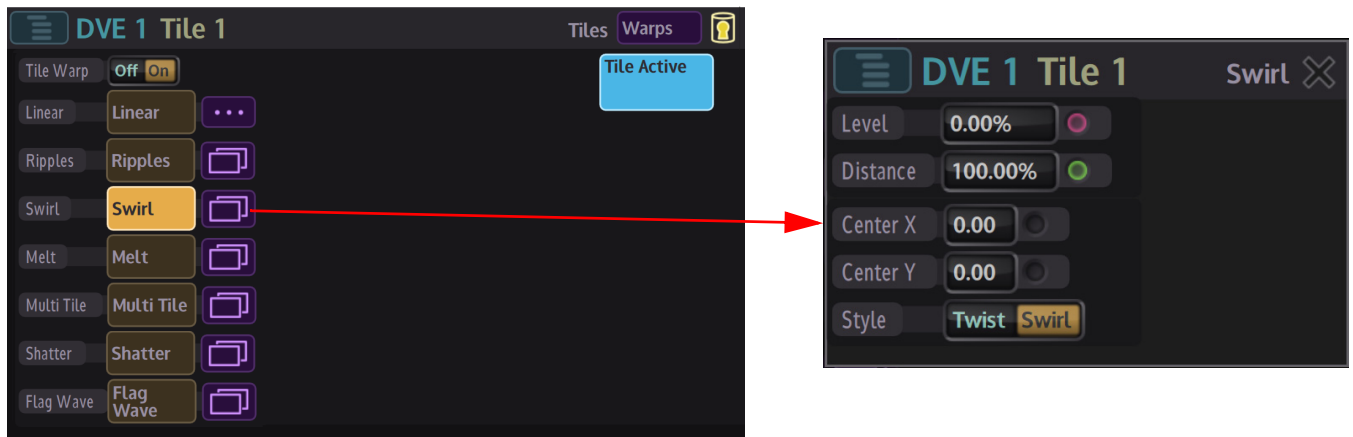
Angle - decides what rotation, if any, is applied to the Ripple.



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

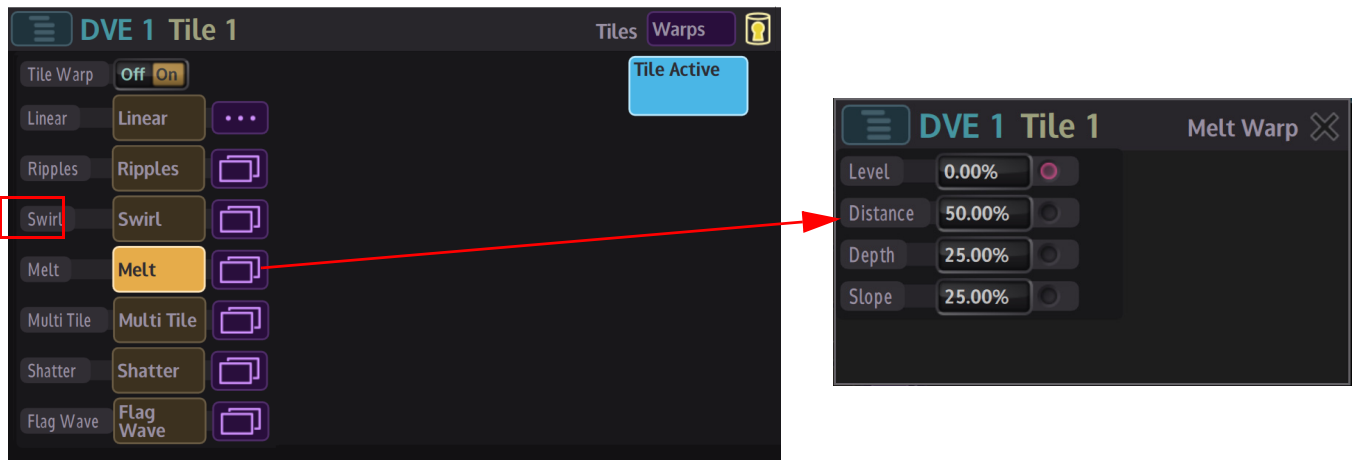
Y Center - moves the center of the swirl up or down

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.

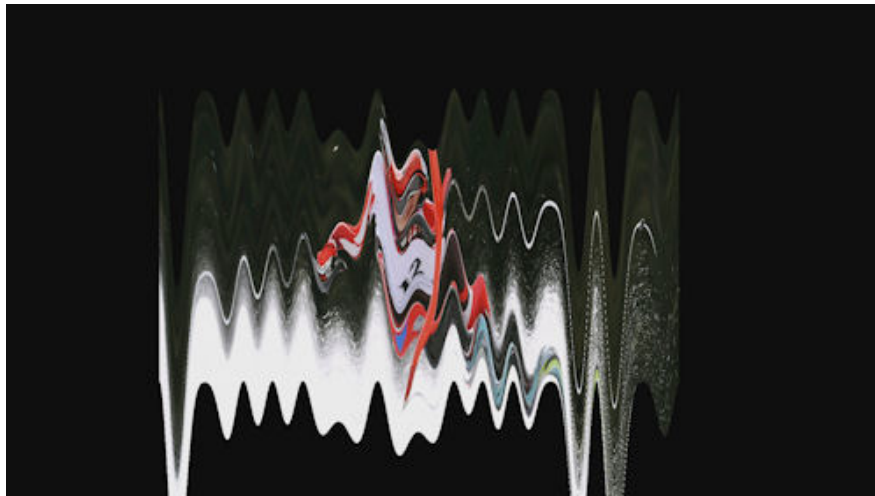


Level - sets the amount of Melt applied to the Tile

Distance - sets how far the Melt spreads away from the top of the tile

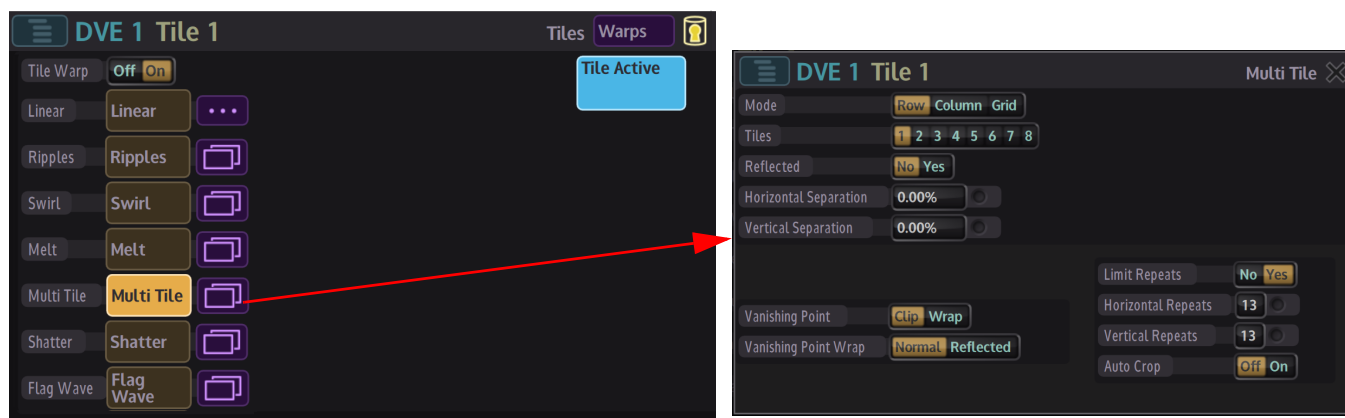
Depth - sets the depth for the bottom of the U shape between each melted segment.

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.



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

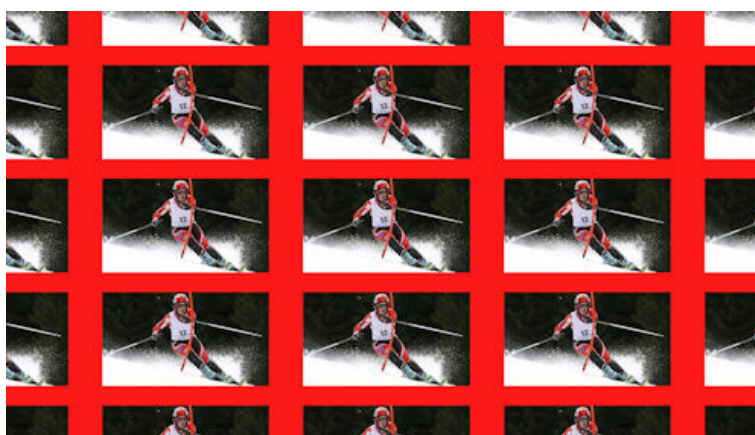
Limit Repeats - this will limit the number of repeats

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

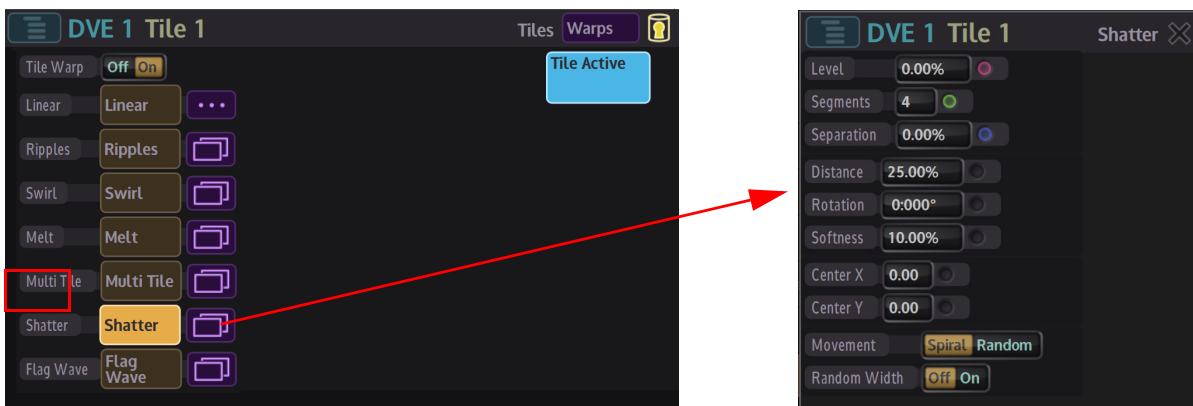
Vanishing Point - will add a reflected view of the multi tile setup



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 pre-determined number of segments and to the pre-determined distance

Segments - selects the amount of pieces the Shatter splits into

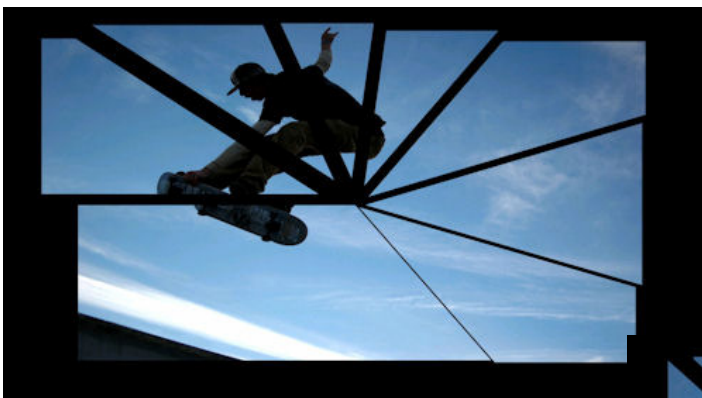
Separation - widens the gap between the segments

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

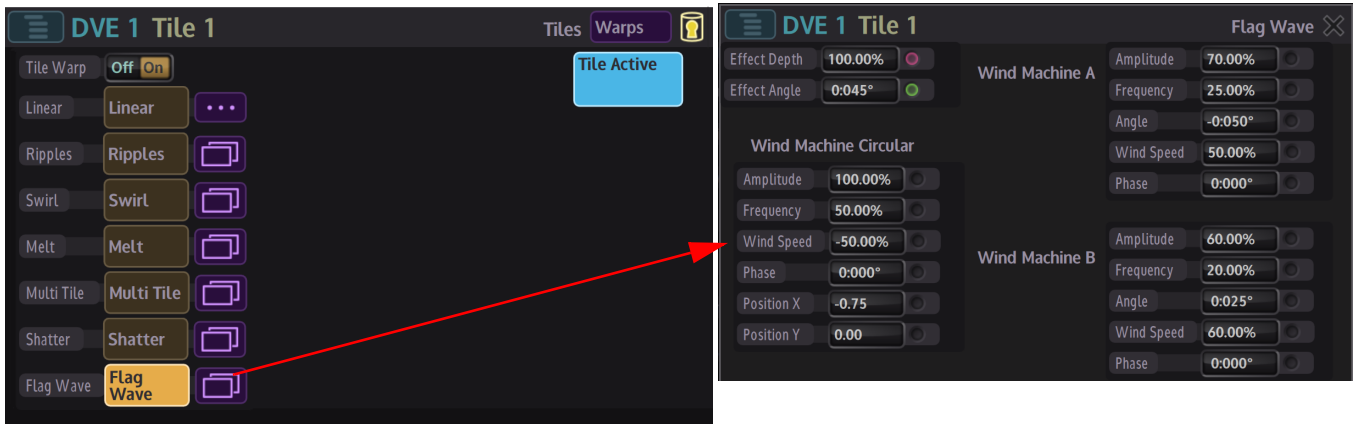
Y Center - moves the Shatter center up or down

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.



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'



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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.

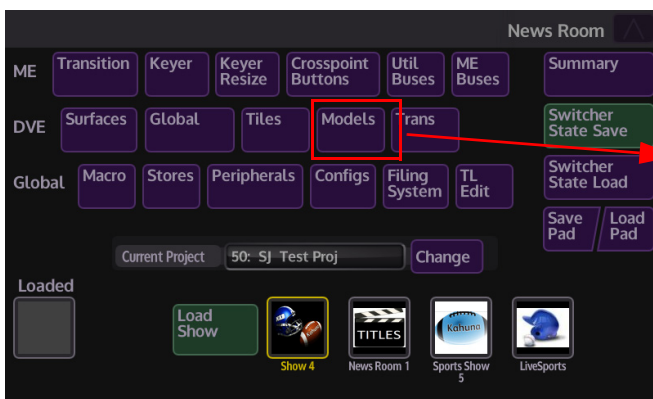
To select a model, simply touch the required model button and then press the **{Model Menu}** button to use the models parameter controls.

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

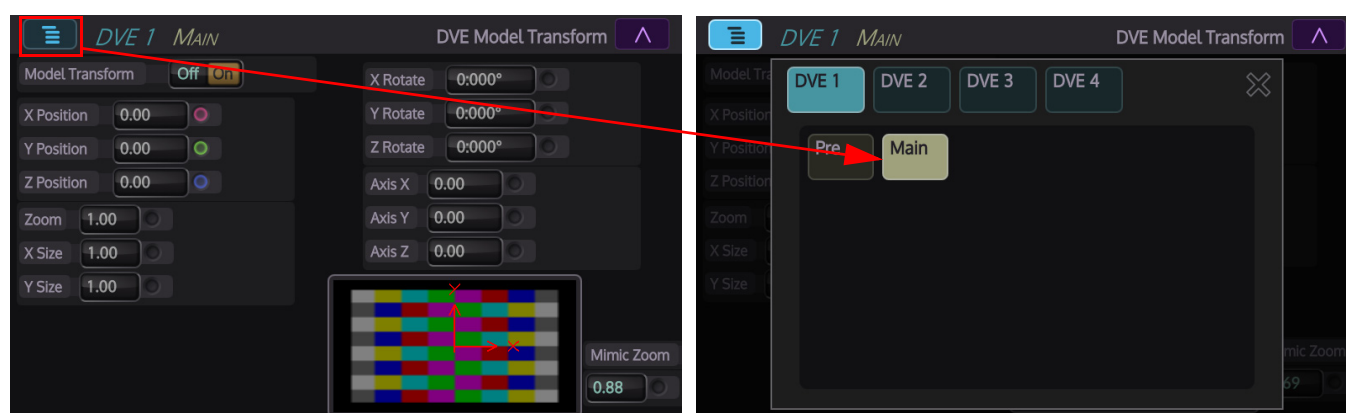
X Rotate - rotates the slab such that the left and right sides turn into the screen

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



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

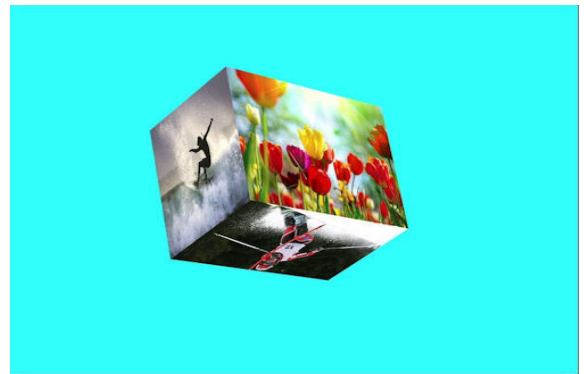
The Slab Model is made up of 3 or 6 Tiles (6 tiles if there are 2 DVE cards in the switcher mainframe), which make up the front 3 visible sides. When the user wants to create a slab, the first thing to make sure of is that the selected DVE has enough tiles allocated to it. As can be seen in the menu 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

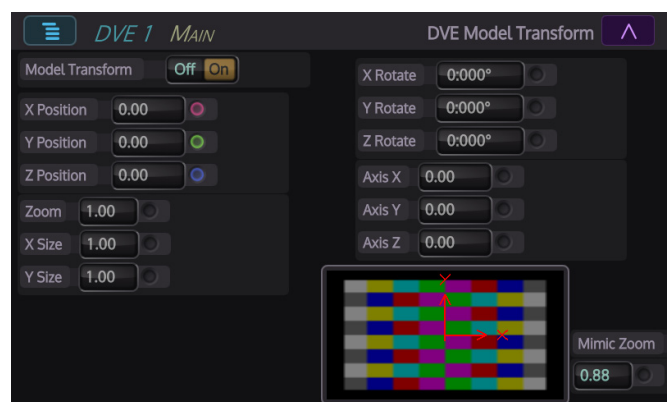
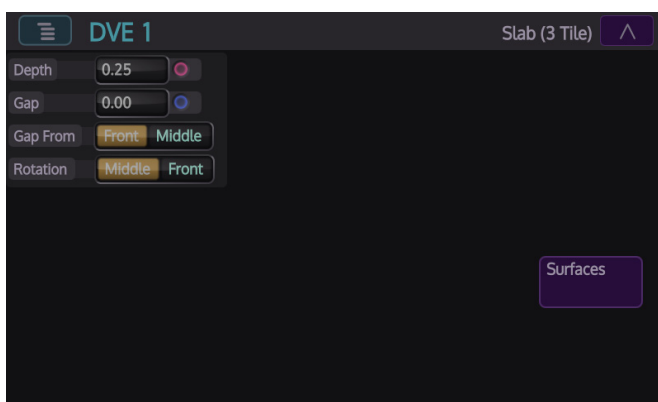
Note: To change the DVE models Size, Position and Rotation, please see the DVE Model Transform (Pre and Main) section of this manual.



Example of a Slab Model



Press the **{Slab (3/6 Tile)}** button to enter the parameter controls menu for the Slab Model.

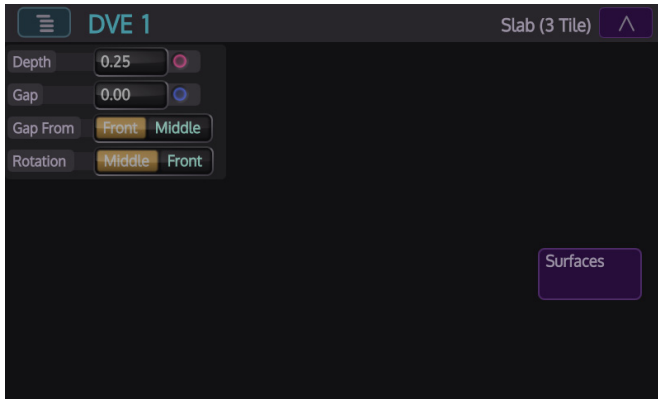


The **Slab (3 Tile)** main menu is used to adjust the look of the slab model, which will be explained in detail on the next page.

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

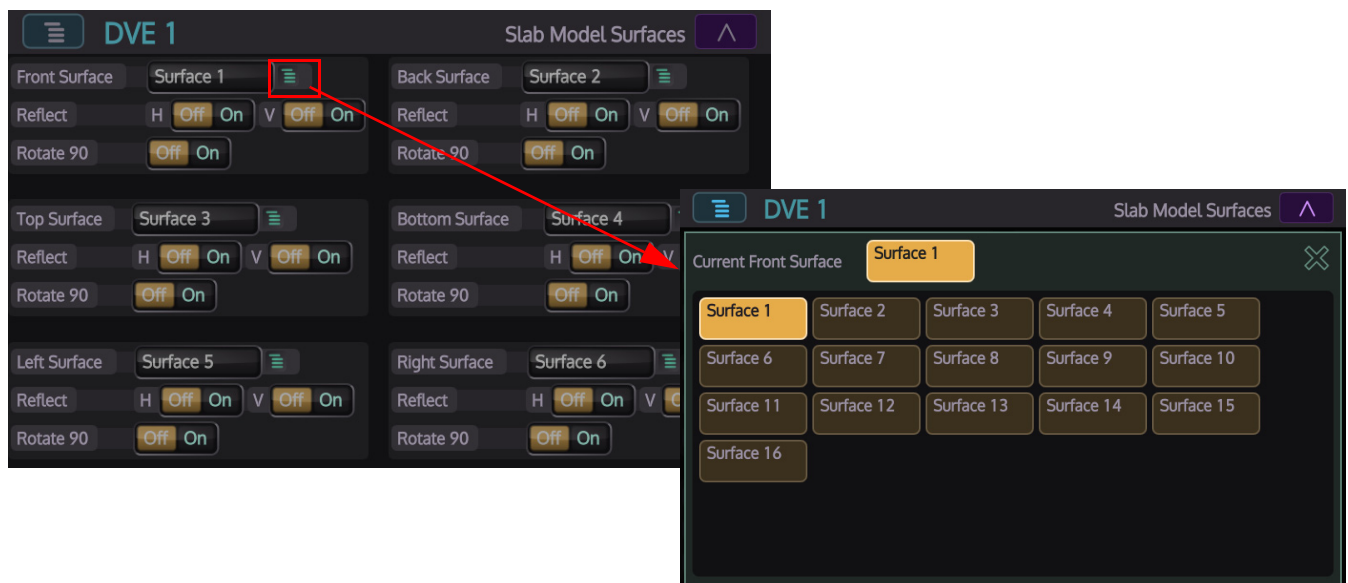
The **Depth** adjustment will adjust the slab from being a thin sliver to a wide slab.
The **Gap** adjustment as shown below moves the 3 tiles away from each other.
Mimic Zoom - will zoom the mimic in the menu in or out.



Example of a Slab Model with Gap Adjustment



Slab - Surface



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)

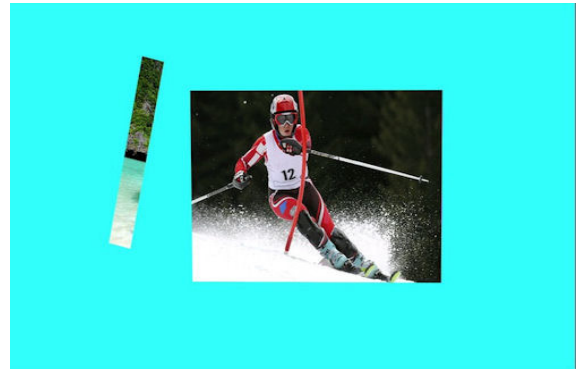
DVE Fragment Model

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.

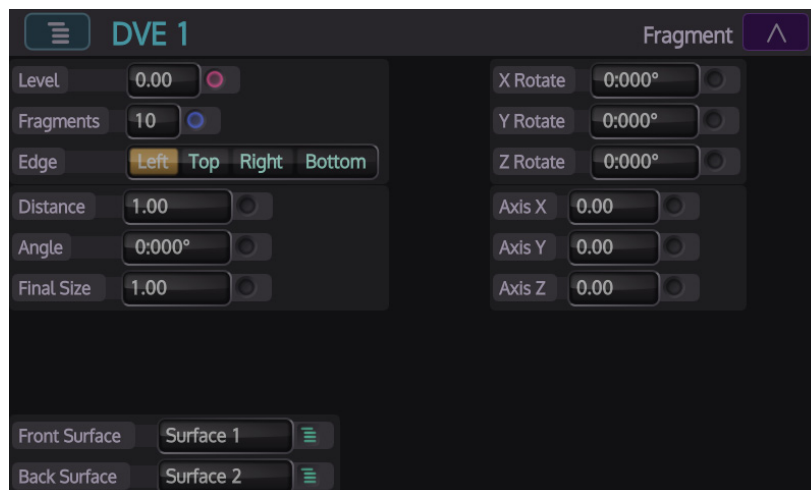
Note: To change the DVE models Size, Position and Rotation, please see the DVE Model Transform (Pre and Main) section of this manual.



Example of a Fragment Model



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.



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.

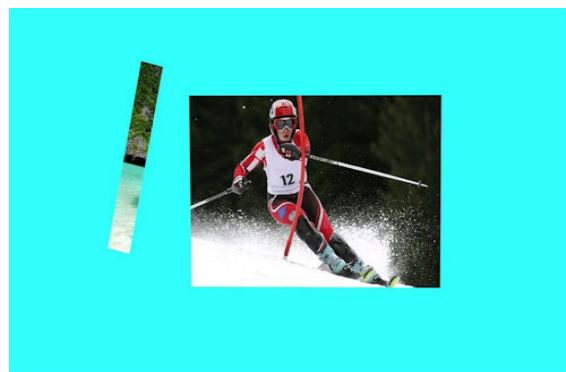
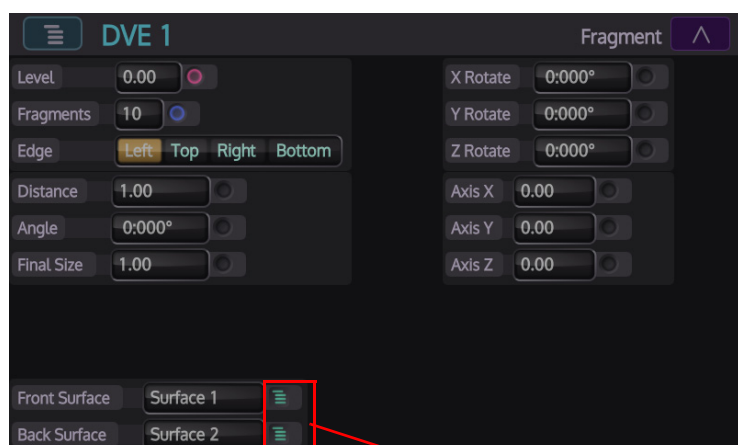
Fragments - sets the number of slices into which the surface will be fragmented

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.



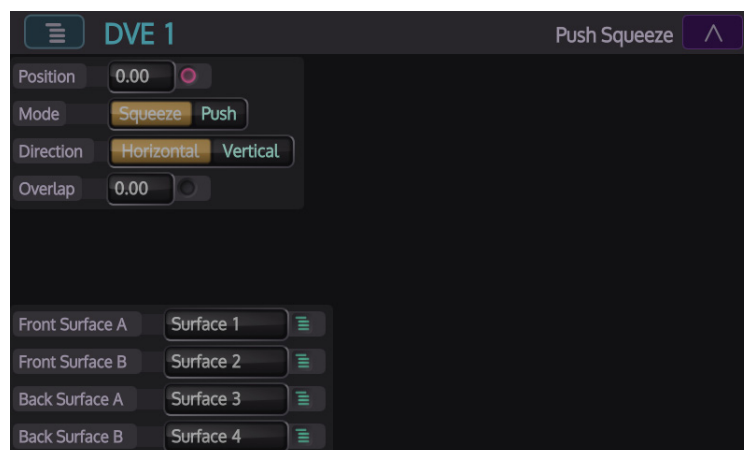
Example of a Push Model



Example of a Squeeze Model



Touch the **{Push Squeeze}** button to enter the parameter controls menu for the Push/Squeeze Model.



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.

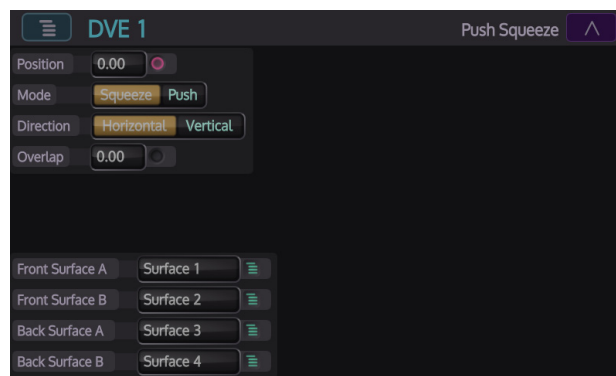
Push Squeeze Adjustment

Position - determines the position (amount) of push or squeeze applied to a tile.

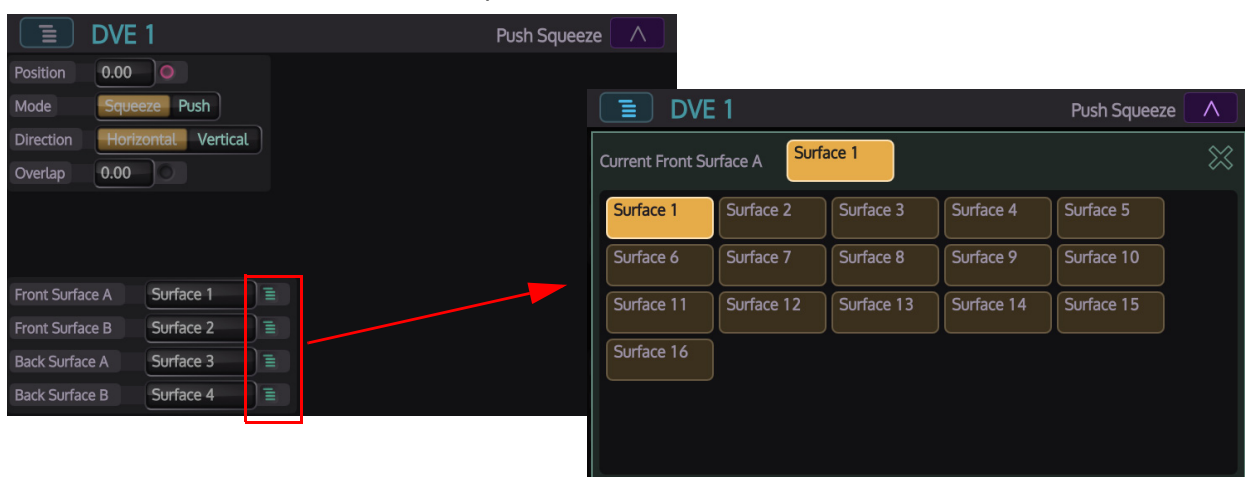
Mode - **Push/Squeeze**, switches between the Push and Squeeze models

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



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.



Example of Source Based Page Turn



Example Bus Based Keyed over Bgnd



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 revealed.



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

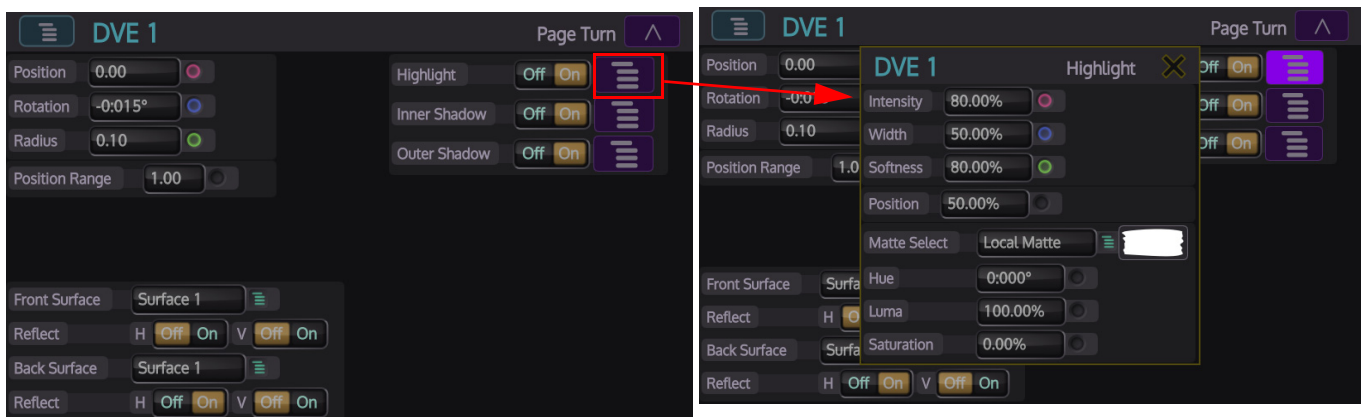
To help distinguish between the three different types of lighting please refer to the diagram on the next page.

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.



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

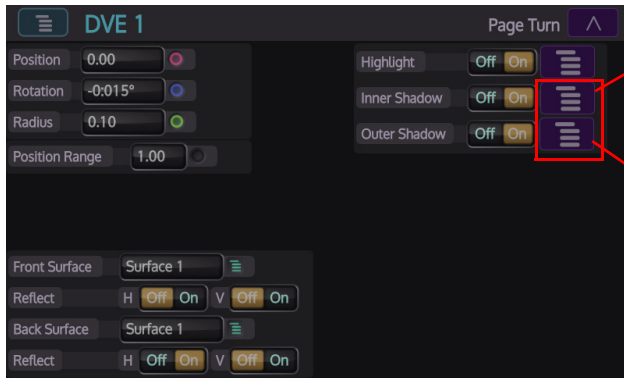
Position - adjusts the angle where the light/shadow source fall on the page turn.

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



Page Turn- Surface



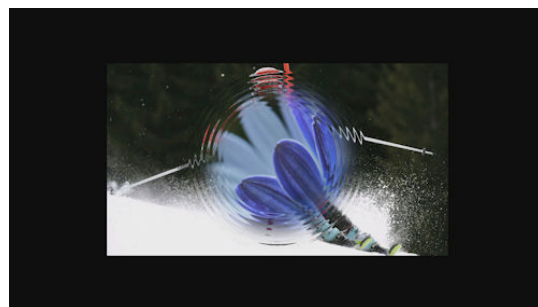
Front Surface/Back Surface - determines the surface of the selected Tile.

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 may be useful when rotating a tile to have the front and rear source in the same orientation.

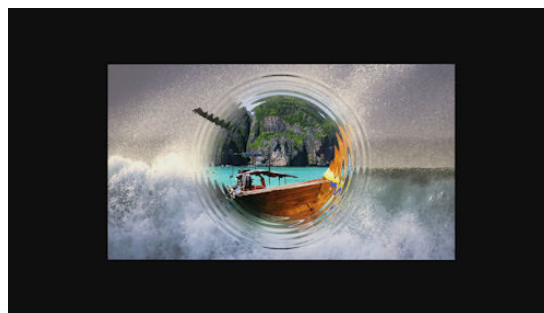
Ripples

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



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.



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

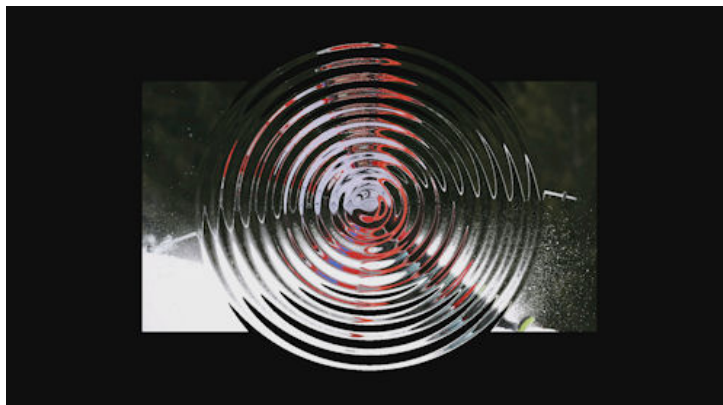
Decay - applies a softness from the center of the ripple outwards

Effects Style:

Radial - keeps a constant radial affect to the ripples

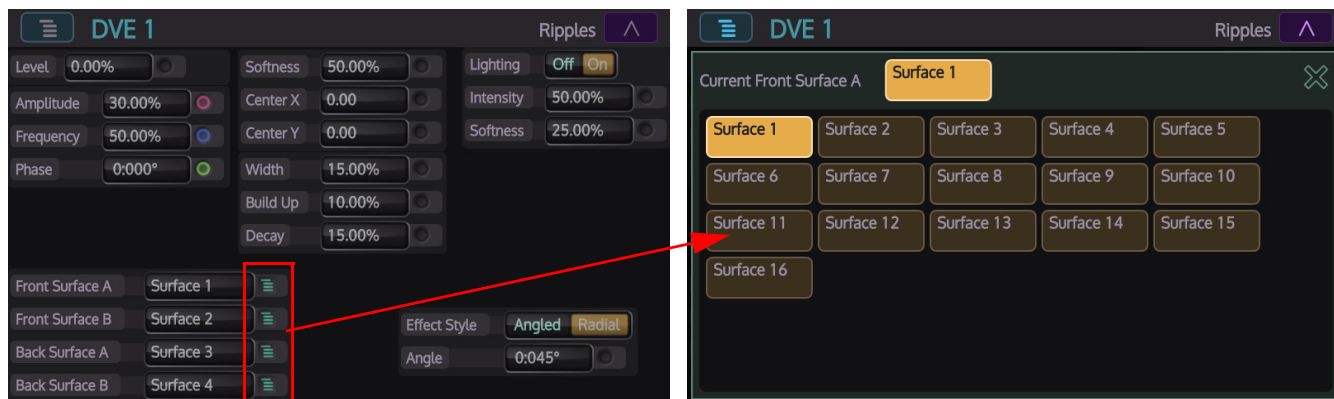
Angled - allows the angle of shadow across the ripples to be adjusted

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



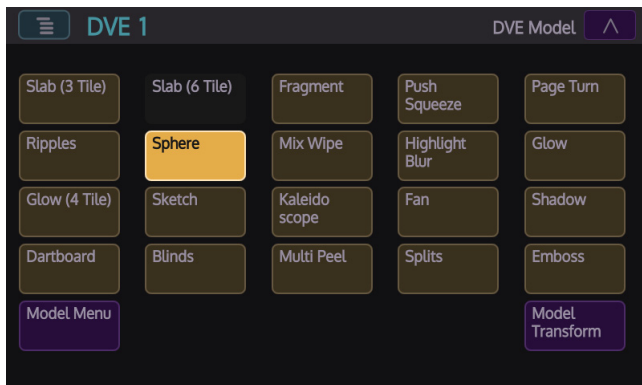
Front Surface A/B - selects the front surface A and B

Back Surface A/B - selects the rear surface A and B.

Sphere Model

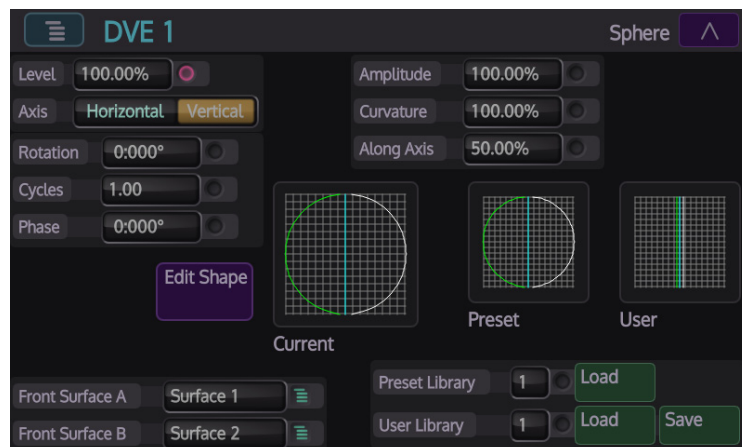
This DVE option allows the user to create a Sphere from a DVE Tile. The Sphere Model as the name suggests simulates a sphere who's shape can be manipulated, the model is made up of 2 surfaces, one surface being the front, the other being the back. When the user wants to use the sphere model. When the 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.

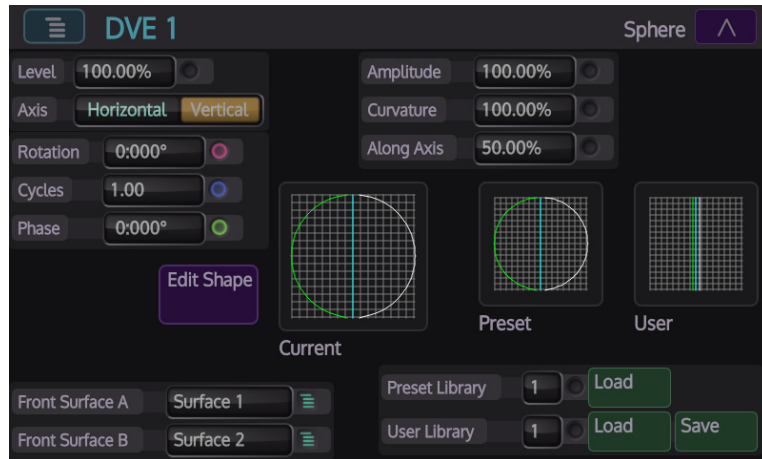
Axis - displays the Sphere horizontally or vertically

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



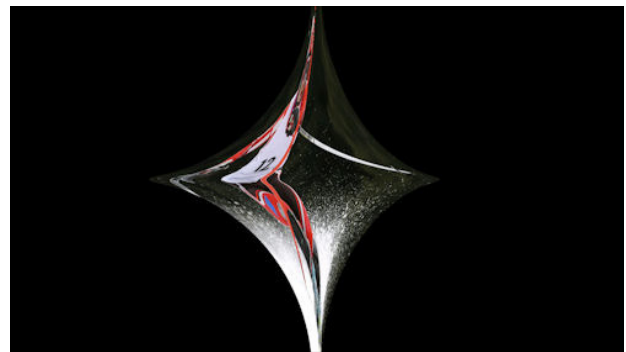
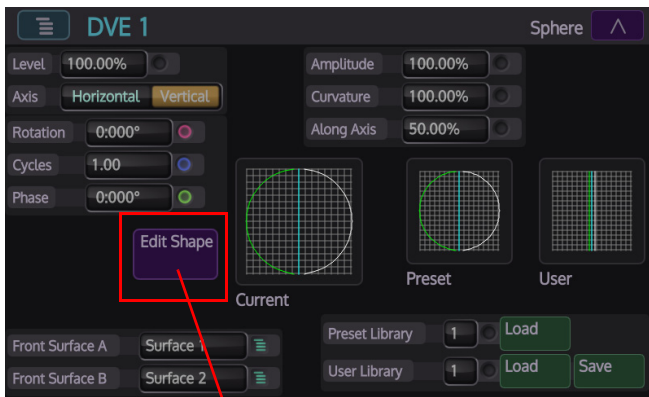
Curvature - adjusts the bulge that is given to the spheres surface

Along Axis - length of curvature along the set axis

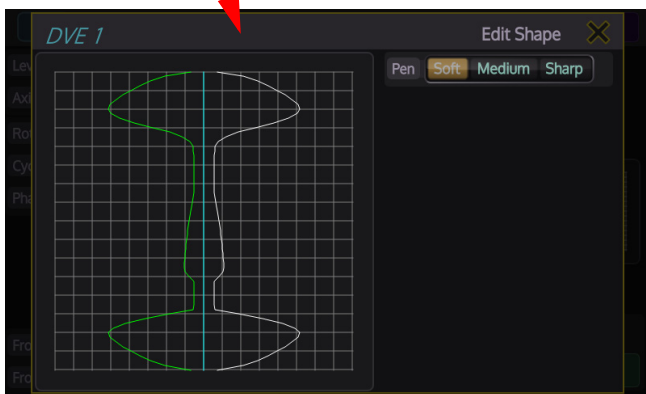
Edit Shape

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

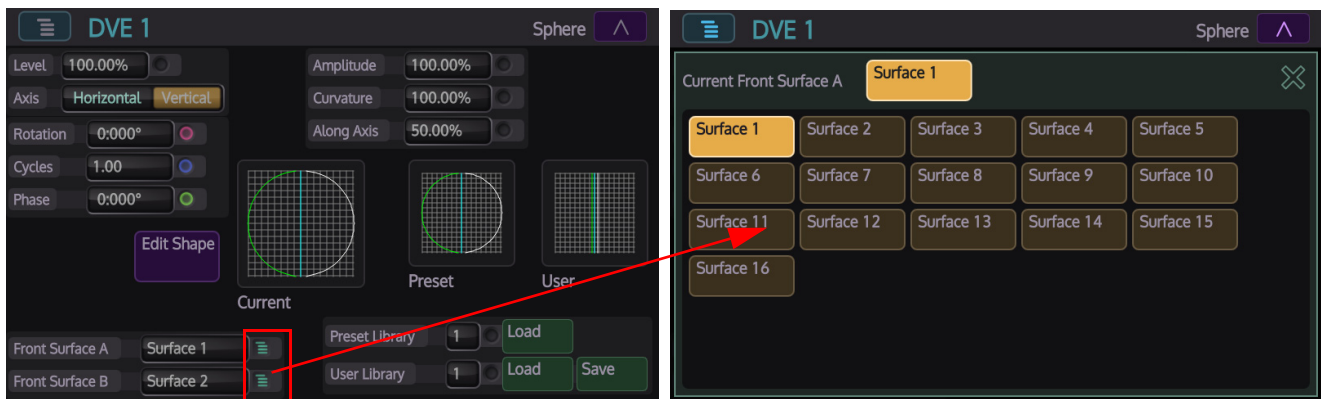
The shapes can be chosen from a **Preset Library** or designed using the Edit Shape graph. Running a finger over one side of the graph will create a shape that mirrors itself.

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

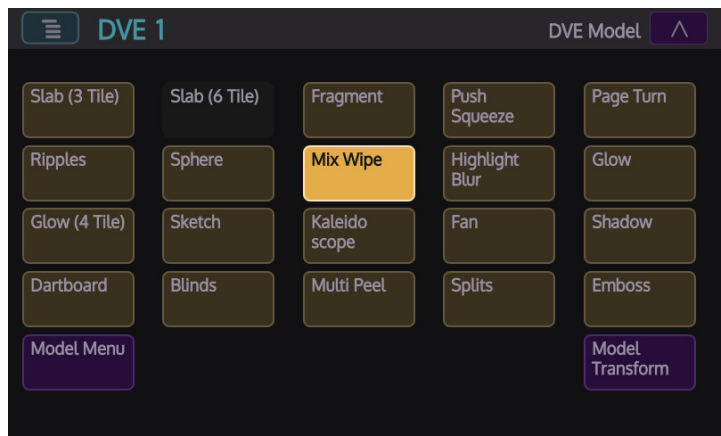


Front Surface A/B - selects the surface A and B.

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.

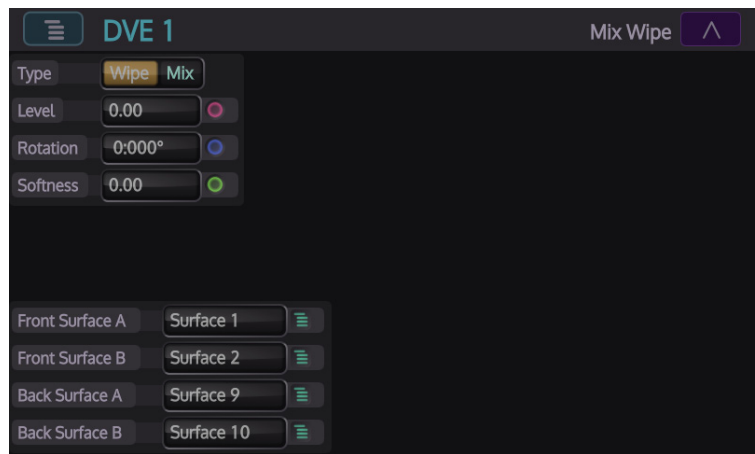


DVE Tile with Wipe



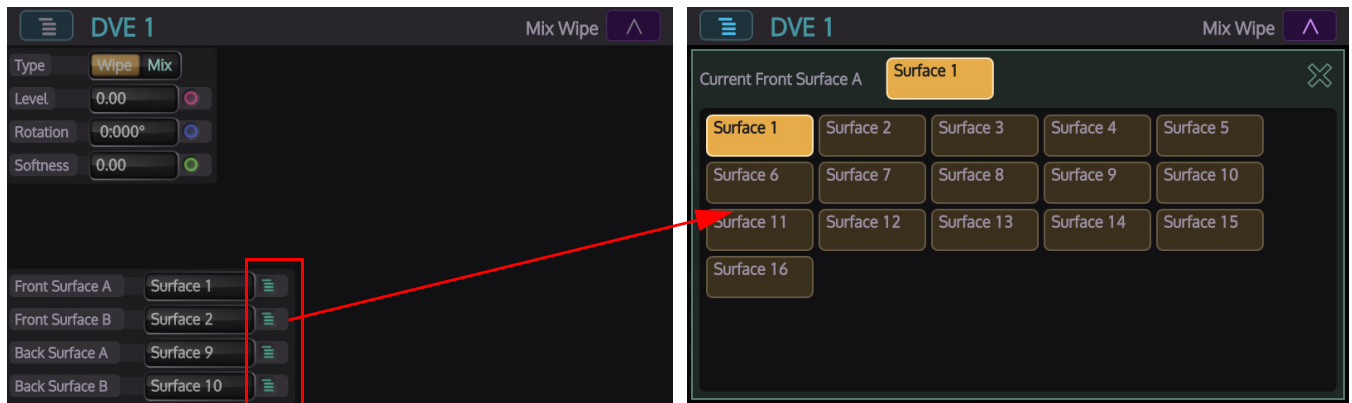
DVE Tile with Mix

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

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

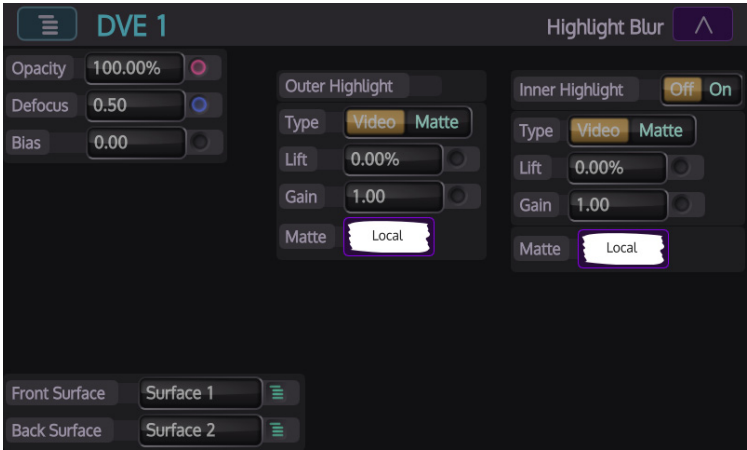
Highlight Blur adjusts and blurs the Luma content of a DVE Tile surface.

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

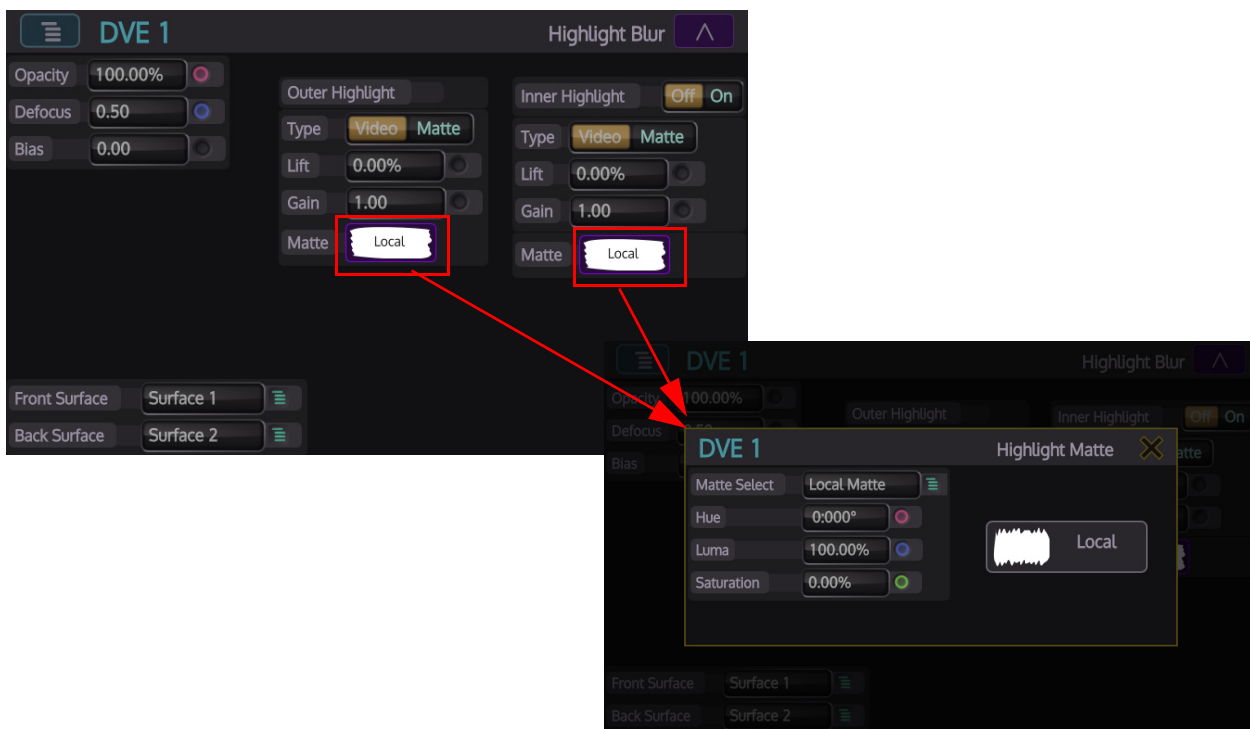


Opacity - sets the opacity level of luminance

Defocus - adjusts the amount of defocus applied to the source

Bias - this changes the horizontal and vertical blur bias

Outer and Inner Highlight



Type - will select between luminance of the source or luminance of a Matte added to the luminance of the source

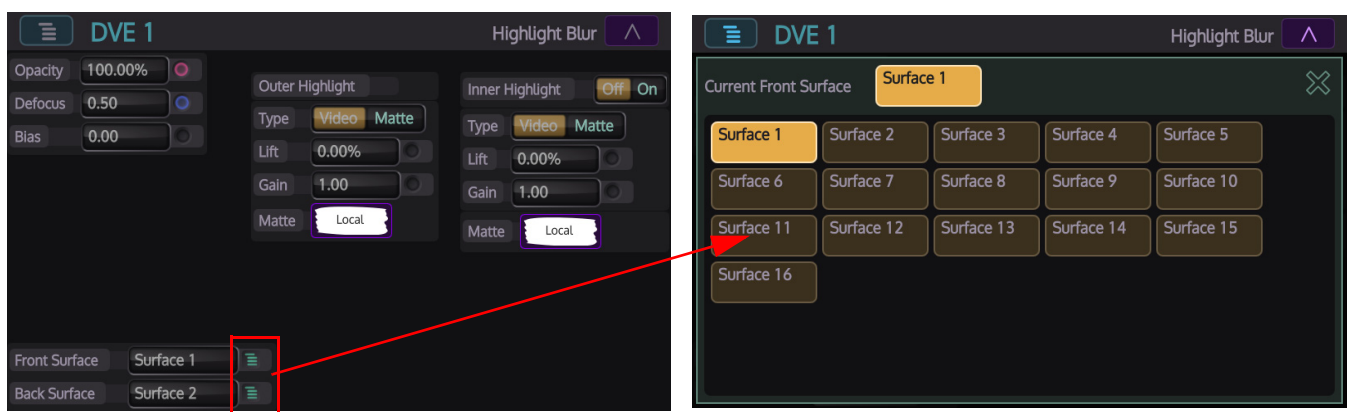
Lift - makes an overall Luma adjustment to the entire image

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



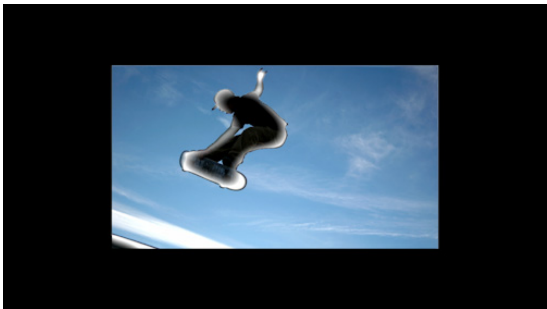
Front Surface - selects the source for the tile front surface.

Back Surface - selects the source for the tile back surface.

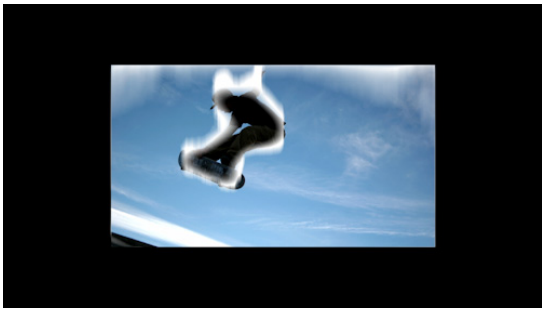
DVE Model - Glow and Glow (4 Tile)

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.

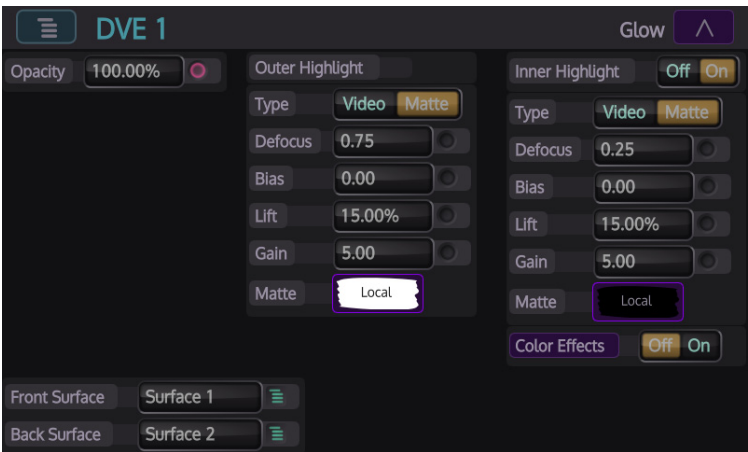


DVE Surface with Default 3 Tile Glow



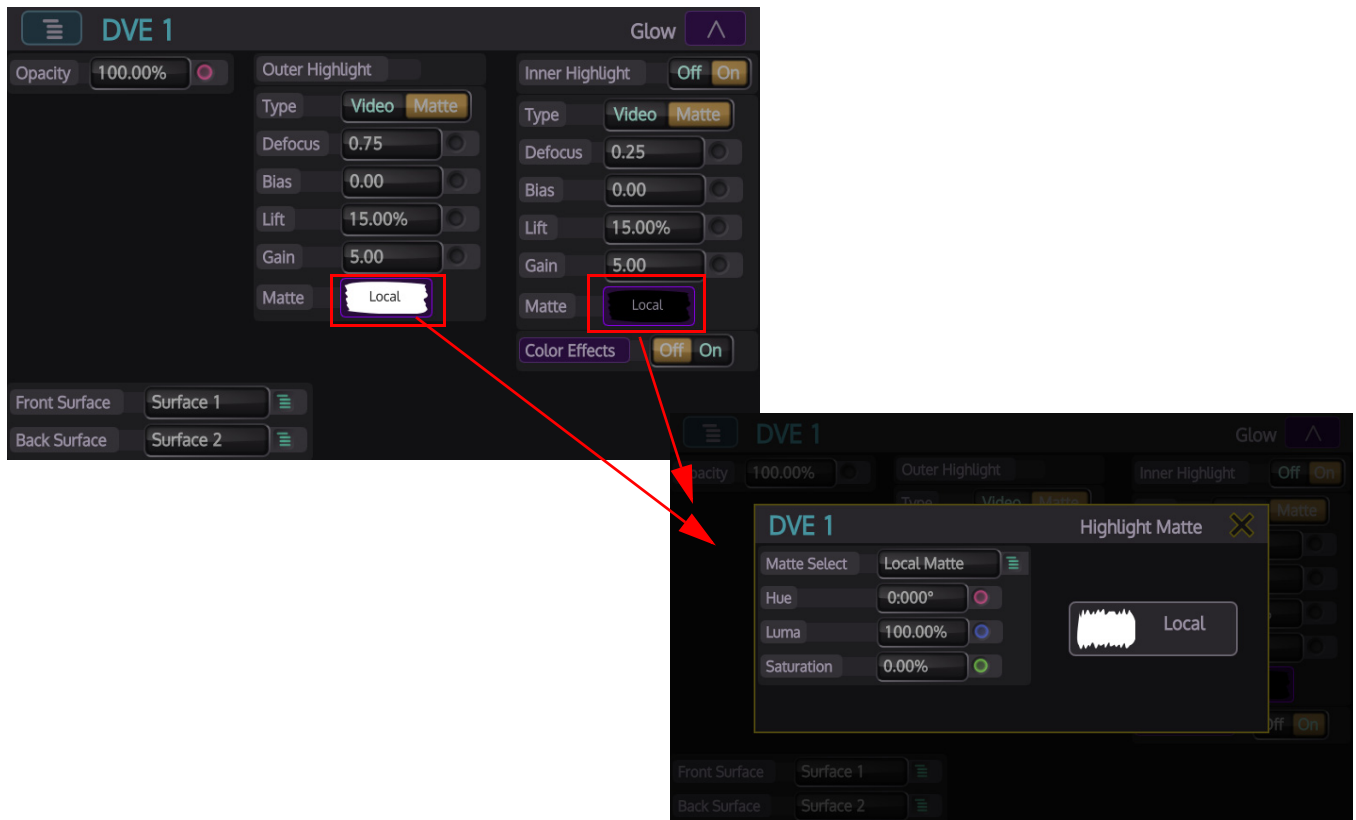
DVE Surface with Inner Bias and Gain adjusted

Glow Parameters



Opacity - sets the opacity level of luminance

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.

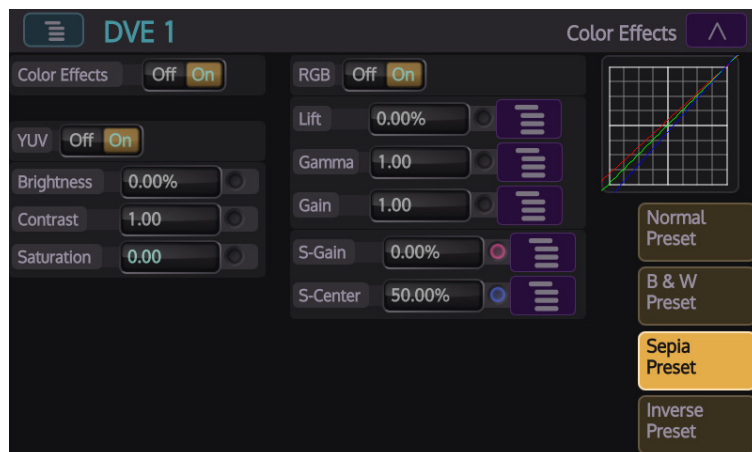
Hue, Luma and Saturation - allows the user to adjust the color of the Inner/Outer highlight when the Local Matte is selected.

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.



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%

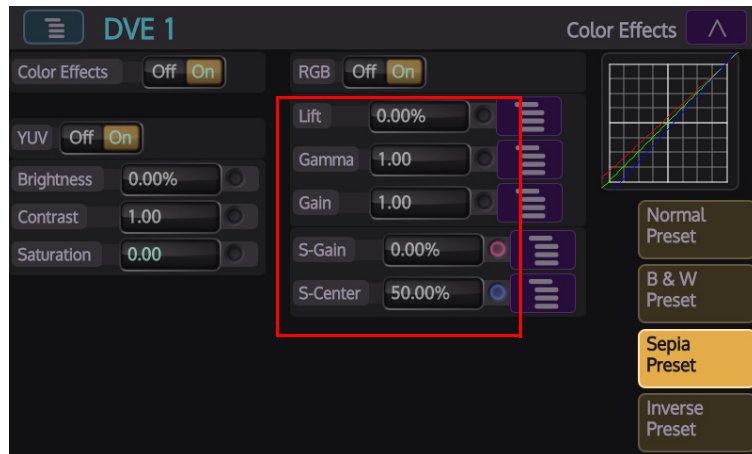
Saturation - default value is 1.00%, and the range is from -0% to 16%

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

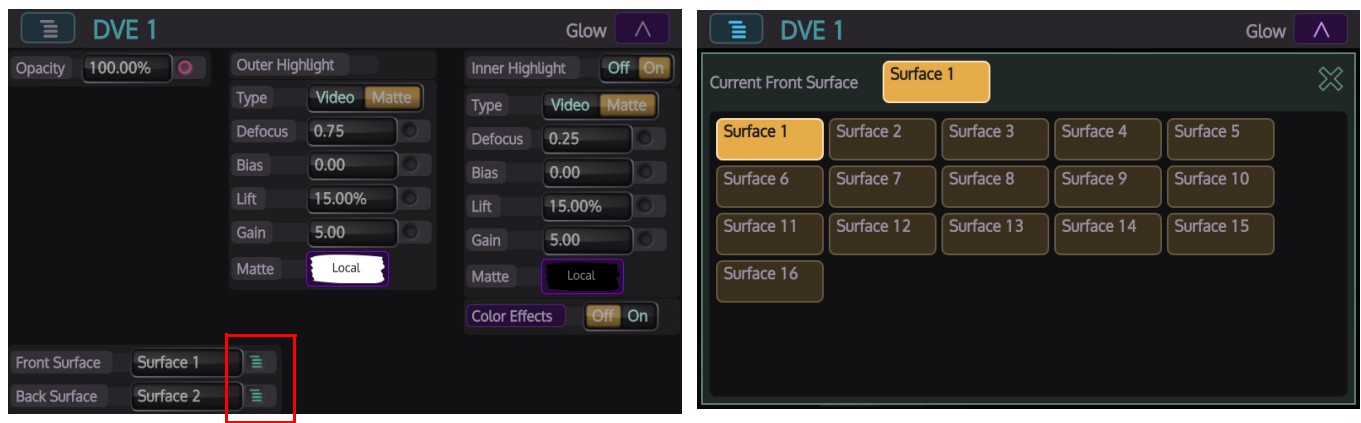
The main menu is set to a default condition, which shows all five Master adjustment parameters which can be selected in groups by touching one of them, notice that the attaches light up the same color as the rotary controls on the MAV-GUI. This will give an adjustment of Master Lift, Gamma, Gain, S-Gain and S-Center.



Touching a menu link button next to the attacher will open each of the RGB color effects menus.



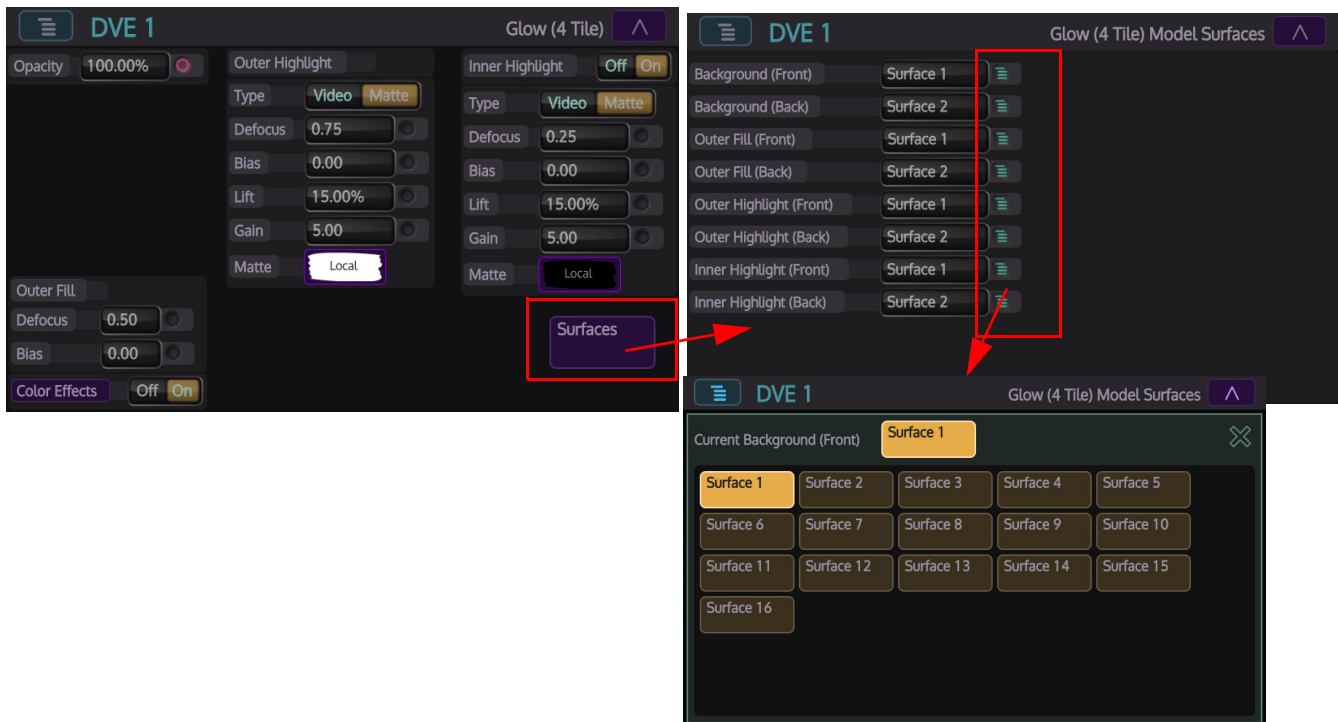
Surface Parameters



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)



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.



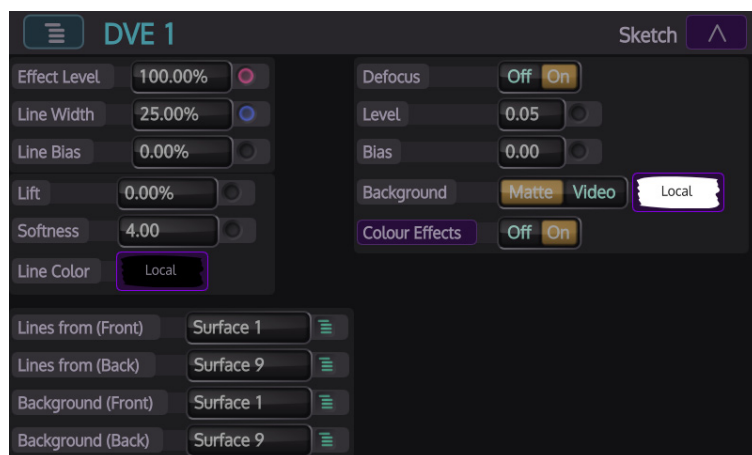
Original DVE Source



DVE Source with Sketch Turned On



Touch the **{Sketch}** button to reveal all the main adjustment parameters.



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.

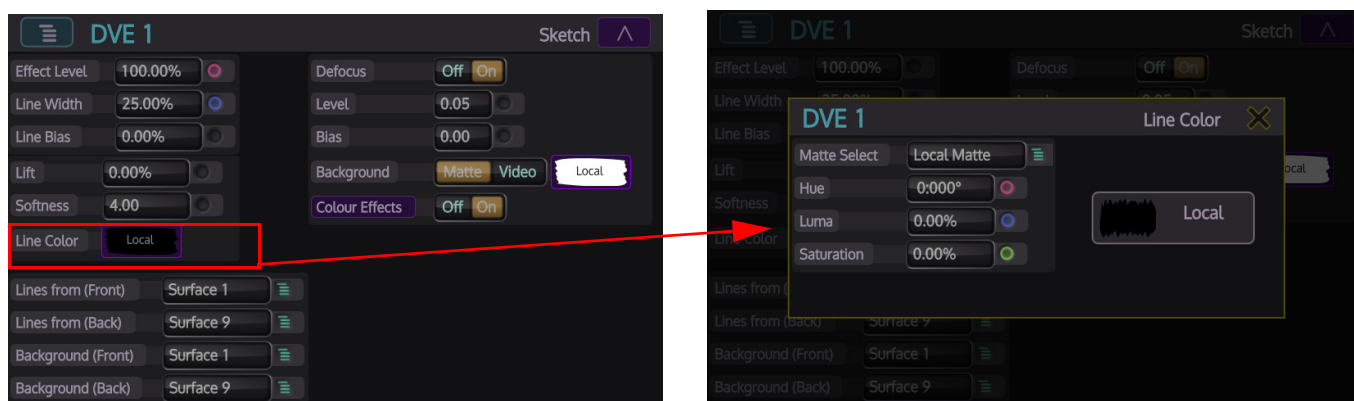
Line Width - widens and narrows the Pen/Pencil line that the surface is drawn with.

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

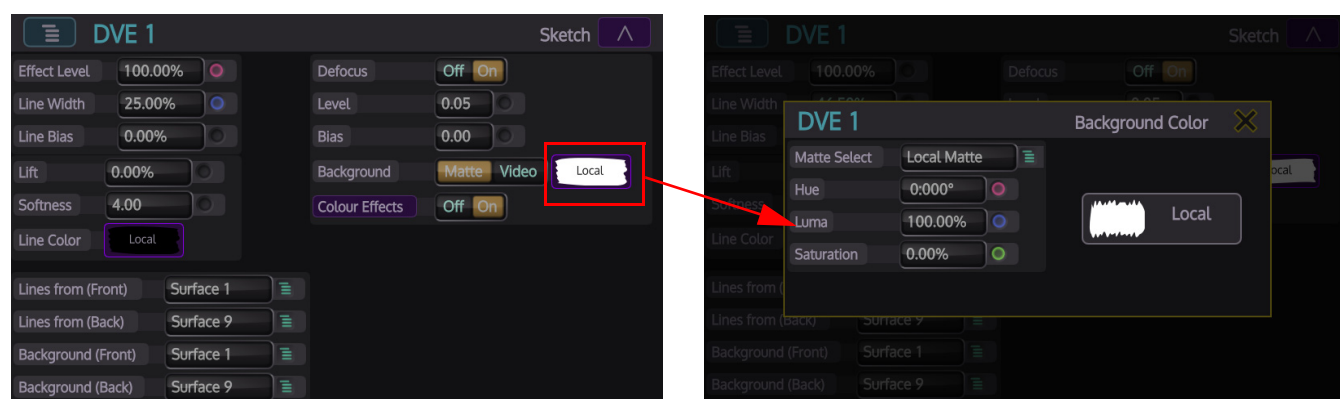
Line Color - this changes the color of the Sketch line



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.

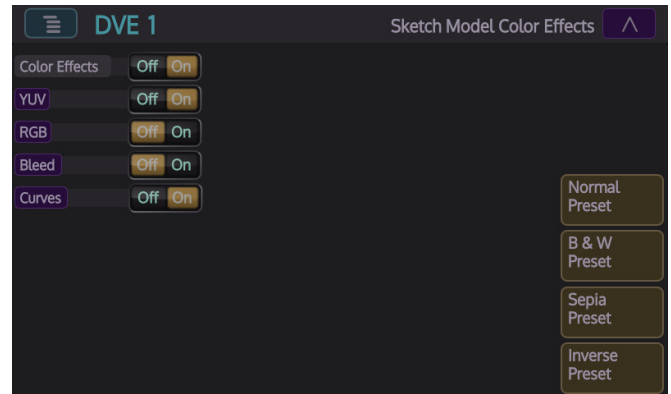
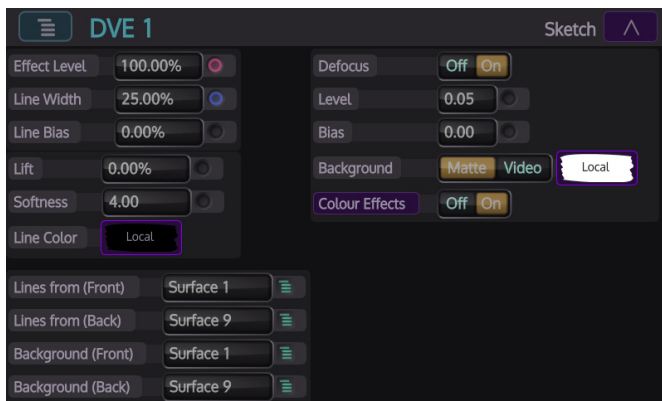
Sat - The saturation control affects the selected Matte Hue, the parameter adjusts from 0 to 100% where 0% is no saturation or no color i.e. only shades of Gray and 100% is fully saturated or maximum color.

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.

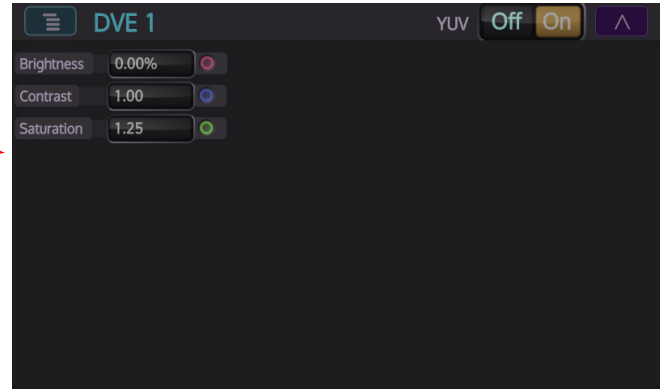
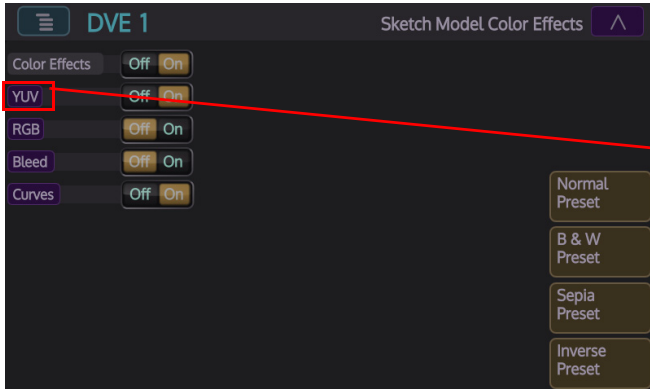


The color correction part of the menu allows the user to change the color balance of the DVE surface, there are 4 types of control, YUV, RGB, Bleed and P

DVE Model - YUV

Press the **{YUV}** menu link button to enter the **YUV** menu.

Adjusting the Brightness, Contrast and Saturation can be adjusted.

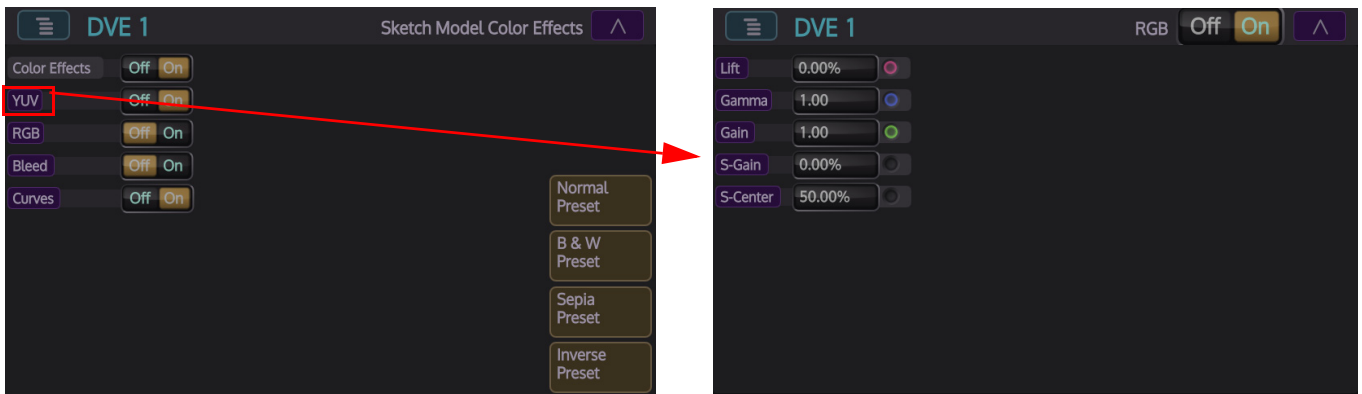


- Brightness default value is 0.00%, and the range is from -10% to 100%
- Contrast default value is 1.00%, and the range is from -0% to 16%
- Saturation default value is 1.00%, and the range is from -0% to 16%

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.



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.

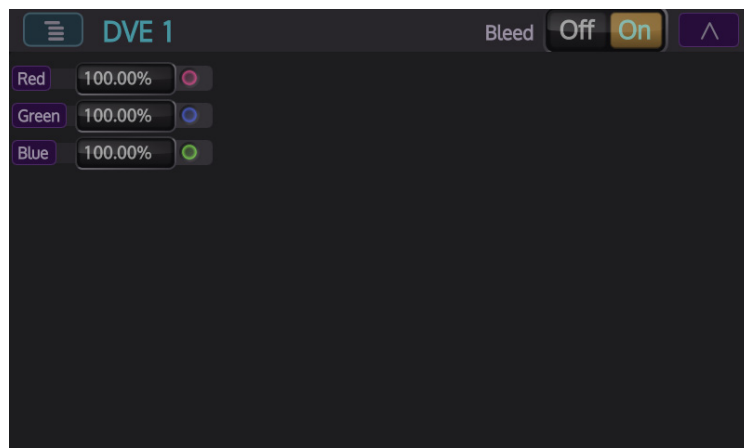
Gain - parameters control the White Level or highlights, where brighter colors become brighter or darker; depending on the adjustment made.

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.



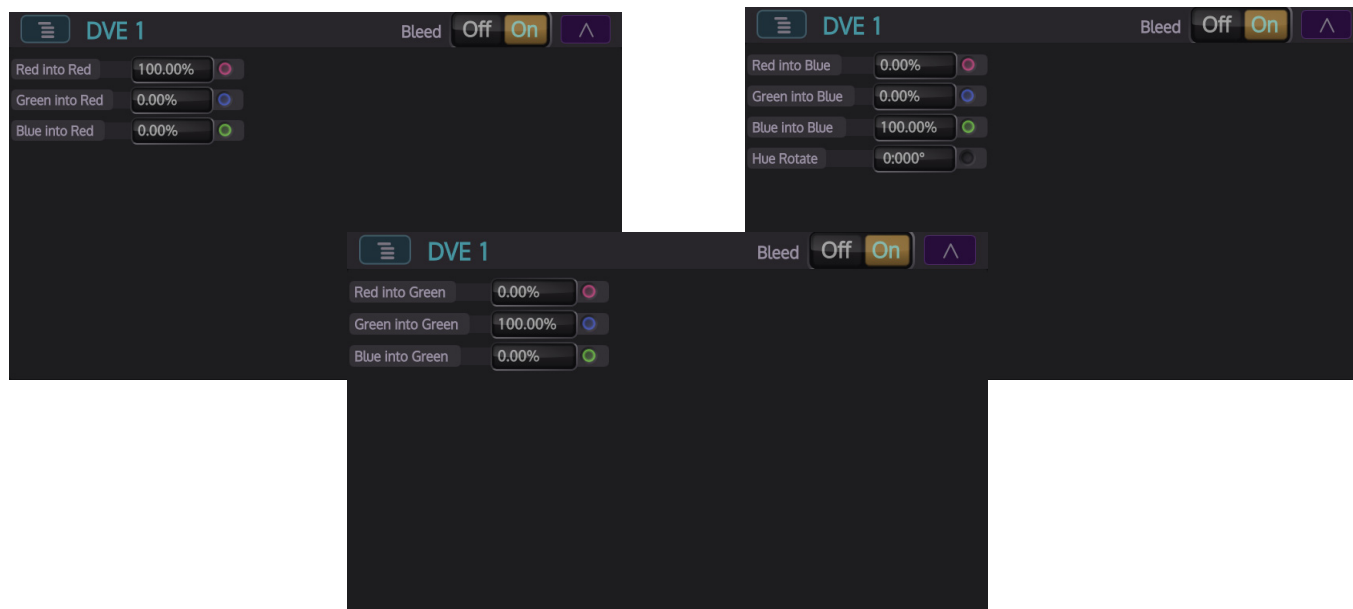
DVE Model - Bleed

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

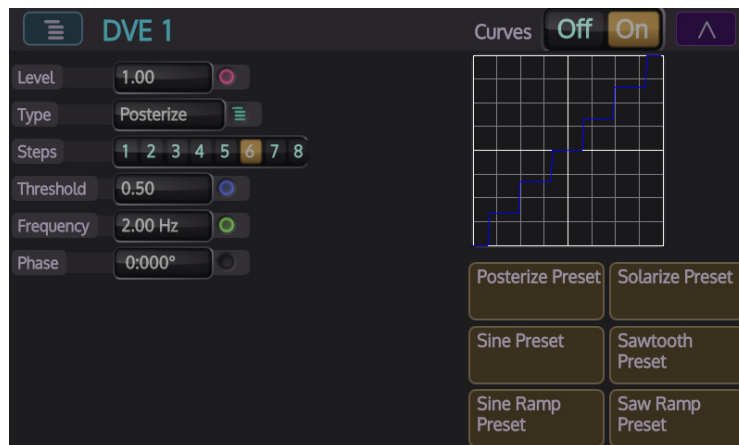


The adjustments are measured on a -100% to a +100% scale. Each parameter menu will adjust a single color, i.e. red into red, green into red and blue into red. These changes are also reflected graphically in the RGB bar graphs above the parameter sets.

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.



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.



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.

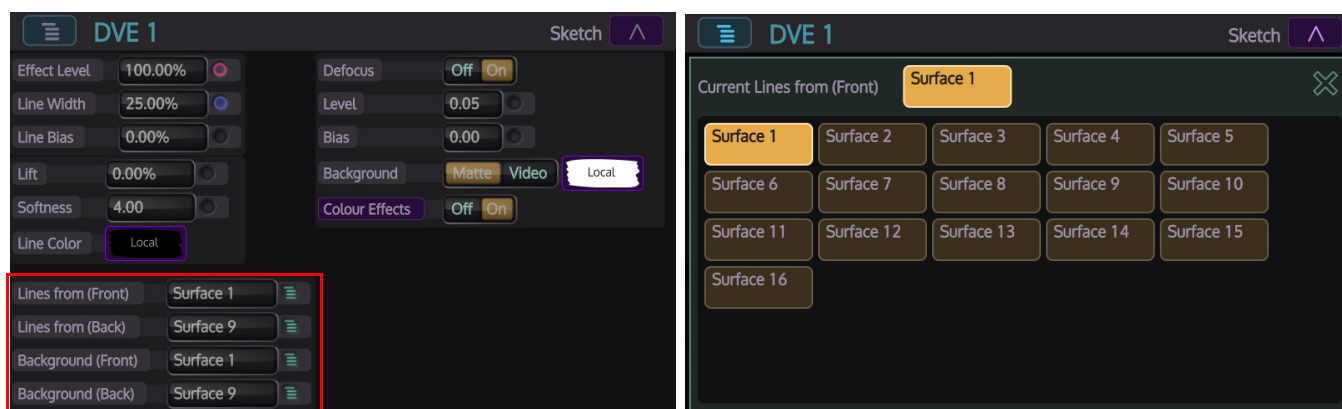
Sepia - sets the chroma saturation to zero removing the chroma content, then adds positive portions of Red and Green and a negative portion of Blue to make-up a sepia appearance.

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.

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.

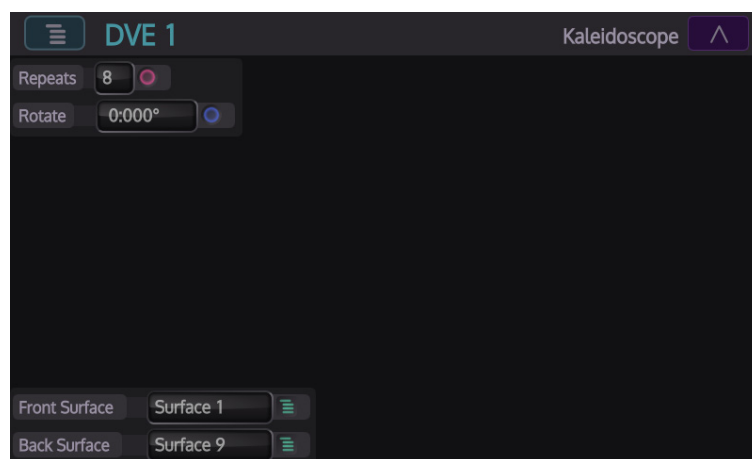
Note: To change the DVE models Size, Position and Rotation, please see the DVE Model Transform (Pre and Main) section of this manual.



Original DVE Source



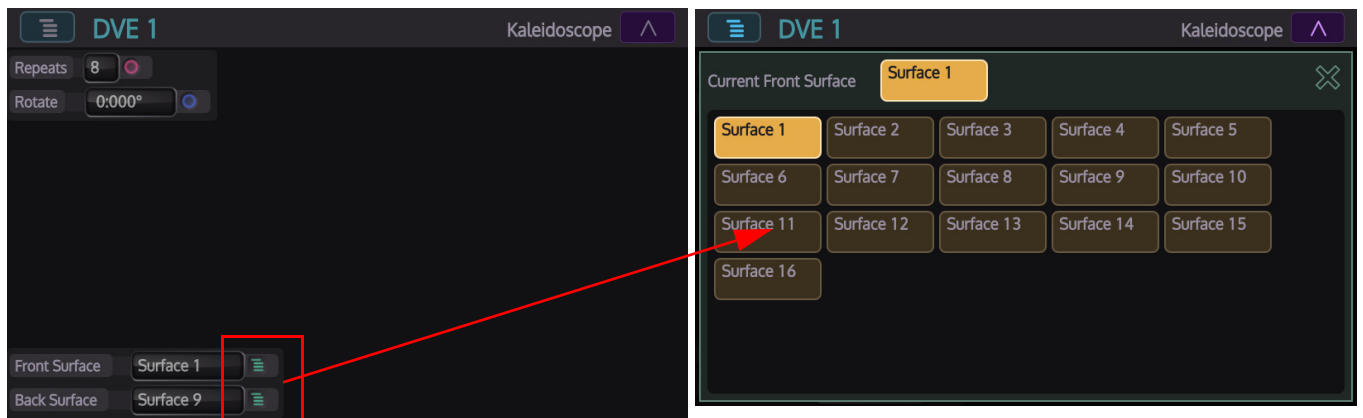
DVE Source with Kaleidoscope Turned On



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



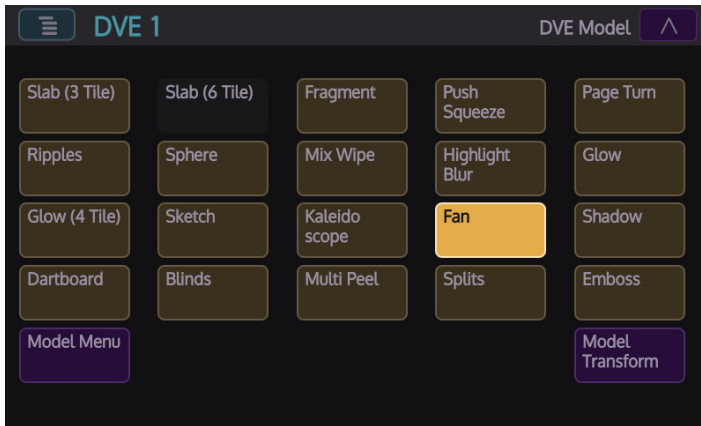
Front - selects the source for the front surface.

Back - selects the source for the back surface.

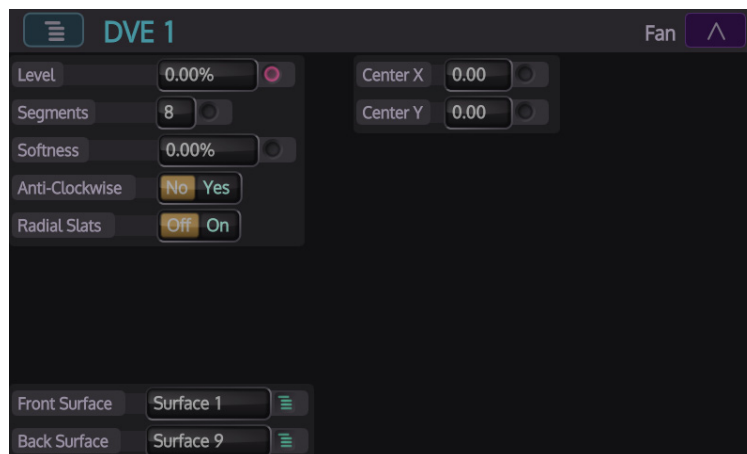
DVE Model - Fan

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



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

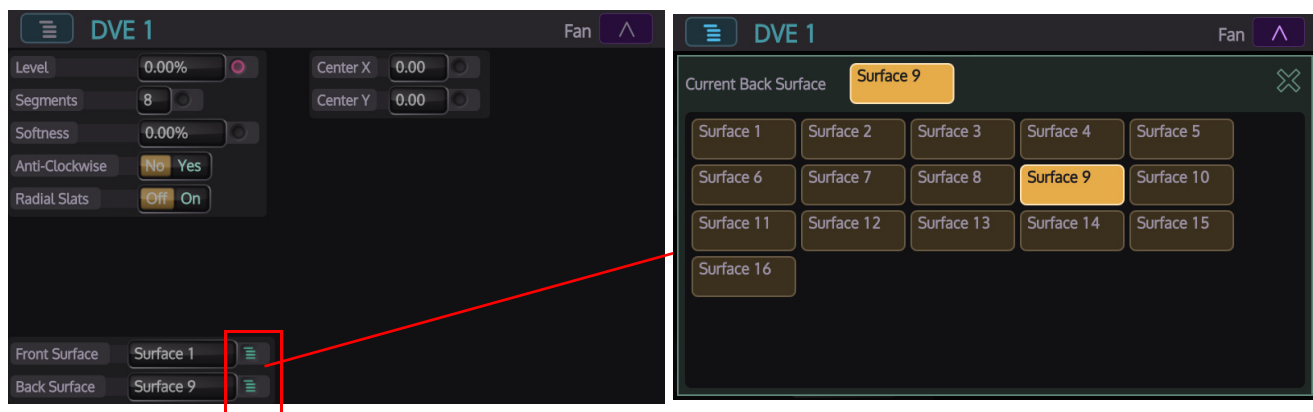
Radial Slats - give the effect that the tile is being rotated and causes the Fan to break up into sections and reveal the image or surface in the background



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

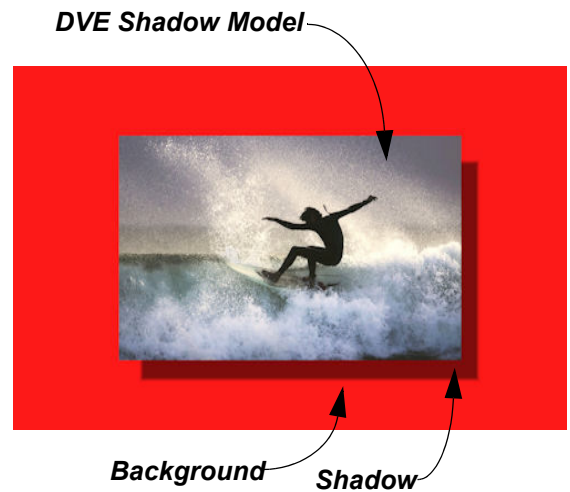


Front Surface - selects front surfaces 1 to 16

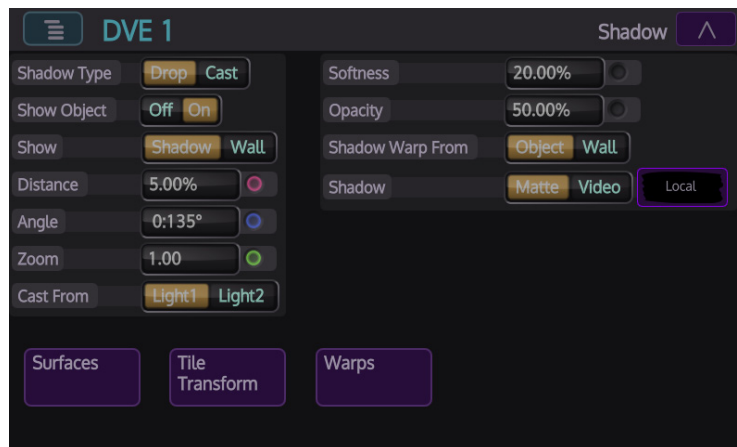
Back Surface - selects back surfaces 1 to 16

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.



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.

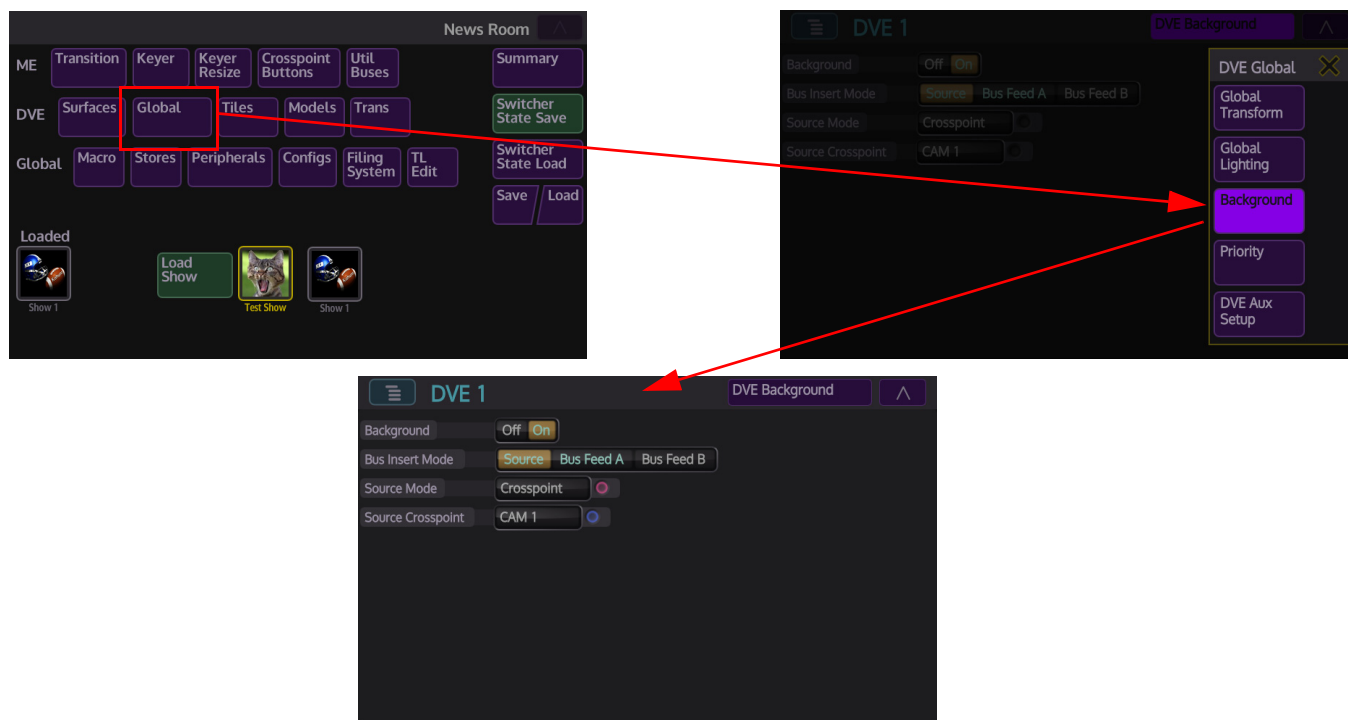
Cast Shadow Type the software projects a real shadow from the surface's light source, over the object onto the wall.

Note: The parameter adjustments made in the "Shadow" menu are either made to an object or the wall the shadow reflects onto.

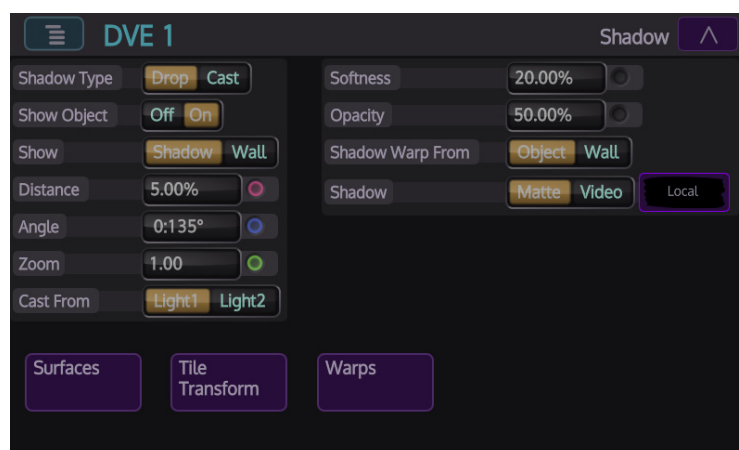
Using Shadow Model

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.



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

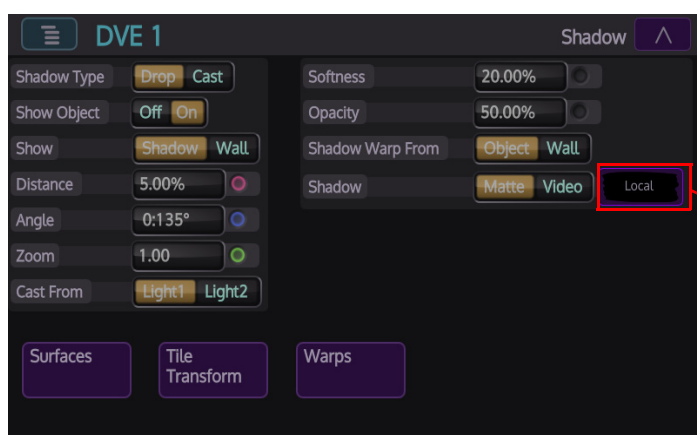
Zoom - this will move the shadow closer to or away from the object, as the shadow moves away it will get smaller, as if moving the object away from the wall.

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.

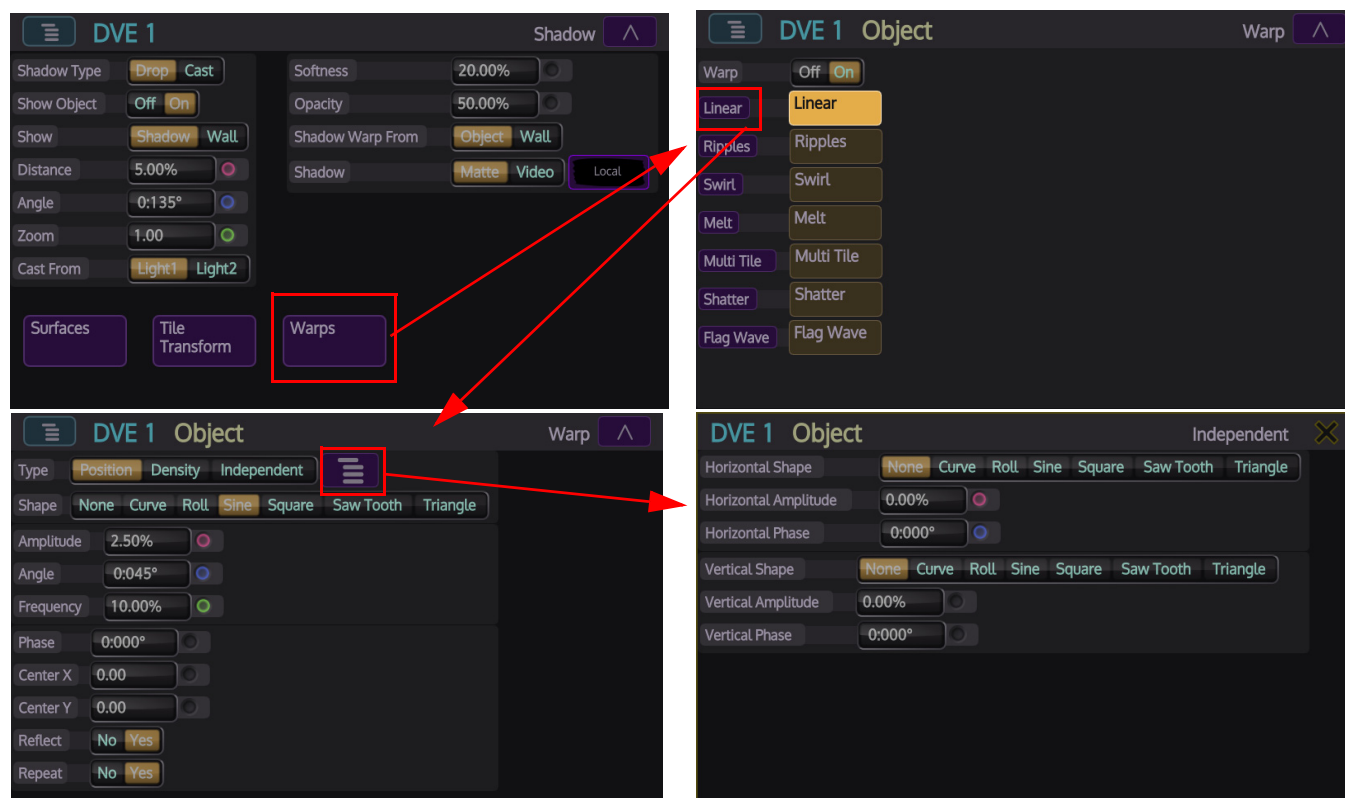
Warp

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" if the warp effects are to affect the wall behind the DVE surface.

Linear

This effect allows 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

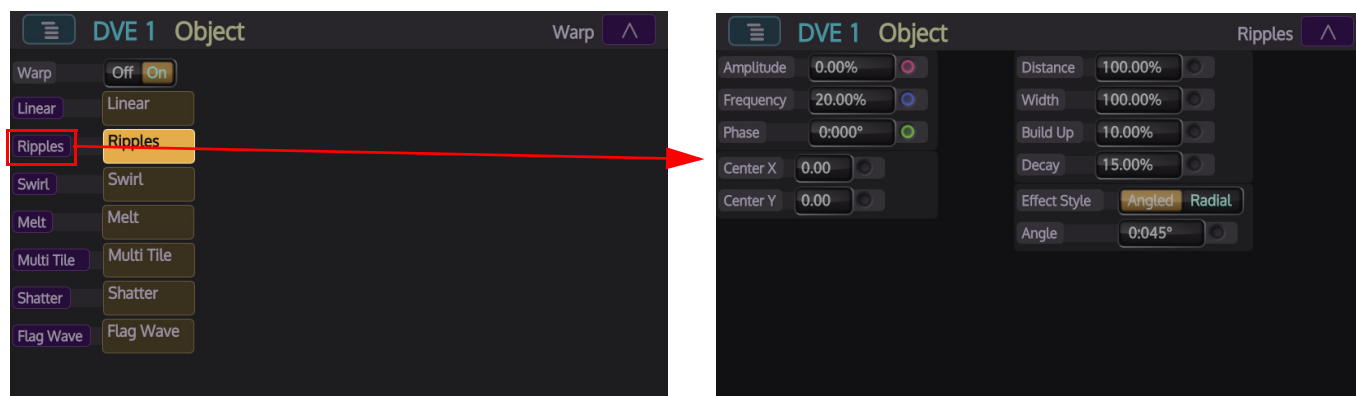
Reflect - when set to Yes applies a warp to the entire tile, when set to No will warp one half of the tile

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 Warp.

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

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

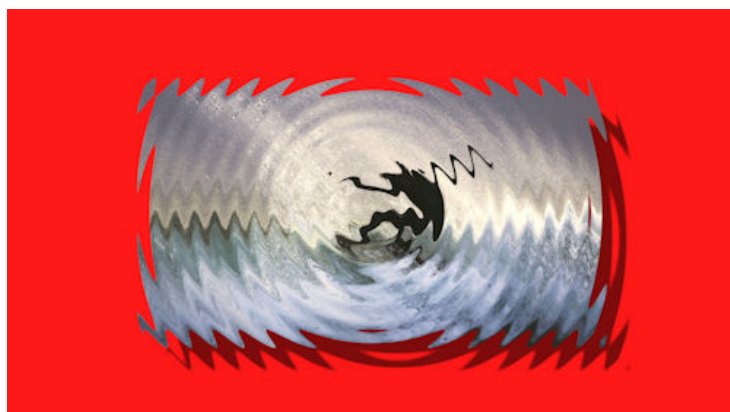
Width - sets the width between the Ripples

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

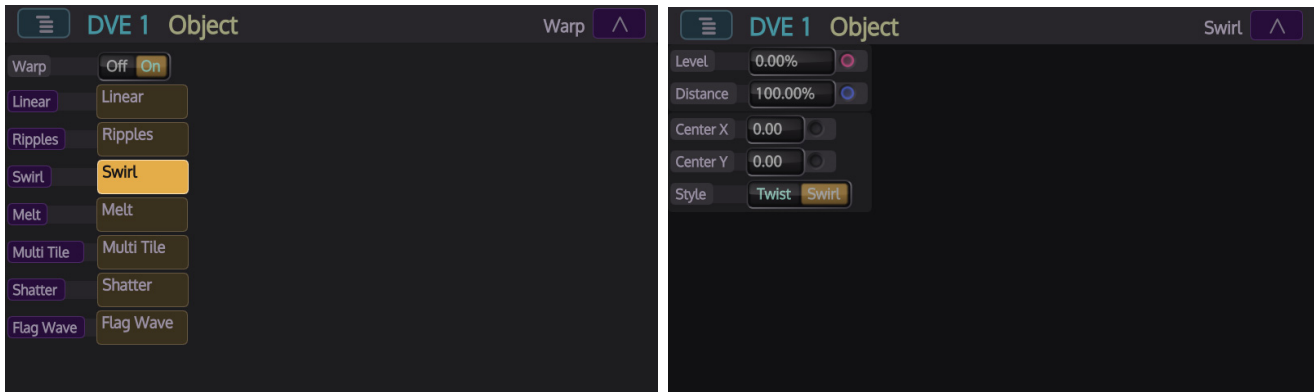
Angle - decides what rotation, if any, is applied to the Ripple.



Ripples Warp with Amplitude and Frequency turned up

Swirl

This adds a Swirl effect to a drop shadow object.



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

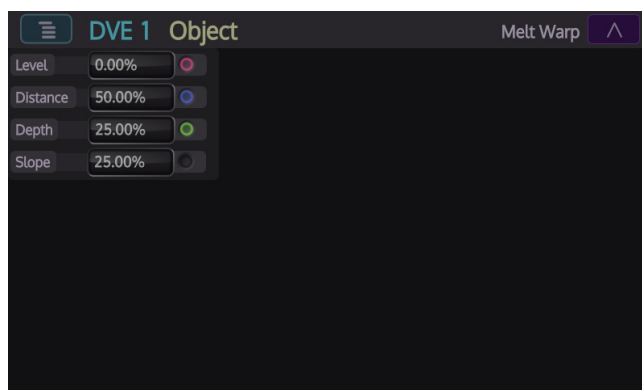
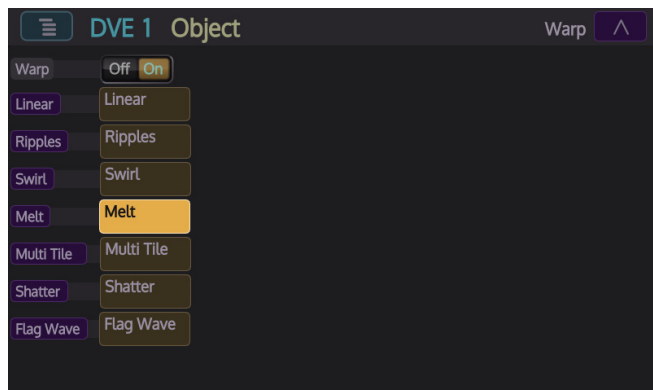
Style - the user has 2 choices, Twist or Swirl effect



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.

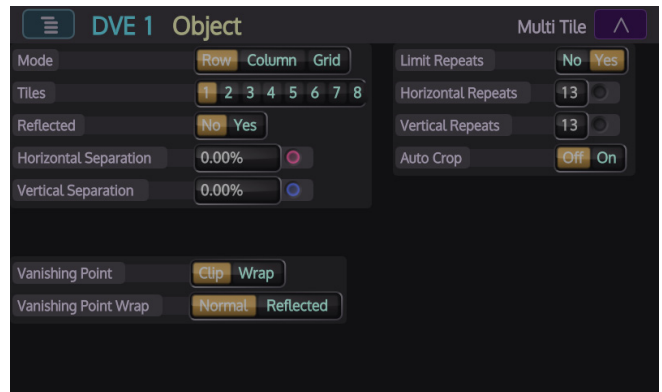
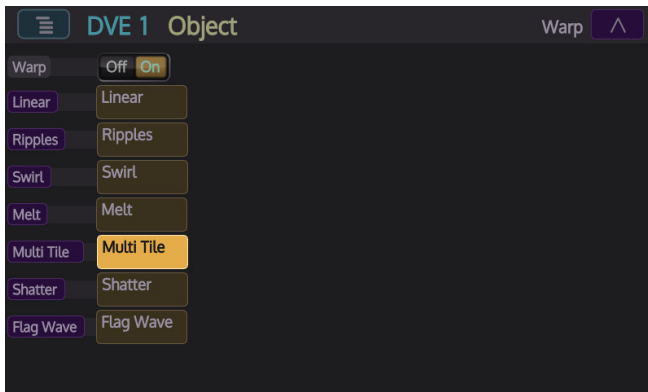
Slope - determines whether the Melt will hold a straight line from the top of the screen or if it will gradually slope down the screen from the left as the percentage of the parameter is increased.



DVE Shadow with Melt Warp Effect

Multi Tile

This menu allows a selection of multiple tile DVE effects to be displayed.



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



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

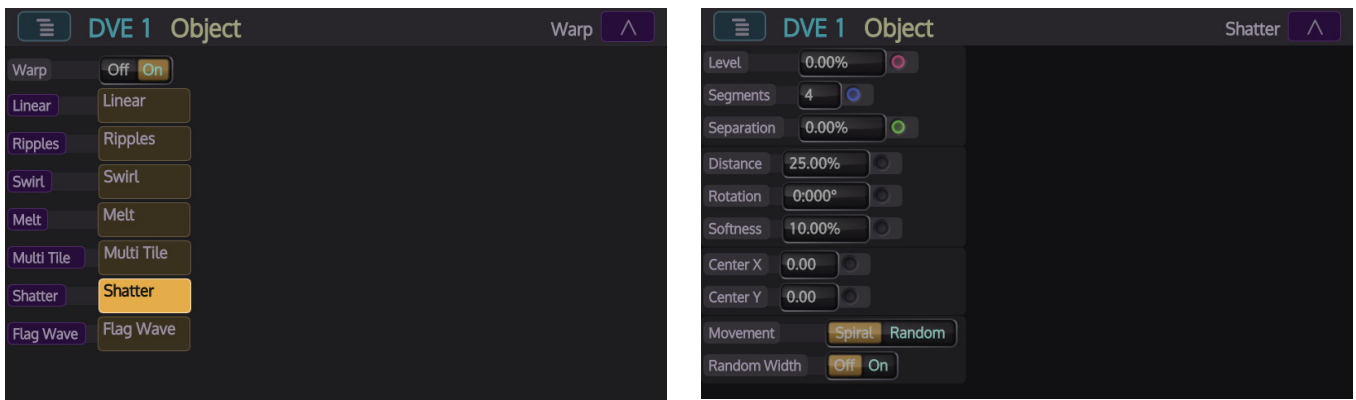
Auto Crop - will automatically crop to make sure multi tiles fit within the tile space



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.



Level - controls the level of the shatter from no shatter to entirely shattered into the pre-determined 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

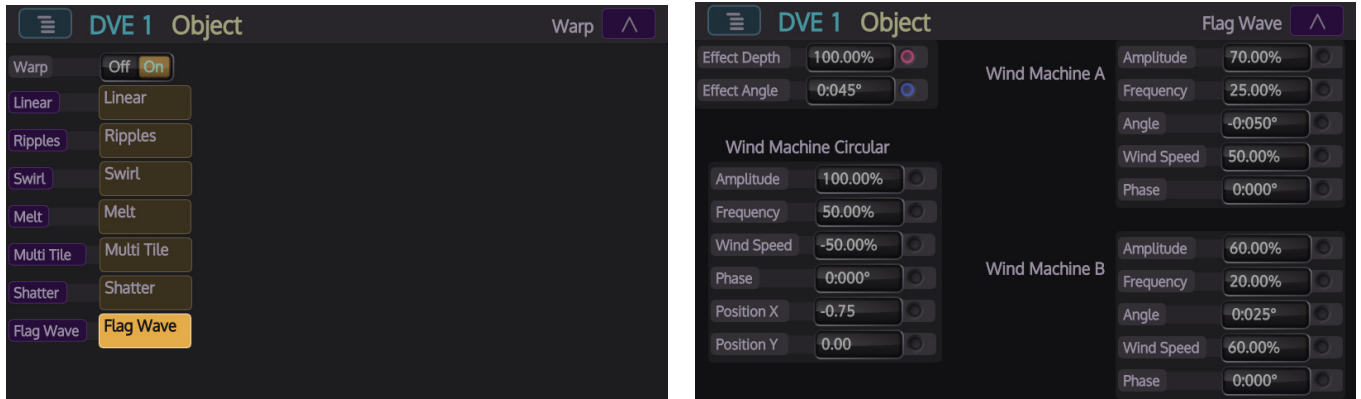
Movement - draws segments from the center, in a non concentric pattern

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.



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



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

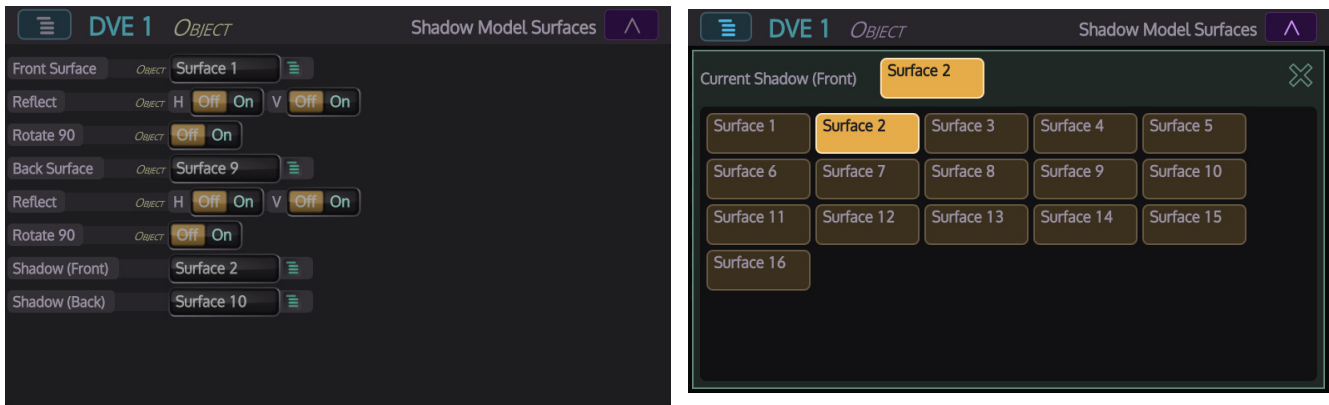
Wind Speed - this adjusts the wind speed and wind direction, the preset level is left to right at 50%, if the parameter is changed to +100% the wind direction is from right to left at maximum speed

Phase - adjusts the warp starting point within the 'circular shape cycle'



DVE Shadow Model with Warp Flag Wave

Surface Parameters



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

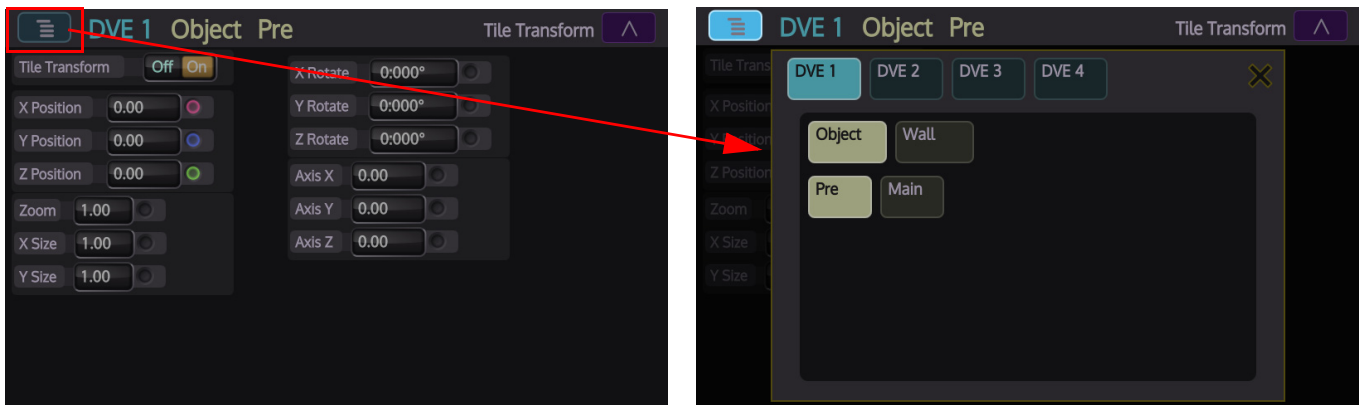
Shadow

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

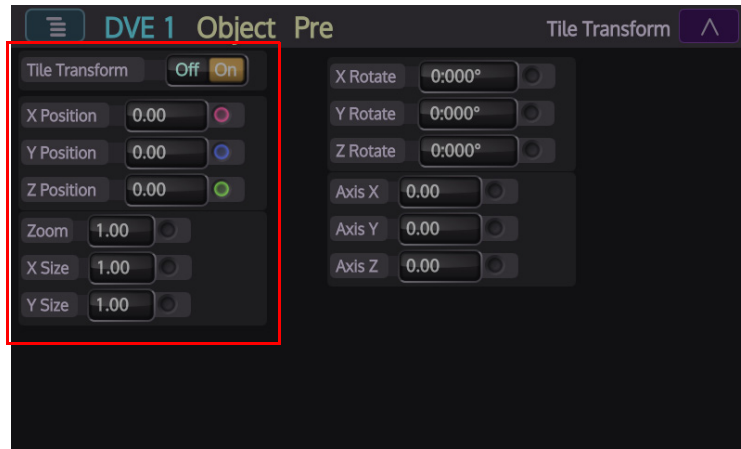
always move around its own axis, again, think of it as the Earth being the tile, spinning around its own axis but can be moved away from the Sun, by the parameter controls.

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.



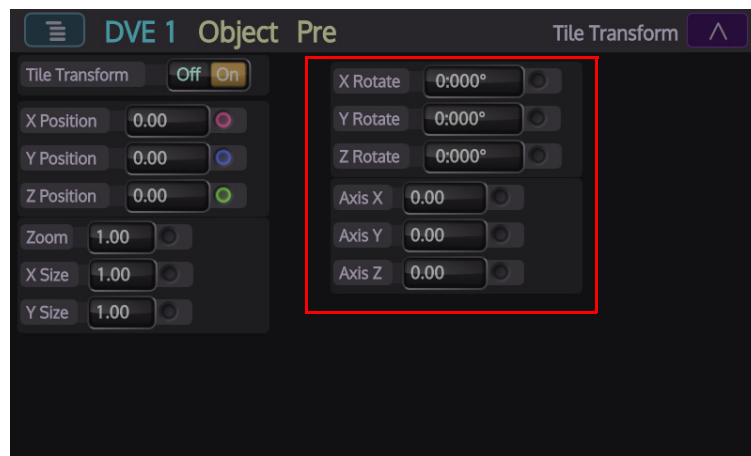
X, Y, Z Position - will move the position of the tile around the center of the axis

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.



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.

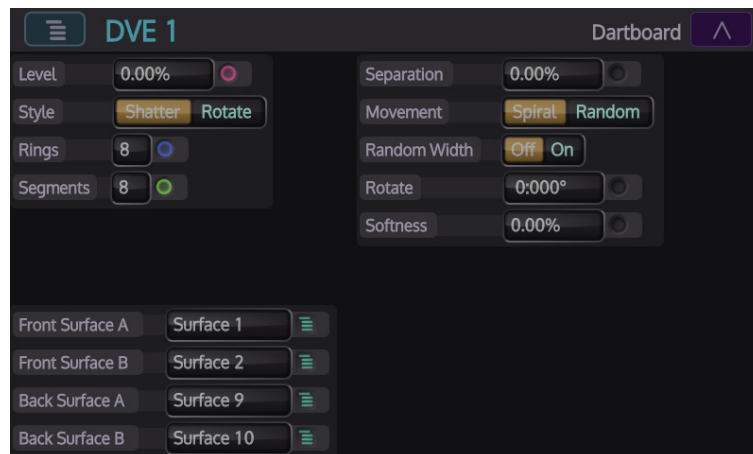
Note: To change the DVE models Size, Position and Rotation, please see the DVE Model Transform (Pre and Main) section of this manual.



DVE Dartboard Model - Rotate Style



DVE Dartboard Model - Shatter Style

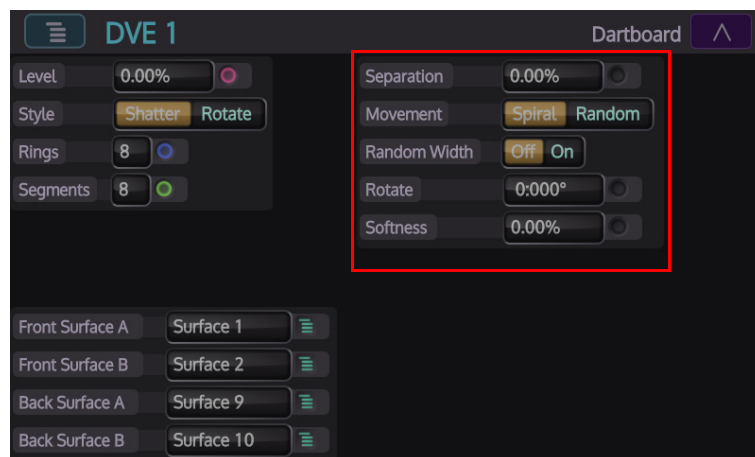


Level - determines the prominence of the dartboard effect on a tile, 0% will display a normal tile, 50% will display half a dartboard effect from the outside of a tile inwards, 100% displays a full dartboard effect

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 is 15 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

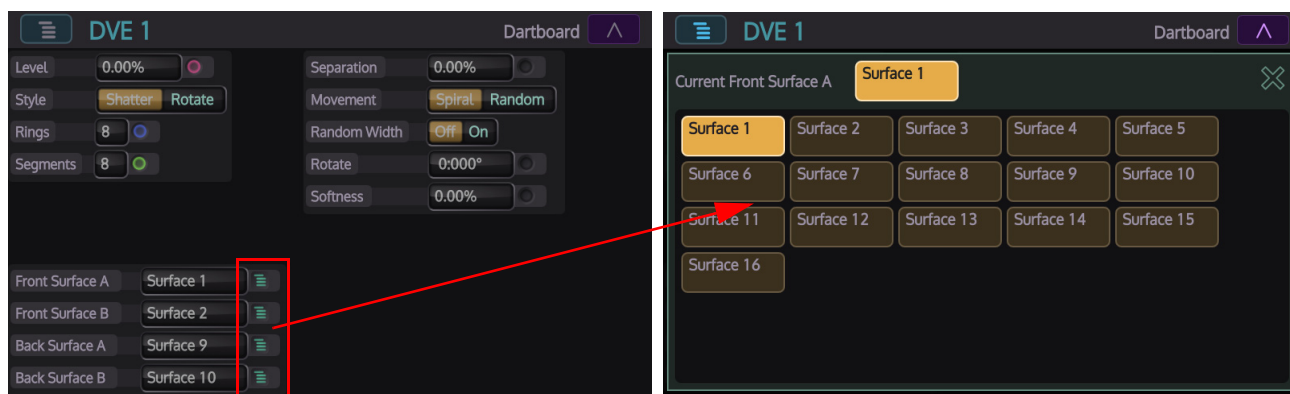
Movement - Spiral when rotated gives a spiral effect, Random makes the segments move in different directions when rotated

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



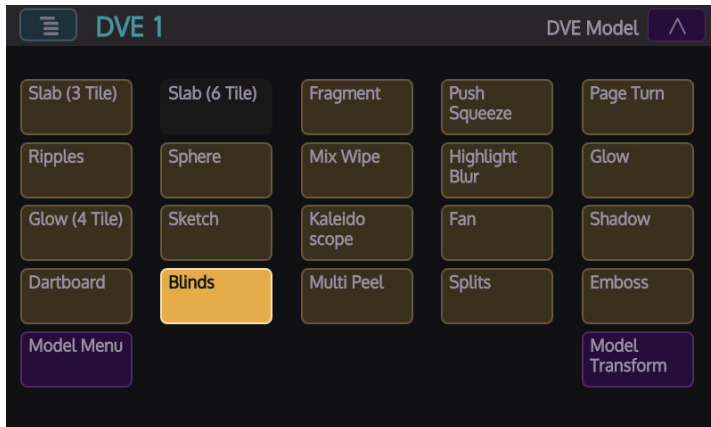
Front Surface A/B - selects the source for surface A and B

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.



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

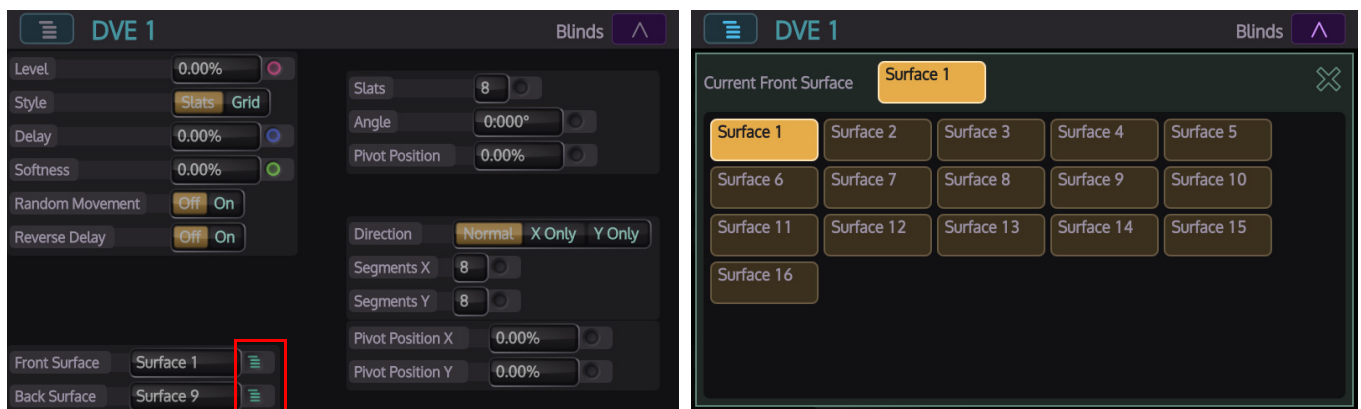
Note: These parameters will only work when the blind style is set to "Grid"

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

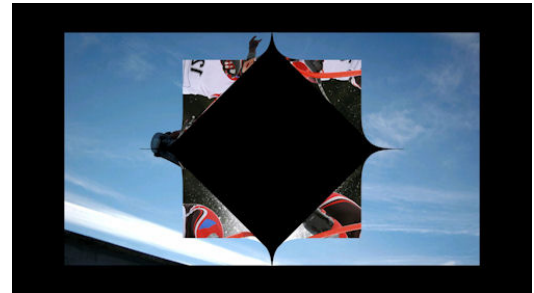
DVE Model - Multi Peel

This DVE model is able to display a “peel back” effect to a tile.

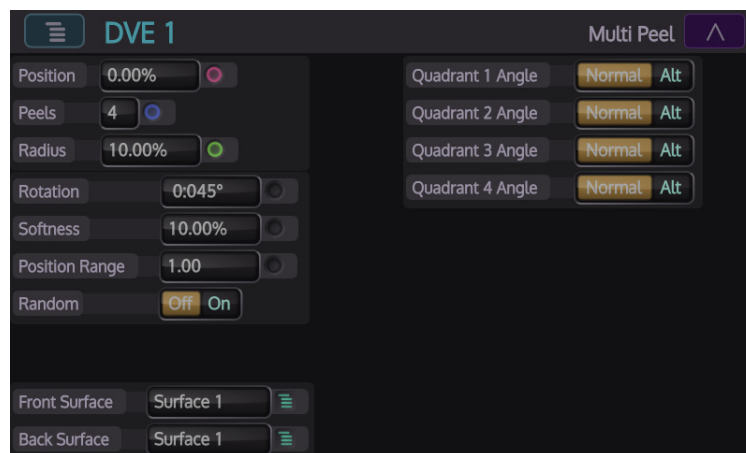
Note: To change the DVE models Size, Position and Rotation, please see the DVE Model Transform (Pre and Main) section of this manual.



DVE Multi Peel model set to 4 peels



DVE Multi Peel set to 8 peels



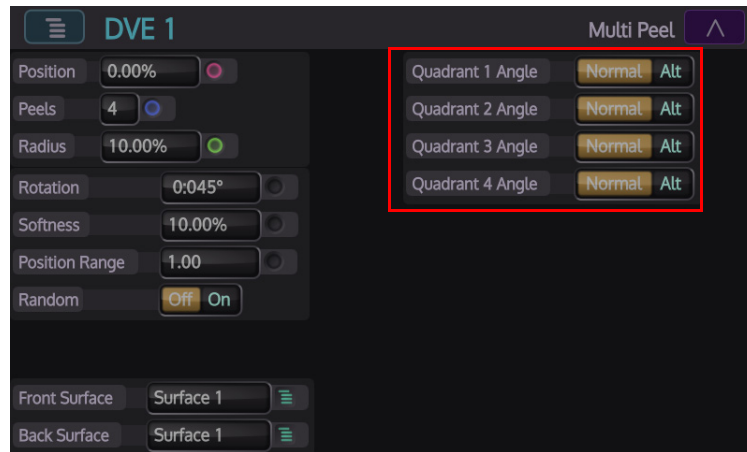
Position - sets the position of the segments being peeled backwards, i.e. how far the segments have been peeled outwards

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



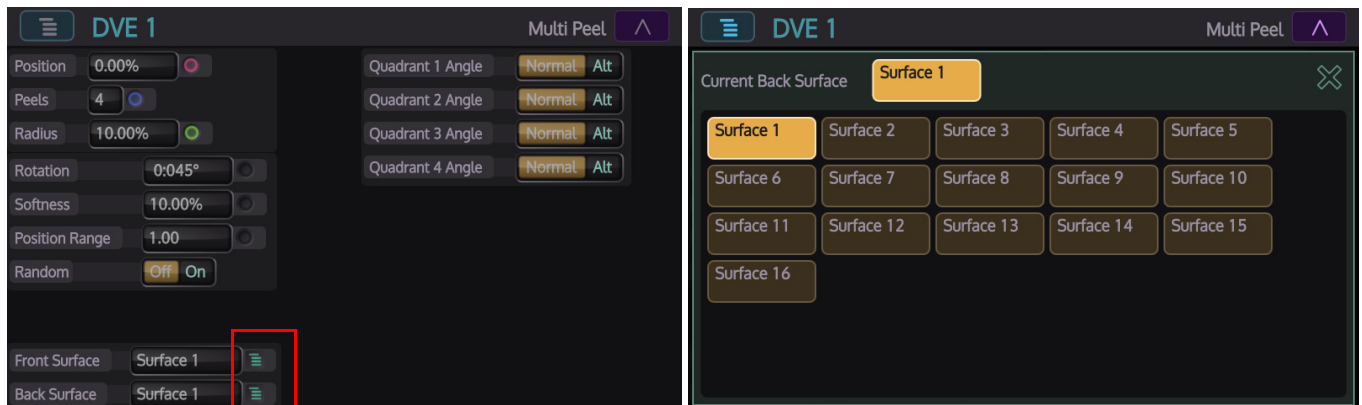
Softness - sets the softness of the edges of the peel

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, and 4 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.

Surface Parameters



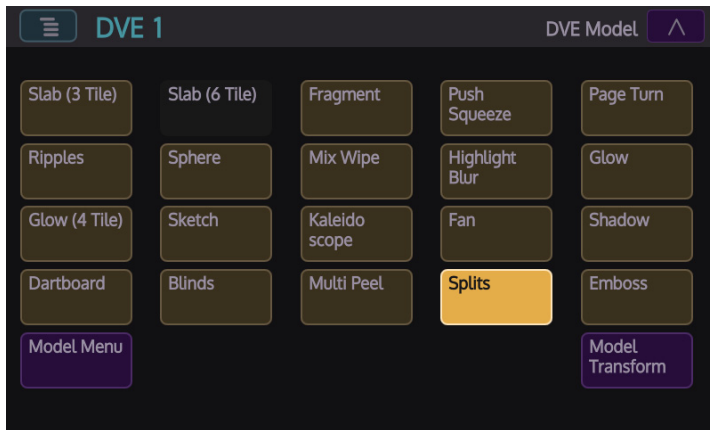
Front Surface - selects the source for the front surface of the model

Back Surface - selects the source for the back surface of the model

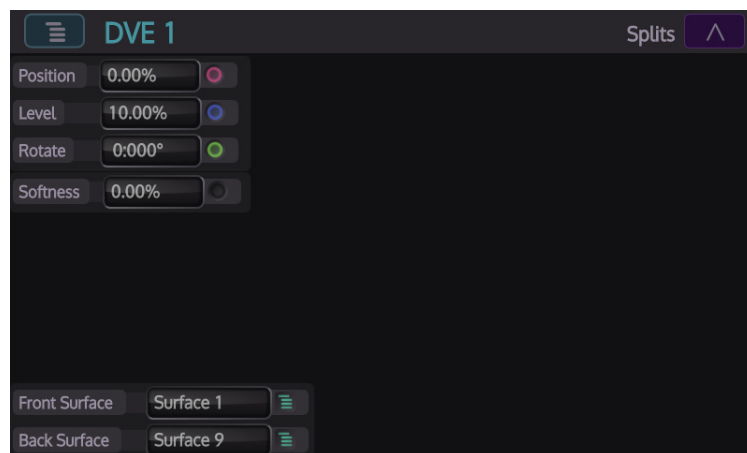
DVE Model - Splits

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)



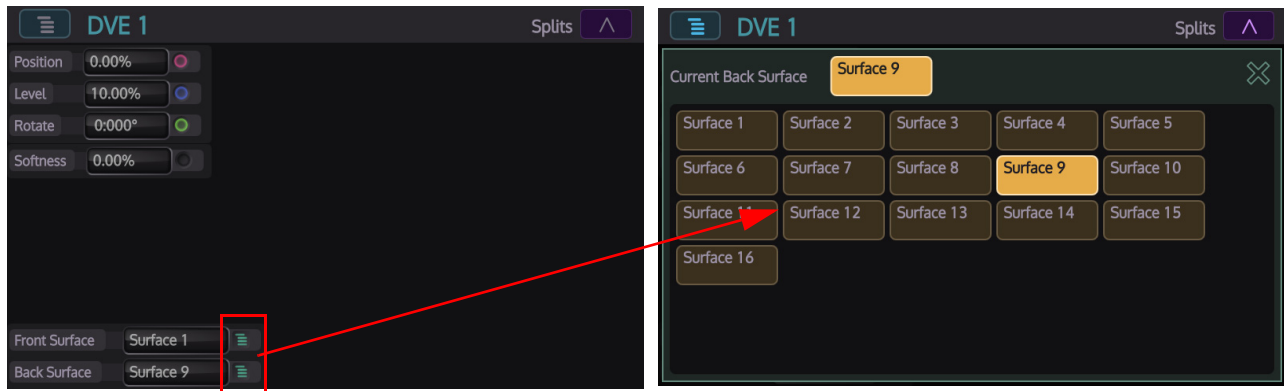
Position - moves the two section of the tile apart, i.e., even strips in one direction and odd strips in the opposite direction.

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

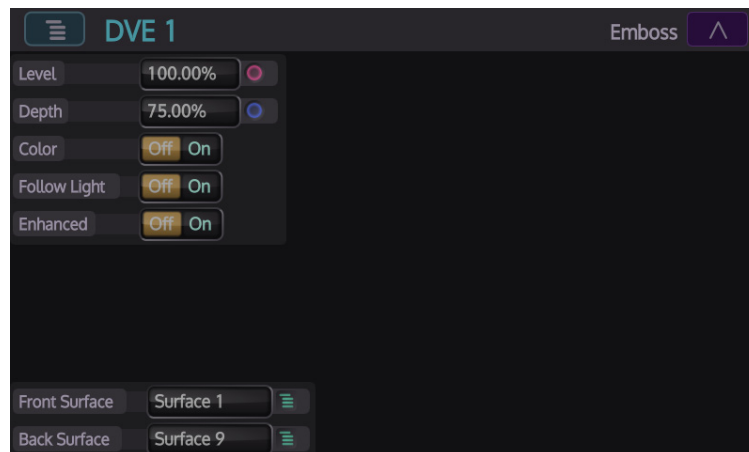
DVE Model - Emboss

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.

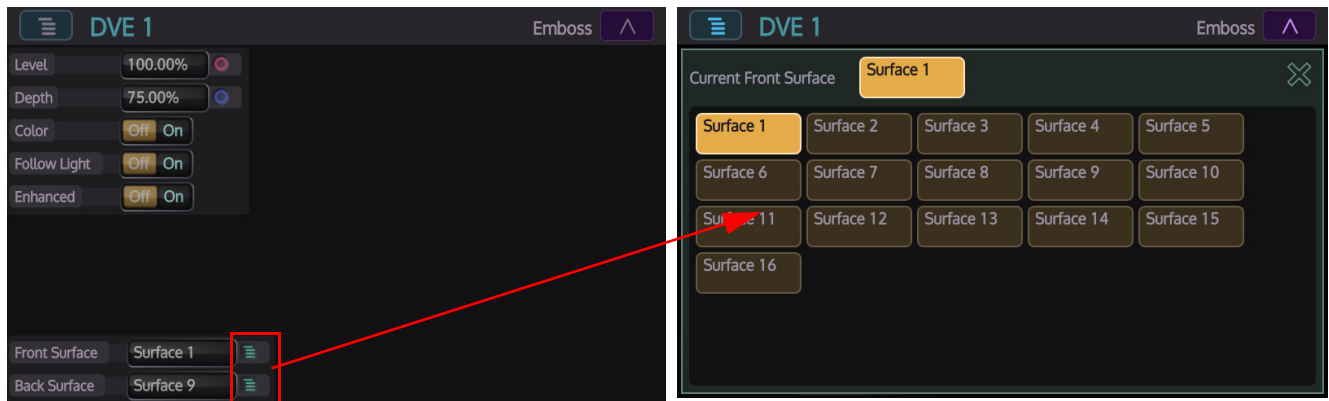
Depth - sets the depth of the emboss and enhance the effect of the raised lines.

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



Front Surface - selects the source for the front surface of the model

Back Surface - selects the source for the back surface of the model

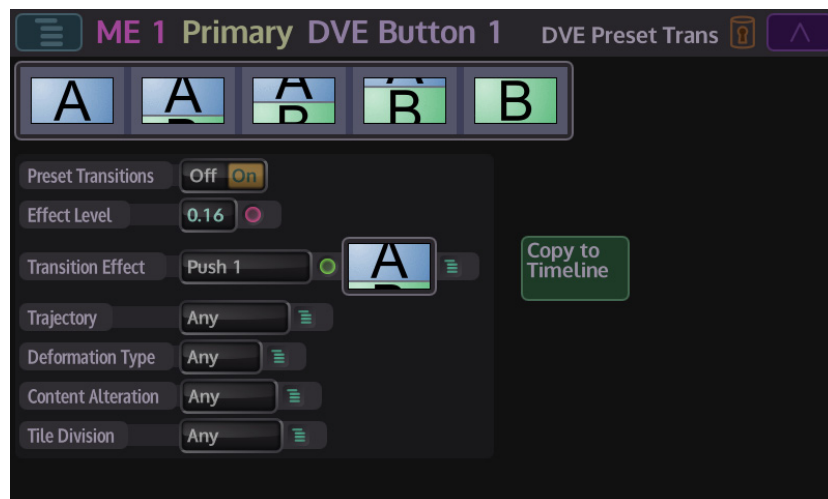
18

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.



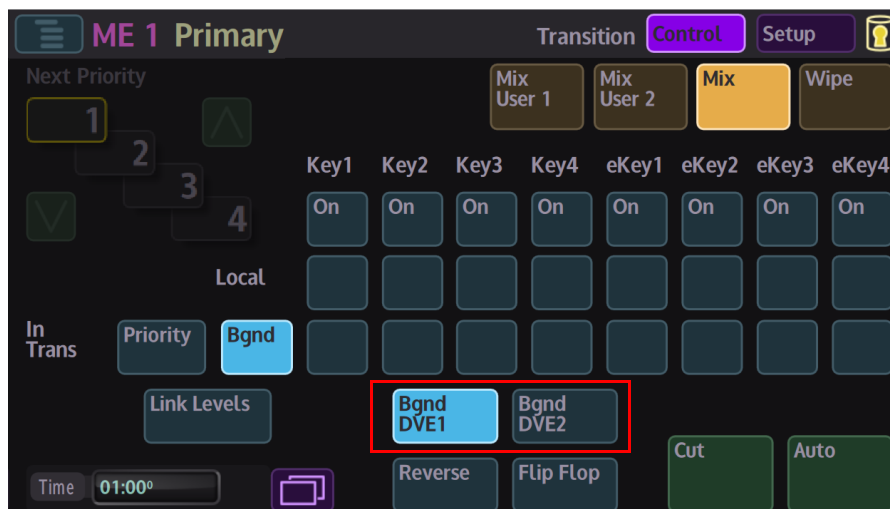
Preset Transitions - turns the option On/Off

Effect Level - turning this parameter control will start the current DVE Trans and run through to the transition finish

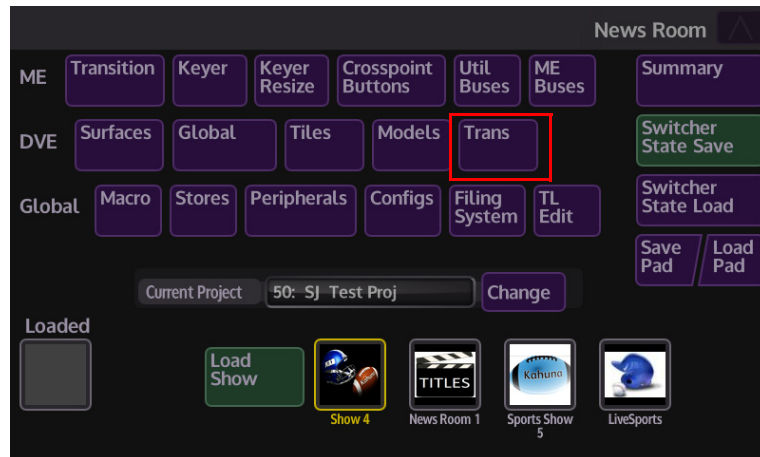
Transition Effect - selects a transition effect from the options in the menu.

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.

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Global - Macros

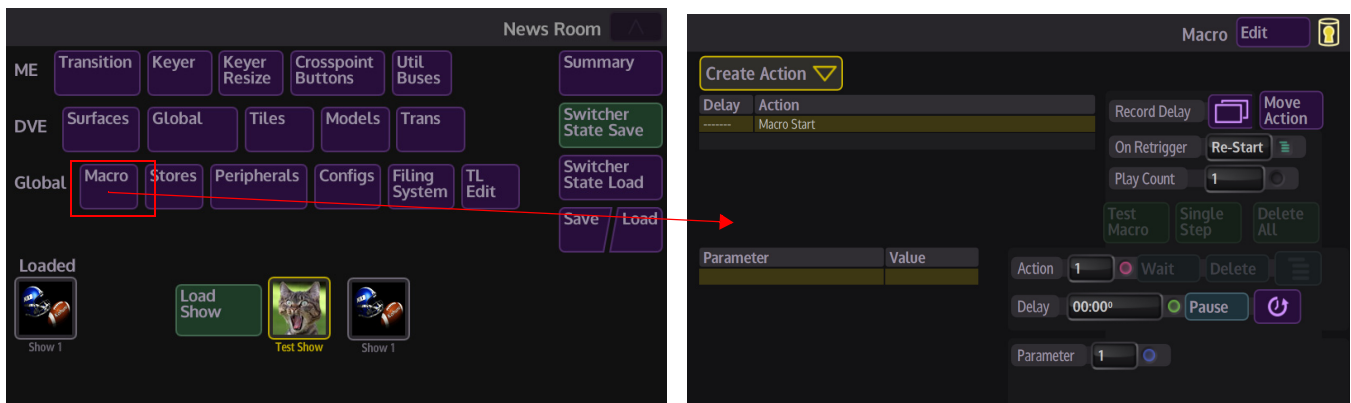
Overview

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.

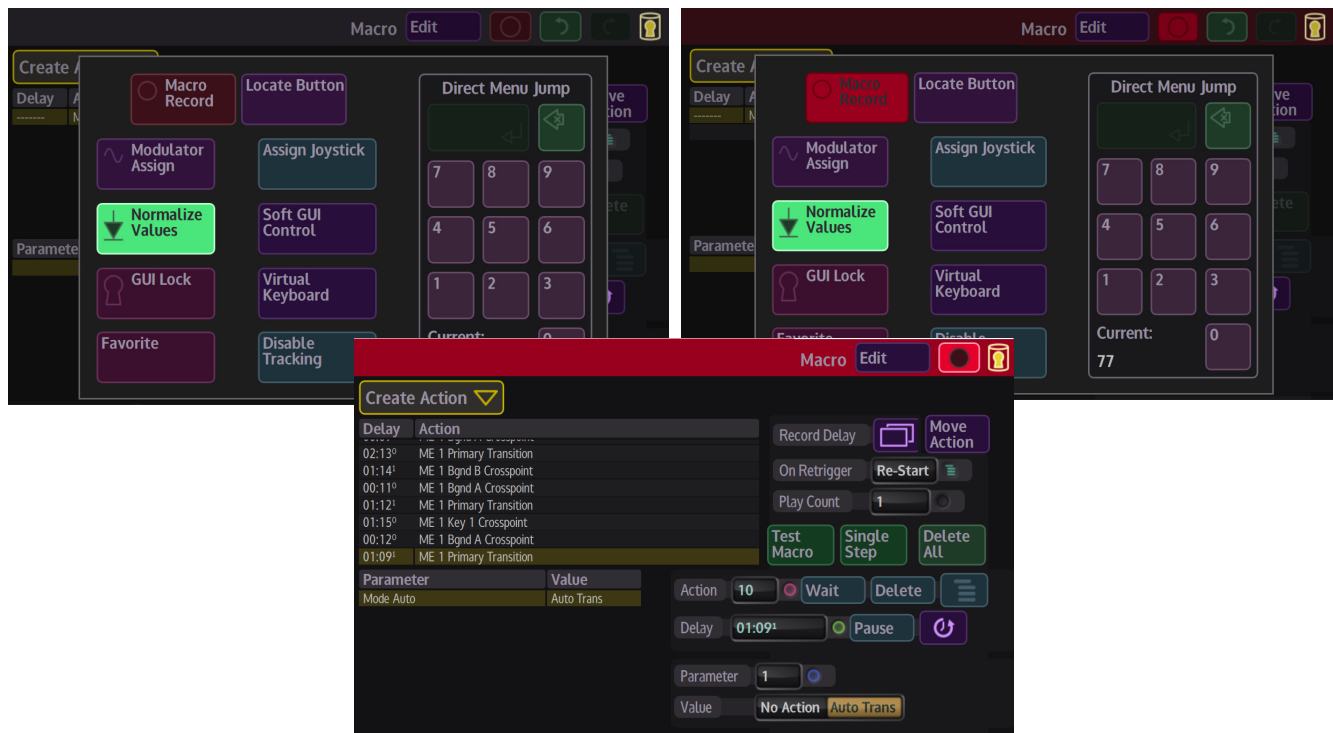


Macros are saved in **Filing System - Macros**, which in-turn are saved into Projects in the **Filing System** (please read the *Filing System* section of the *Kahuna 9600/6400 User Instruction Manual*, the second manual supplied with this system), button functions are assigned within the Panel Config. Although the macros themselves are run and activated in the mainframe the buttons are associated with the Panel Config.

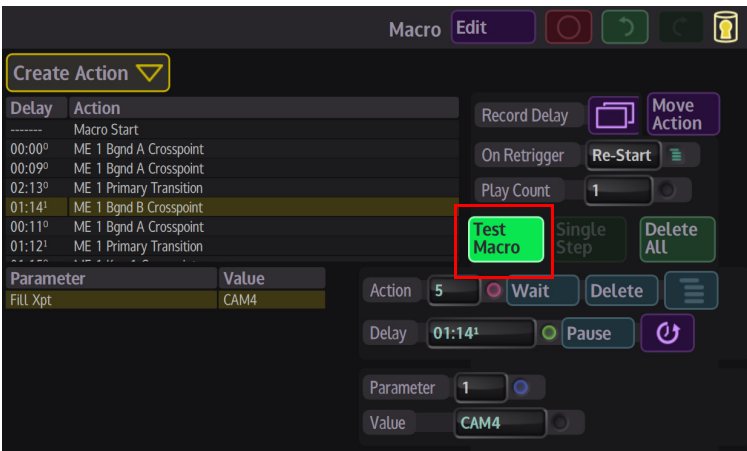
As mentioned earlier, macros are recorded as a sequence of button presses in real time, which in turn are translated into a sequence of actions. The delay between these functions (button presses) can be tested and edited once the recording is completed. Once a macro is running if it is run a second time 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 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 menu-related 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.

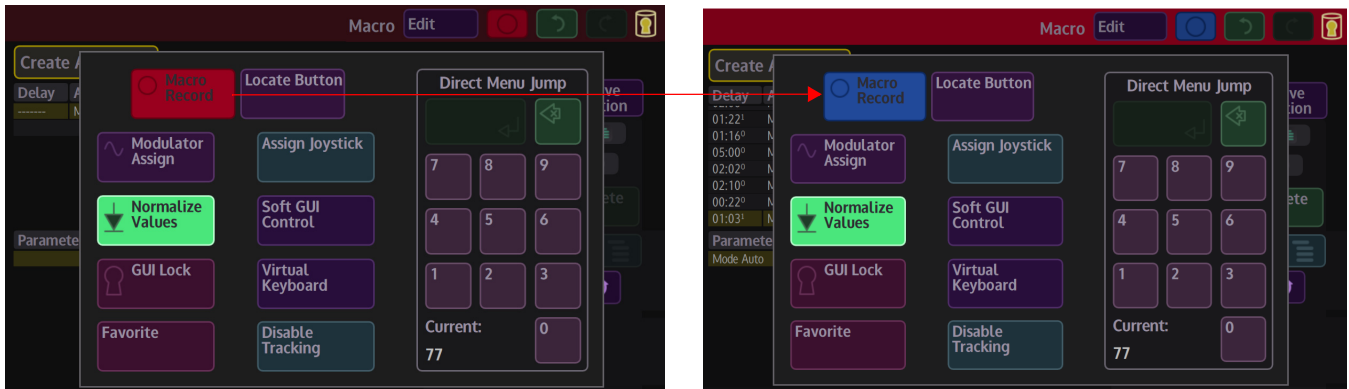


The button press sequence that was recorded in the macro is displayed in the Macro Actions table (shown above). In the **Macro - Edit** menu, press the **{Test Macro}** button to test the macro just recorded.

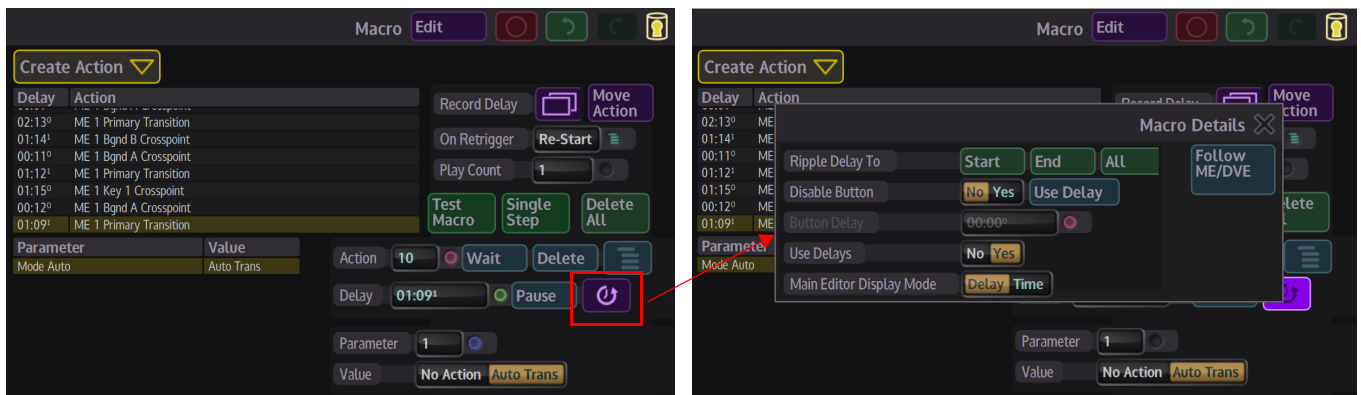
Pausing a Macro During the Record Sequence

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.

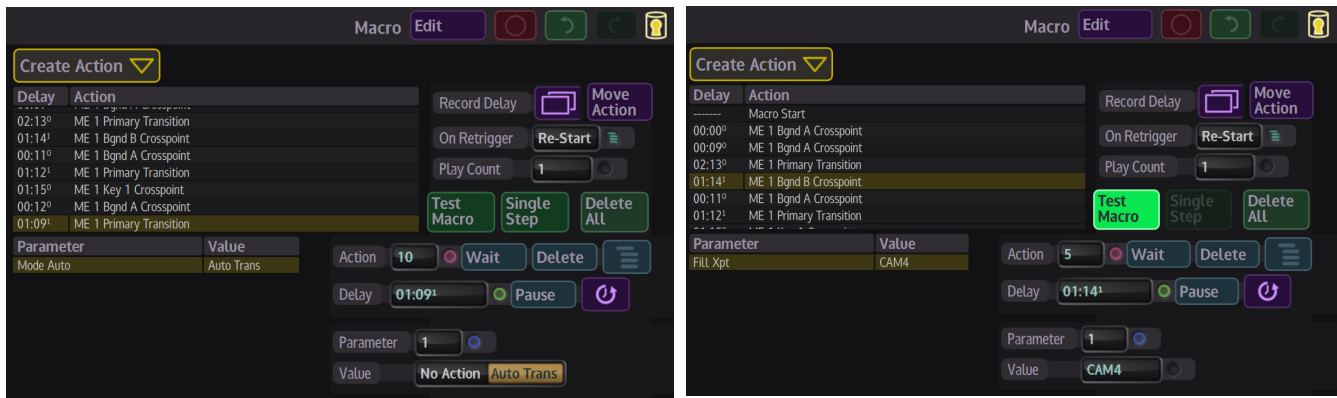
Press the **{Macro Record}** button once, the button will turn red and the record process will start once again.



Note: While a macro is paused, Kahuna can still run multiple other macros at the same time



Macro Test and Edit

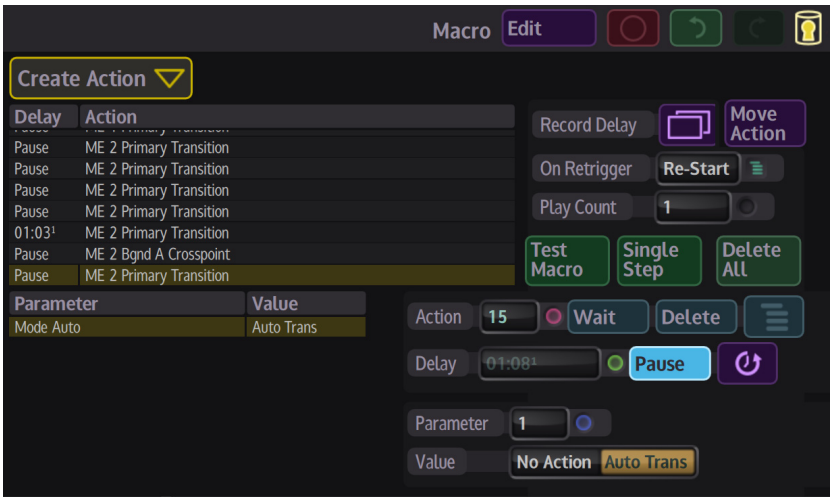


Test Macro

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.



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)

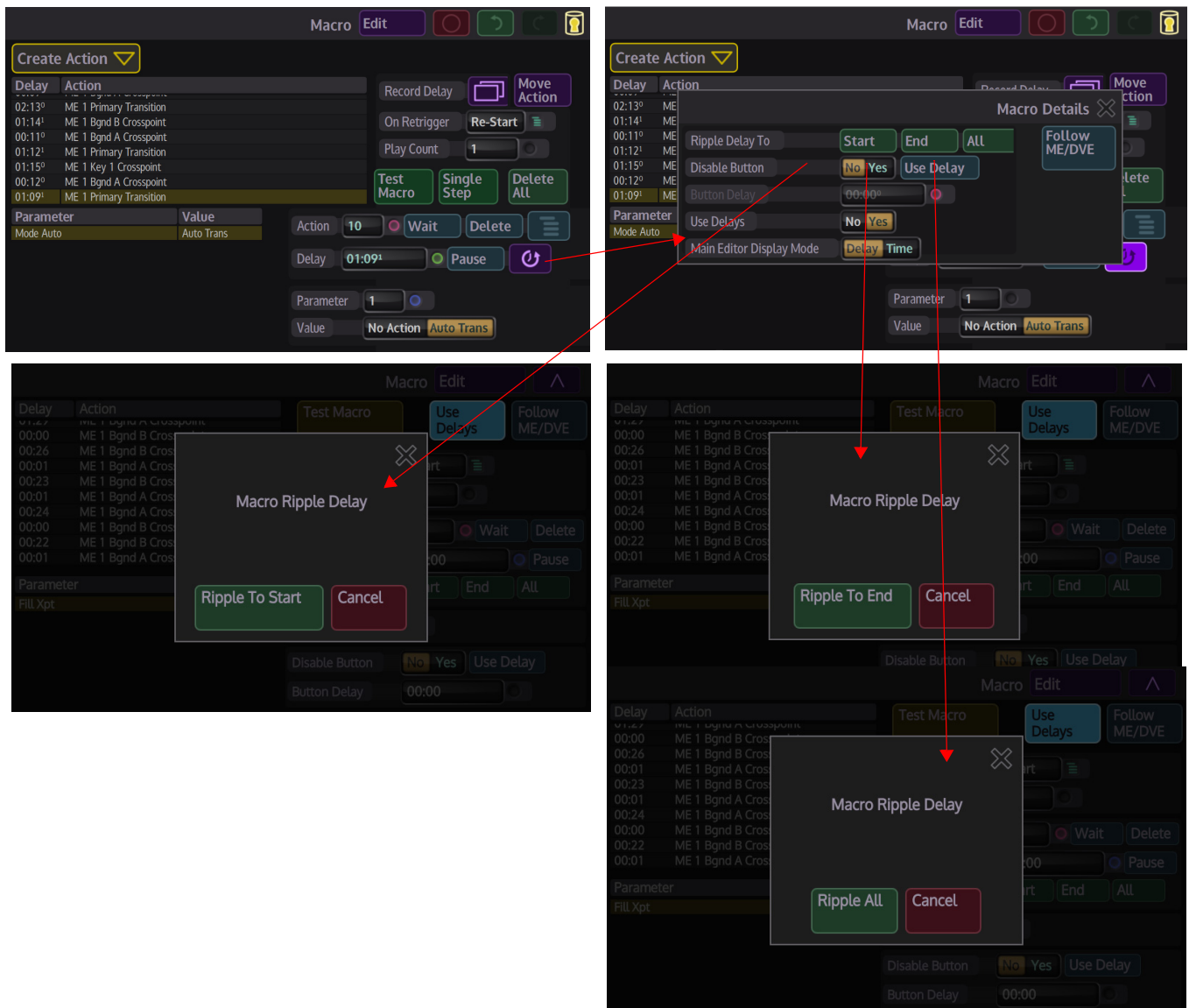
Allows an **Action Delay** that has been set, to be "Rippled" through all Actions in the table from that point onwards.

Pressing the **{Ripple Delay}** button will pop up a Macro Ripple Delay dialog box.

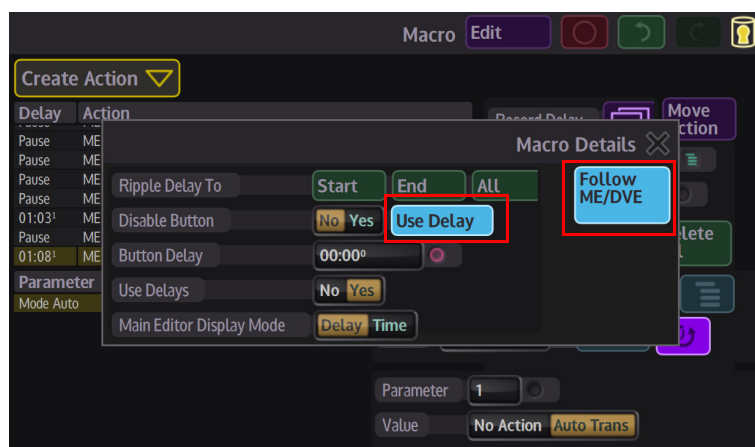
Ripple To Start button will ripple the current delay value to all previous Actions up as far as the first Action in the table

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

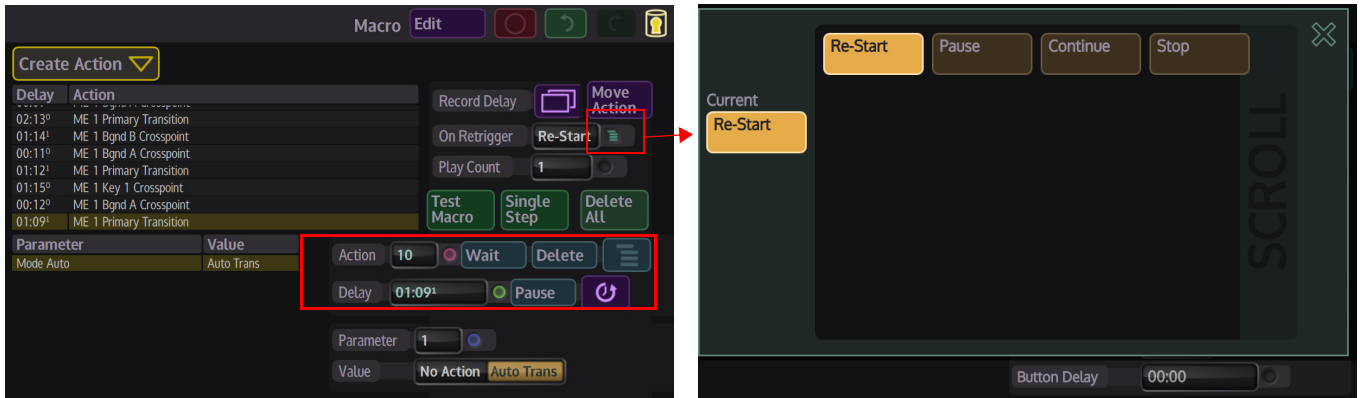


Use Delays - this function turns the real-time button press delays On or Off.

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.

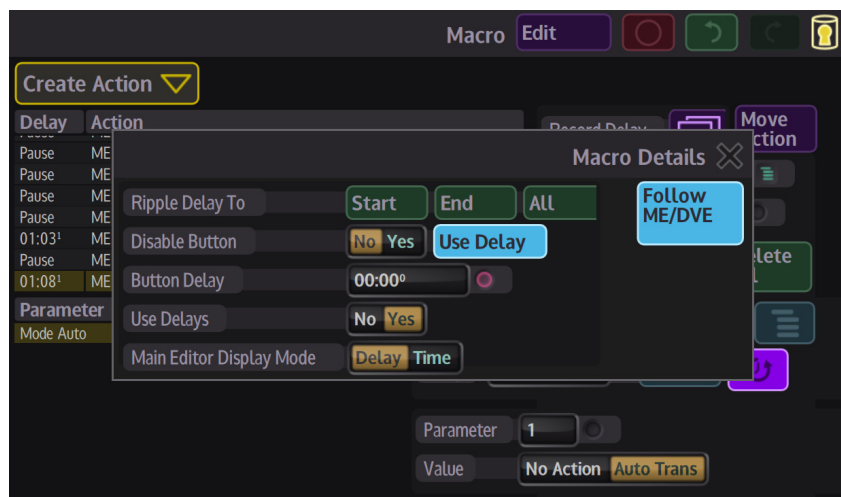


On Re-Trigger - this will set the action after a Macro has been re-triggered, and selects between Re-Start, Pause, Ignore and Stop.

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.



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.

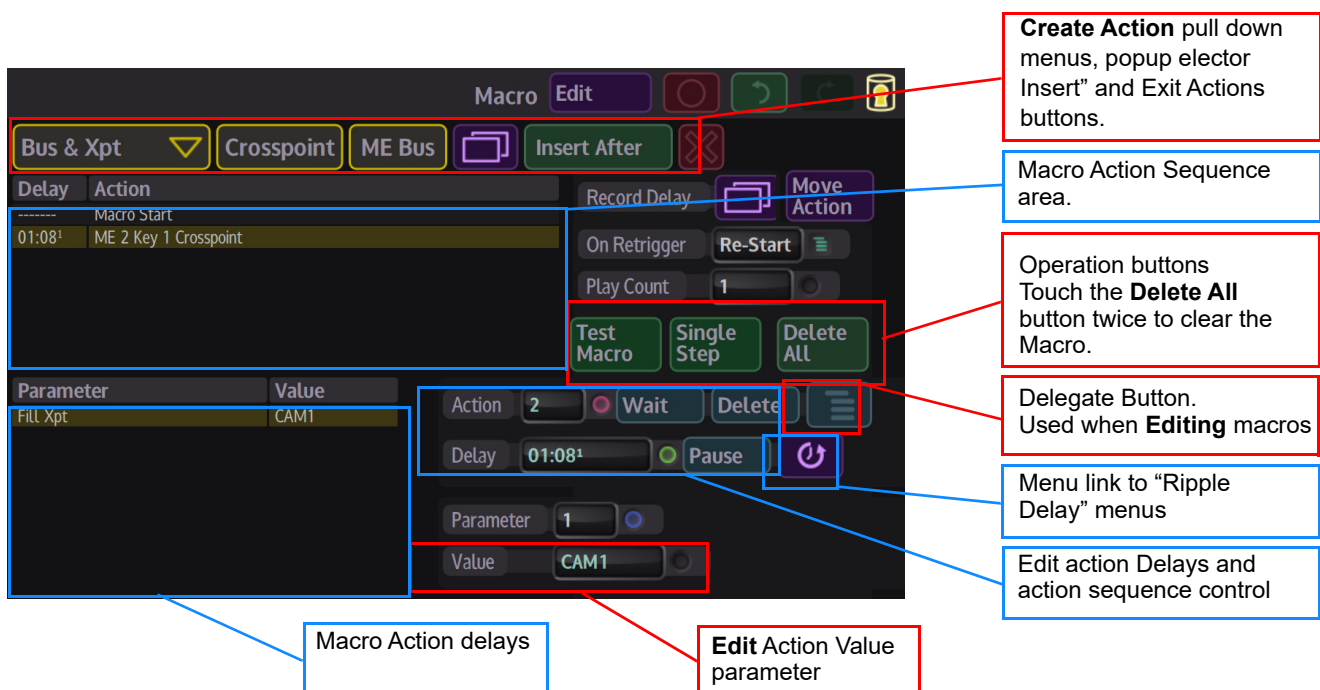
Offline Macro Editor

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 through 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.



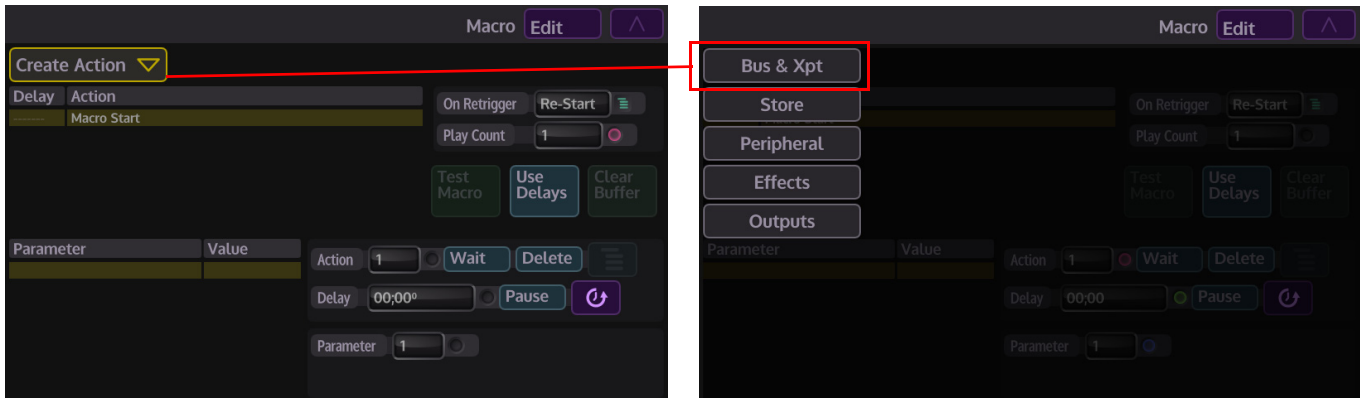
Creating a Macro “Offline”

The following example will go through the steps of making an “**Offline**” macro for a simple animated transition.

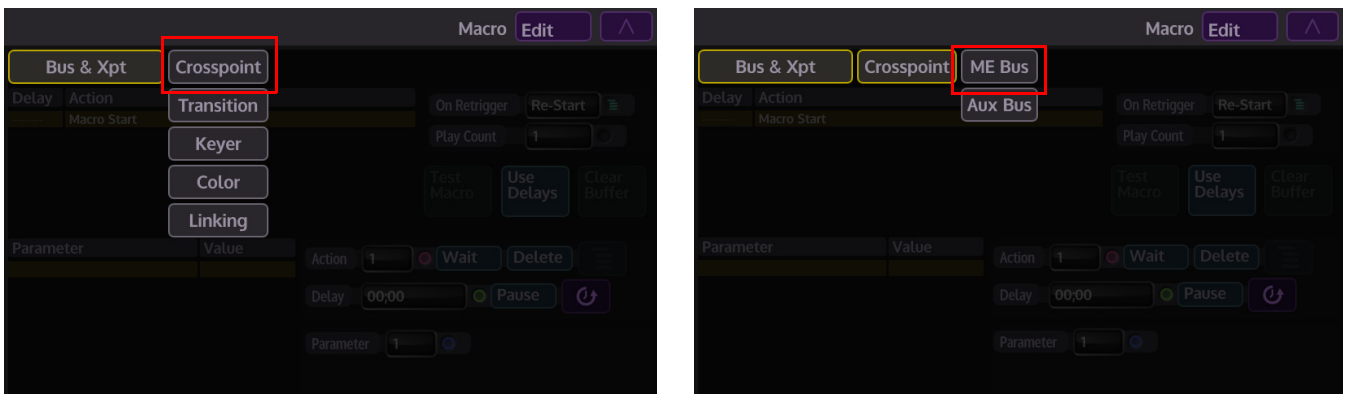
Prior to creating the macro, the Key/Fill portions of the animated clip were coupled into Stores 9 and 10 and setup on the control surface.

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.

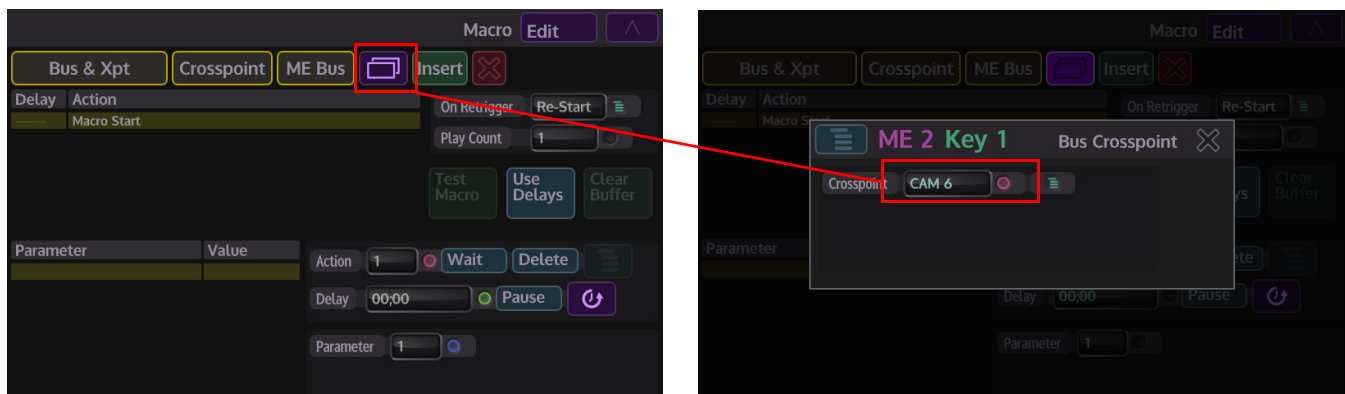
Step 1 - Change Xpt to a different background.



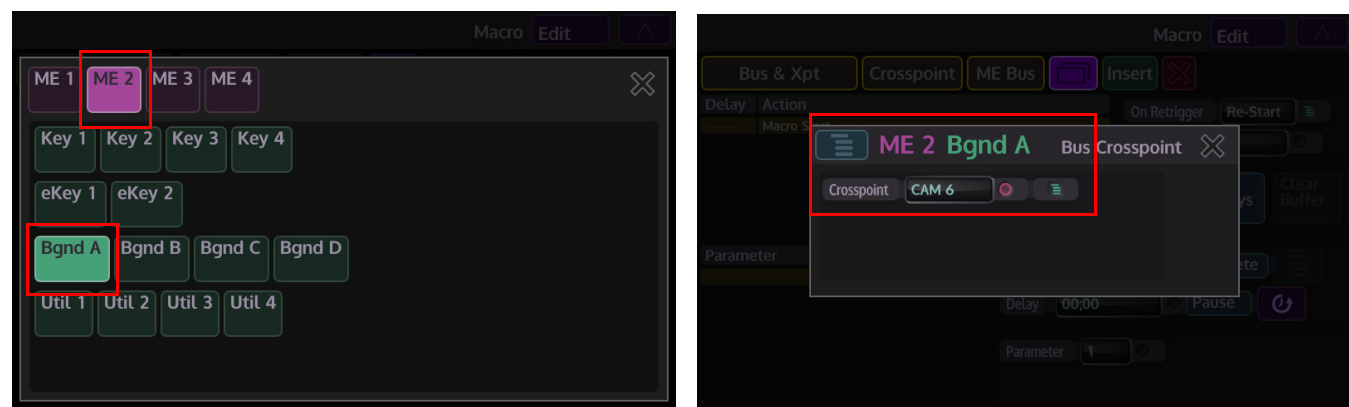
Select **Bus & Xpt** - Crosspoint - ME Bus, the menu will return to the Macro Edit main menu.



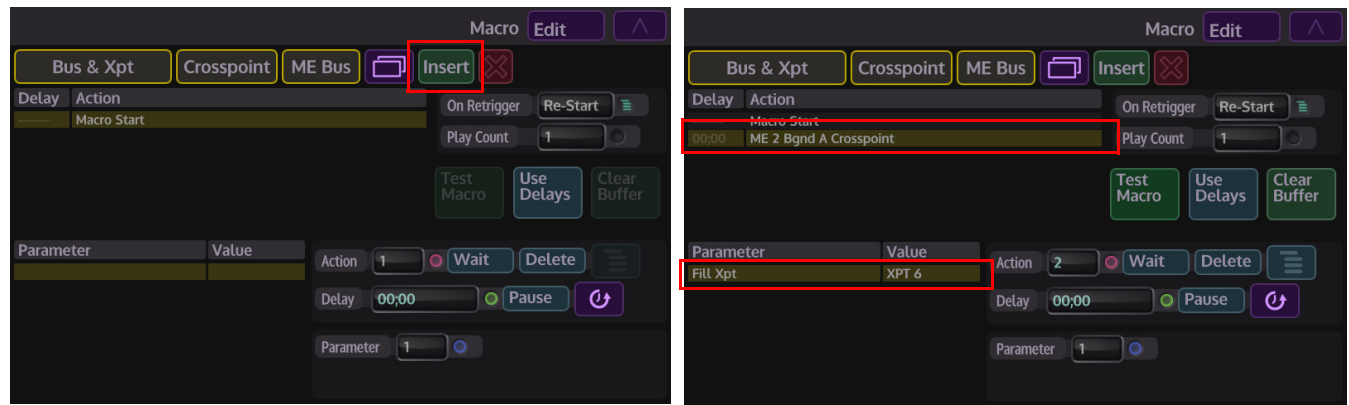
Touch the “**popup selector**” use the parameter control to select the Xpt, and then press the “**Delegate**” button.



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.

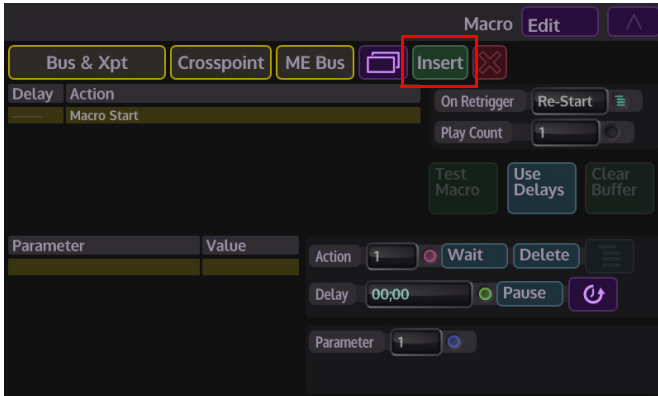


Finally, touch the **{Insert}** button to insert the macro action. The action can now be seen in the action list, with the macro information in the “Action” table below.

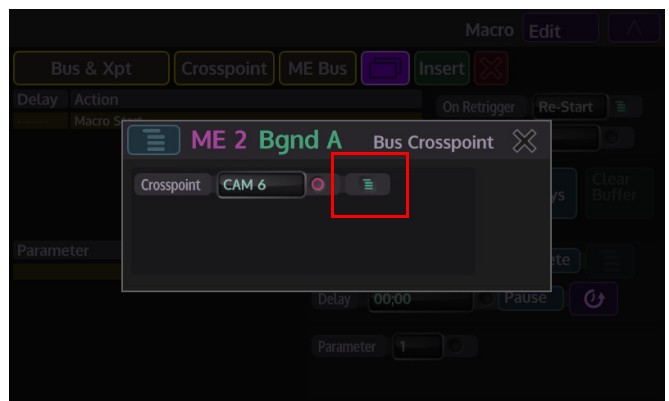


Step 2 - Select the Key that the animated clip will be displayed in and the Store that the clip is loaded into.

Again, select Bus & Xpt, then select Crosspoint and ME Bus. Touch the popup selector, then, in the menu, touch the "Delegate" button.



In the Delegate menu, select the Key that the animation clip will be displayed on, then press the "X" button to leave the menu.

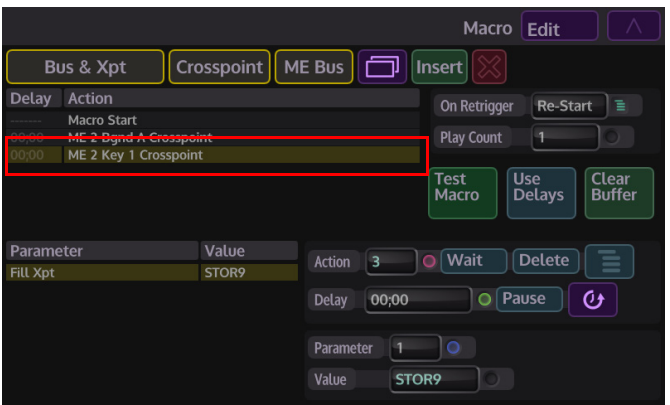
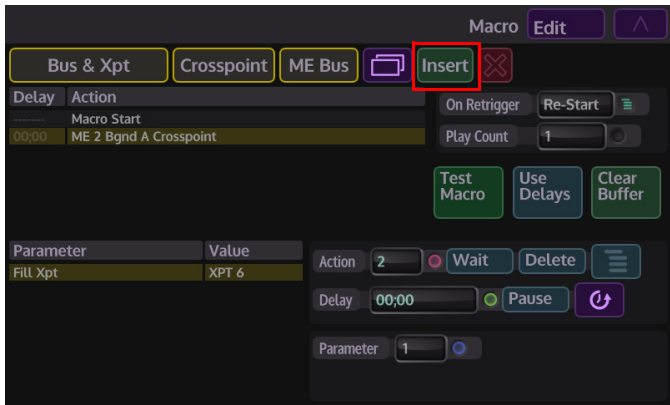


Touch the menu expand button at the end of the "Crosspoint" parameter (above) and in the menu, select "Store", this is the "Key" coupled store - for this example Store 9. Touch the "X" button to exit the menu.

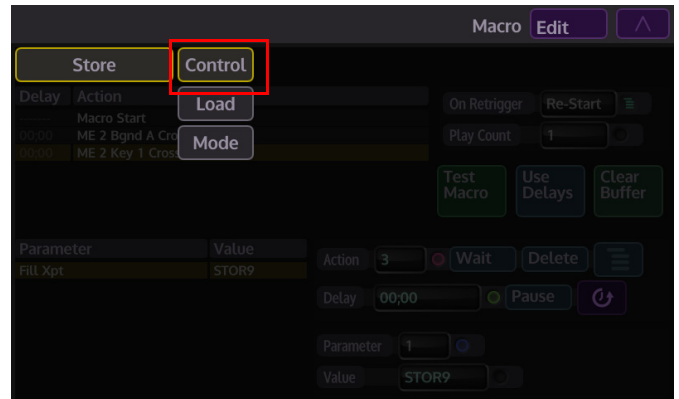


In the popup menu, M/E 2, Key 1 and STOR 9 have been selected. Touch the "X" button to exit the menu.

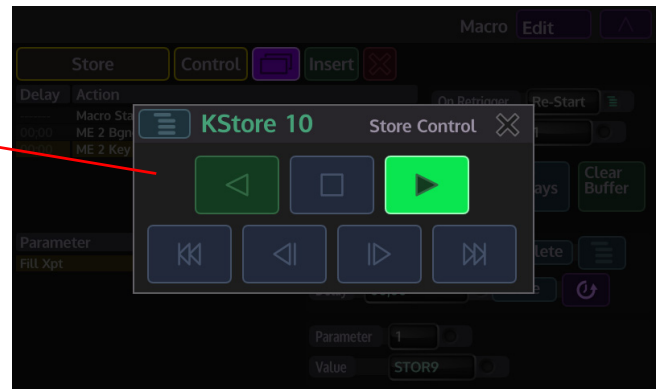
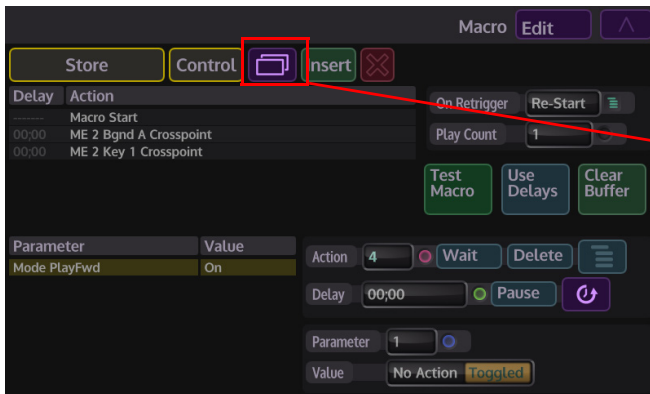
Then finally, back in the Macro Edit menu, touch the {Insert} button and the macro action is inserted into the action list.
This action will select the Key and the Store with the animated clip.



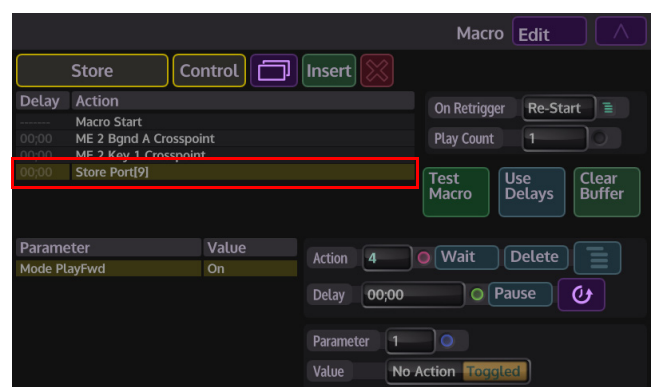
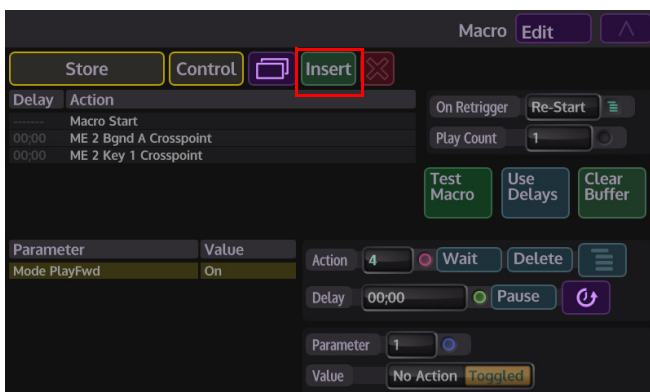
Step 3 - The next thing to do is to tell the selected Store to play. Select **"Store"** in the drop down menu, then select **"Control"**, this allows the user to select the transport controls in the popup selector in the main menu. Touch the Create Action drop down menu, select Store then Control.



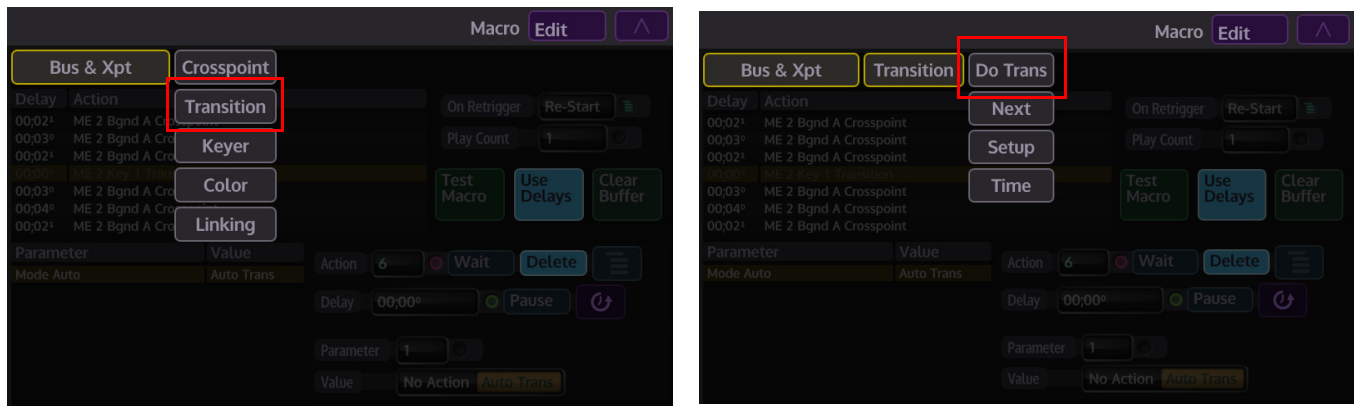
The Macro Edit menu will be displayed, then touch the popup selector and the **Store Control** menu will be displayed. Touch the **{Play}** button, when the macro action is triggered, this will play the animation clip.



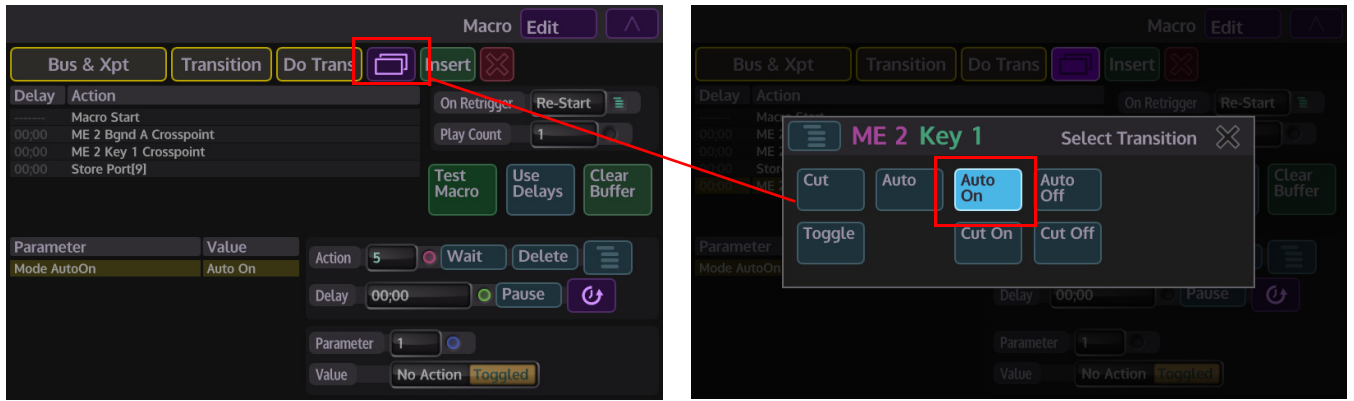
Then finally, back in the Macro Edit menu, touch the **{Insert}** button and the macro action is inserted into the action list.



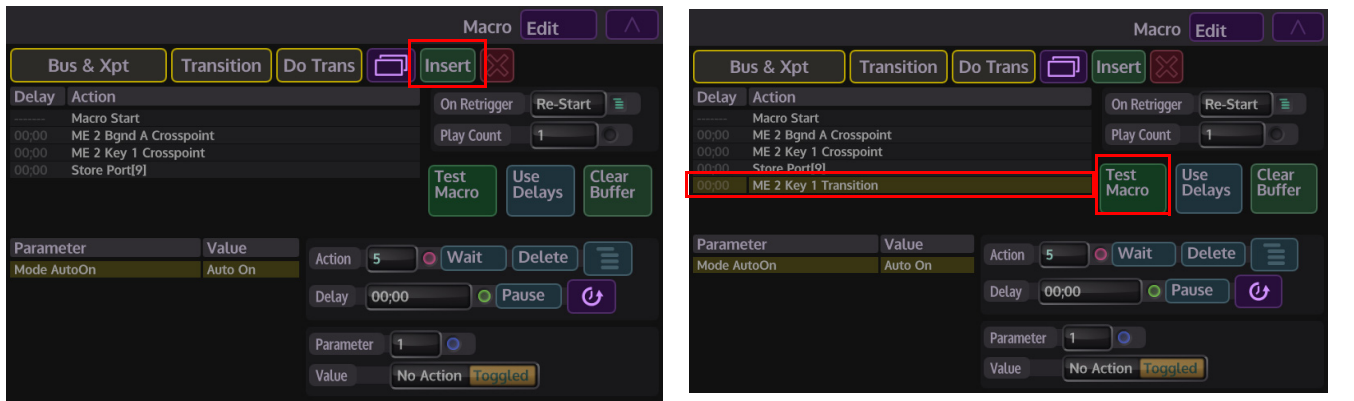
Step 4 - This is the final step and will add the transition into the macro.
Touch the Create Action drop down menu, and then select **Bus & Xpt, Transition** and Do Trans.



In the Macro Edit menu, touch the popup selector and then in the popup menu touch the **{Auto On}** button.



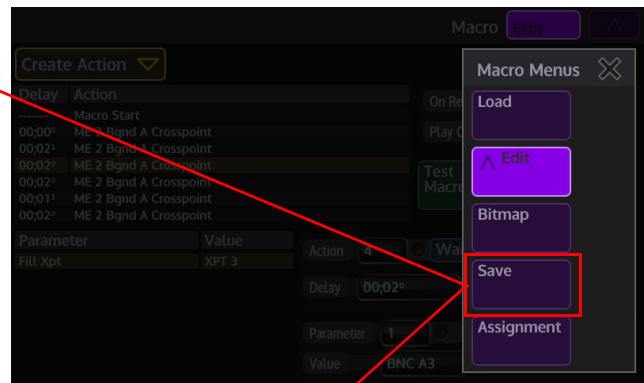
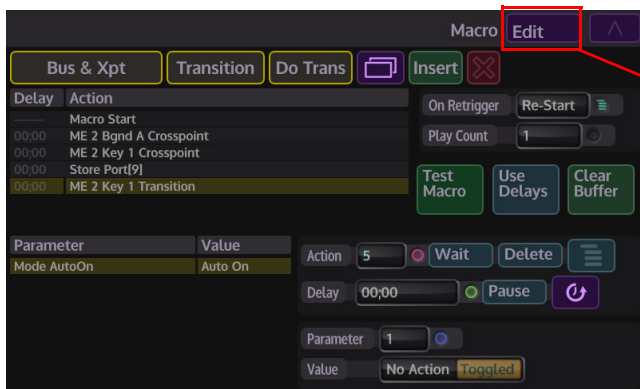
Then finally, back in the Macro Edit menu, touch the **{Insert}** button and the macro action is inserted into the action list.



Macro 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.

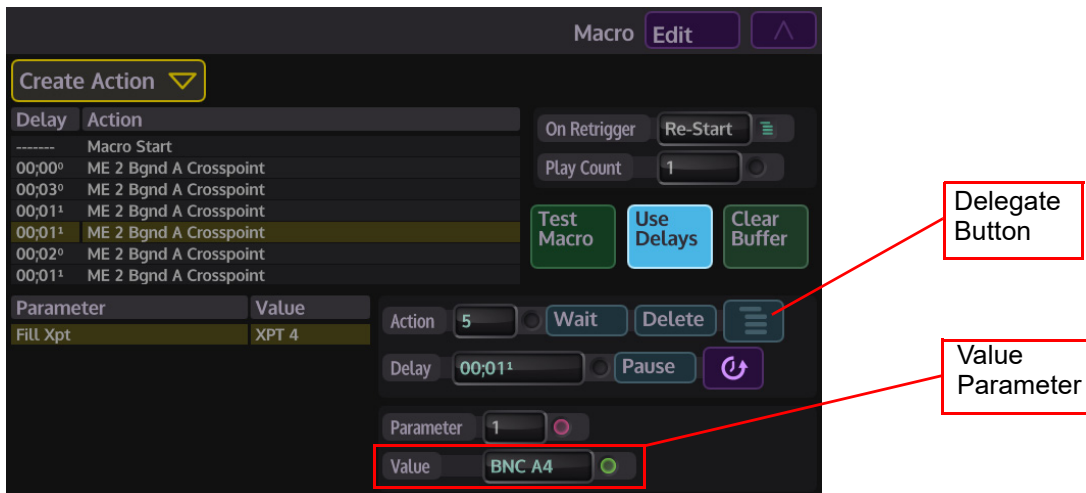


In the **Macro Save** menu, use the “Project” parameter controls to select the required project and then use the “File” parameter to select where the macro is going to be saved. The macro can be given a name and description, when finished, touch the **{Save}** button.

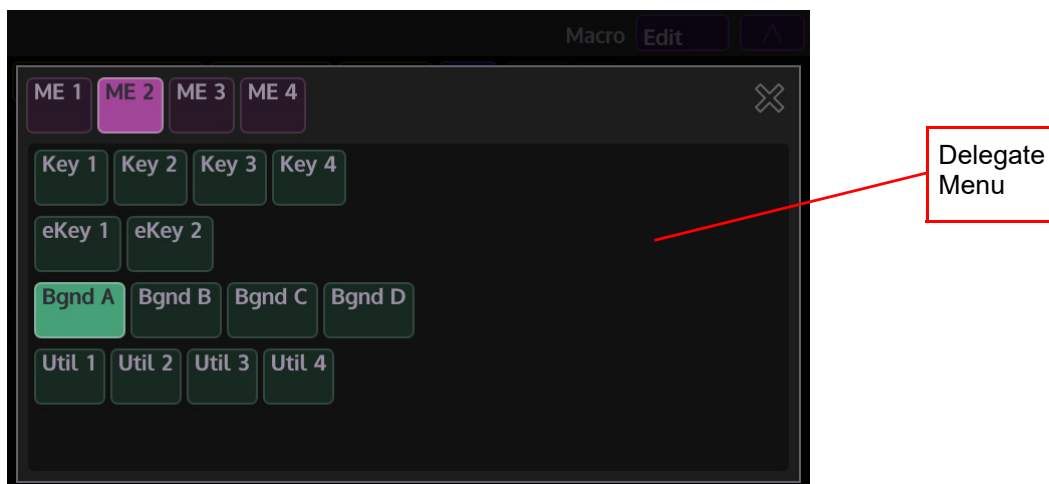
Edit an existing Macro using the Using Value and Delegate Parameters

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.



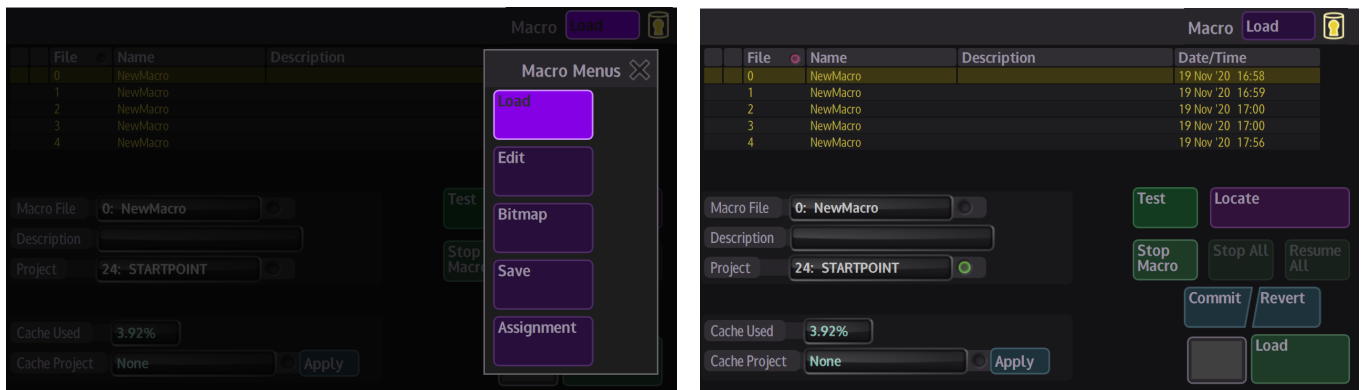
The second way is to use the **Delegate** menu and select a completely different action, i.e. change from selecting a background crosspoint to selecting an eKey within the selected action.



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.



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!

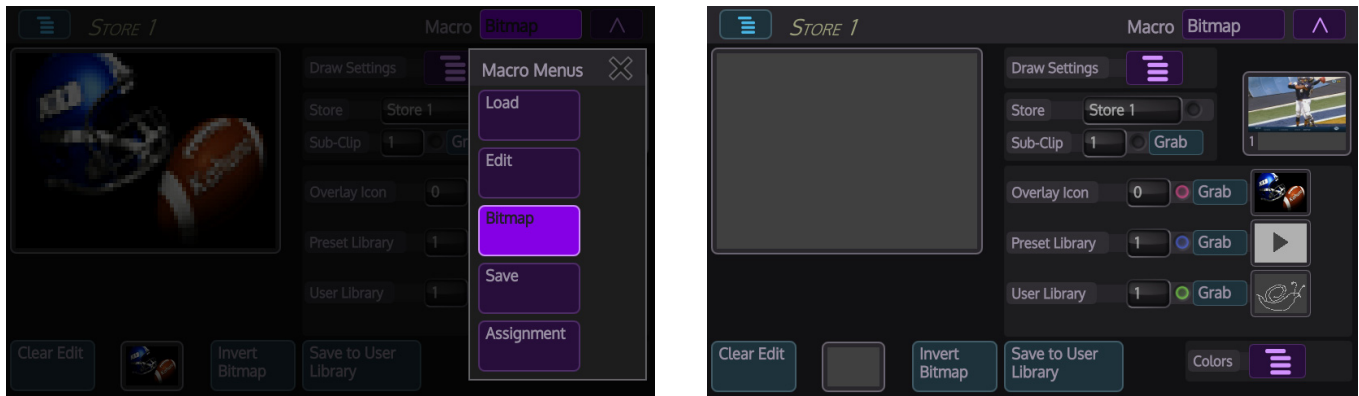
Cached macros can be used by **Timelines** or the Macro Protocol and will always be available so the timeline will be able to trigger them reliably.

The macro cache project is stored under user config with a new enable.

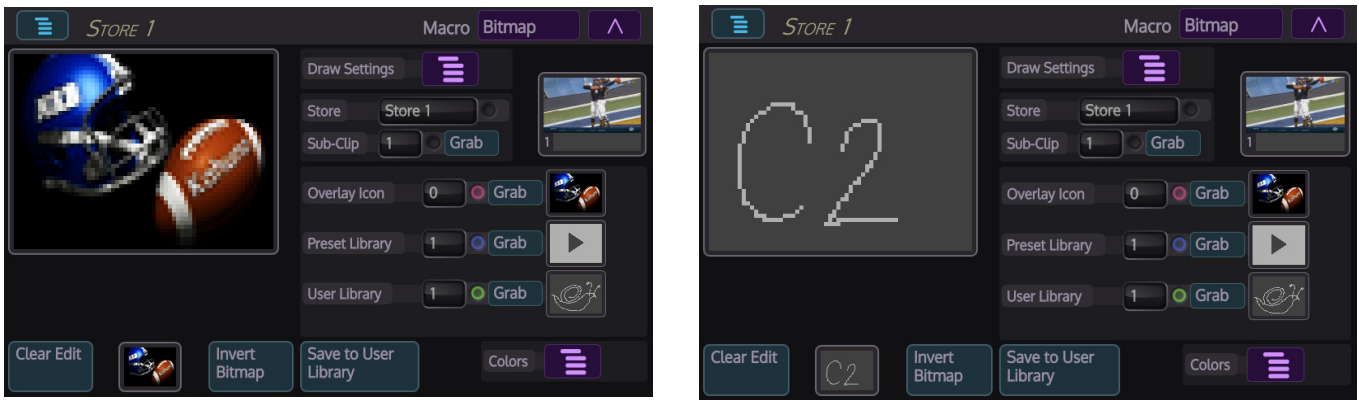
Bitmap

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.



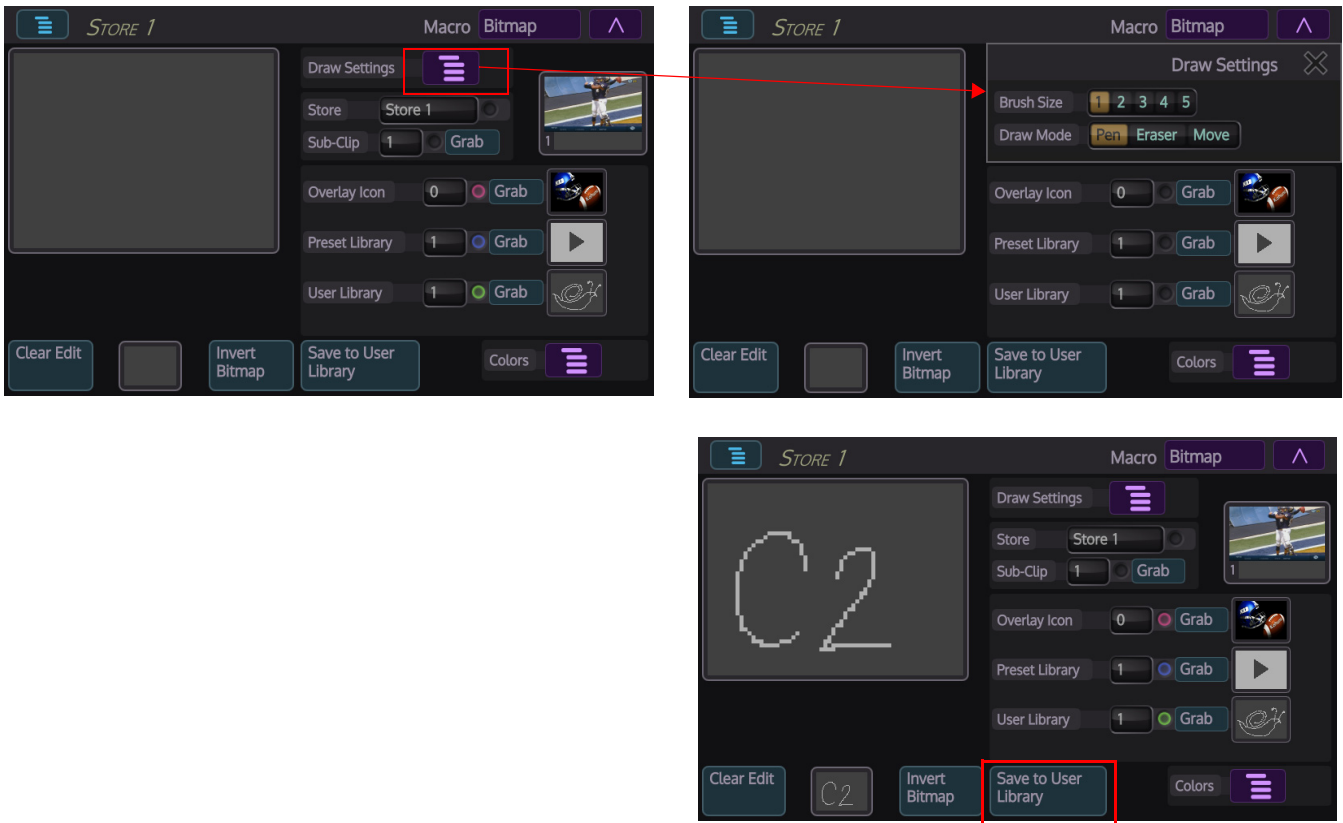
A bitmap from a pre-installed library can be selected using the **Preset Library** parameter. A mimic of the Icon will appear in the larger gray square to the left of the menu. Running through the library of bitmaps, a user defined library can also be created and selected in this way. Once the required 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.



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.

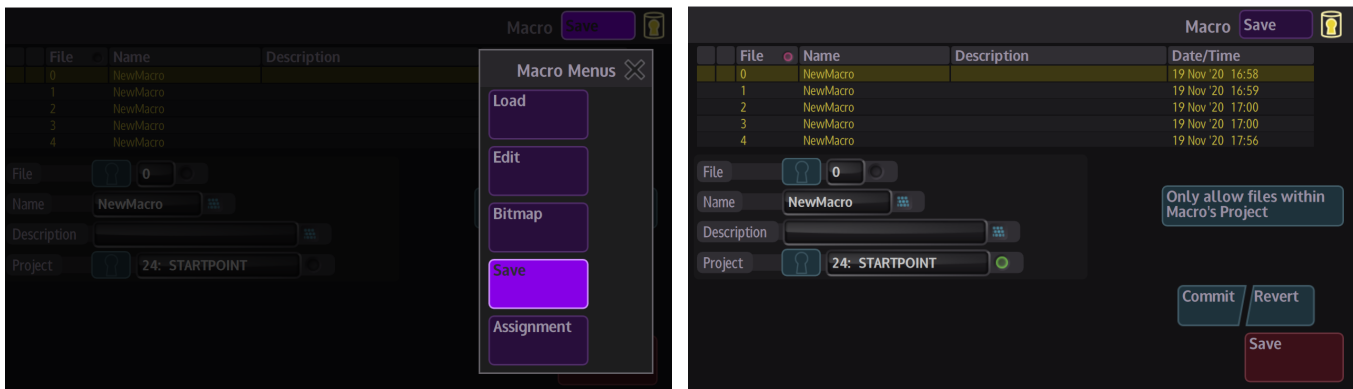
When happy with the Bitmap in the display, move onto the **{Save}** menu.

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.

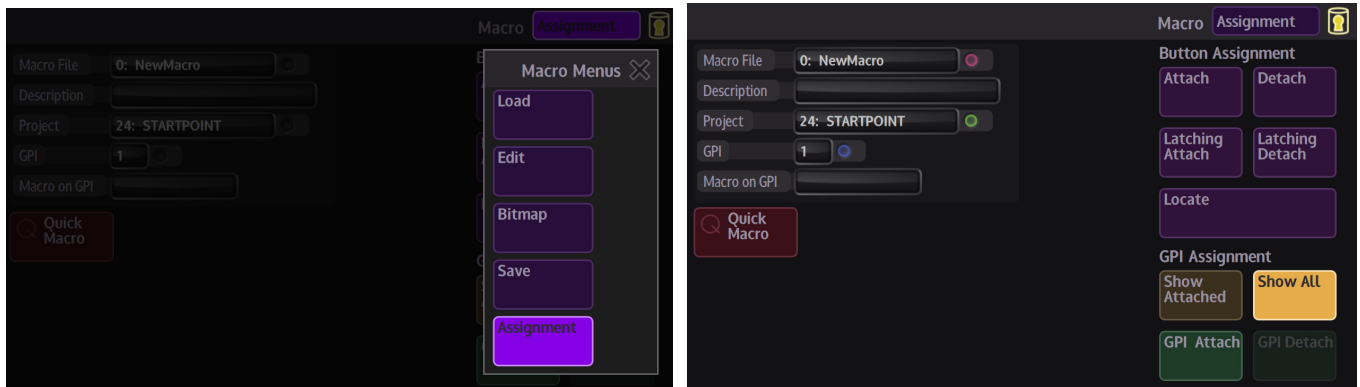
Finally, press **{Save}** and the macro will be saved to the Hard Disk along with any associated Bitmap, Store image or Icon image.

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.



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.

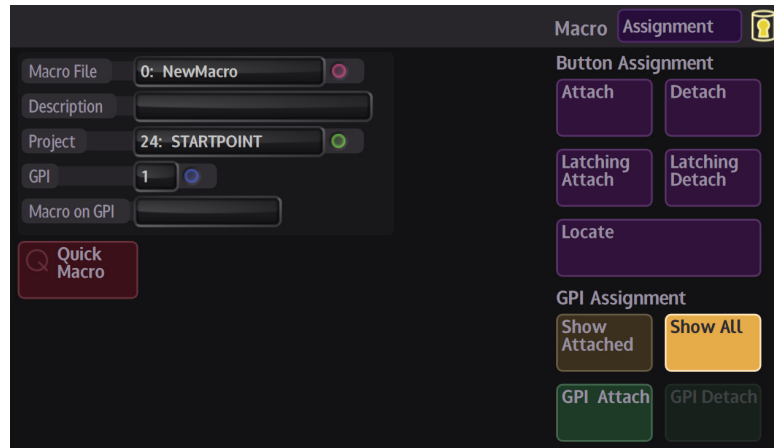
Note: While a macro is paused, Kahuna can still run multiple other macros at the same time.

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.



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 be 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.

20

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 a 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™ - 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.

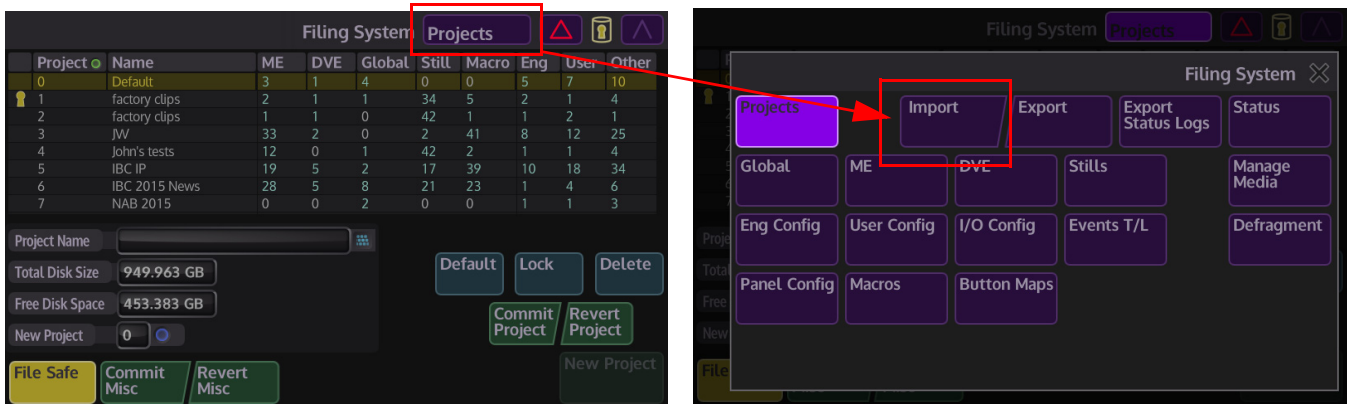
The files can be can loaded or saved maintaining the Audio or Video in a Clip.

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.

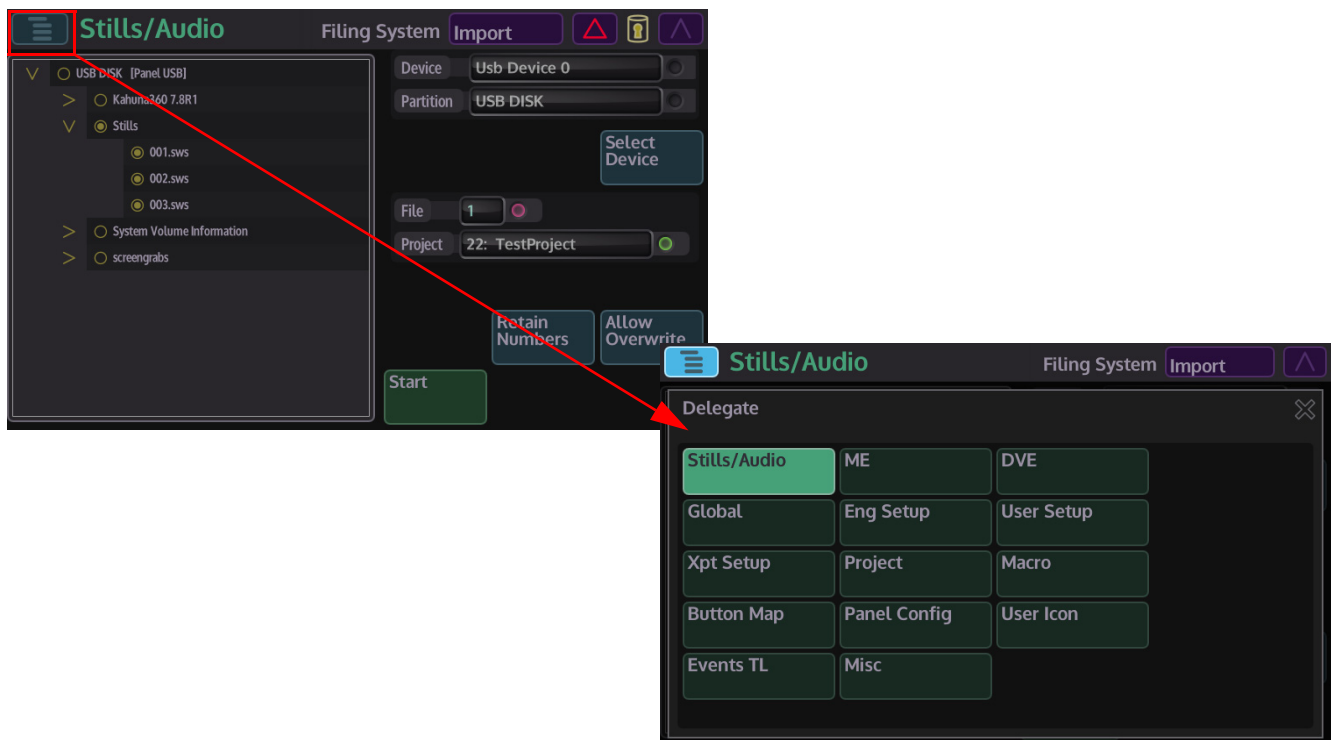
Importing Stills and Clips

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.

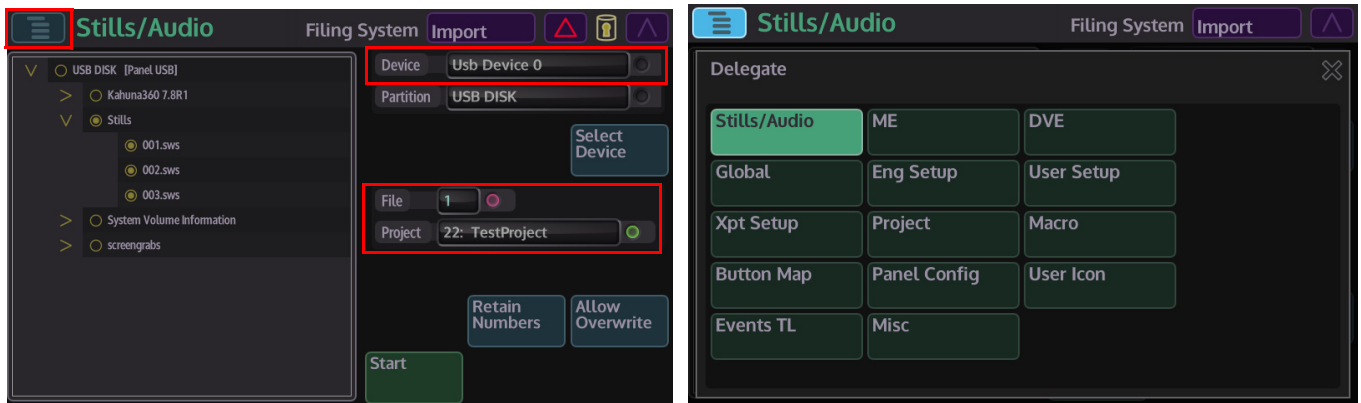
Touch the **{Projects}** menu link button to open the Filing System options menu.



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.

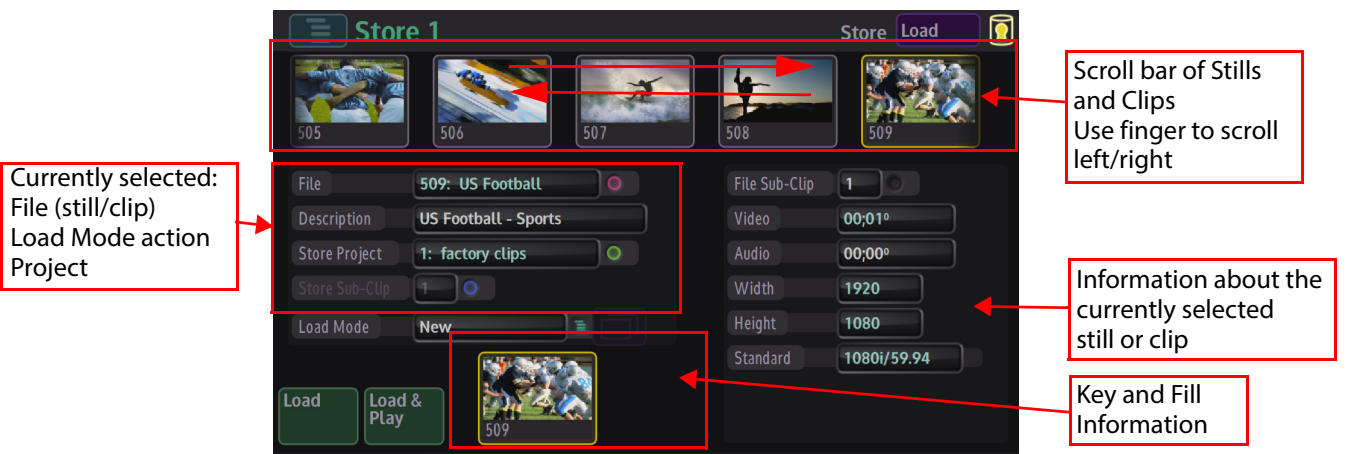
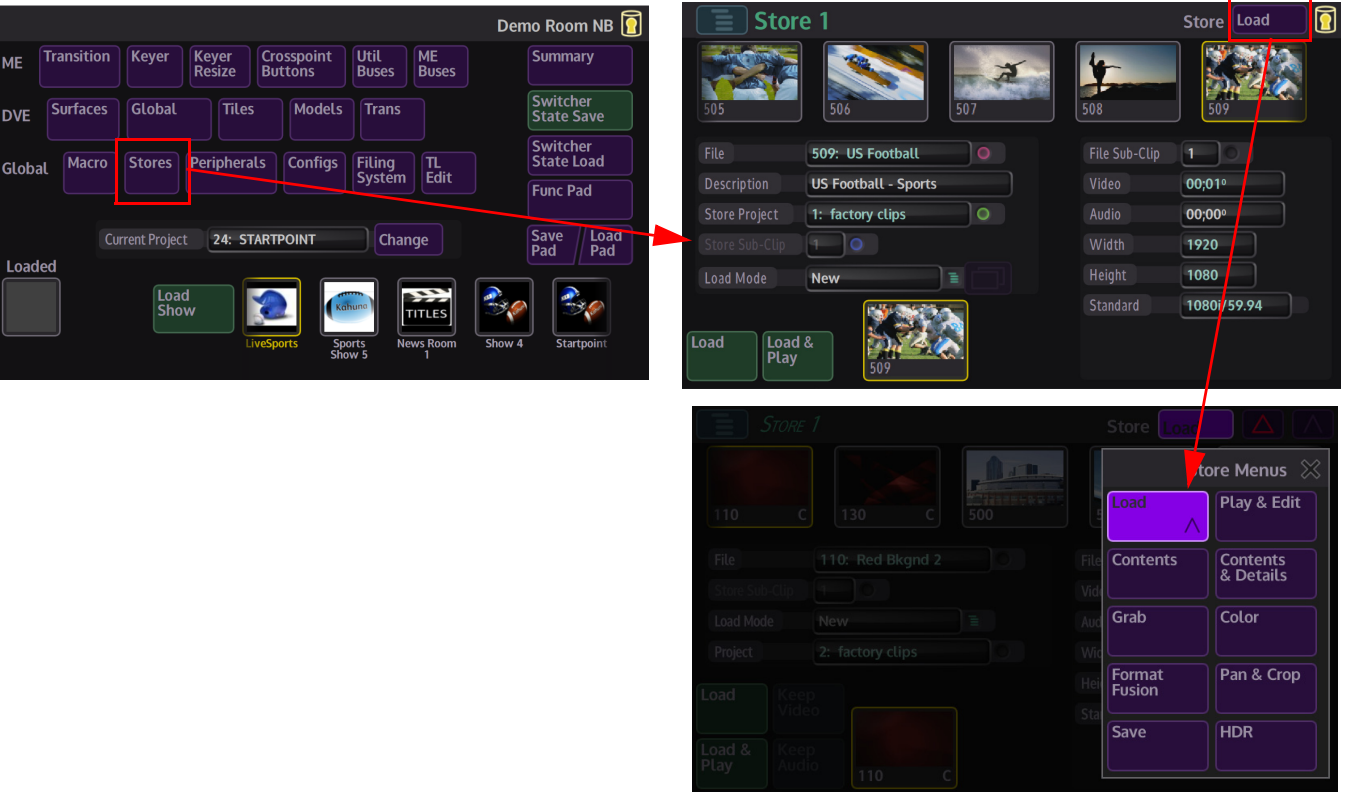


Importing Stills and Clips is very easy; where the user selects the memory device that the files are imported from, using the “**Device**” parameter. Touch the “**Delegate**” button and in the Delegate menu, select “**Stills/Audio**” (touch the “X” to go back to the Import menu).



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.

The first menu that will appear is the **Store - Load** menu



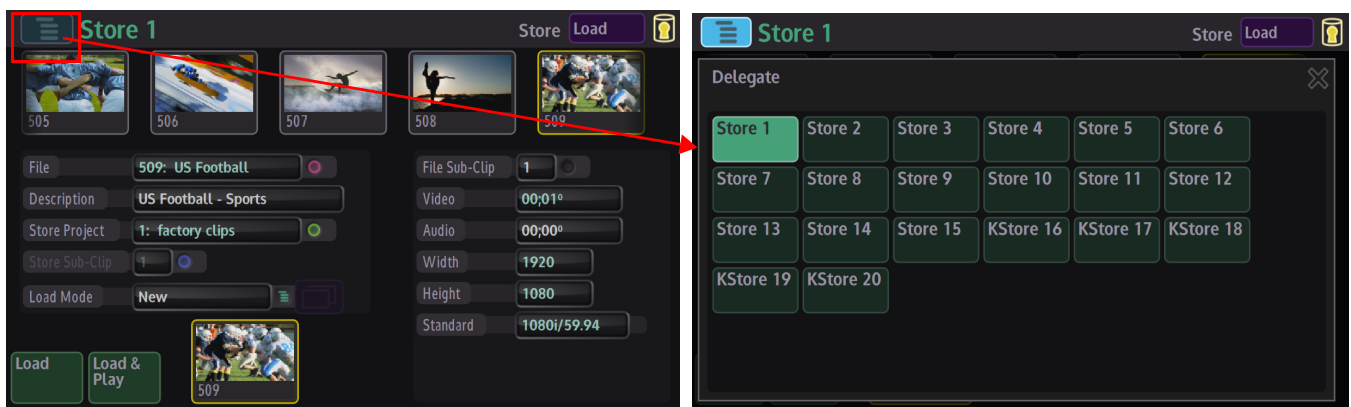
Using Store Load

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.

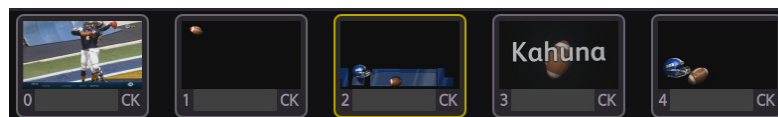
Note: Notice that there is a number in the bottom left corner of the minipic, this is the .sws number given to the still or clip when converting it in the Kahuna Manager software.



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.

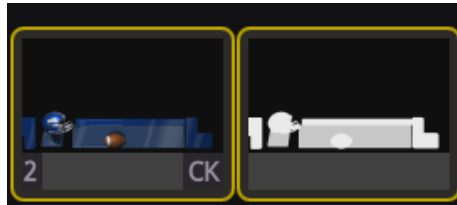


The minipic is generated from a still or the center frame of a Clip. The bottom right hand corner will display “C” if the image is a Clip.



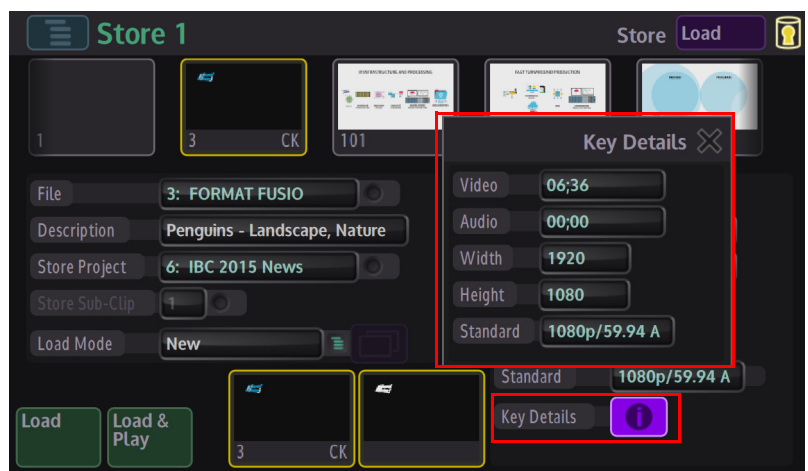
A “K” in the bottom right corner indicates that the Still or Clip has a Key saved with it. The Key will be loaded into the Coupled Store (see *Store Coupling* section of the *Kahuna 9600/6400 User Instruction Manual*, the second manual supplied with this system). A “CK” identifies the clip as having 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.



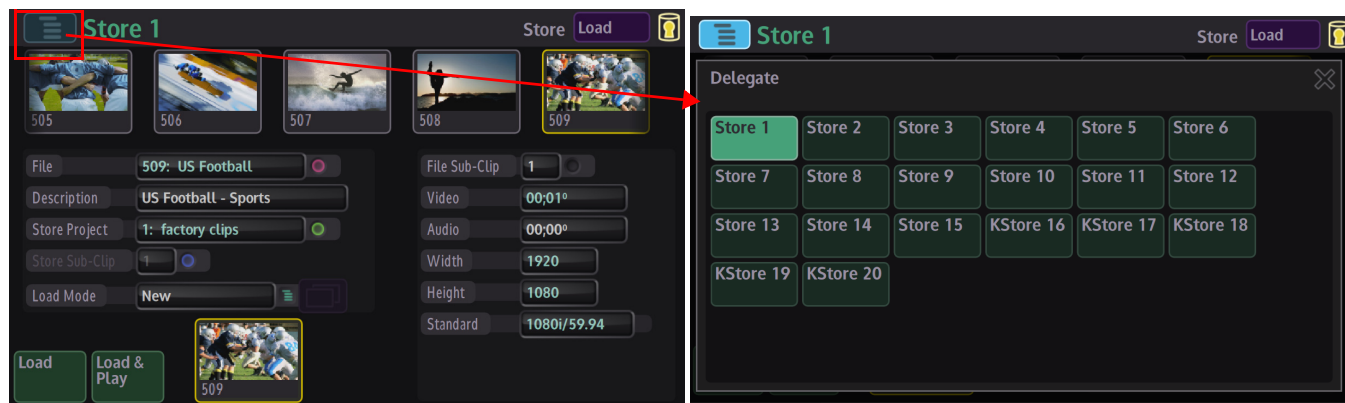
Notice in the diagram above that the Fill portion of the file is on the left and the Key portion is on the right.

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).



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.

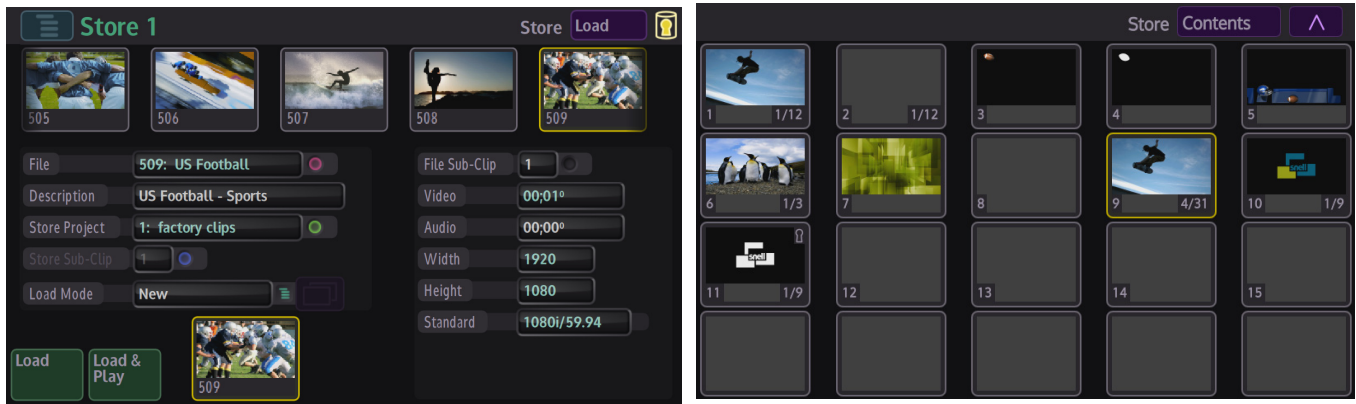
Replace Sub-Clip - This will replace a still/clip in the selected Store Sub-Clip.

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.

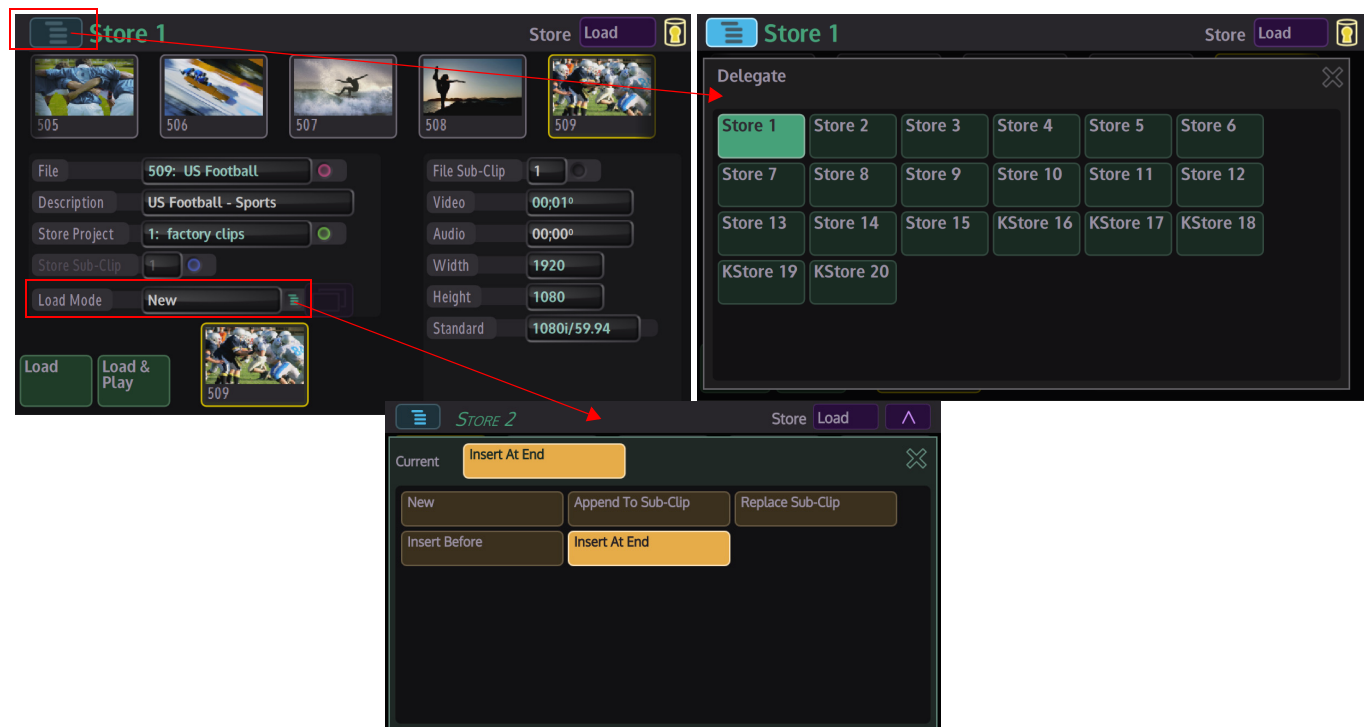
Sub-Clips

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.



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.



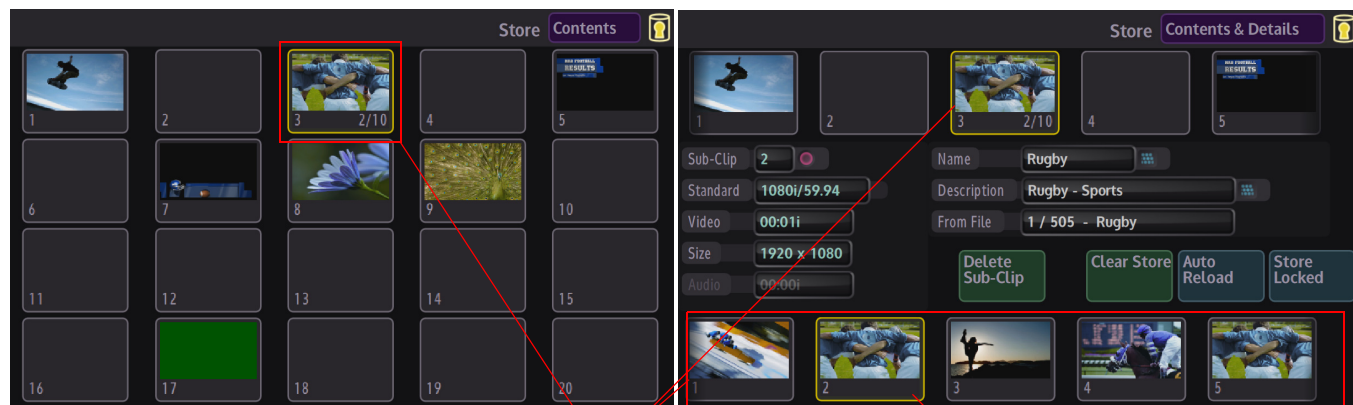
Use the **Project** parameter to select where the stills and clips that will fill the sub-clip store will come from.

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.



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.

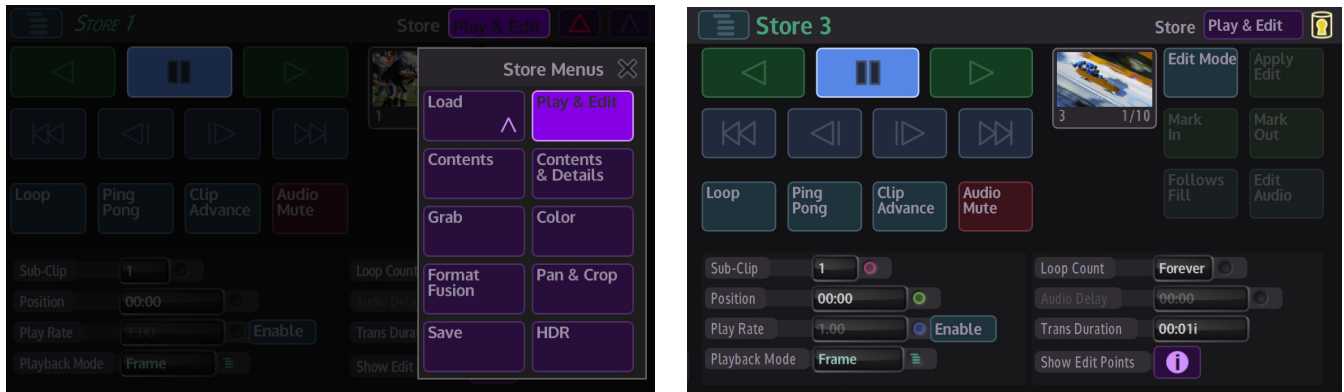
Auto Reload - when set to Yes this causes the still or clip to be automatically reloaded from the hard disk whenever the original file location is updated. If the store contains something that was grabbed rather than loaded, then this has no affect.

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.

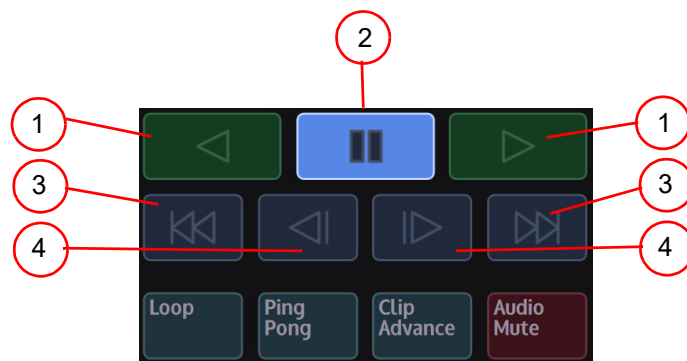
Store Play/Edit

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.

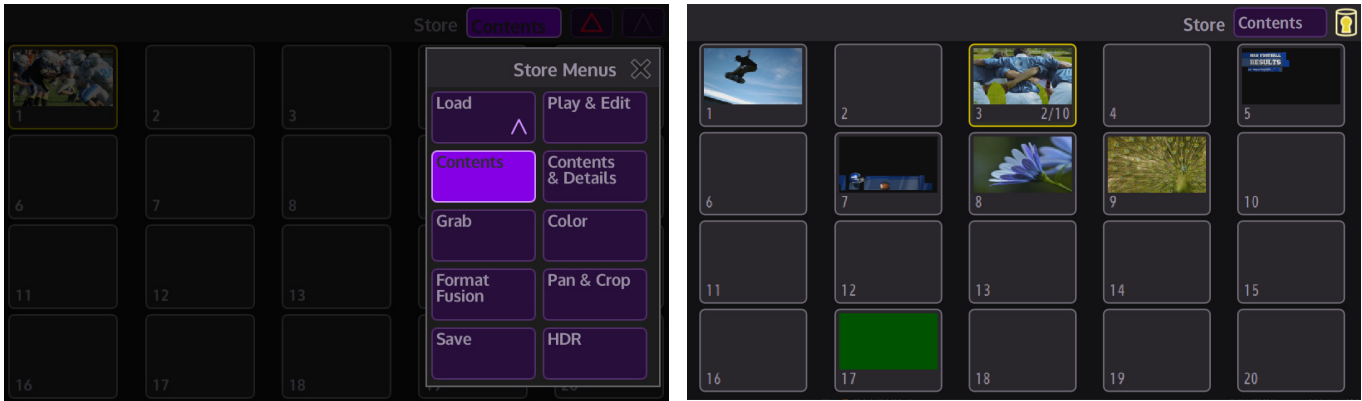
Edit Audio - this allows the user to edit and audio clip in the same way as editing a video clips as described above.

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.



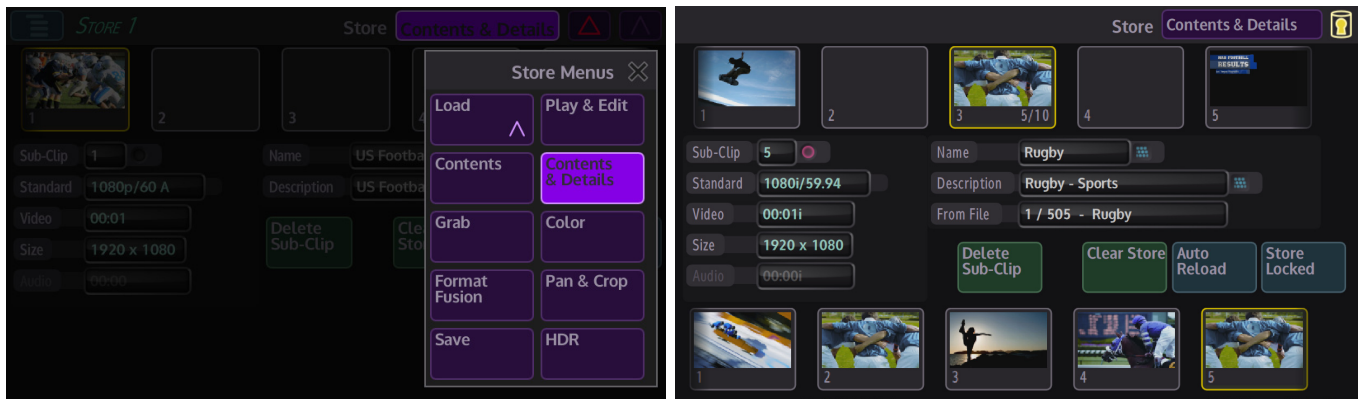
The menu is only used to display the stills, clips, audio files and sub-clips which have been loaded into each store.

If a store has sub-clips loaded, the top rotary control can be used to scroll through the sub-clips.

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 the 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

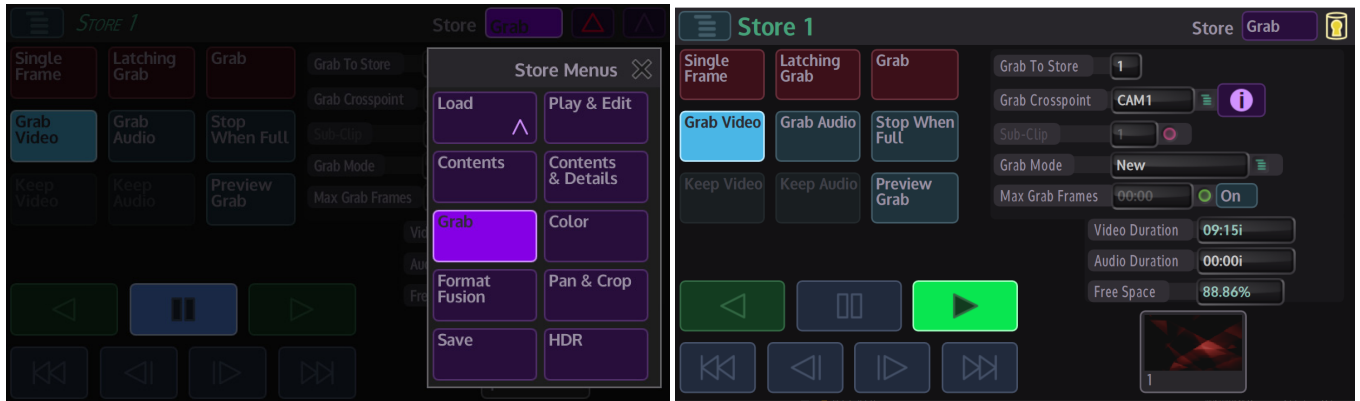
Auto Reload - when set to Yes this causes the still or clip to be automatically reloaded from the hard disk whenever the original file location is updated. If the store contains something that was grabbed rather than loaded, then this has no affect.

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.

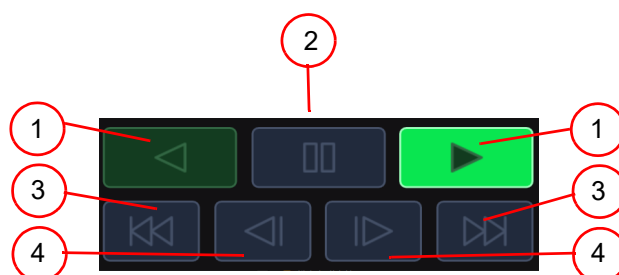
Latching Grab is best used for grabbing Video or Audio files. Pressing the **{Grab Video}** button, which turns the button green, then pressing latching grab for the required grab time will grab video only. Pressing the **{Grab Audio}** button, which turns the button green, then pressing latching grab for the required grab time will grab 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.

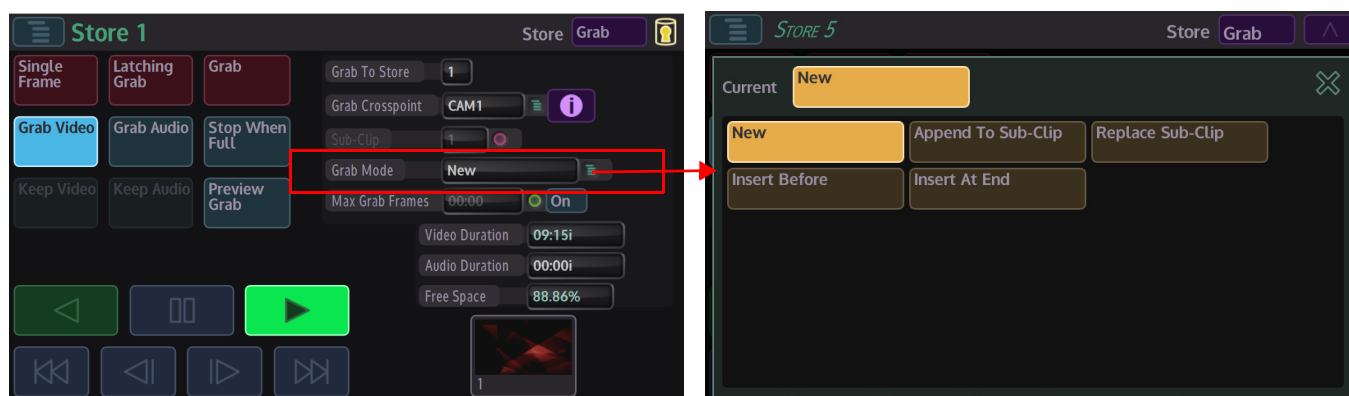
Preview Grab - This will place a preview of the grabbed image or video into the minipic at the bottom of the screen.

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



New - Allows the user to grab new stills and clips into a store.

Note: Any stills or clips in the selected store will be over written.

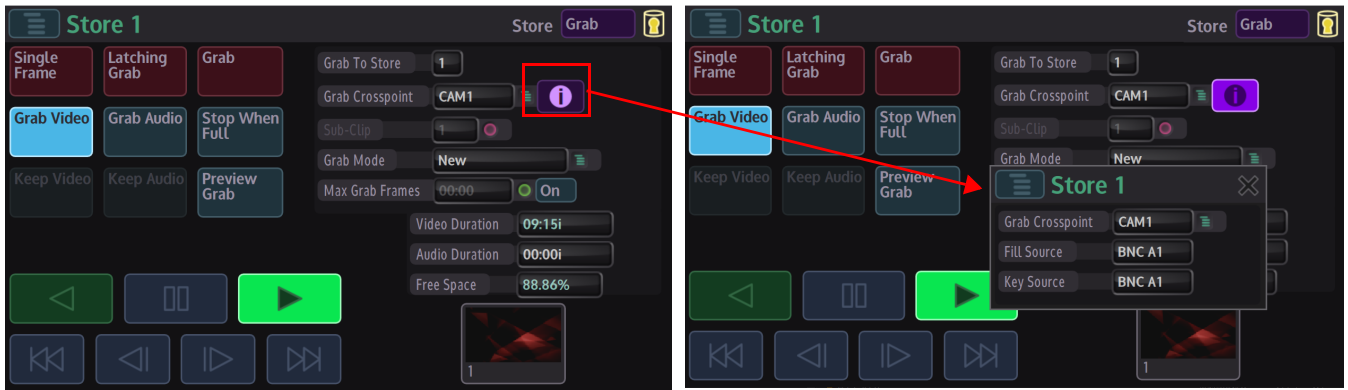
Append To Sub-Clip - This will send a grabbed still or clip to the Sub-Clip folder of a selected store, each time a still or clip is selected by touching the miniclip or pressing **{Load}** the still or clip will be sent to selected store as a sub-clip. In the Append To Sub-Clip mode, if a different 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

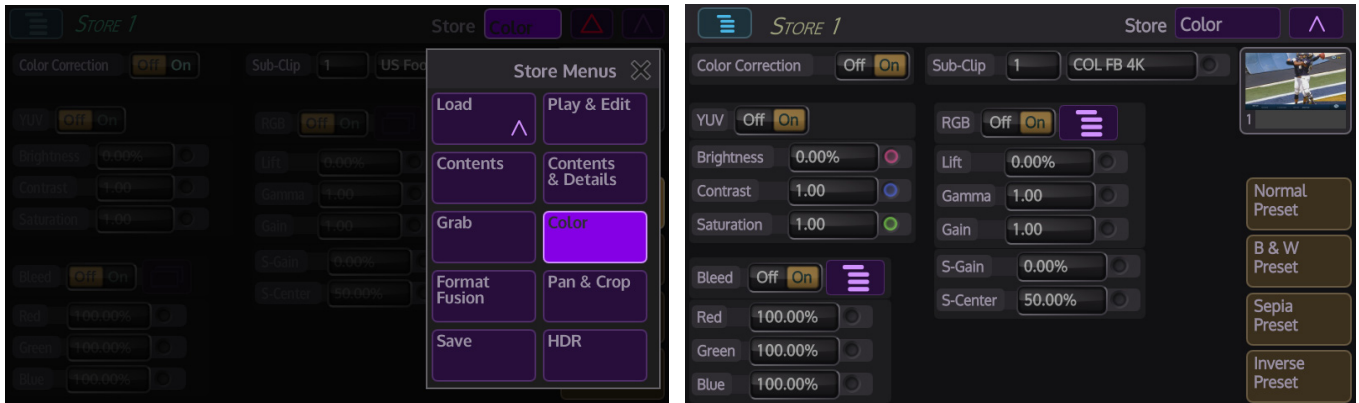


Max Grab Frames - when turned On (the {On} button is green), the user is able to set the maximum number of frame that a grab will take. Use the rotary parameter control to set the maximum number of frames.

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).



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

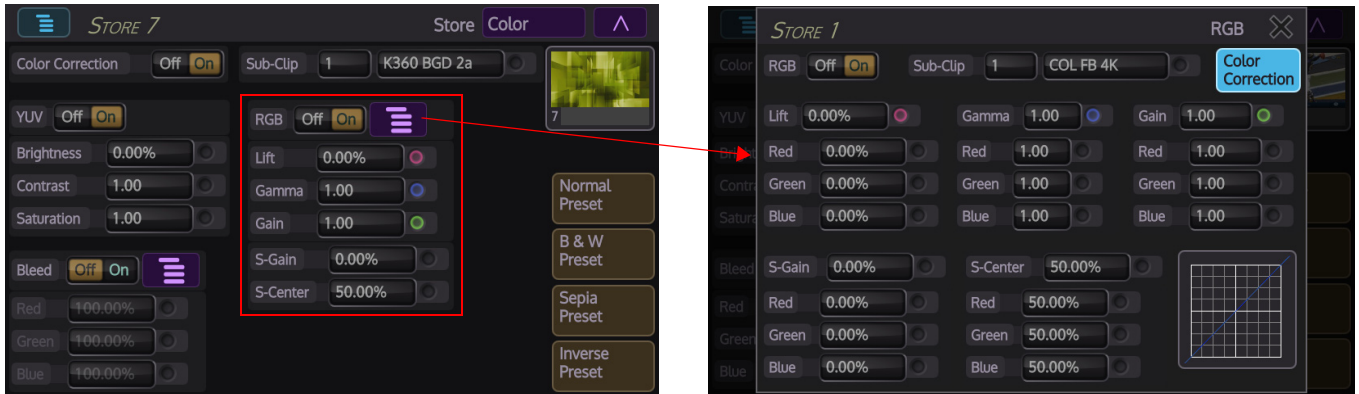


- Brightness default value is 0.00%, and the range is from -10% to 100%
- Contrast default value is 1.00%, and the range is from -0% to 16%
- Saturation default value is 1.00%, and the range is from -0% to 16%

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.



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.



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.

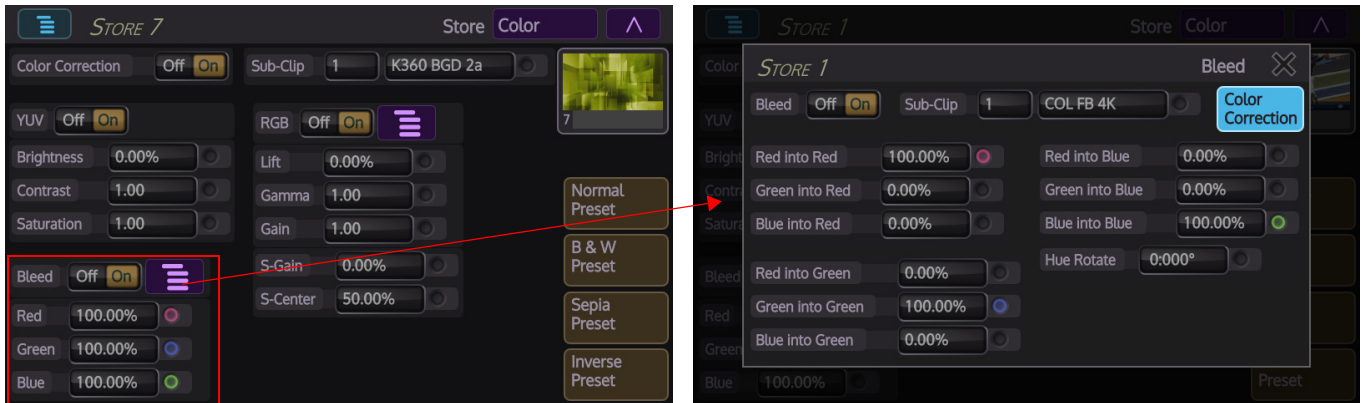
Gain - parameters control the White level or highlights, where brighter colors become brighter or darker; depending on the adjustment made.

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.



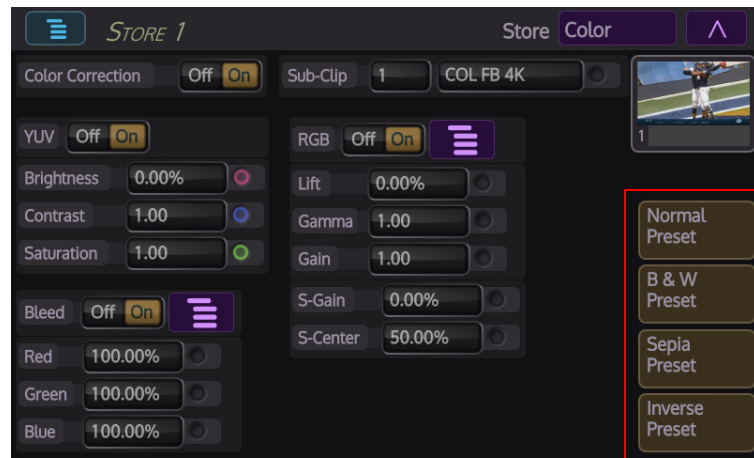
The initial menu has a default state where a single adjustment for each parameter menu is active; this will allow the adjustment of the main RGB bleed parameters:

- 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.

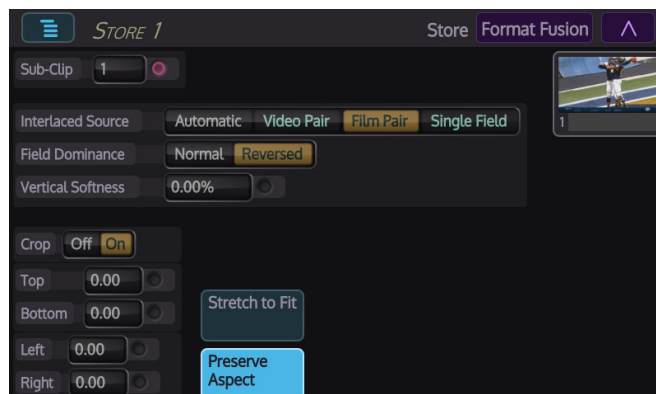
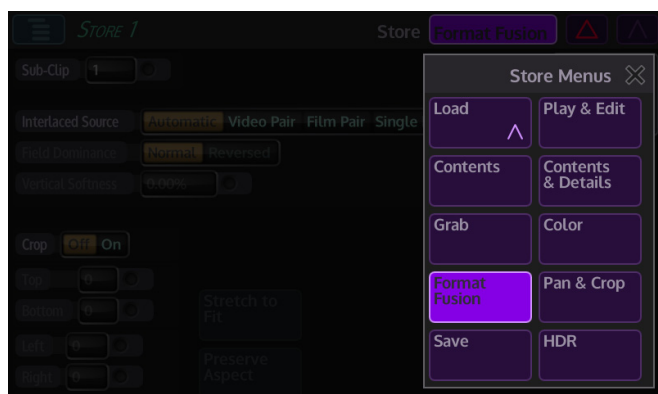
If **B&W**, **Sepia** and **Inverse** are selected, the preset levels can all be color corrected.

Store - FormatFusion™

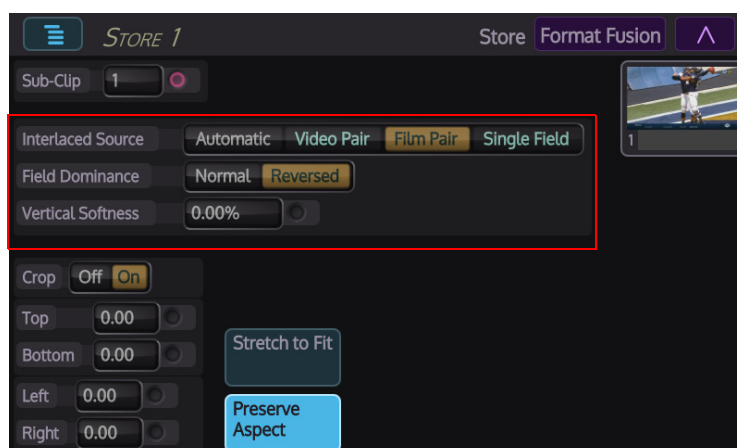
The FormatFusion™ controls allow the user to change the aspect of Still or Clip, this would be used for example if a portion of an HD Source or Clip needs to be cropped and stretched to fit a 16:9 format or an SD 4:3 source or Clip aspect has to change to fit a 16:9 output. Touch the menu link button 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.



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.



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.

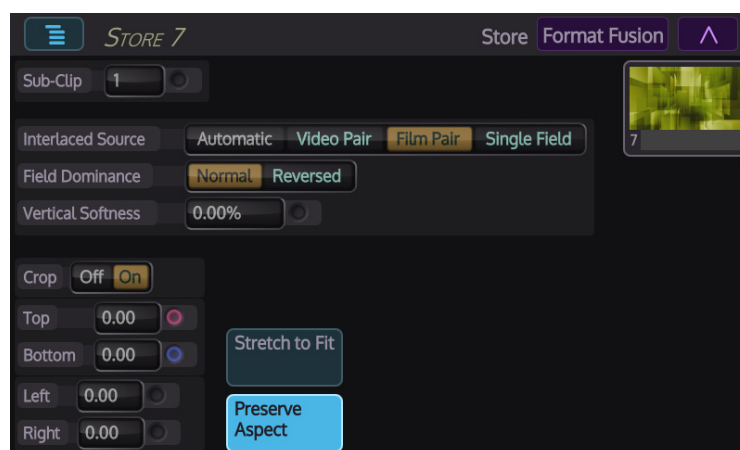
Film Pair is used when creating the current field/frame, will directly combine the current input field and either the previous or next field. This mode should only be used if the fields are temporarily matched, e.g. PAL film based sources or some animation.

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 be 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

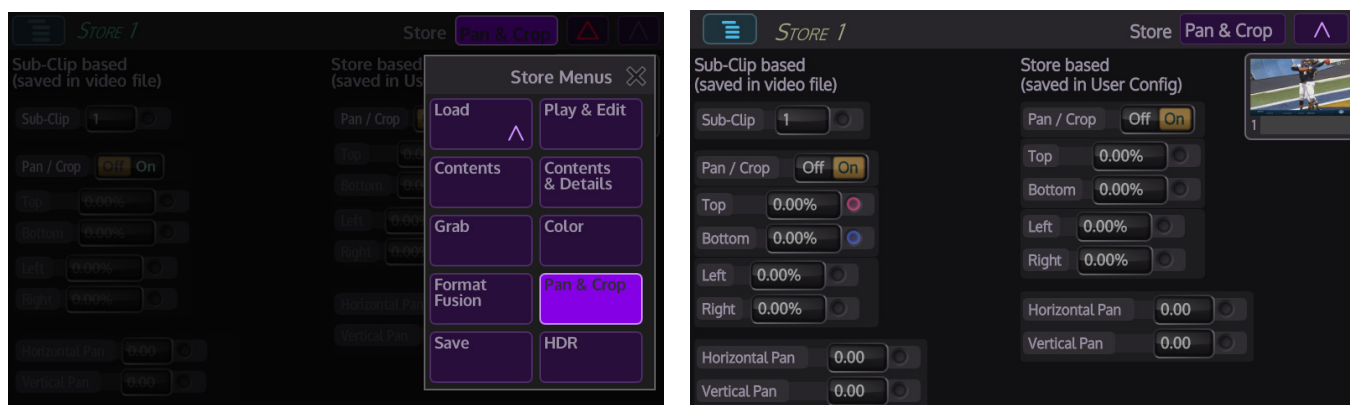
This feature allows the user to manipulate the stills/clips that are assigned to one of the stores. There are two types of Pan/Crop available to use:

- Sub-Clip based.
- Framestore Based

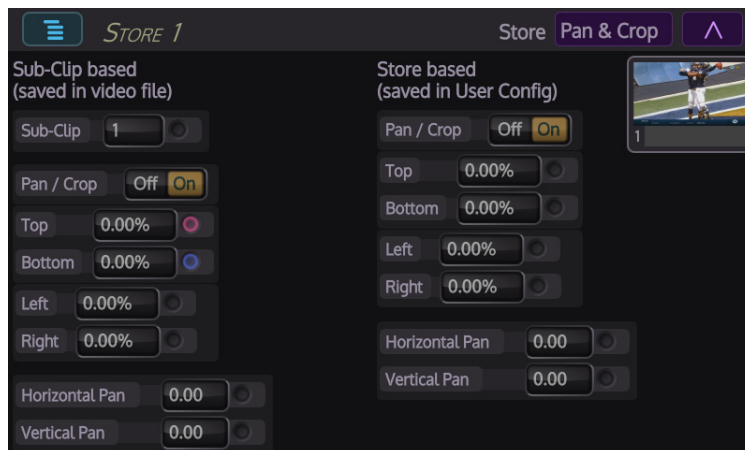
In Framestore based Pan/Crop, the adjustment will pan or crop all stills/clips in the selected store and all sub-clips if the store is set to contain sub-clips.

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).



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.



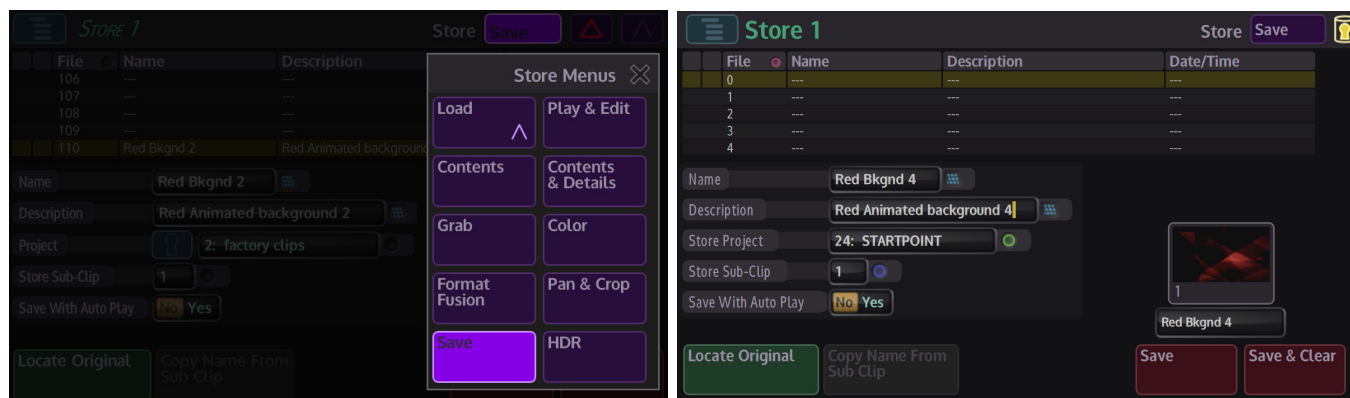
Make sure that the **Crop/Pan** function is turned ON, by touching the **{OFF/ON}** buttons in the Crop parameters.

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).



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.

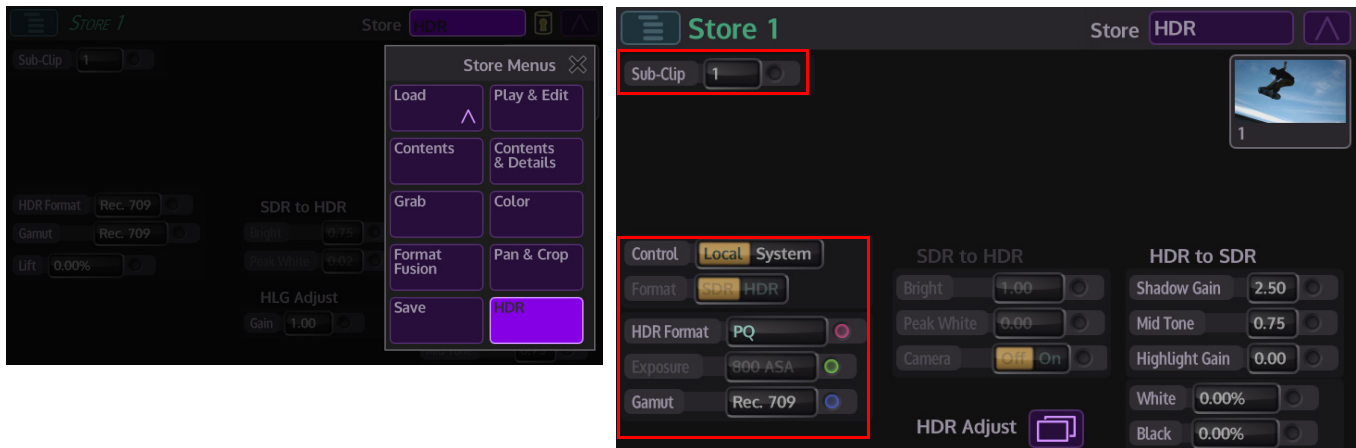
Store HDR Setup

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 Menu, 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.

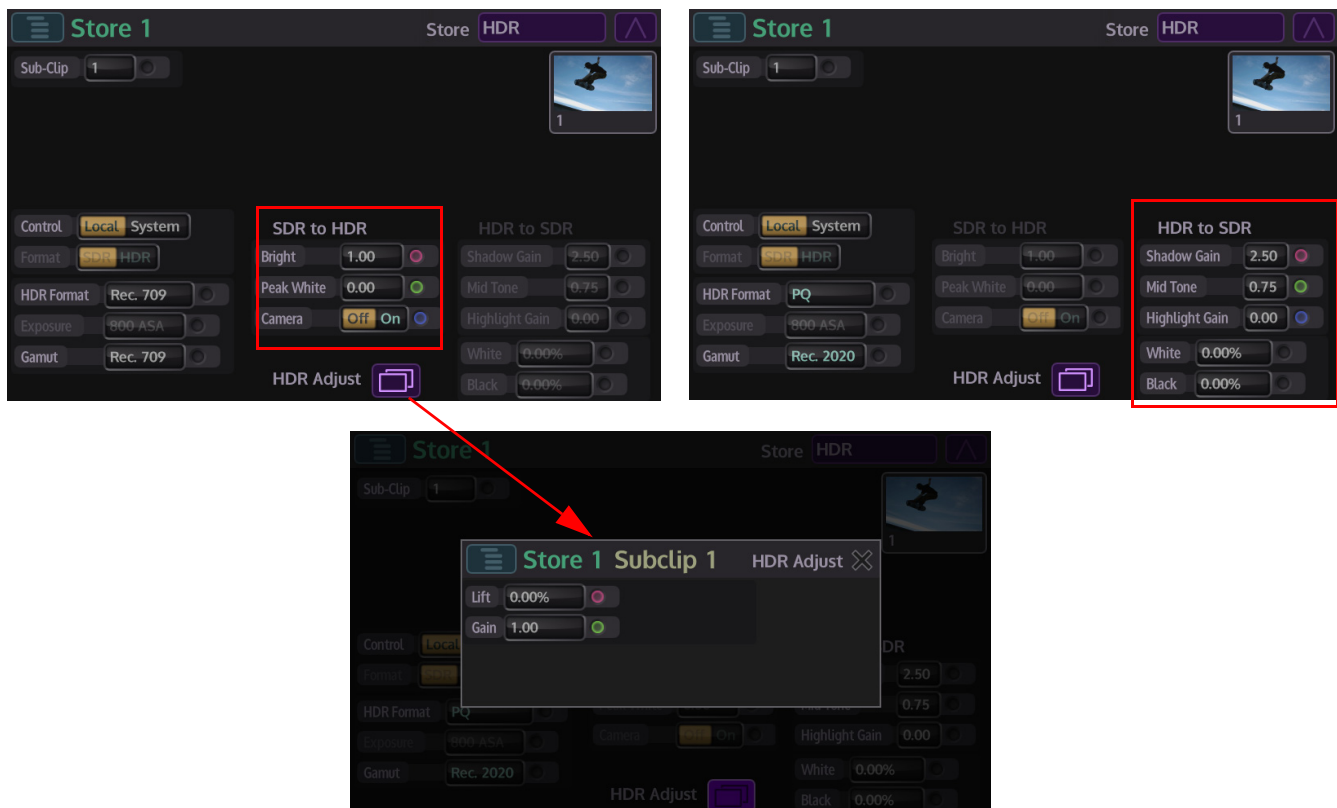
The user then needs to tell the system what format the selected still is set to. This is done using the **HDR Format/Gamut** parameters.

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.



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.

21

Global - Peripherals

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.

The Available Protocols in their Protocol Types are as follows:

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	Ignite			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 VDCCP 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				

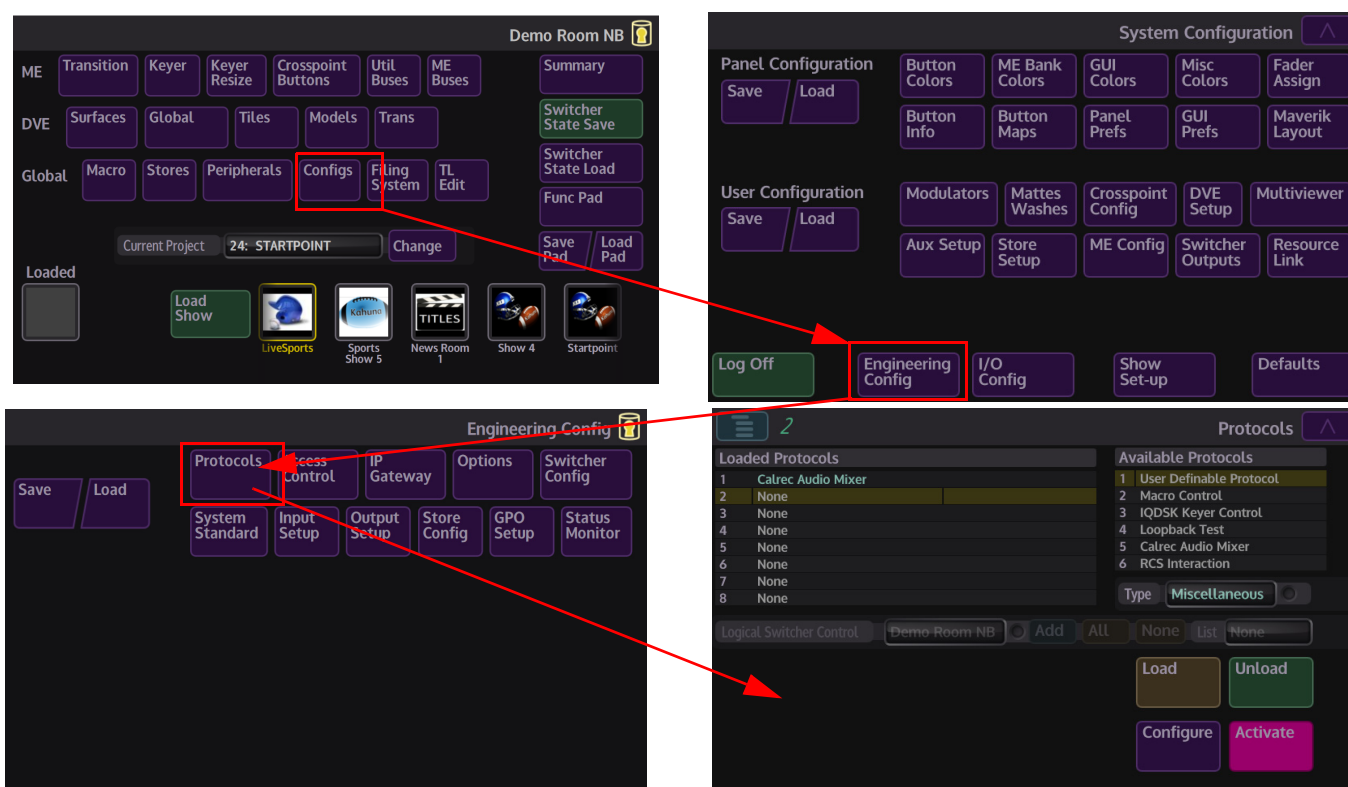
Protocol Type						
	Harris (Pass-Through)	LiveTouch				
	NP0016-00	LiveTouch Minipic				
	NP0017-00D Port					
	NP0017-00D Device					
	UTAH RCP-3					
	UTAH RCP-3A					

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.

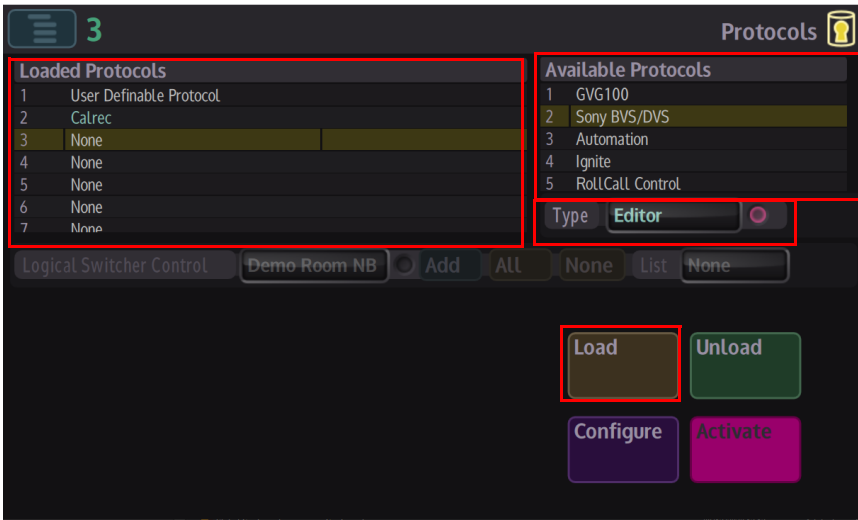
To get to the Protocols menu, in the **"Home"** menu, touch the **"Global - Configs"** menu link button, then in the **"System Configuration"** main menu, touch the **"Engineering Config"** menu link button. Finally in the Engineering Config menu, touch the **"Protocols"** menu link button.



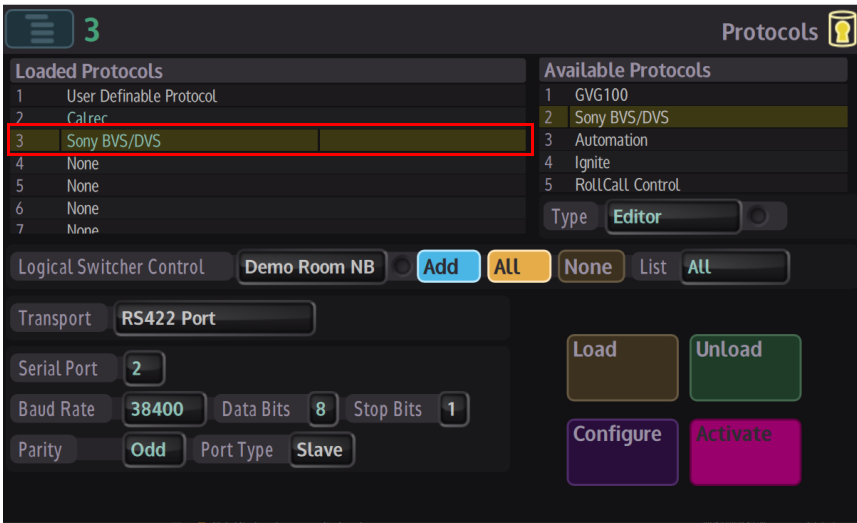
The next step is to setup the protocol ready to use the required Peripheral.

The method for setting up a protocol is exactly the same for all protocols, which will be explained over the next couple of pages.

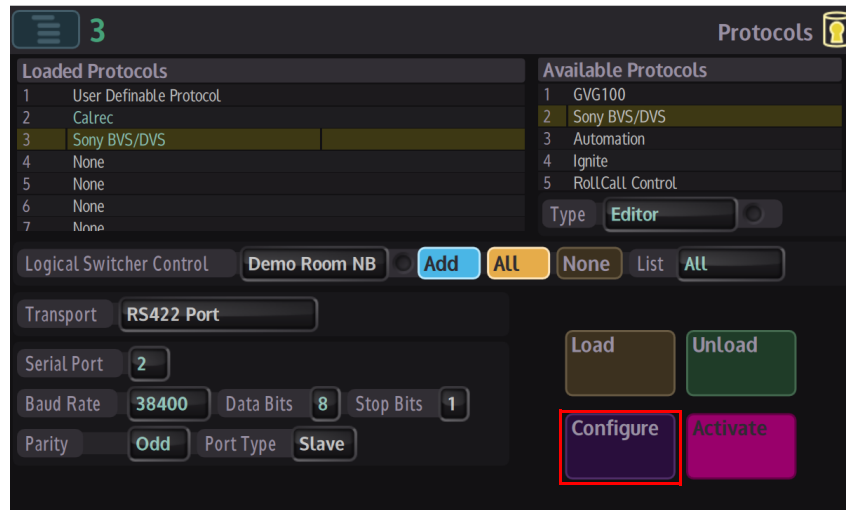
How to Setup a Protocol



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).



The next step is to configure the protocol.

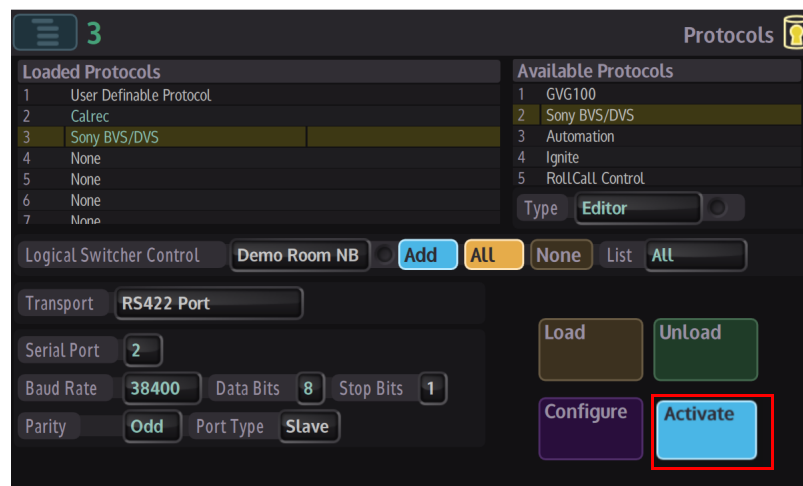


Touch the **{Configure}** menu link button to enter the “**Protocol Configure**” menu.



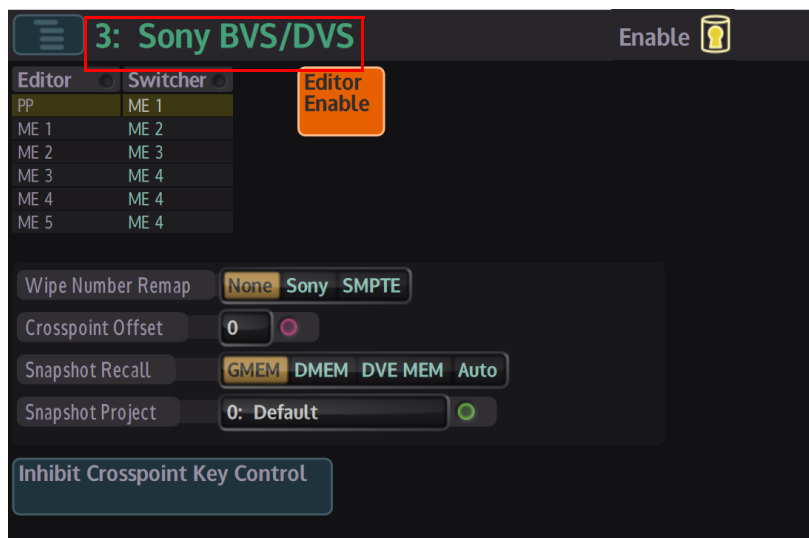
The user is able to select the type of connection to the external equipment that is required, using the “**Transport Type**” parameter i.e Serial or IP.

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.



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.

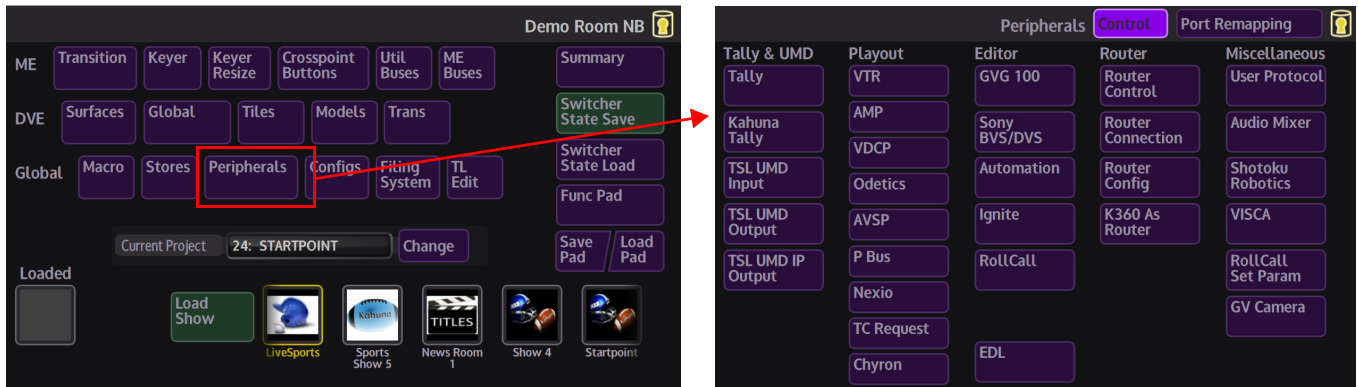


If the number and the protocol name are not there, the protocol has not been setup.

Peripherals Menu's

The Peripherals menu is used to control various external equipment; such as VTR's, Routers, Under Monitor Displays etc.

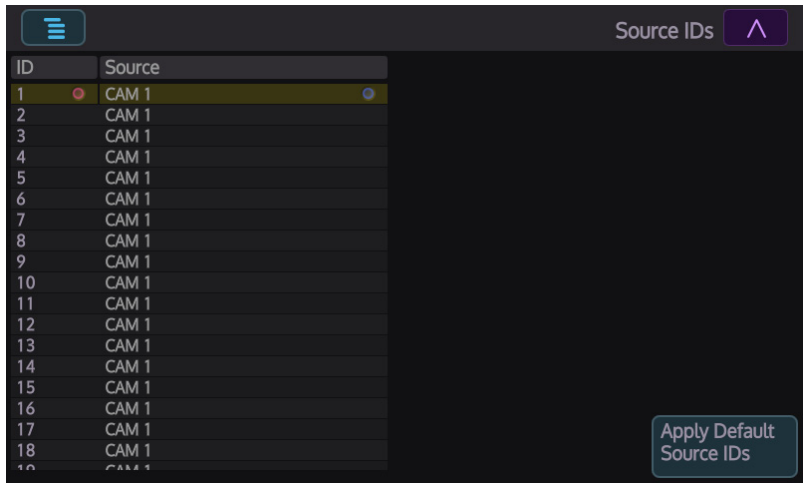
Press the **{Peripherals}** button in the Global area in the Home menu to enter the Peripherals main menu.



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



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.

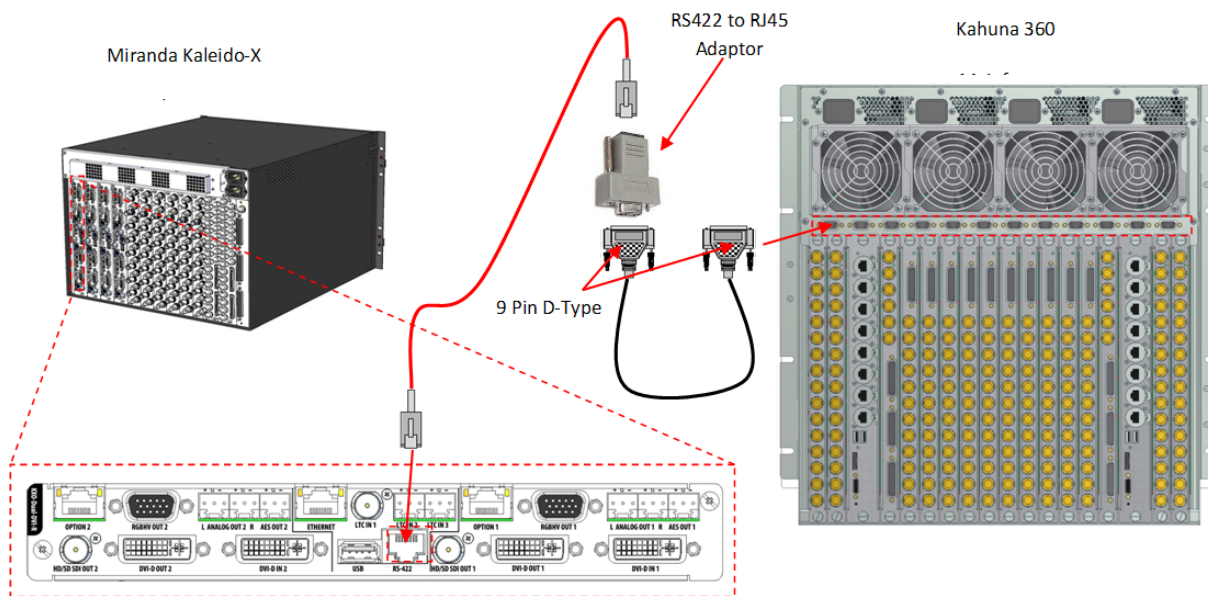
Practical Solutions for the Tally Protocol

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

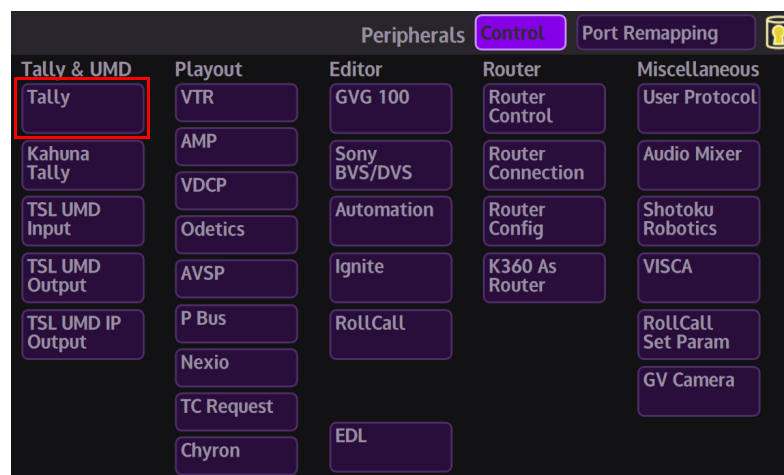
The Kahuna mainframe connects to the Kaleido-X Multiviewer via RS422 using one of the RS422 ports on the Kahuna and RS422 to RJ45 adaptor for the Kaleido-X as shown below.



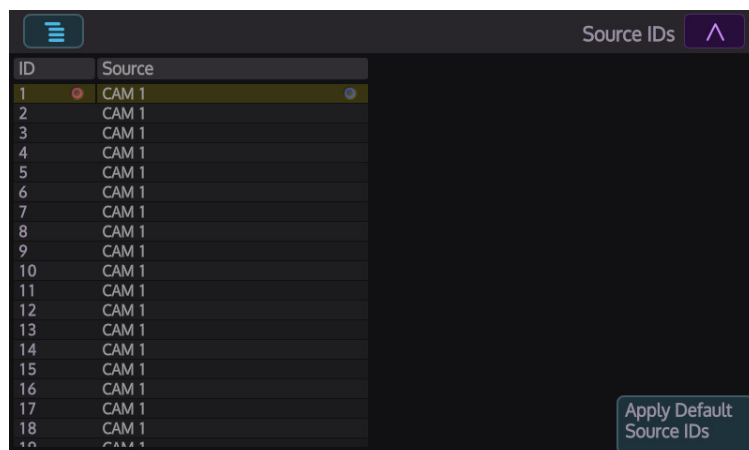
The protocol will now need to be configured so that it is able to communicate with the Kaleido-X. (5)

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.



Press the Delegate button to select the RS422 Port and set the Extension Enable parameter to "On"



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.

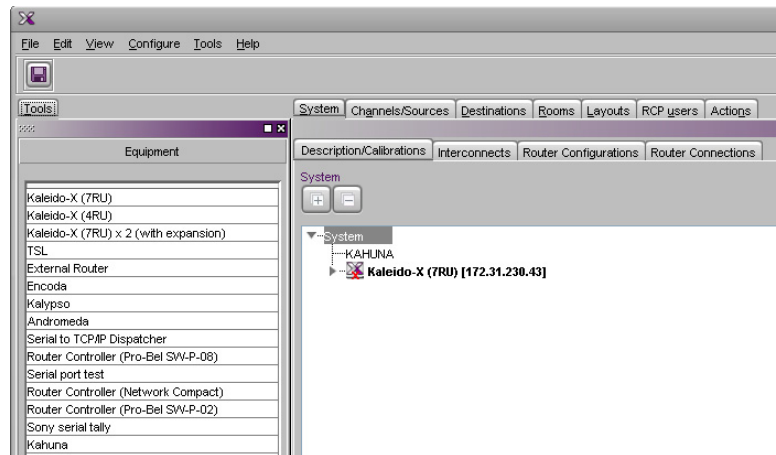
Right click mouse.

Click "Show Dashboard"

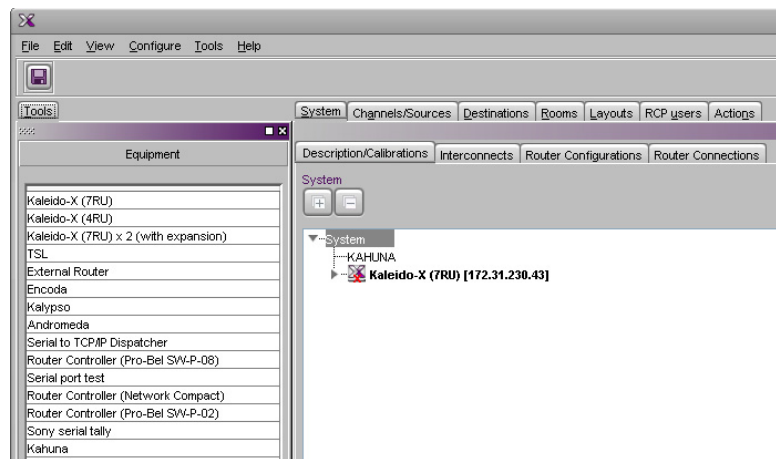
The current layout, IP address and software version of the Kaleido-X will be displayed.

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.

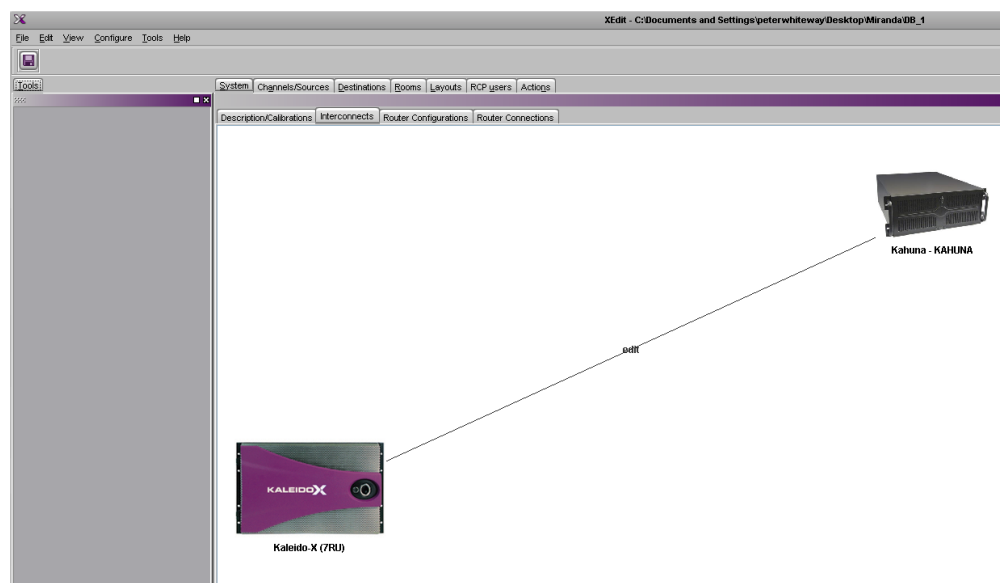
3. Install the requested Miranda applications and Open X-Edit.
4. Click on the Description/Calibration tab as shown below.



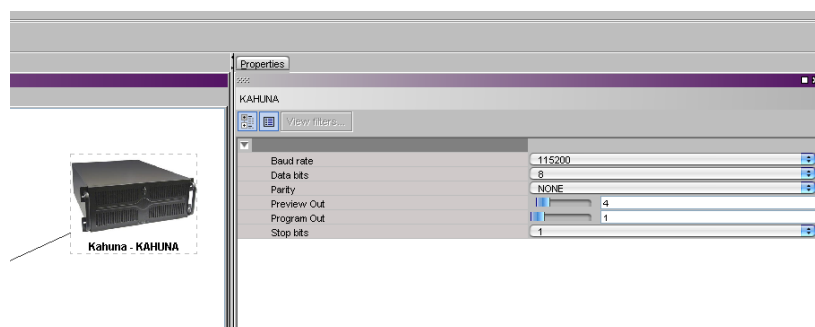
5. Drag "Kahuna" from the equipment tab and drop it into the system list; as show below.



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.



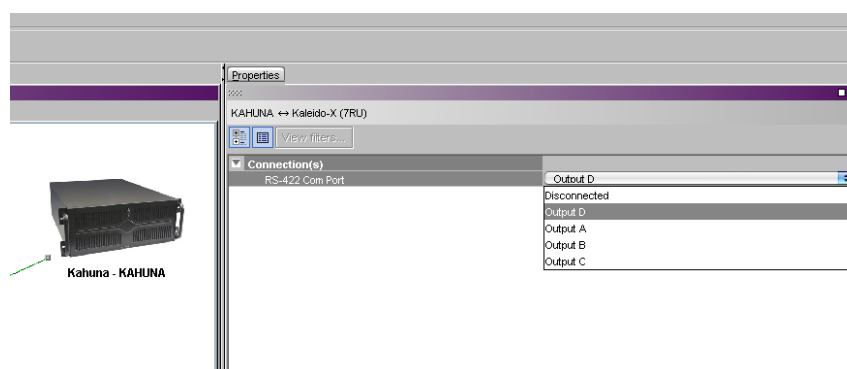
8. In the options above, set the Program Out parameter to correspond to the output set to Program on the Kahuna.

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.

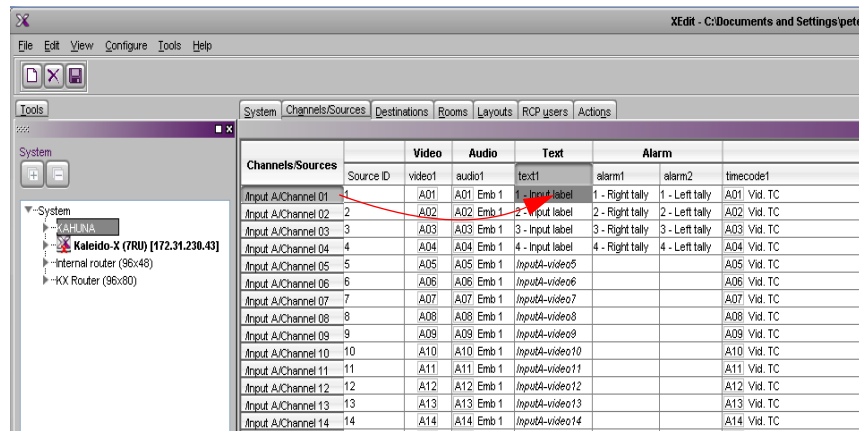
Note: Only outputs 1-48 can be selected for PGM and PVW.

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.

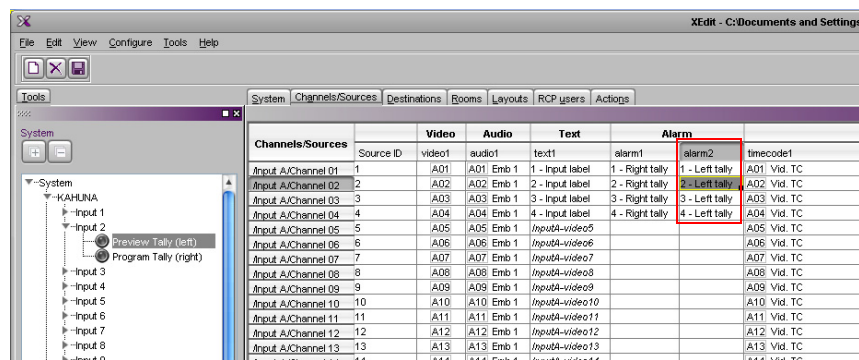


11. At this point it is advised that you save your Config, using the File>Save as option.

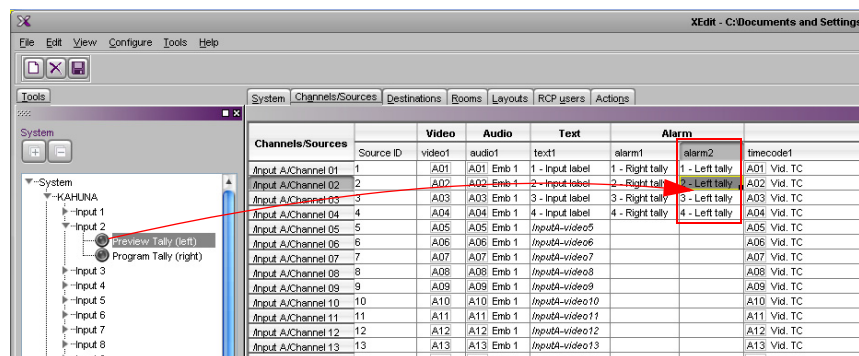
12. Select the Tools - System tab. Select the Text column in the channels area and then drag the input label for each Kahuna input from the Kahuna in the Tools tab on the right. Repeat for each input you want to display on the Kaleido-X from the Kahuna.



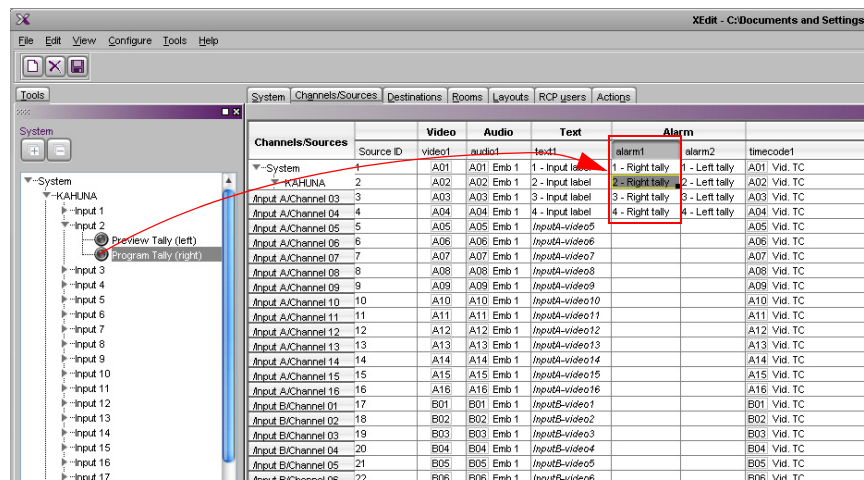
13. Setting up Alarms, right click and add a level so there is Alarm 1 and Alarm 2. The alarms will trigger the UMD physical tally LED's when PGM/PVW are selected on the Kahuna control surface.



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.



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.

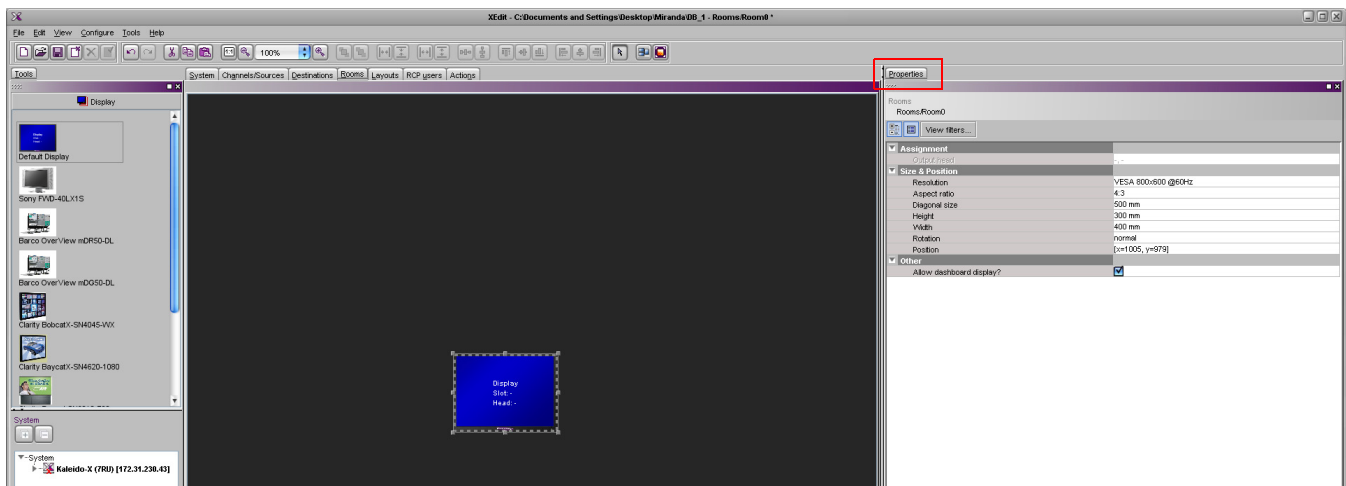


16. At this point it is advised that you save your Config, using the File>Save as option.

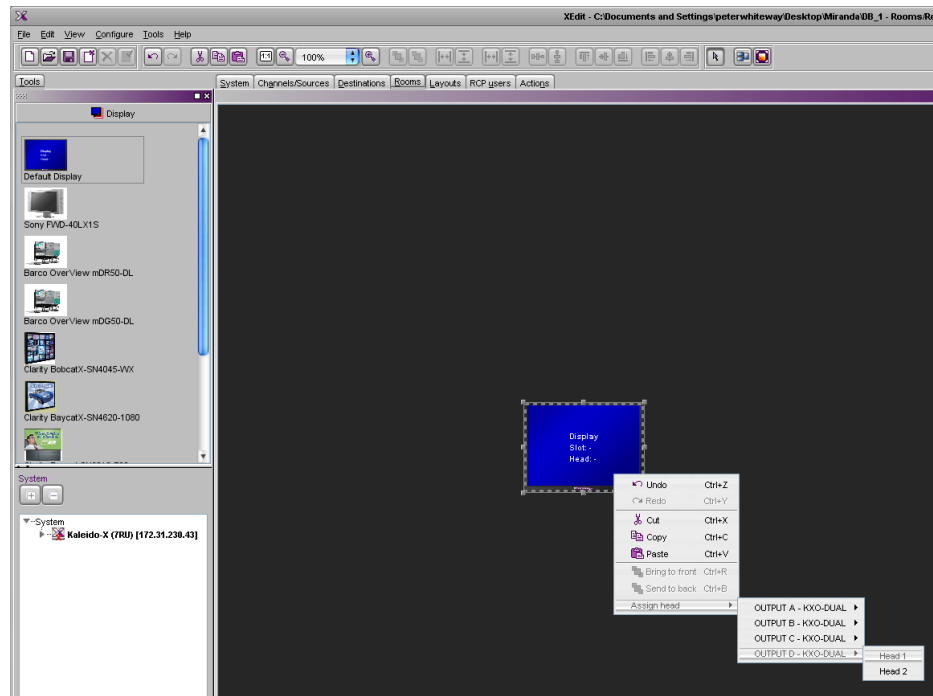
17. Select the Rooms tab and create a new room. For the example below Default Display is selected.

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).



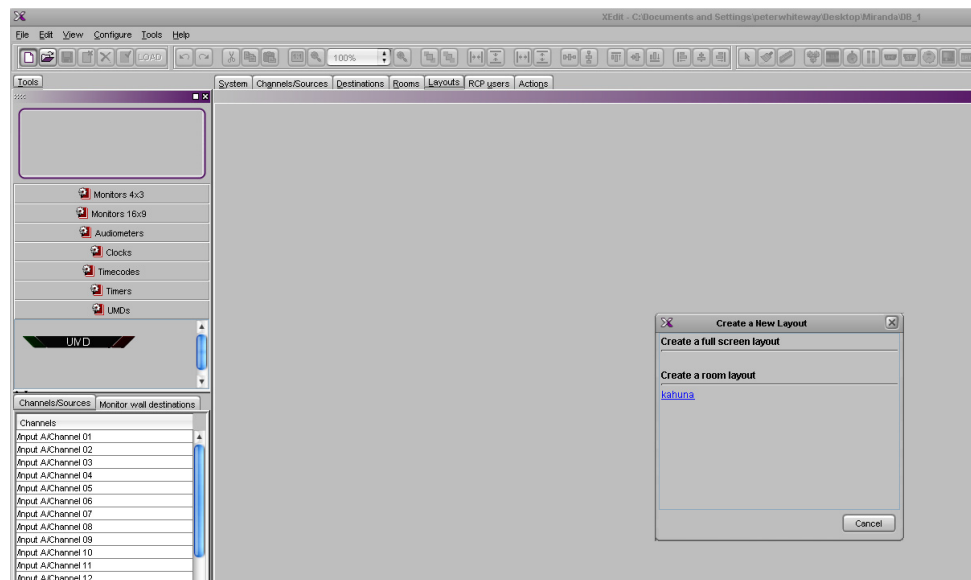
19. Right click the display and select the Kaleido-X output that is going to be connected to the monitor (shown below).



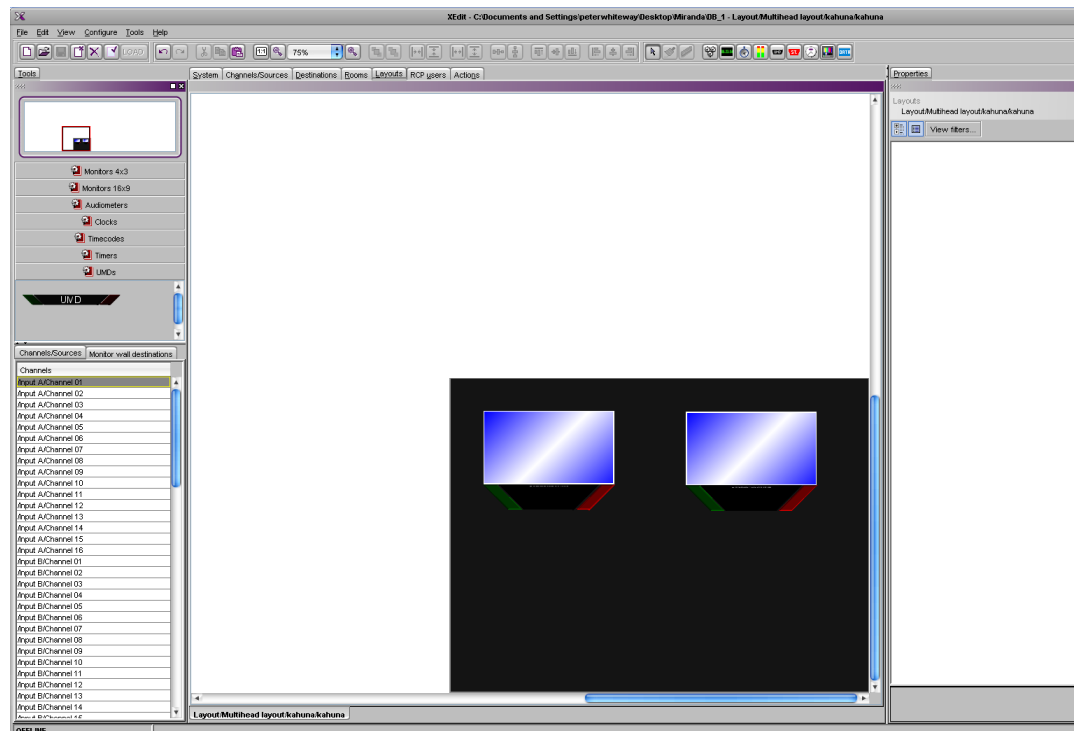
20. Save the room.

21. Select the Layouts tab and select new.

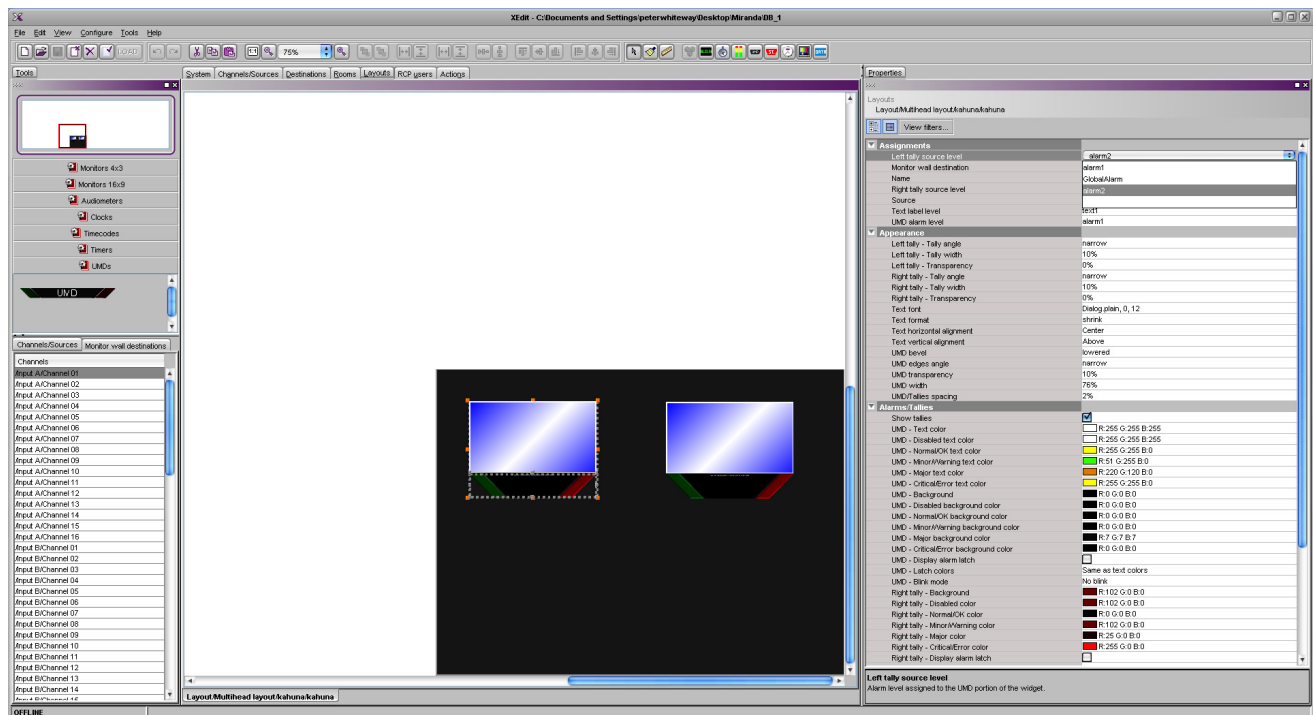
22. Select the room to be used for the layout.



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.

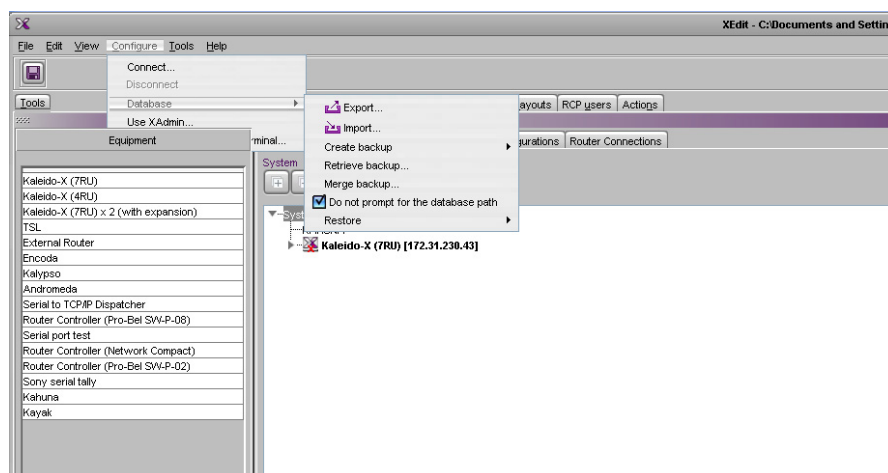


26. Save the setup once complete.

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.

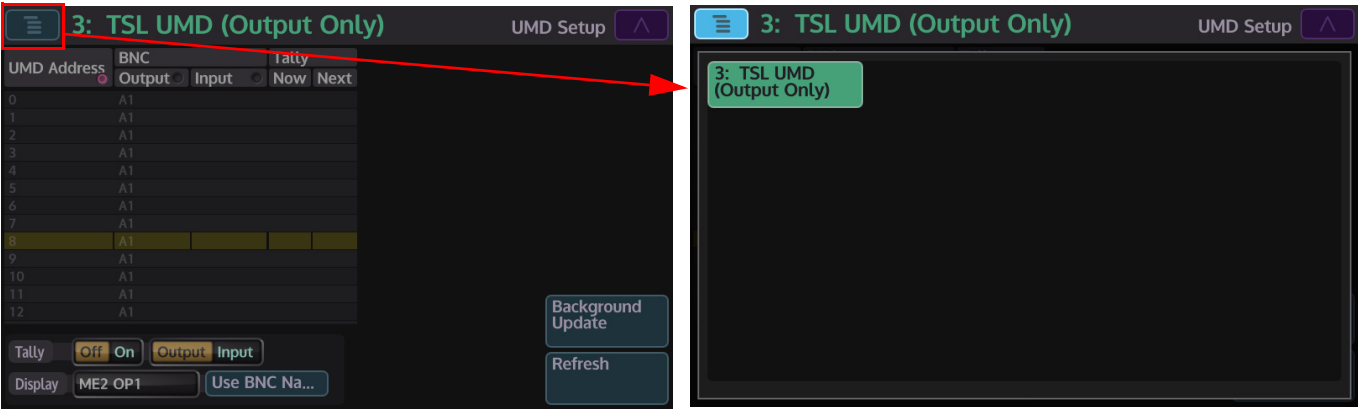
Note: Be careful of the above otherwise you can export an empty database to the multiviewer losing the saved setup.



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.



The protocol is connected to Kahuna by one of the serial ports.

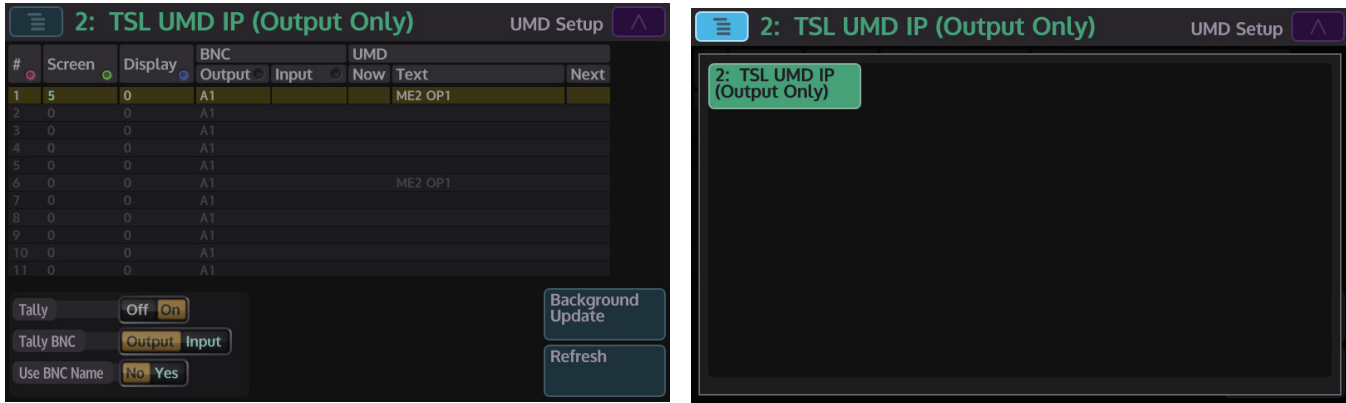
Select the UMD address, then select the BNC output from the Kahuna mainframe, the user can then select if they wish to display the output name from the Kahuna system to be displayed on the under monitor display.

A tally is also displayed if the source to the under monitor display is on air.

TSL UMD IP Output Only

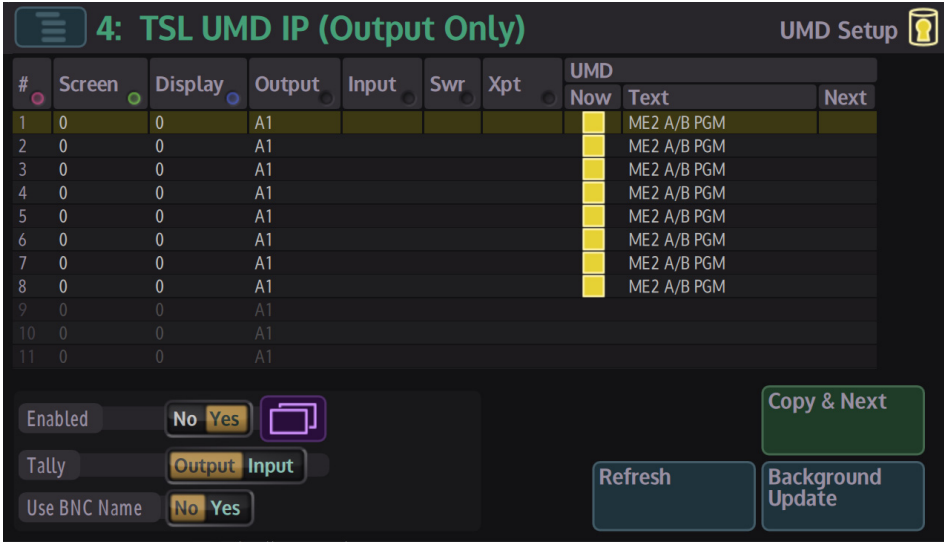
This is basically the same peripheral and protocol as the one above except that the protocol connects to the TSL UMD equipment via IP.

The menus work in the same way, with the inclusion of the UMD text display area.



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.



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.

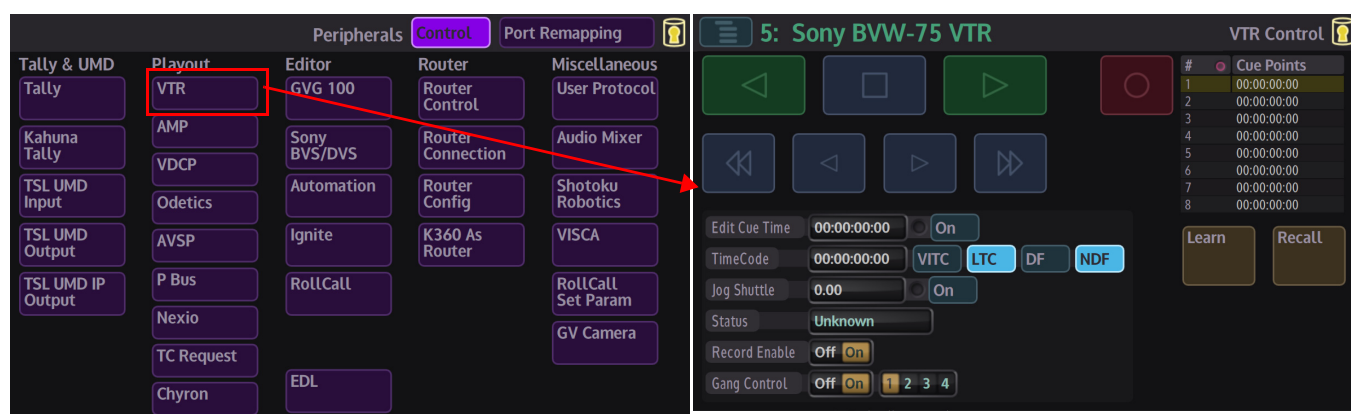
Playout

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

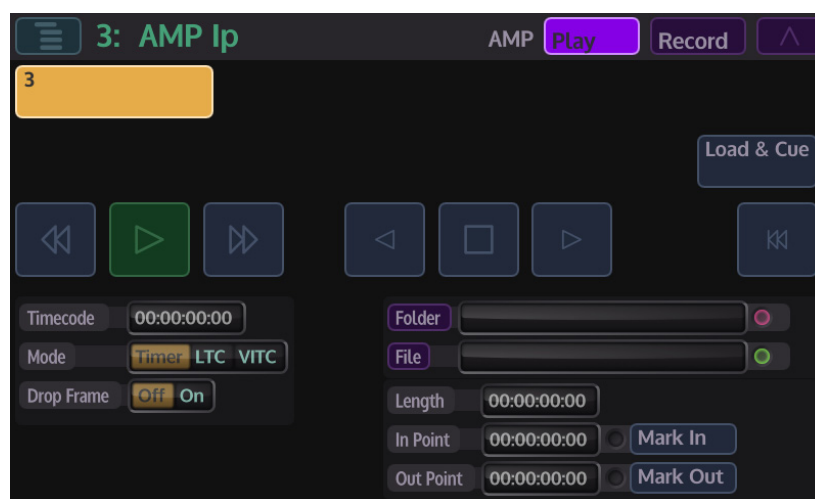
AMP protocol is an IP Based control structure, it will support 4 channels (VTR1, VTR2, VTR3, & VTR4) in a single device, and also supports multiple devices over different IP Addresses.

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

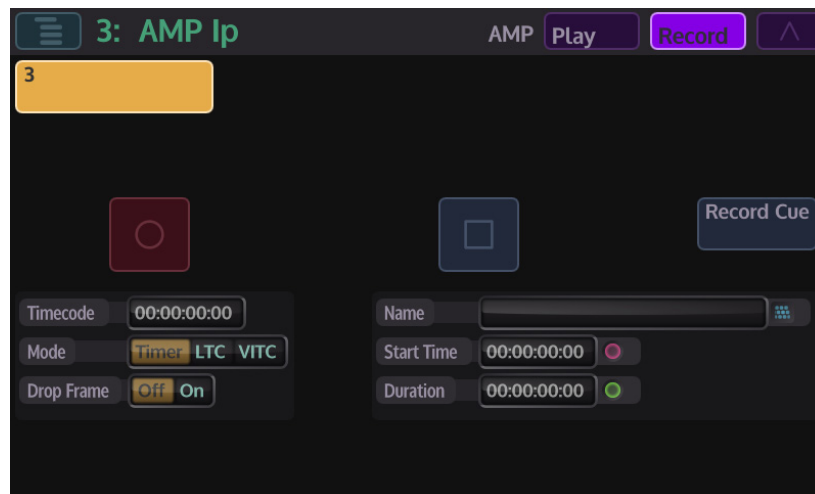
The **Play** menu allows the user to set In/Out points for the currently selected VTR and clip, setting the In/Out points can be done either by using the VTR command buttons to position the clip then press the **{Mark In}** or **{Mark Out}** buttons, or by direct input using the In and Out parameter 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.

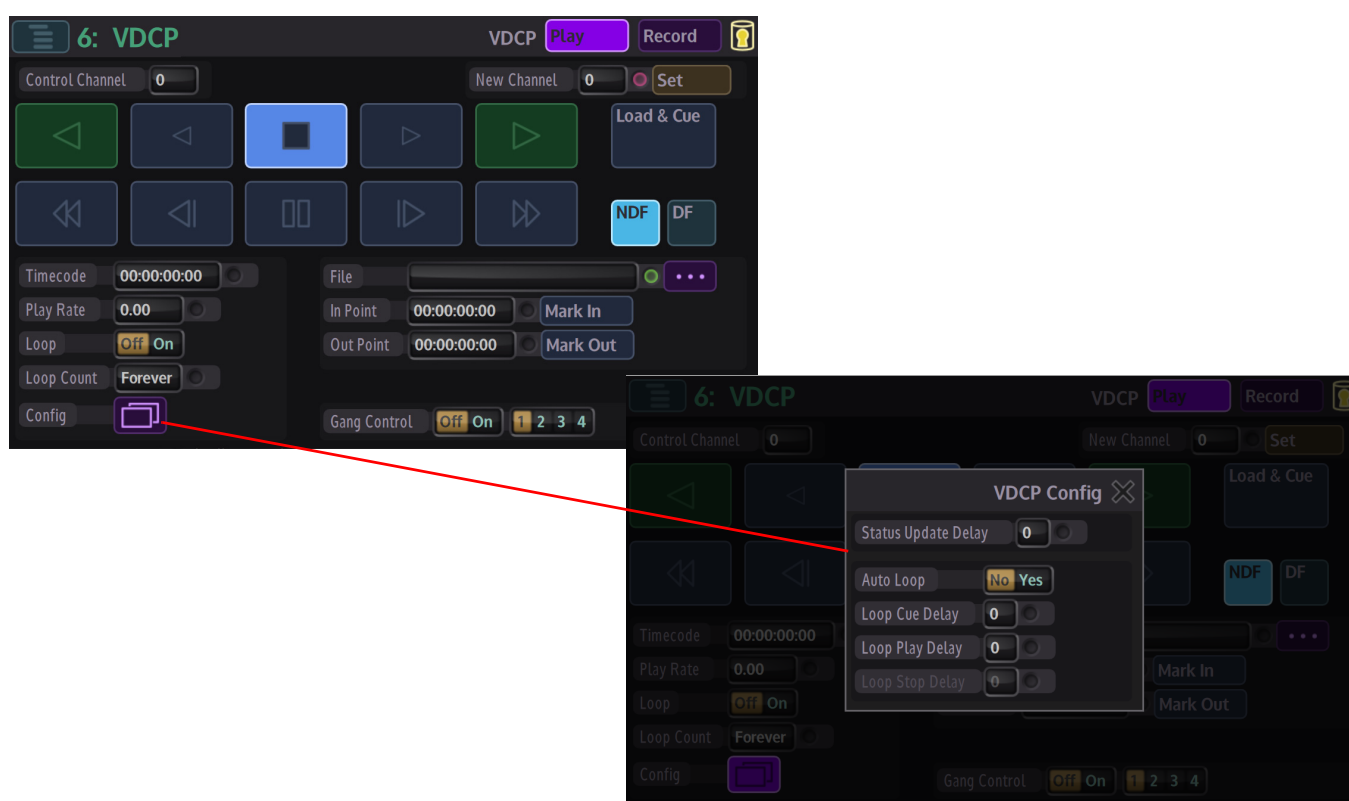
VDCP

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

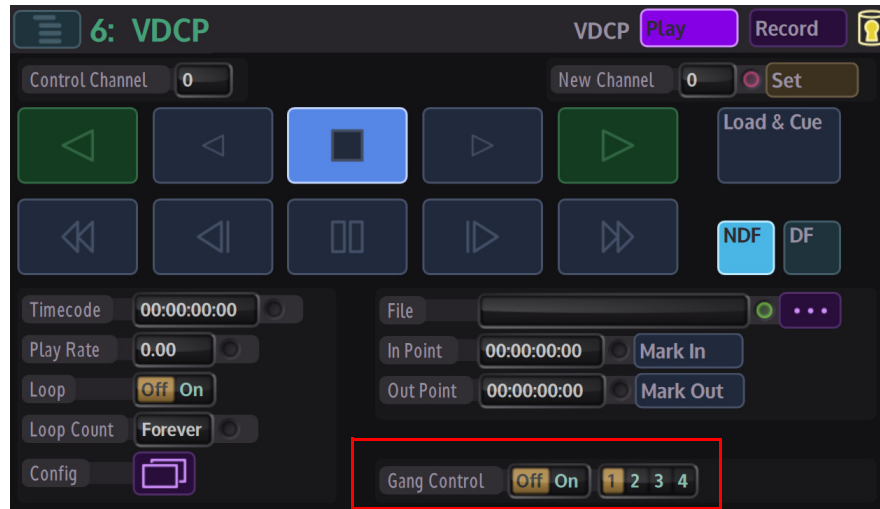
Loop - will set the loop function On/Off.

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.



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

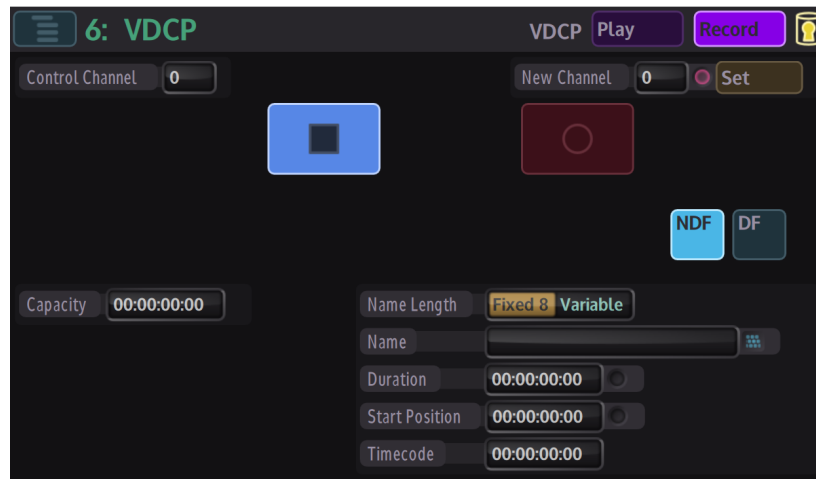
Fast reverse and fast forward

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.



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 than 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 than 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

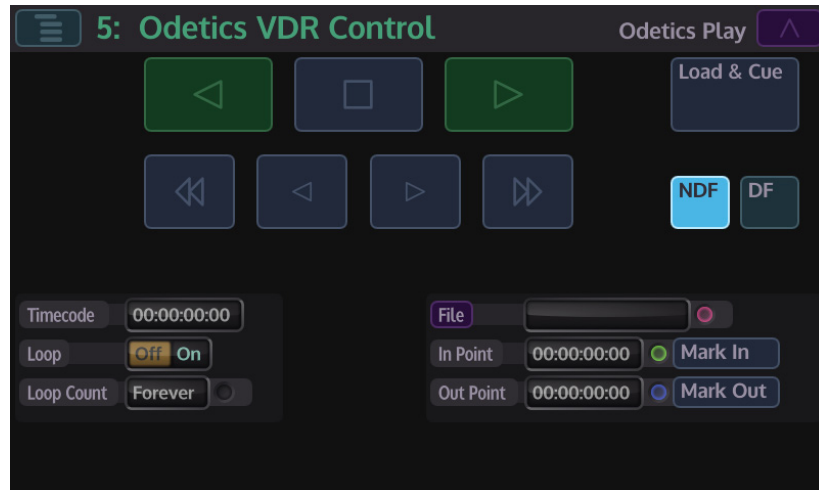
Record - starts recording

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.

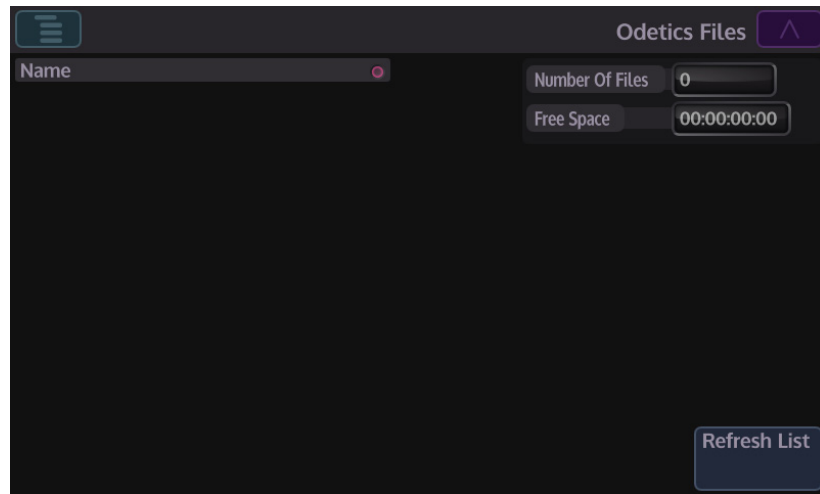
Mark In / Out Points - the currently stored In and Out points for the currently loaded clip. Using the attachers and Snap/Normal buttons it is possible to scroll through the clip to re-assign a new In or Out point.

{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.



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.

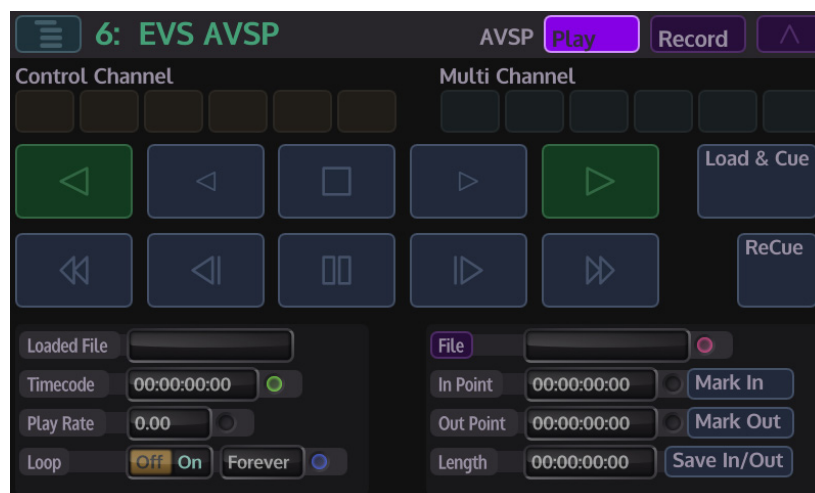
AVSP

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 ½ 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

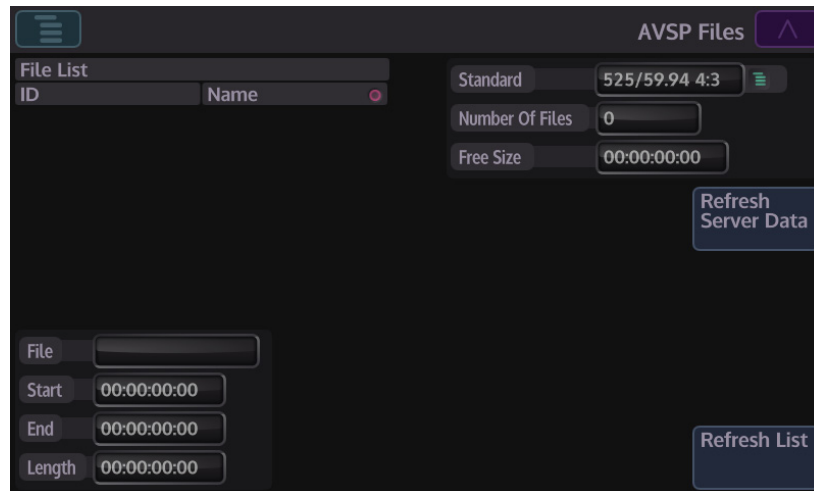
Loop - when a file is set to play, if the {Loop} button is touched, the **Loop Count** parameter can be set to play the file; Forever or from 1 time up to 100 times then stop.

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.



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

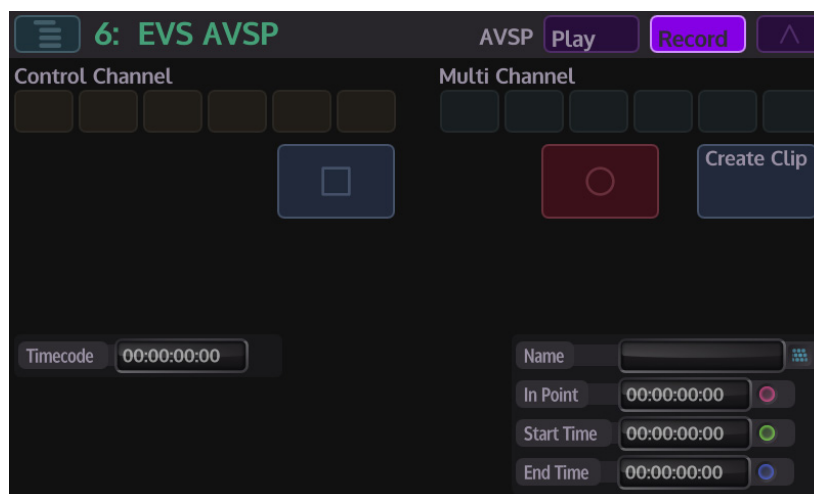
Free Size - the remaining Free Storage Space

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.



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.

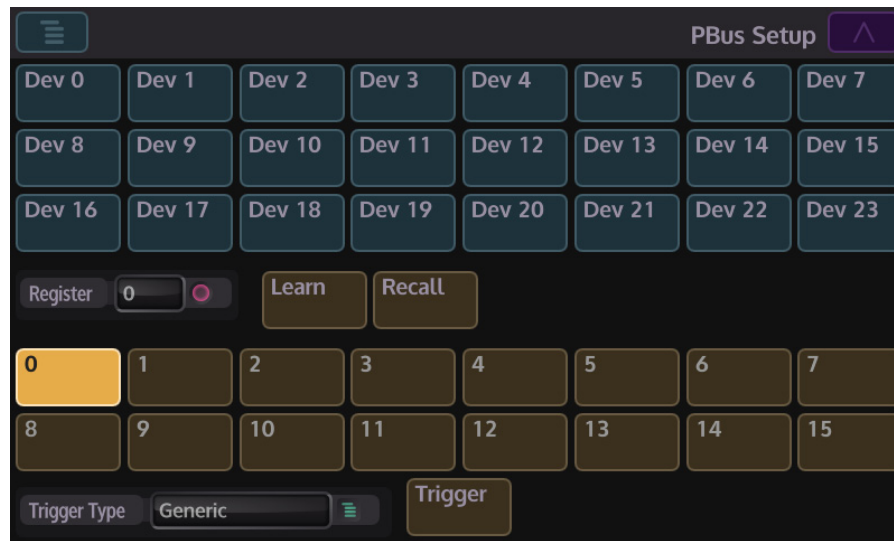
P Bus

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.

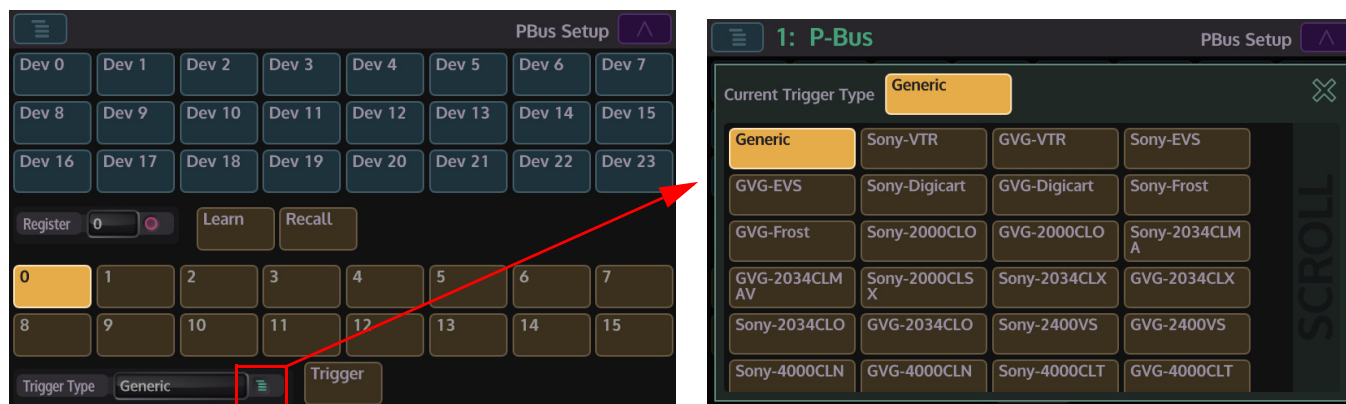
P Bus Setup

On the MAV-GUI, in the “**Home**” menu, touch the **{Peripherals}** menu link button, then in the Peripherals menu touch the **{P Bus}** menu link button.

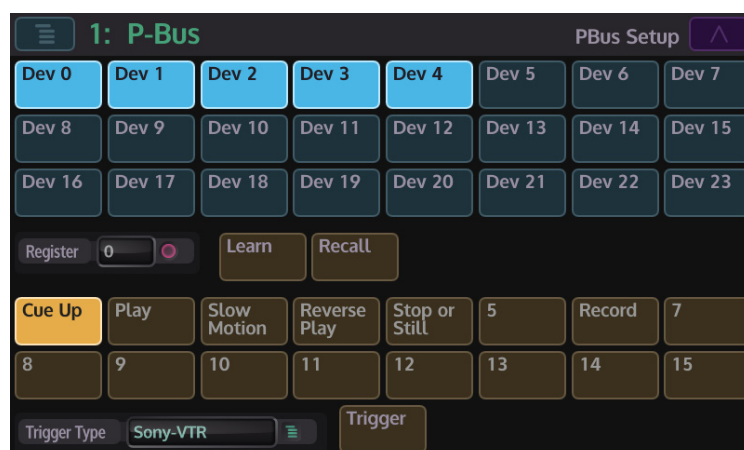


Register - is a store for the setup and position of the P Bus device, 4096 registers are available. For example, the start point on a VTR tape can be set in a register by selecting a register number at a certain point relating to the time code then pressing the **{Learn}** button. **{Recall}** will wind 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).



Button Controls



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

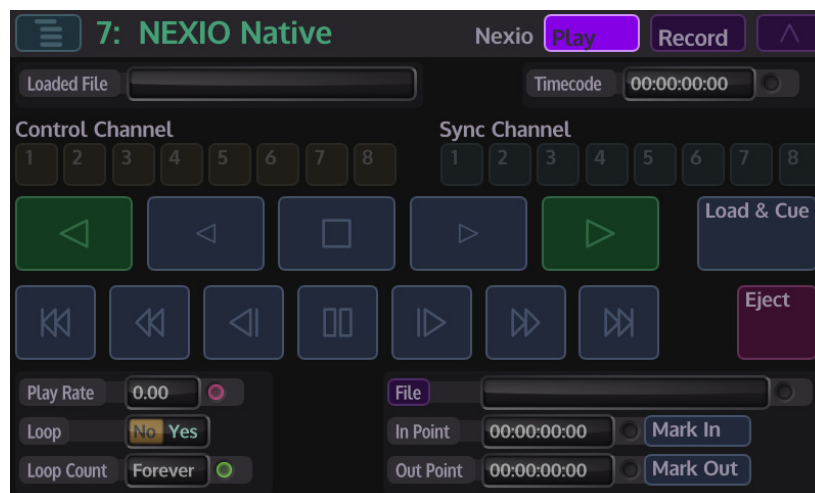
The **Nexio Play** menu allows the user to select files in the playout File List, set In/Out points for the currently selected file, setting the In/Out points can be done either by using the VTR command buttons to position the clip then press the **{Mark In}** or **{Mark Out}** buttons, or by direct 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}**.

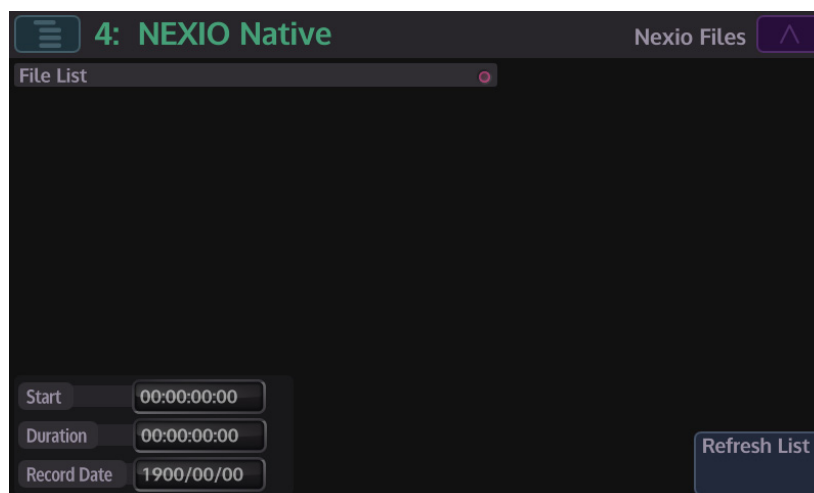
The **Sync Channel** is the channel that follows the control channel i.e. if Sync Channel 1 is the Fill channel and Sync Channel 2 is Key channel, the user can set Control Channel for the transport commands to 1 and Sync Channel to 1&2, so the Key channel will always follow the Fill. channel.

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}**.

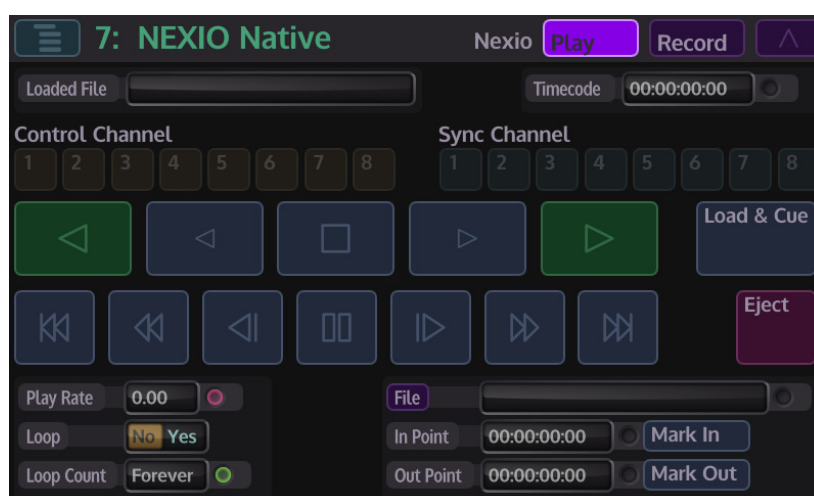


Touch the **{File}** menu link button to display the “**Nexio Files**” menu.

Note: It is recommended to setup the loop play parameters before doing a {Load & Cue}.



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.



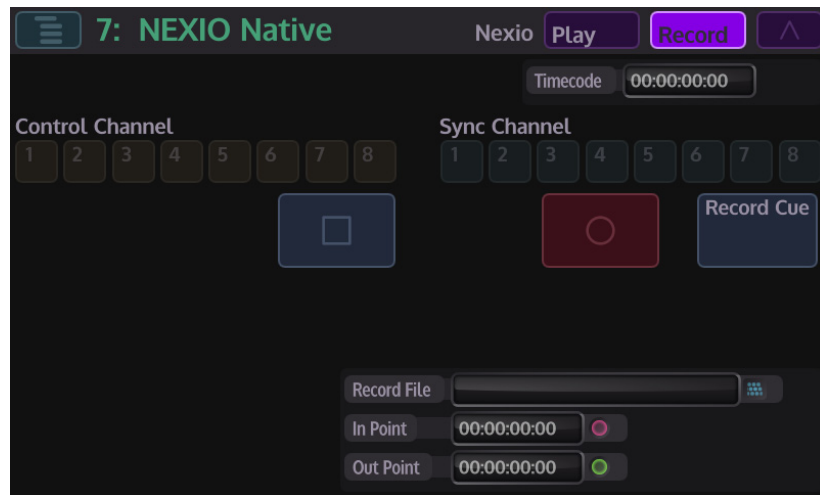
Press the {Load & Cue} button and the file will show in the **"Loaded File"** window. Use the **In Point** and **Out Point** parameters to set the **Mark In/Out** points as required. Select the transport command Control Channel, and then select the Sync and then press the Play button.

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.



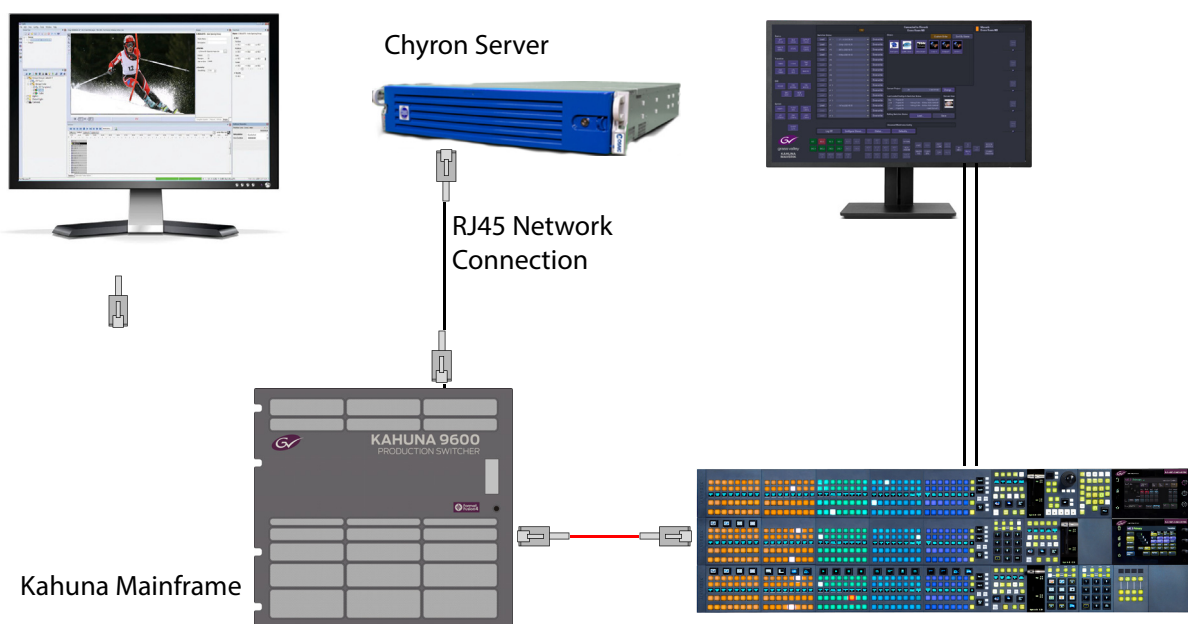
Once happy with the settings press the **{Rec}** button and recording will commence.

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.

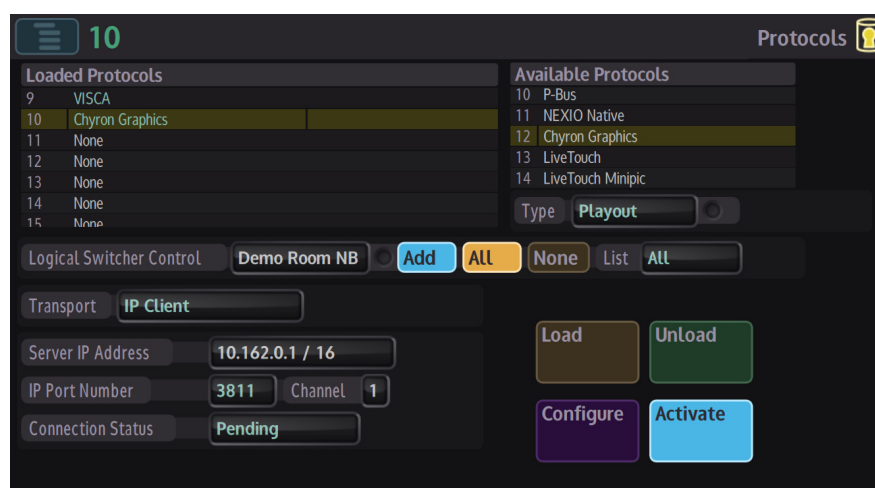
Setup - Example of Kahuna connecting to a Chyron System



The Chyron server is connected to the Kahuna mainframe.

Kahuna Setup

In the “Eng Config” menu, touch the **{Protocols...}** menu link button.



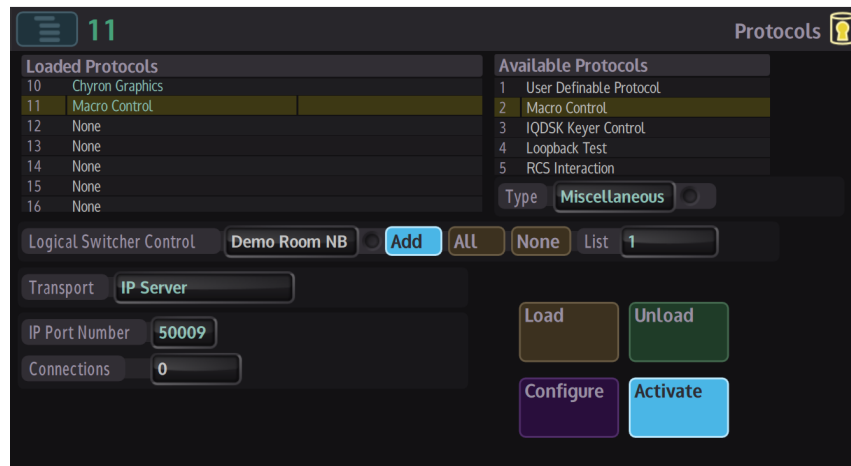
Select “Playout” in the “Protocol Type” parameter, then in the “Available Protocols” table, touch to select “Chyron Graphics” and then touch the **{Load}** button.

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.



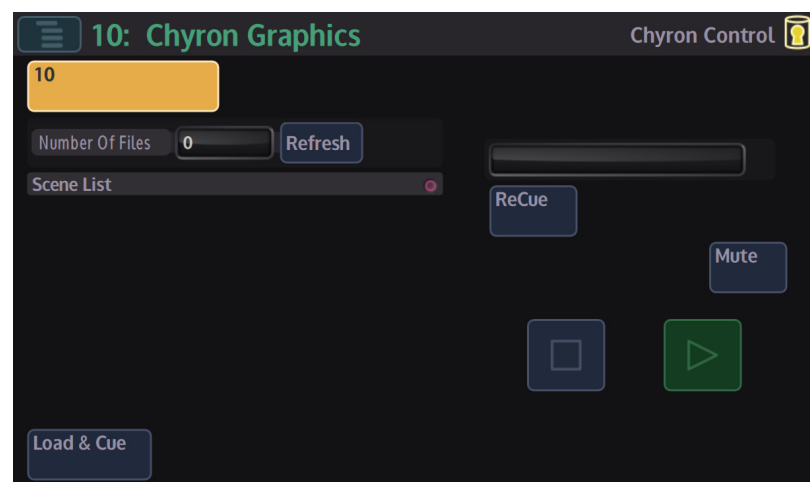
In the “Protocol Type” parameter, select “Miscellaneous”, and in the “Available Protocols” table select “Macro Control” and touch the **{load}** button.

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

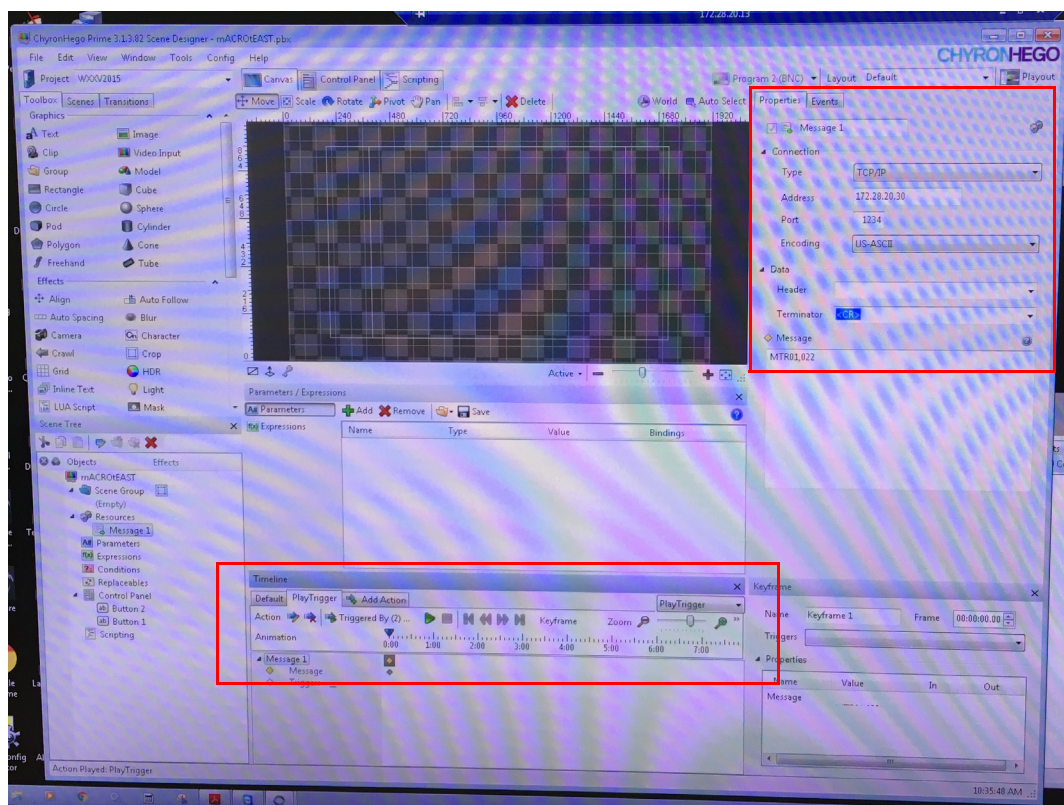
Touch the **{Peripherals}** menu button and then in the “Others” column, touch the **{Chyron Control...}** menu link button.



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.

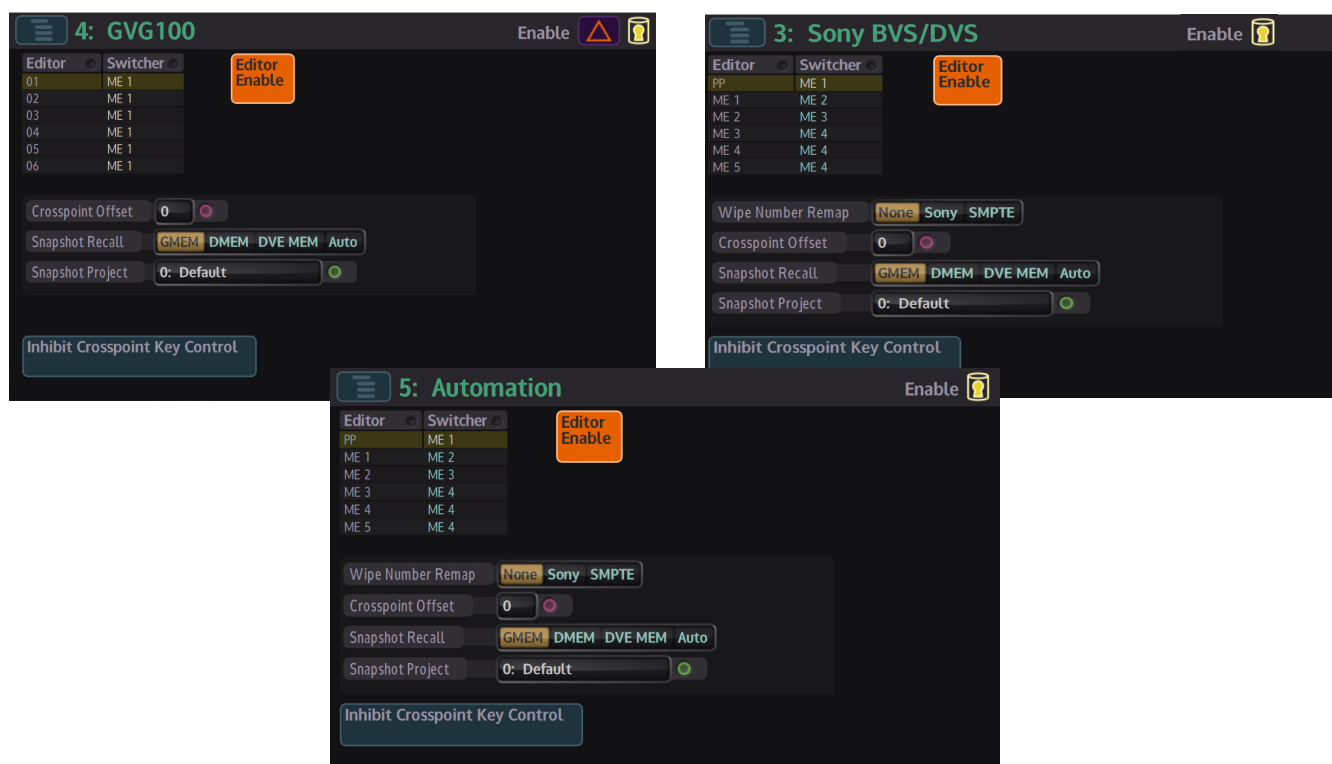
Note: Chyron will only Flash 1 or trigger the macro once on Kahuna and then cut the connection.

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.

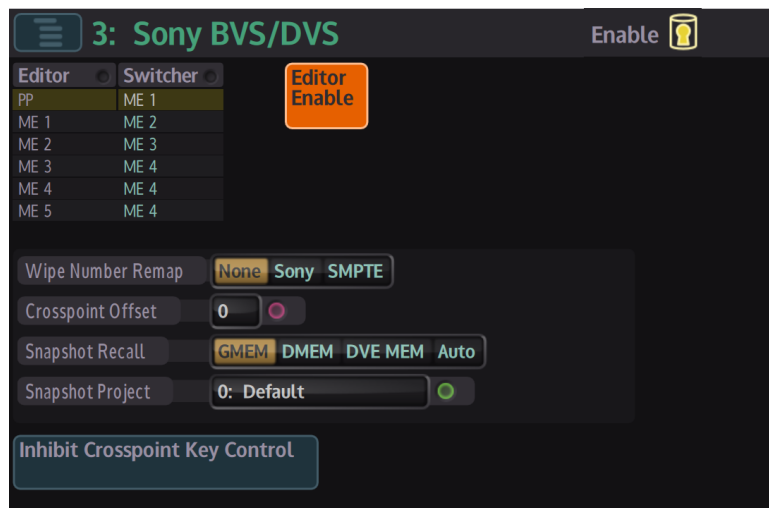
Before using this protocol the required DMEM/GMEM's that are going to be used with the external equipment software should have been saved into the "Default" Project on the Kahuna mainframe. This will enable external equipment software to recall the required DMEM's and GMEM's.

Set the **Snapshot Project** parameter to "Default", this enables the external equipment software to recall the required DMEM's and GMEM's.

The **Snapshot Recall** 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.



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.

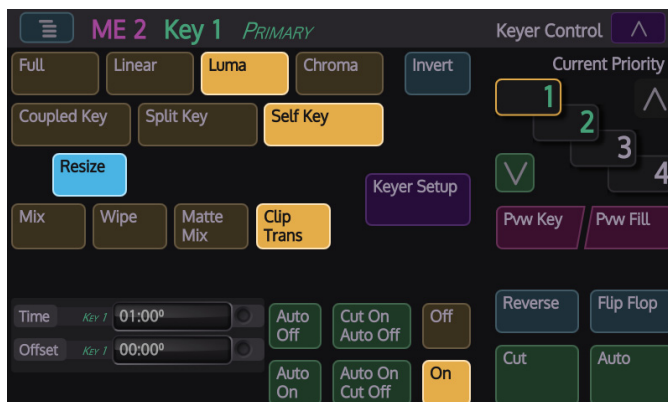
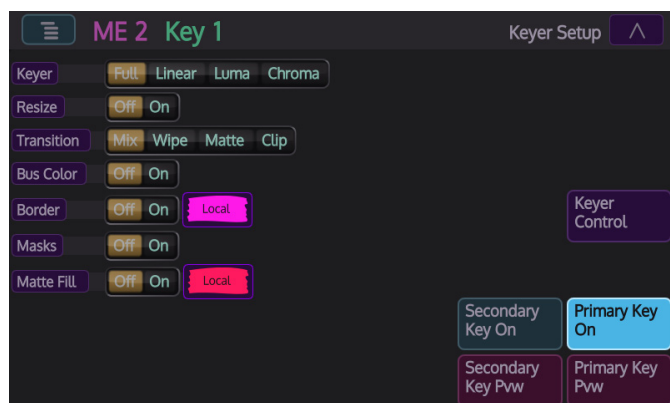
Transition Control



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



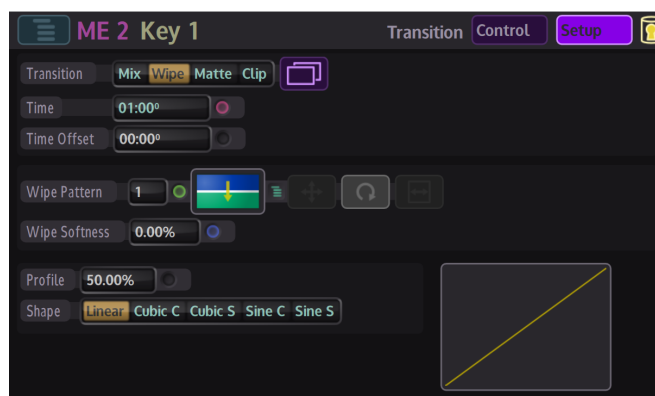
The following can be selected to affect Key1, Key2, Key3 and Key 4 for each ME

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.



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



Snapshot Recall - Loads a Kahuna DMEM or GMEM (1 ~ 255 in the Default Project) from specified Snapshot Project.

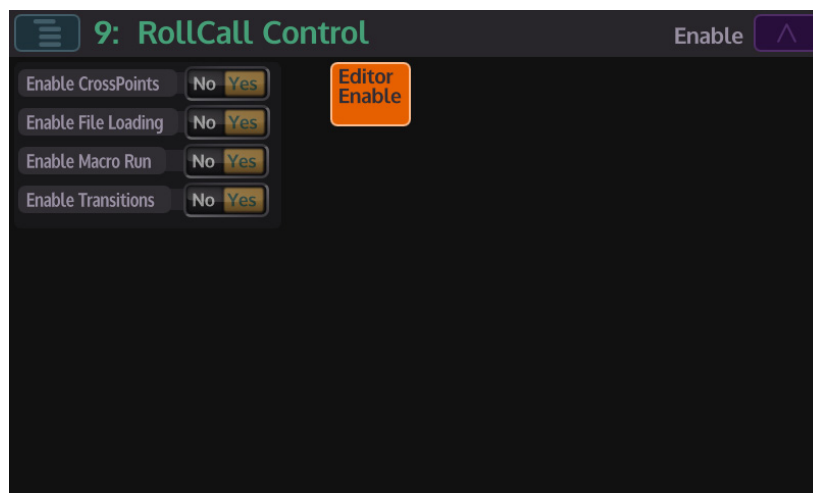
Snapshot Project - selects the project that contains the snapshot

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.

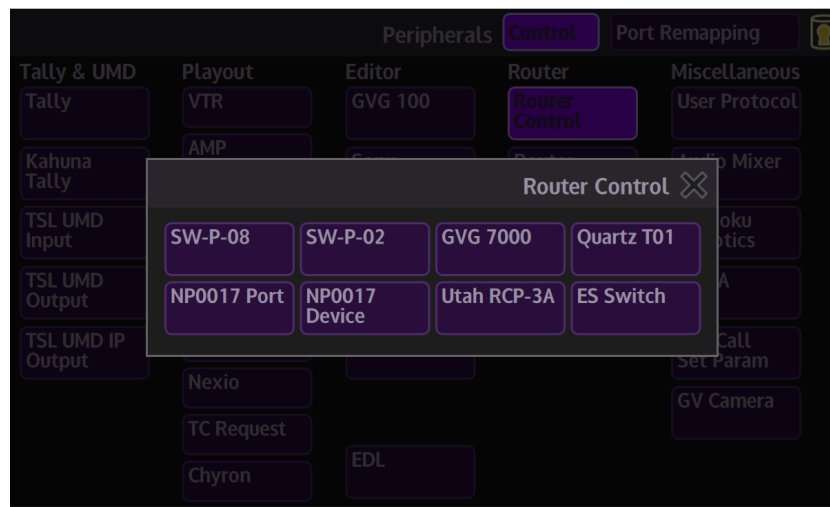
Router

Router Control

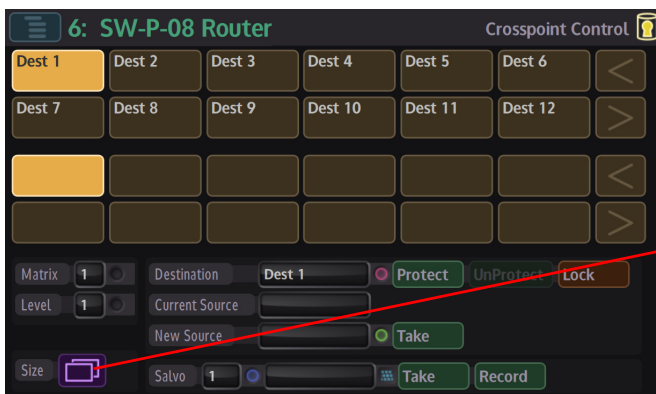
This function allows Kahuna to control a third party router. For this section of the manual we are going to look at the Grass Valley Router.

Touch the **{Router Control}** menu link button and the menu below 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



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

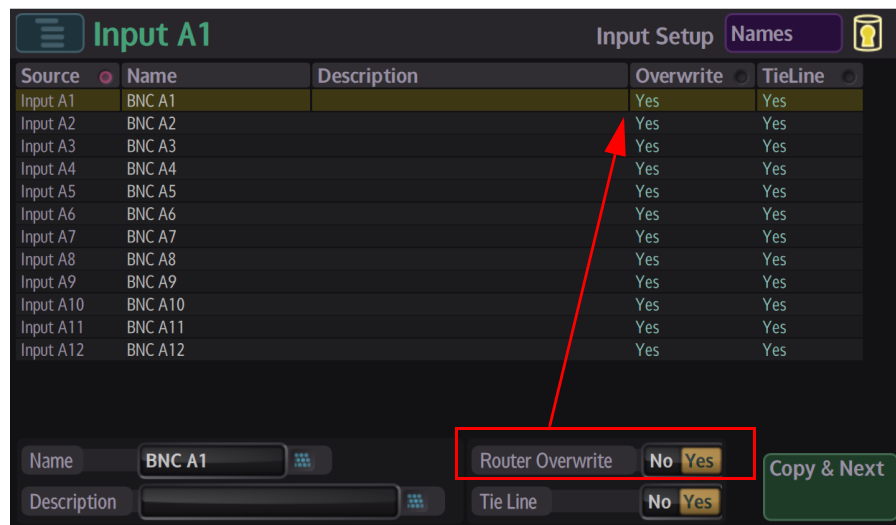
Take - Sets a crosspoint

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.

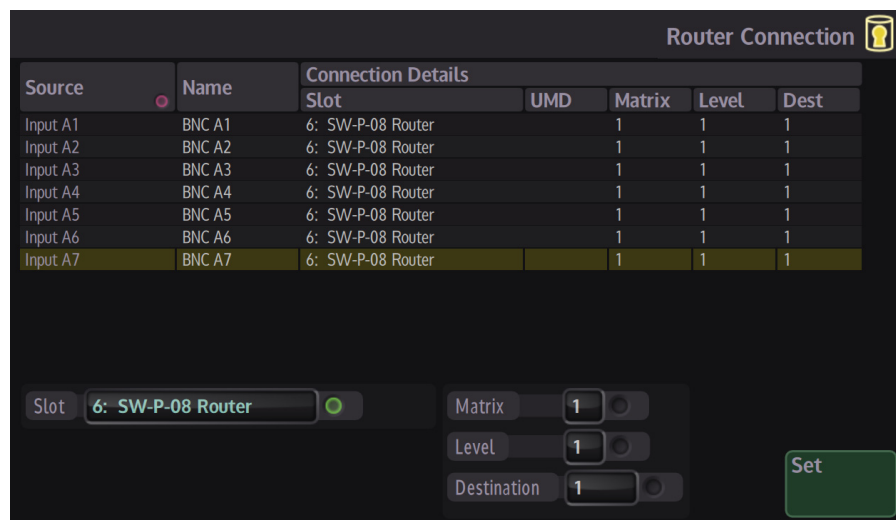
In the **"Engineer Config - Input Setup - Names"** menu, the **"Router Overwrite"** parameter has to be set to **"Yes"** before using the menu below.



The screenshot shows the 'Input Setup Names' menu. At the top, there's a header 'Input A1' and 'Input Setup Names'. Below it is a table with columns: Source, Name, Description, Overwrite, and TieLine. The table lists inputs from Input A1 to Input A12, all with 'BNC' names. The 'Overwrite' column for all inputs is set to 'Yes'. Below the table, there's a 'Router Overwrite' button with 'No' and 'Yes' options. A red arrow points from the 'Yes' button to the 'Overwrite' column in the table above. At the bottom, there are input fields for Name (BNC A1), Description, and Tie Line (No/Yes), and a 'Copy & Next' button.

Source	Name	Description	Overwrite	TieLine
Input A1	BNC A1		Yes	Yes
Input A2	BNC A2		Yes	Yes
Input A3	BNC A3		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

Using the **Matrix**, **Level** and **Destination** parameters, map the Router Destinations connected to the Kahuna inputs, as shown in the above table.



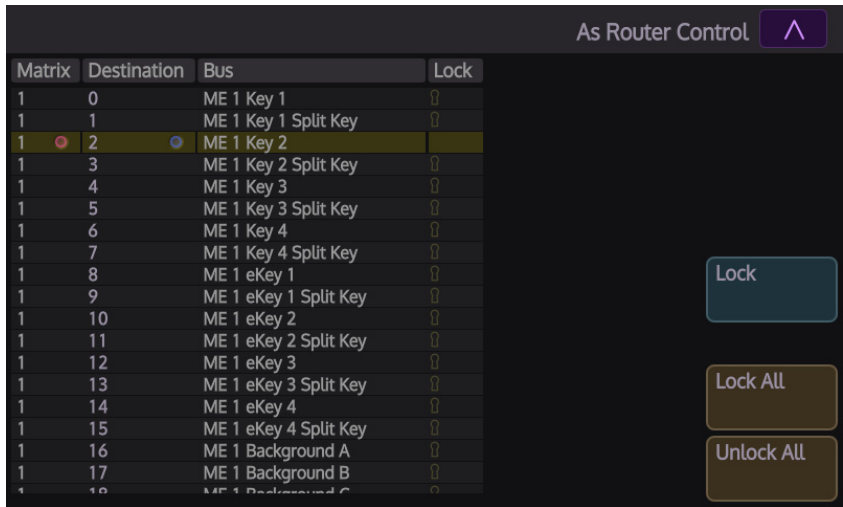
The screenshot shows the 'Router Connection' menu. At the top, there's a header 'Router Connection'. Below it is a table with columns: Source, Name, Connection Details (Slot, UMD, Matrix, Level, Dest). The table lists inputs from Input A1 to Input A7, all with 'BNC' names. The 'Connection Details' column shows '6: SW-P-08 Router' for all inputs. The 'Matrix', 'Level', and 'Dest' columns are all set to '1'. Below the table, there are input fields for Slot (6: SW-P-08 Router), Matrix (1), Level (1), and Destination (1), and a 'Set' button.

Source	Name	Connection Details	Slot	UMD	Matrix	Level	Dest
Input A1	BNC A1	6: SW-P-08 Router			1	1	1
Input A2	BNC A2	6: SW-P-08 Router			1	1	1
Input A3	BNC A3	6: SW-P-08 Router			1	1	1
Input A4	BNC A4	6: SW-P-08 Router			1	1	1
Input A5	BNC A5	6: SW-P-08 Router			1	1	1
Input A6	BNC A6	6: SW-P-08 Router			1	1	1
Input A7	BNC A7	6: SW-P-08 Router			1	1	1

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



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



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.

The screenshot shows a software interface titled "6: User Definable Protocol" with a "Commands" button. It contains a table with the following data:

#	Name	Command	Length
1		05 ★	3
2			0
3			0
4			0
5			0
6			0
7			0
8			0
9			0
10			0
11			0
12			0
13			0
14			0
15			0

Below the table, there are input fields for "Command" and "Name". The "Command" field has a dropdown menu with "Hex" and "ASCII" options, and a text input containing "05". The "Name" field is empty. A "Send" button is located to the right of the input fields.

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

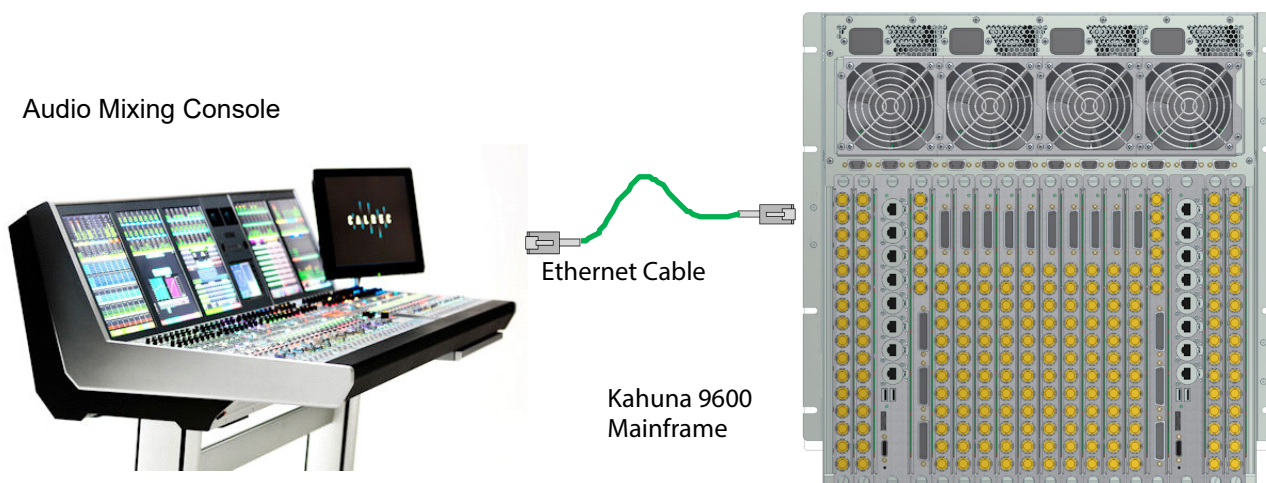
Name - name (function) given to the command data.

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

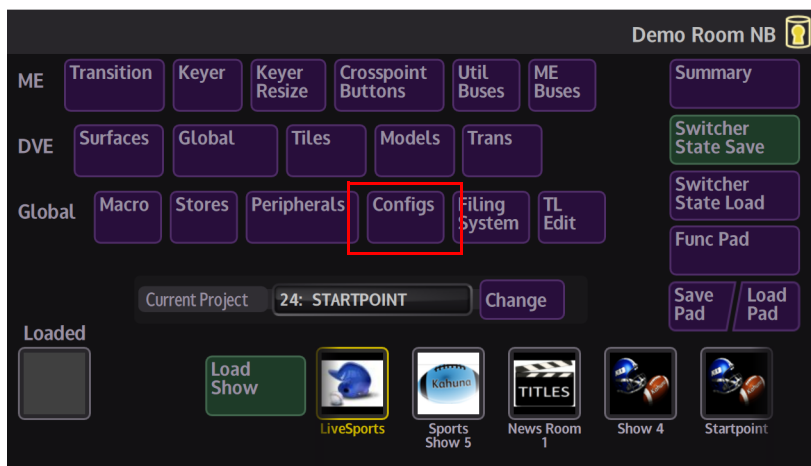
Note: The Kahuna Calrec protocol allows Kahuna to connect to the following Calrec Audio consoles:
Artemis, Apollo and Summa consoles.

Note: Make sure that the MAV-Audio-Fader modules have been added to the Maverik Module Layout.

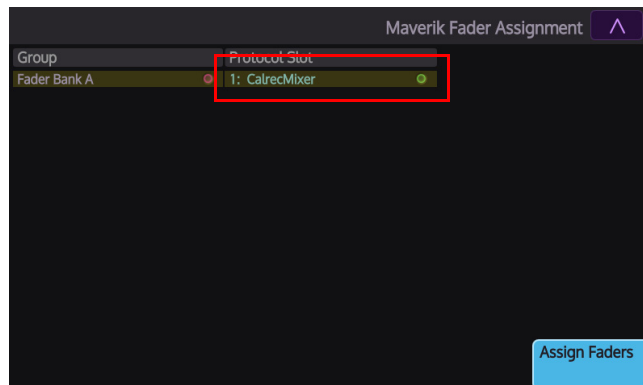
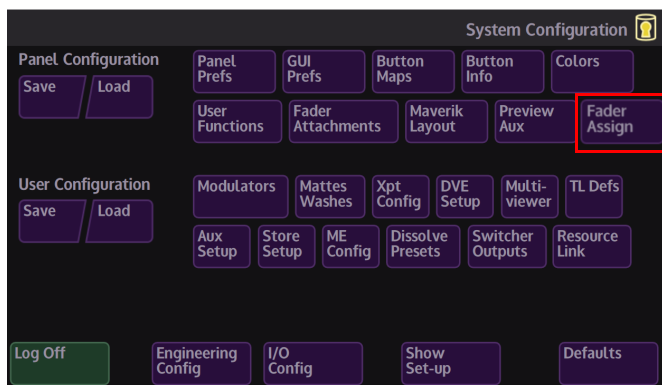
Setting Up Calrec on the MAV-GUI

In the “Home” menu, touch the “Configs” button to open the “System **Configuration**” menu.

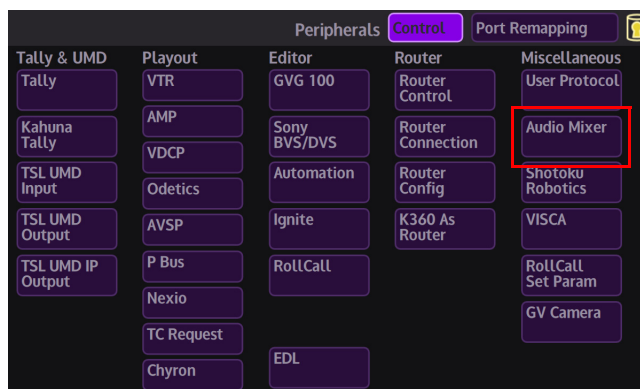
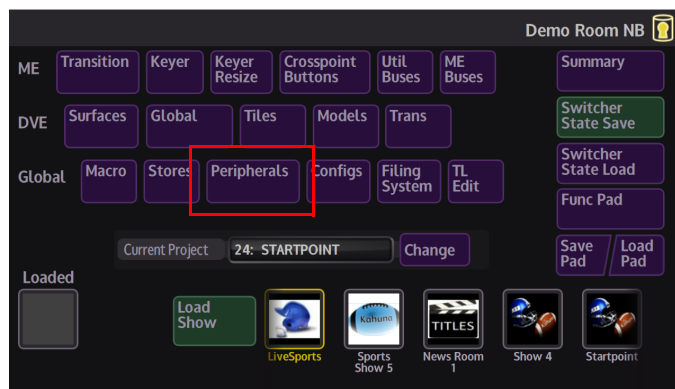
Fader Assign - when a MAV-Aud-Fader module is connected to the control surface, this allows parameter controls to be assigned to the physical faders on the module (see the “Panel Config - Fader Attachments” section of the manual. Note: the “Fader Assign” button and the “Fader Attachments” menu are only 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.

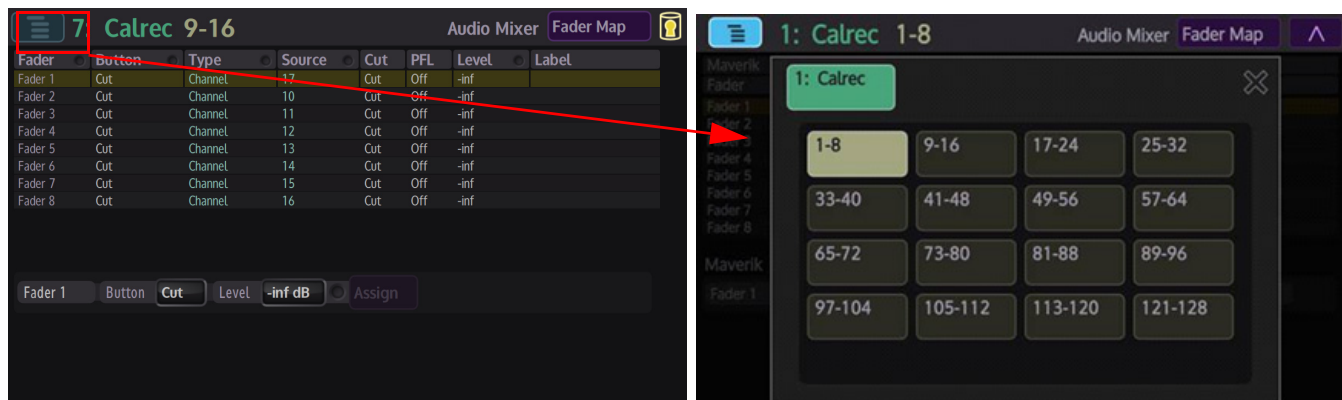


Go back to the “Home” menu and touch the **{Peripherals}** menu link button, Then in the Peripherals main menu touch the **{Audio Mixer}** button.



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.



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”.

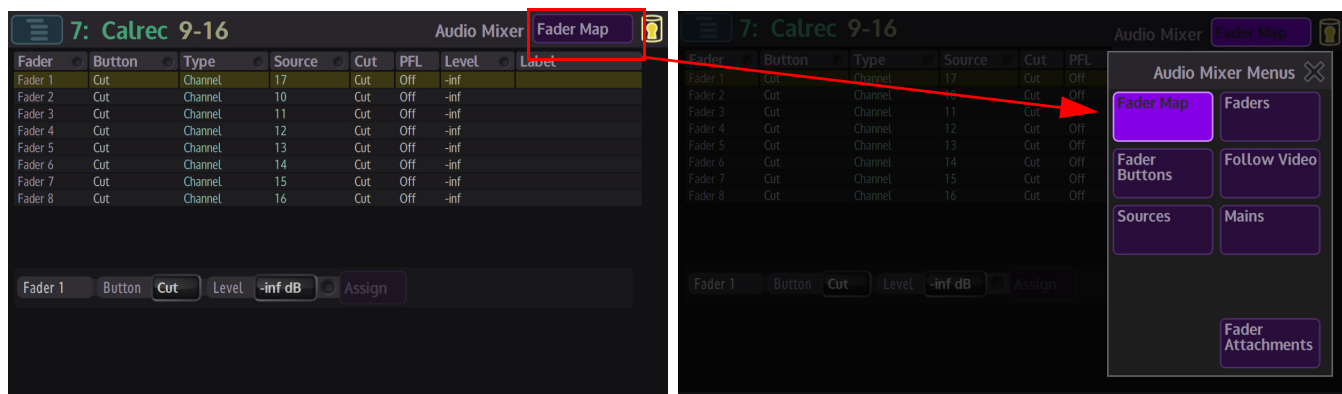
Cut - this displays if the “Cut” function is set or available to use.

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.

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.

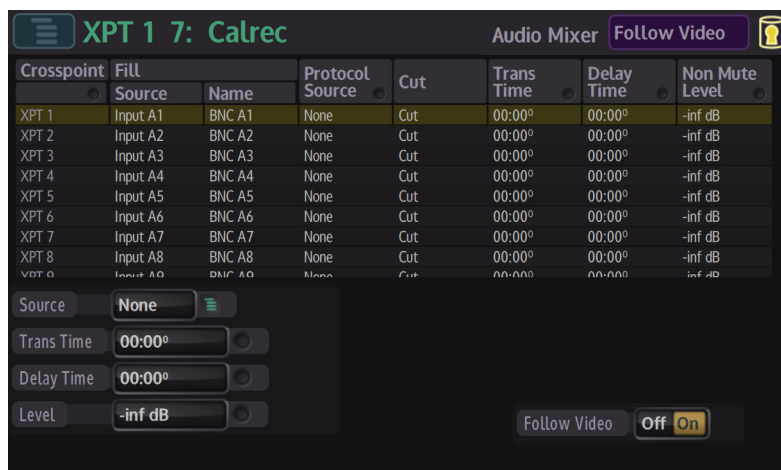


Select the button you want to assign to the faders for each fader bank and then touch the **{Assign}** button.

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.



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.

Source	Type	Cut	PFL	Level	Label
1	Channel	Cut	Off	-inf dB	
2	Channel	On	Off	-1.7 dB	
3	Channel	On	Off	-4.2 dB	
4	Channel	On	Off	0.4 dB	
5	Channel	On	Off	-1.0 dB	
6	Channel	On	Off	-9.8 dB	
7	Channel	On	Off	-6.9 dB	
8	Channel	On	Off	4.5 dB	
9	Channel	On	Off	-2.3 dB	
10	Channel	Cut	Off	-2.9 dB	
11	Channel	Cut	Off	-1.1 dB	
12	Channel	Cut	Off	-1.7 dB	
13	Channel	Cut	Off	-0.1 dB	
14	Channel	Cut	Off	-2.3 dB	
15	Channel	Cut	Off	-0.6 dB	
16	Channel	Cut	Off	0.1 dB	

Source	PFL	Level	Label
1	Off	-inf dB	
2	Off	-inf dB	
3	Off	-inf dB	
4	Off	-inf dB	
5	Off	-inf dB	
6	Off	-inf dB	
7	Off	-inf dB	
8	Off	-inf dB	
9	Off	-inf dB	
10	Off	-inf dB	
11	Off	-inf dB	
12	Off	-inf dB	
13	Off	-inf dB	
14	Off	-inf dB	
15	Off	-inf dB	
16	Off	-inf dB	

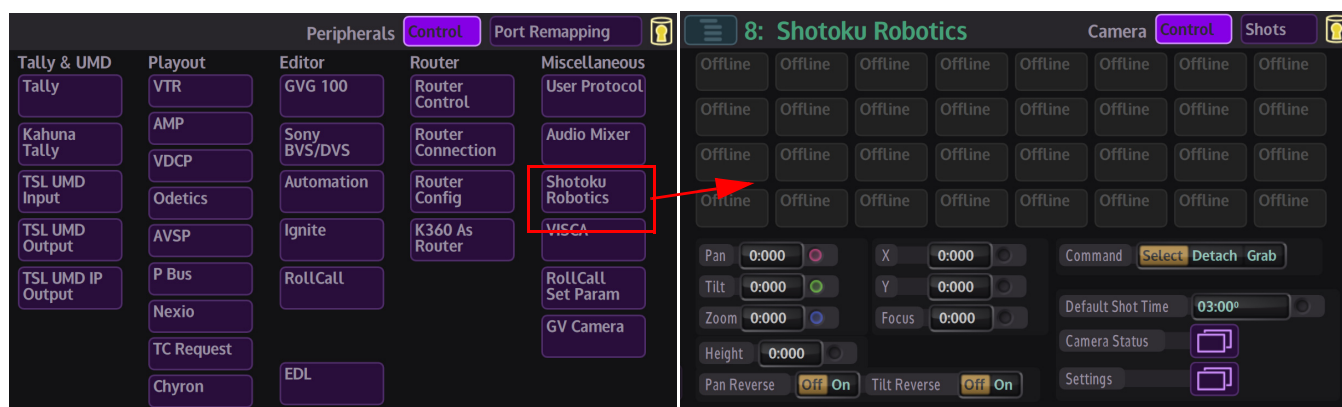
Shotoku Robotics

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

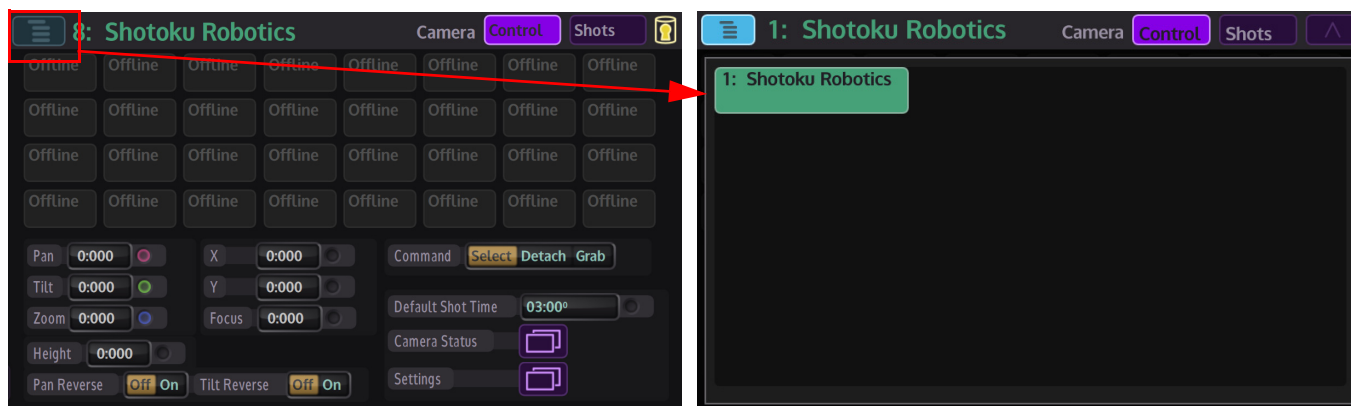
This function is used to control Shotoku Robotic Camera Heads.

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.



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.

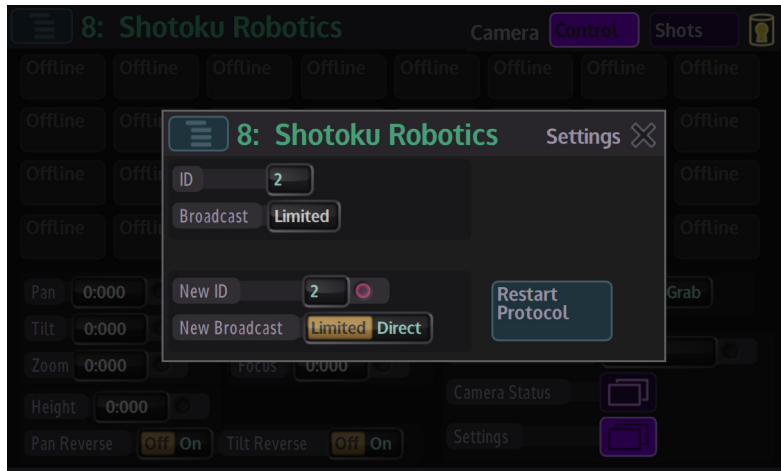
Local - this indicates if the camera head is currently under local control.

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.

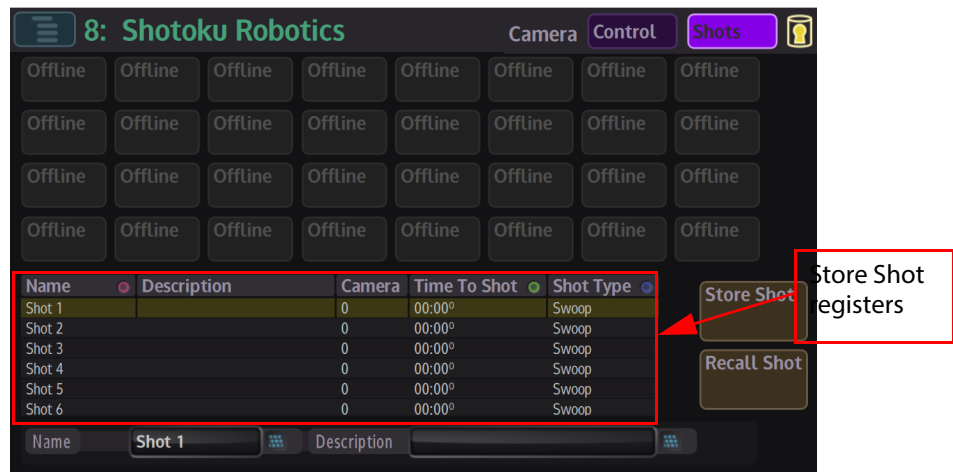


The user can manually select which camera head they wish to use by touching one of the 32 available buttons.

Note: The camera head can only be selected if it is deselected on the Shotoku controller.

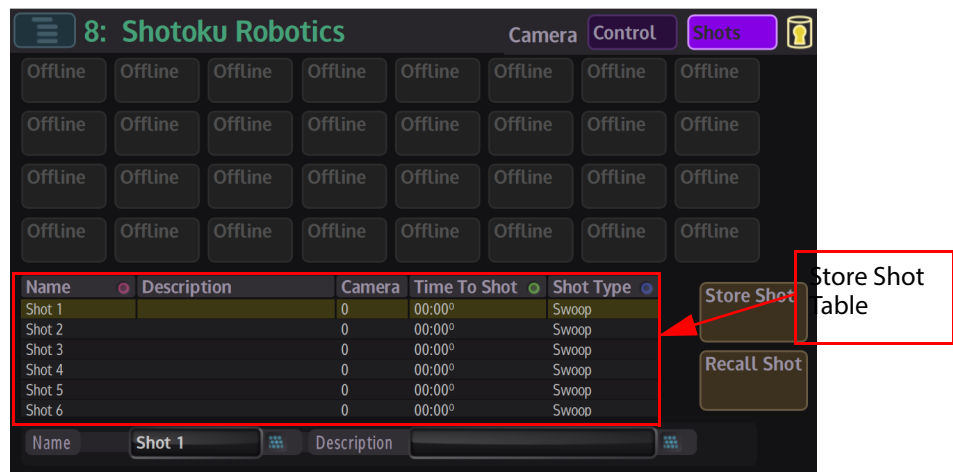
Camera - Shots Menu

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.



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.



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

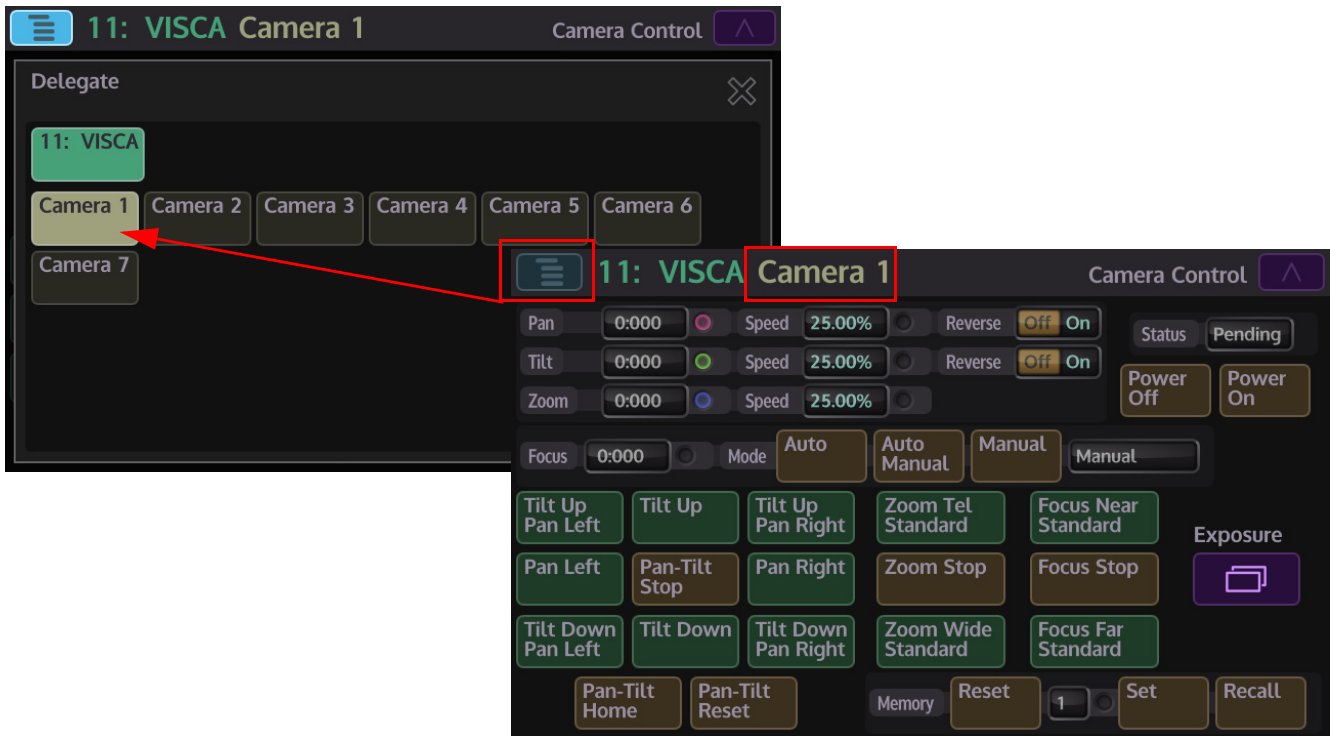
The table displays the Name of the Shot (this can be altered using the Name attacher below the table), the Description (again, this can be given a name using the Description attacher below the table), Camera ID, this is the selected camera head when the Shot was saved and Time To Shot is the time that 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.



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.



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.



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.

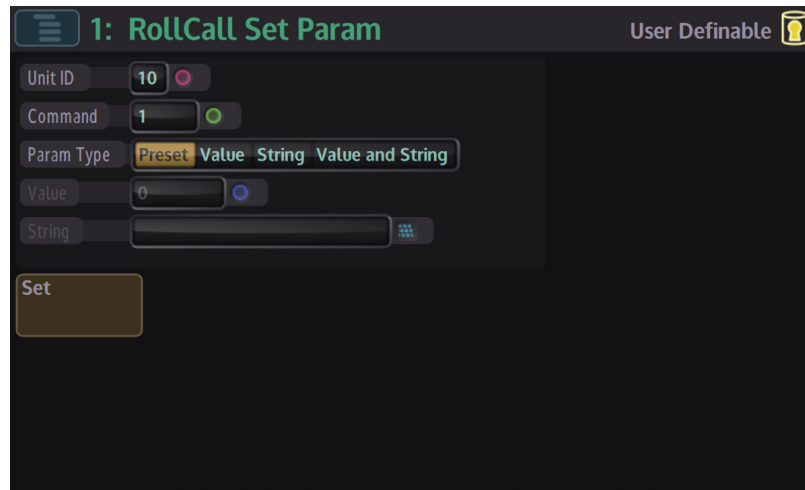


RollCall Set Param

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.



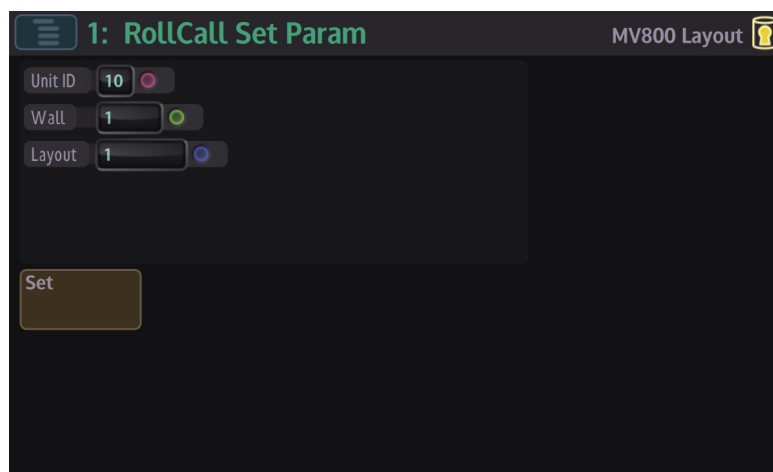
The screenshot shows the '1: RollCall Set Param' menu with the 'User Definable' icon. The fields are: Unit ID (10), Command (1), Param Type (Preset), Value (0), and String. A 'Set' button is located at the bottom left.

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.



The screenshot shows the '1: RollCall Set Param' menu with the 'MV800 Layout' icon. The fields are: Unit ID (10), Wall (1), and Layout (1). A 'Set' button is located at the bottom left.

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.

The screenshot shows a dark-themed interface titled "1: RollCall Set Param" with a "Set Crosspoint" button in the top right. On the left, there are three input fields: "Unit ID" with the value "10" and a red circle icon, "Destination" with the value "1" and a green circle icon, and "Source" with the value "1" and a blue circle icon. Below these fields is a "Set" button.

Set the unique ID for the unit that you are trying to communicate with.

Destination - the destination on the router

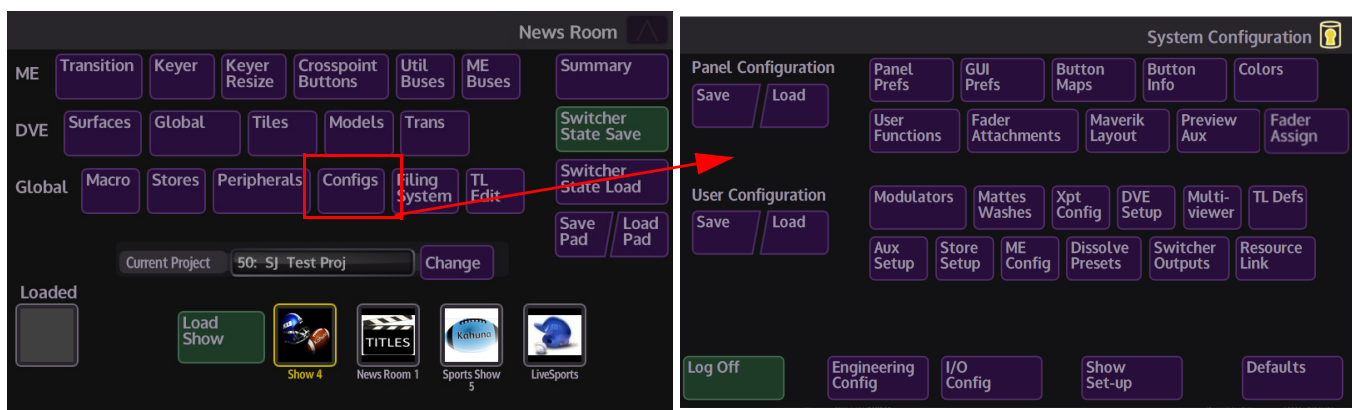
Source - the source that you are trying to switch on the router

22

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.



To **{Load}** a file, use the “Current Project” and “Panel Config” parameters to select the required file, then press the **{Load}** button.

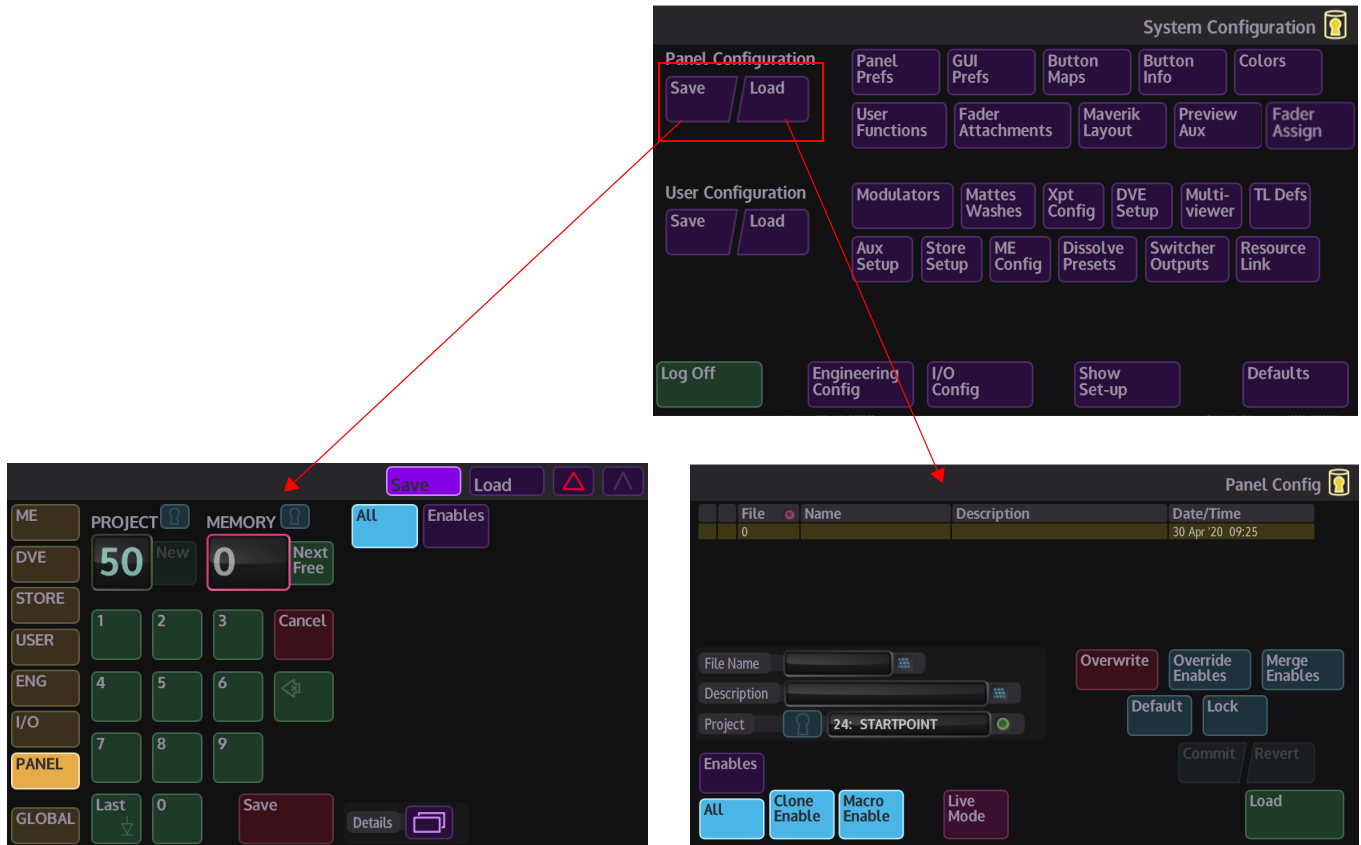
Pressing the **{Default}** button will load the default panel config file.

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.

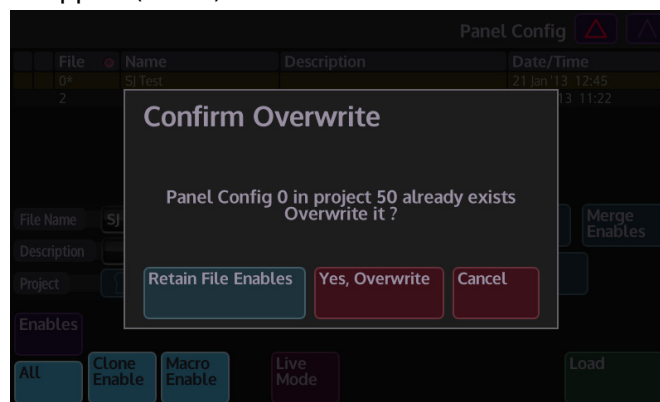
In the Panel Config menu, the user can access the "Save/Load" menus to create a new panel config file or choose a pre-saved user config.



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 file 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.

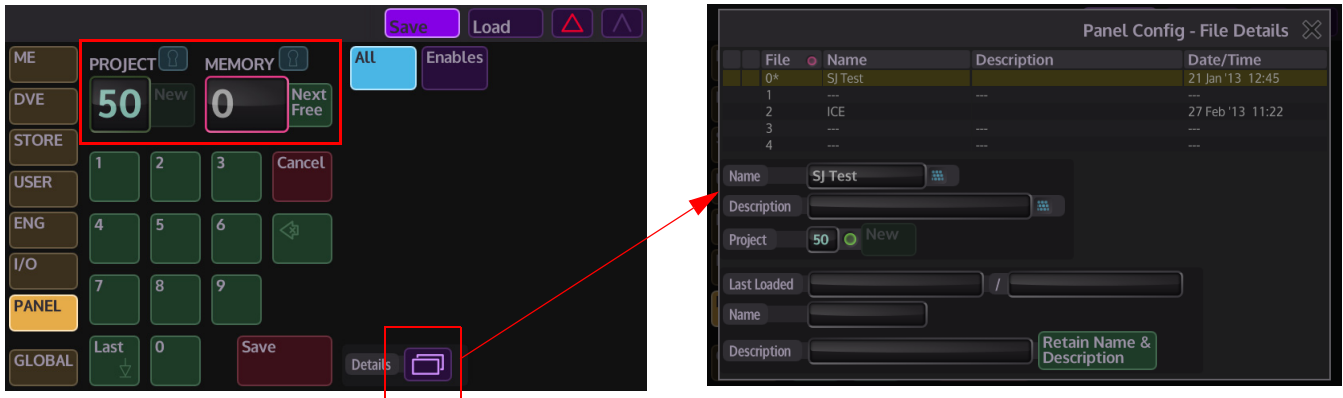
If changes are made, press the {Overwrite} button to overwrite the User Config. A dialog box will appear (below) and asks the user to confirm the overwrite.



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

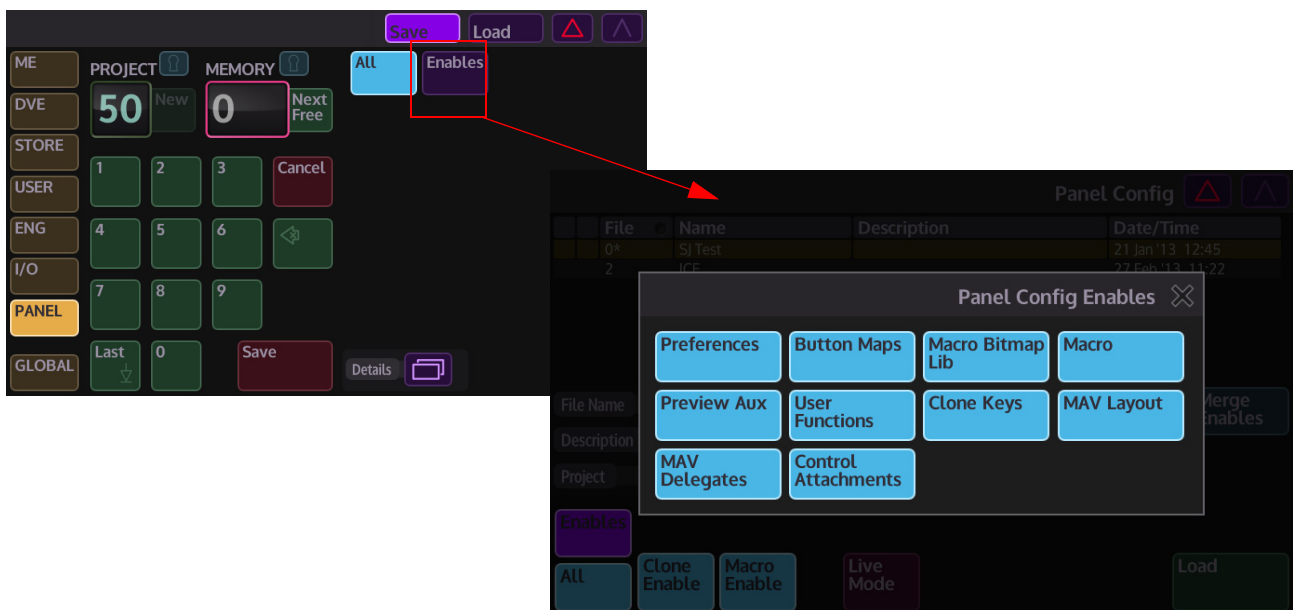
Merge Enables - this function merges the enables currently set in the switcher with the enables saved in the file is being loaded (a 'logical OR' of the enables).

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 Panel Config - File Details menu will be displayed.

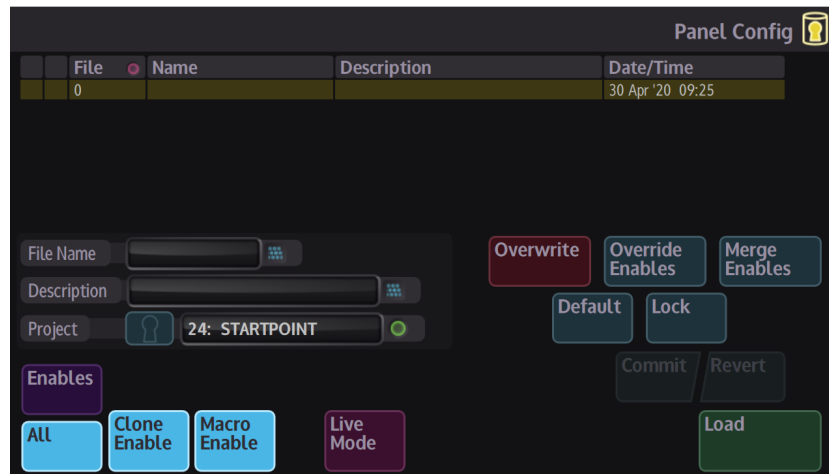


In the File Details menu, the user can select a project to save the Panel Config file into, then use the “File” parameter control to scroll down the table and select a used or unused file slot. A Name and Description can be given to the new Panel Config file. To do this, touch the **Name** or **Description** 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



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).

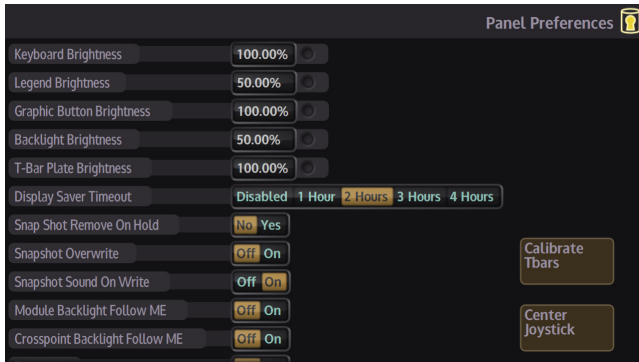
Finally press the **[Live Mode]** button once again to use the system. To remove the button inhibits, go through the same process and press the inhibited buttons to unlock them.

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.

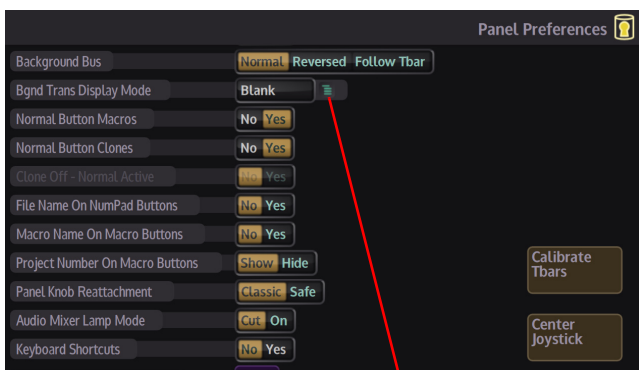
Menu 1



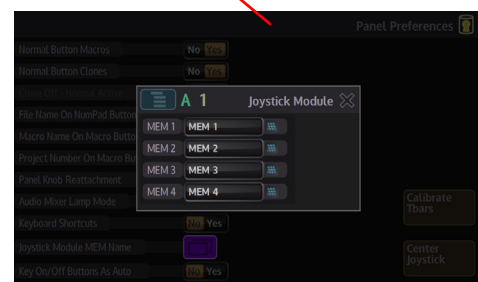
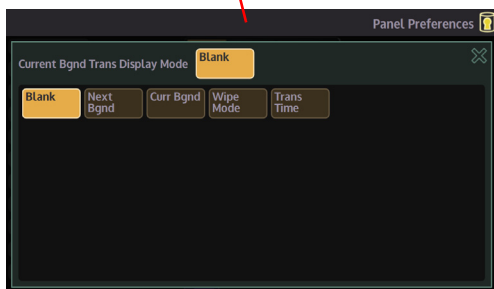
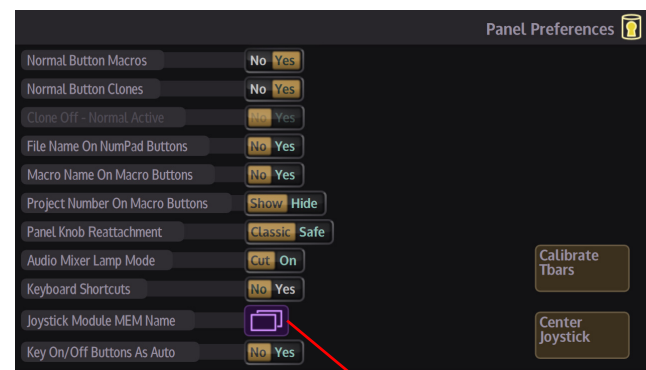
Menu 2



Menu 3



Menu 4



Keyboard Brightness - this adjusts the brightness of any buttons that are lit.

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.

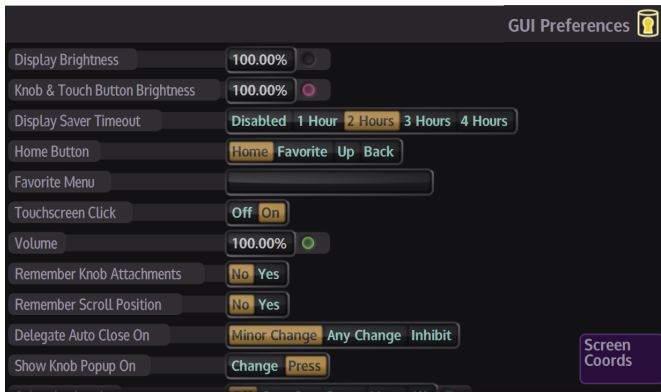
Touch the {Calibrate Tbars} button and the Up/Down arrow indicator for the Tbar will flash orange. Move the Tbar end to end a couple of times to calibrate. When calibrates the Up/Down indicators stop flashing and the Tbar now behaves normally.

Note: Do not offset the Joystick when pressing this button.

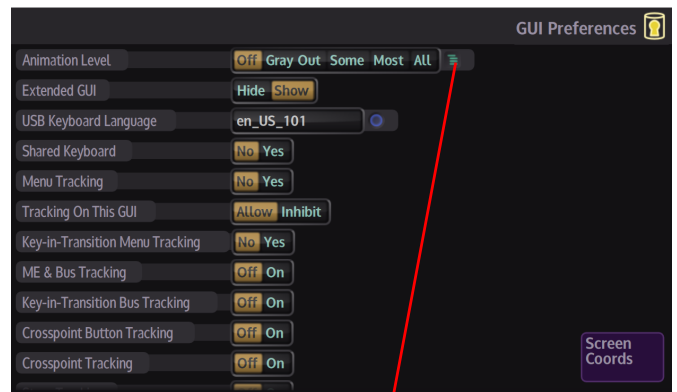
GUI Preferences

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.

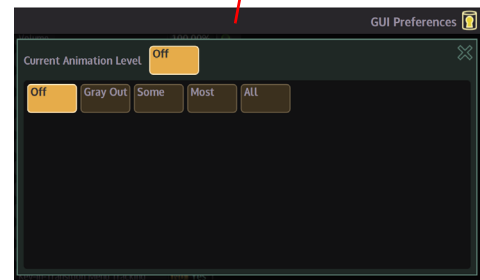
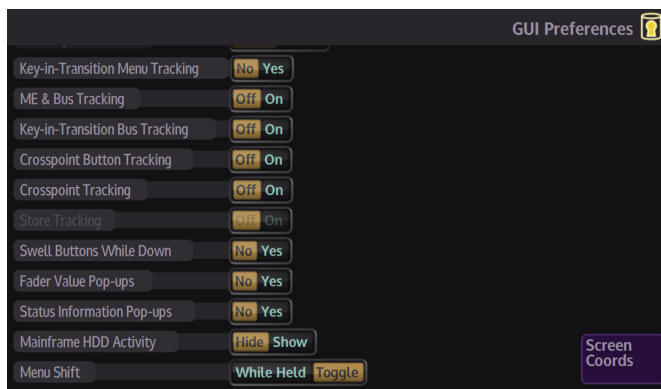
Menu 1



Menu 2



Menu 3



Display Brightness - adjusts the brightness of the MAV-GUI display

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 first touch of the button will go to the favorite menu, a second press will goto 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

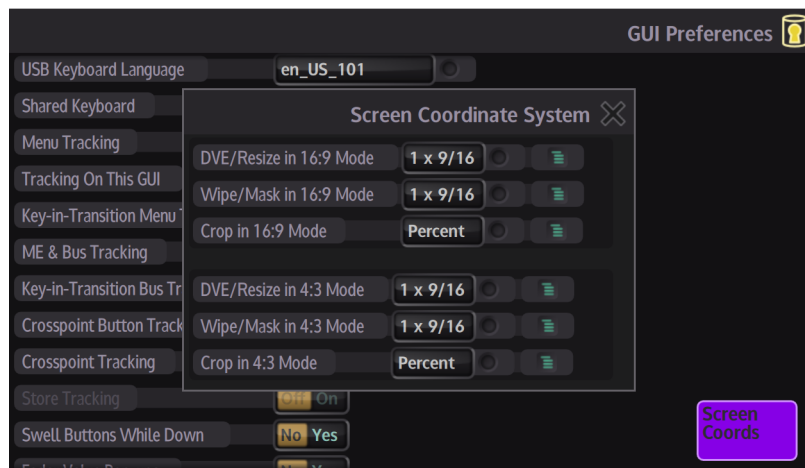
Status Information pop-ups - will display status information.

Mainframe HDD Activity - a "HDD" symbol will be displayed when there is 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 co-ordinates on the GUI screen, co-ordinates that relate to the Resize engine, Mask areas and Wipe positions.



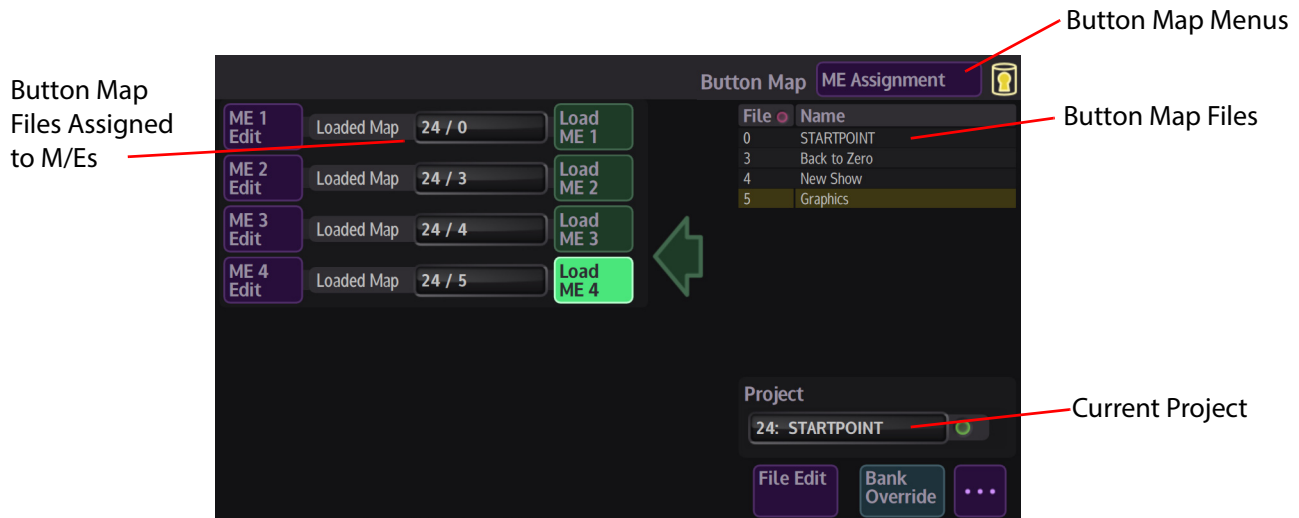
Screen Grid Crop: The ability to set the crop positions into Screen Grid mode (as per Wipe/masks) to allow the copying of Positions and Crops. To copy parameters “press and hold” the **{COPY}** button on the GUI and select the parameter using the **{Snap Norm}** button associated with that parameter.

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.

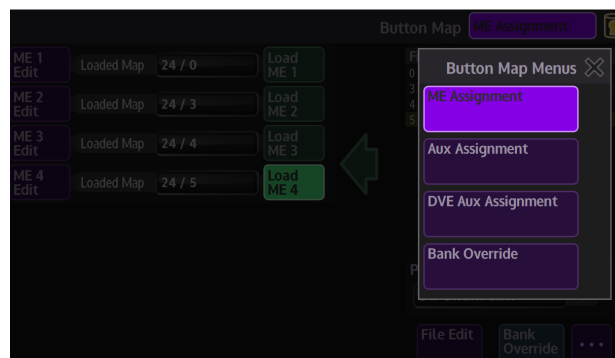
If the selected project contains previously built button map files, to load a file, select a button map file in the list, and then touch the **{Load ME}** button for the M/E. You will see the button map file listed in the “**Loaded Map**” display.

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 Menu**” 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 way 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.

Table displays the Button Map File

Loading Buttons

Source options that can be loaded into the Button Map file

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 **{All}** 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:

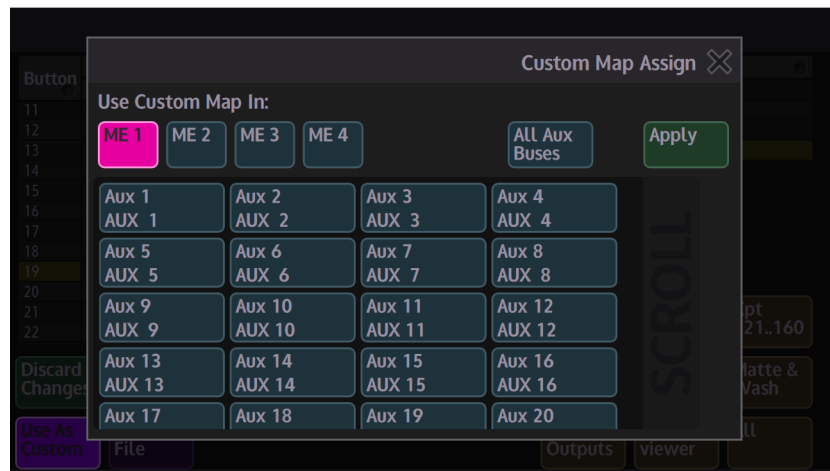
Discard Changes - will discard all changes to the button map file, if not saved!

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).



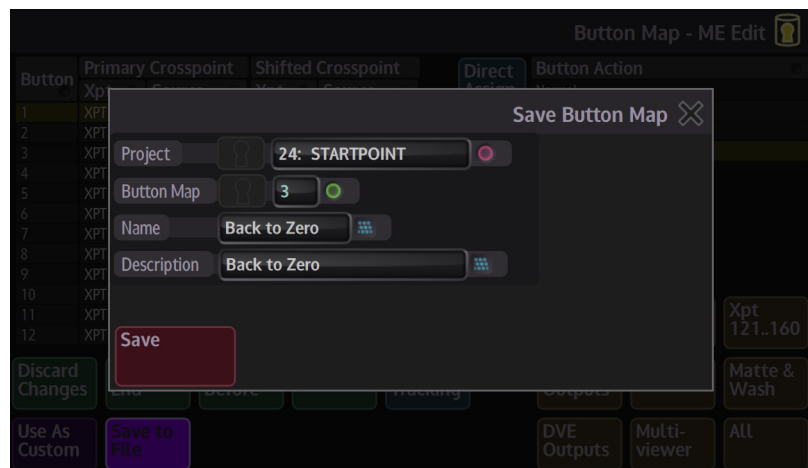
Save To File - allows you to save any changes to the current button map file, or to create a new button map file.

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.

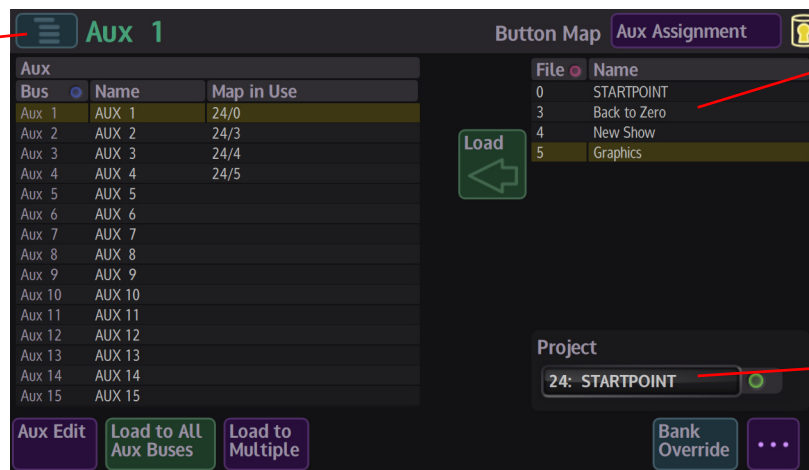


Aux Bus Button Maps

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



Button Map File List

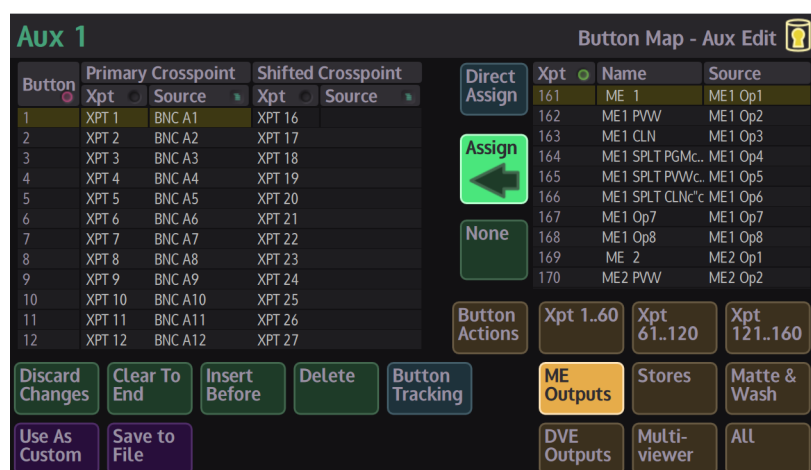
Current Project

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.



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 from 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 **{All}** 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).



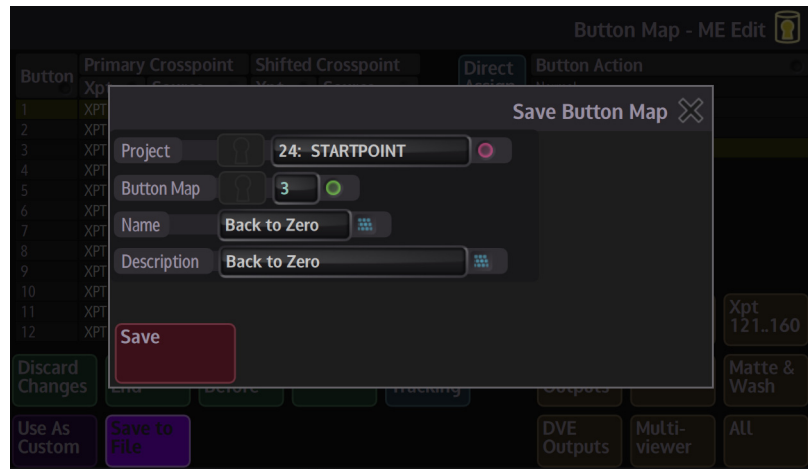
Save To File - allows you to save any changes to the current button map file, or to create a new button map file.

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}**.

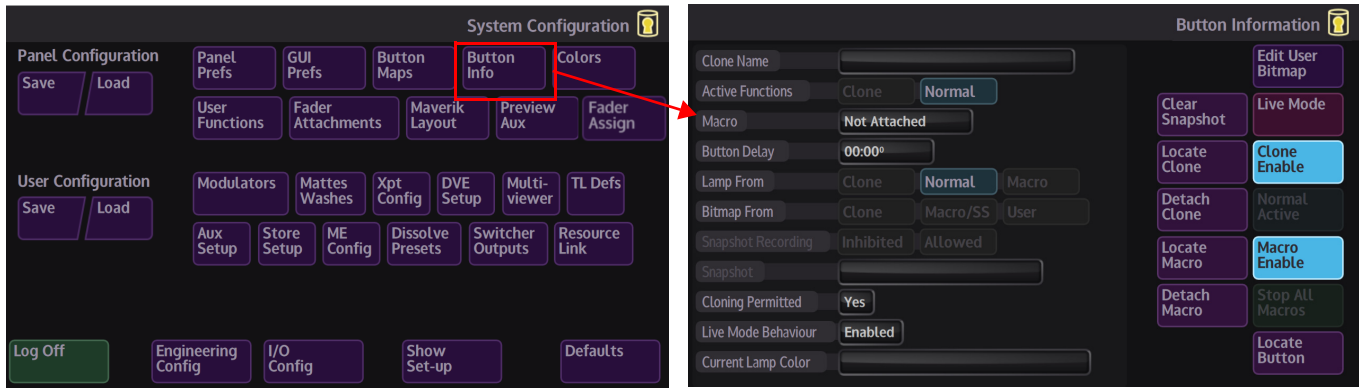
When you go back to the “**ME Assignment menu**”, you can see the new button map file added to the file list.

Following the same procedure as on the previous page 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.



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

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.

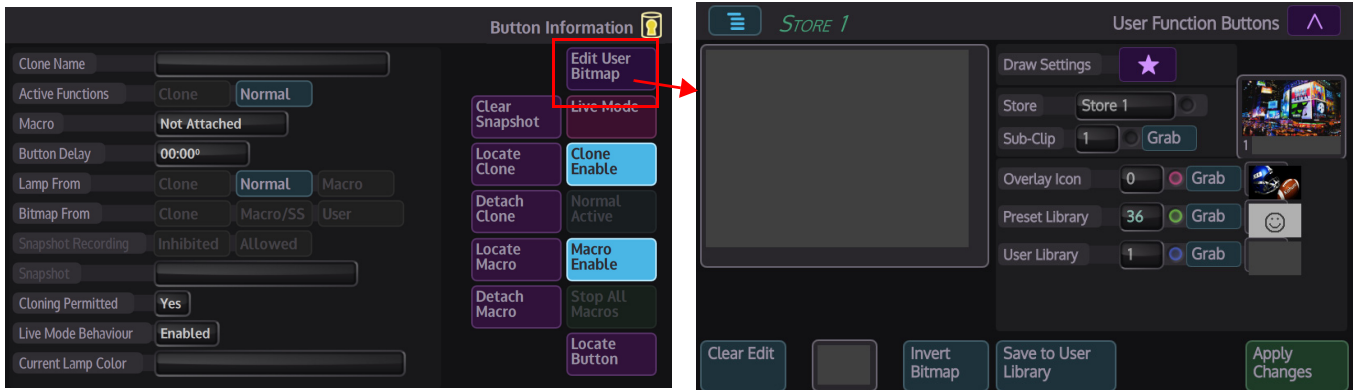
Snapshot Recording

Inhibited - inhibits the user function buttons ability to record a snapshot.

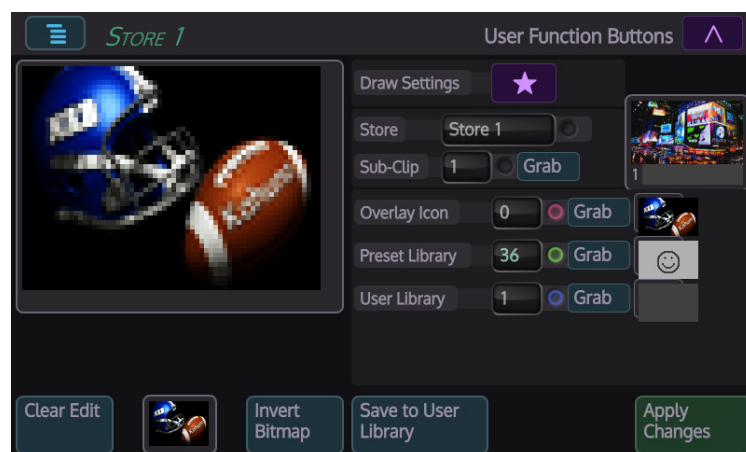
Allowed - allows a user function button to save a snapshot

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**.



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 Icon 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.

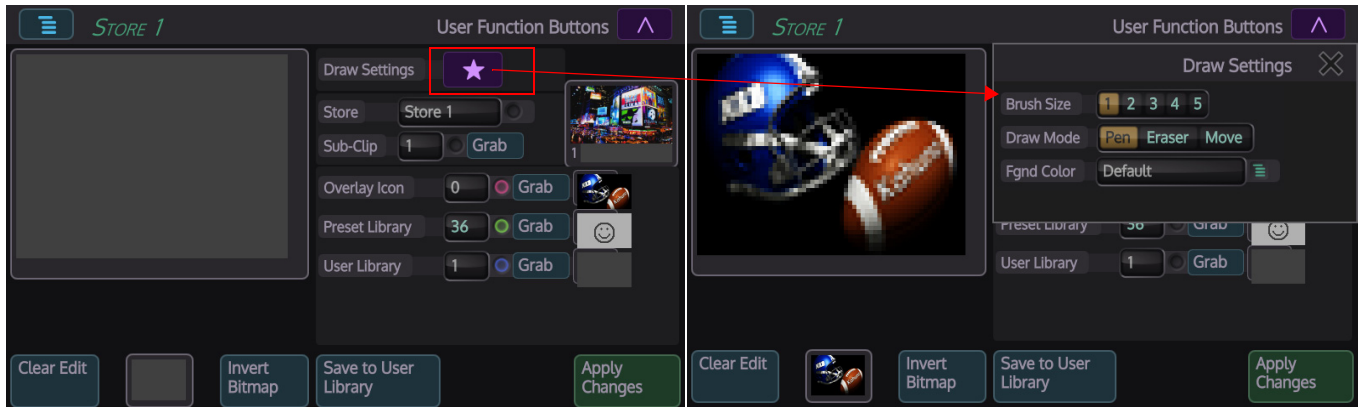
Touching the **{Grab} User Library** will allow the user to grab a user defined bitmap to use for a user function button.

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.

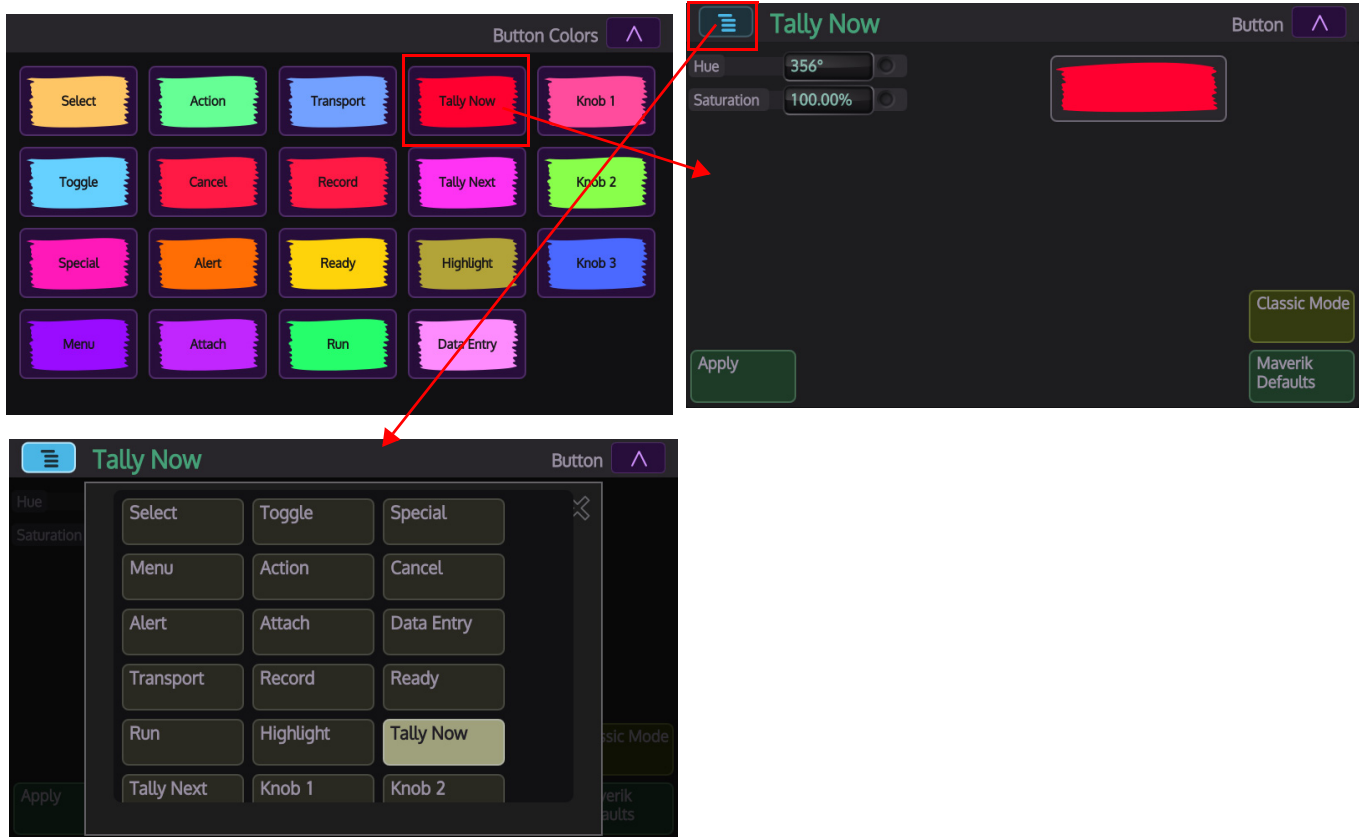
Select **Pen** from the **Draw Mode** parameter and the user can create their own icons by drawing in the large gray area. To delete any mistakes in the grid, select **Eraser** in the **Draw Mode** parameter and rub out the mistake in the grid. There are 5 different brush sizes to select from. Select "**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.

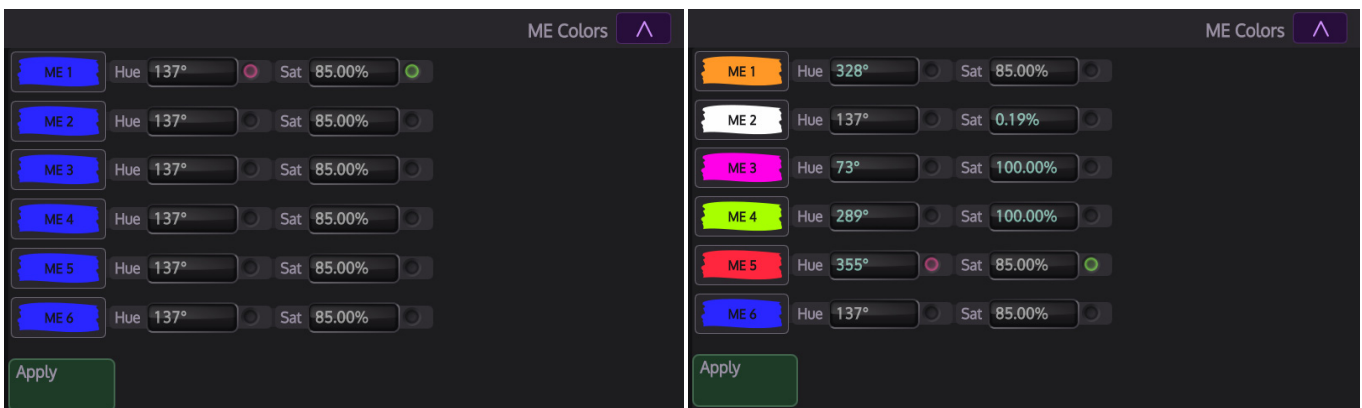


All of the buttons and knobs and alerts on the MAV-GUI and the control surface can have their default color schemes changed in this menu. The diagram above shows an example of the Tally Now adjustment menu. touch one of the items in the main menu and an adjustment menu will appear.

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

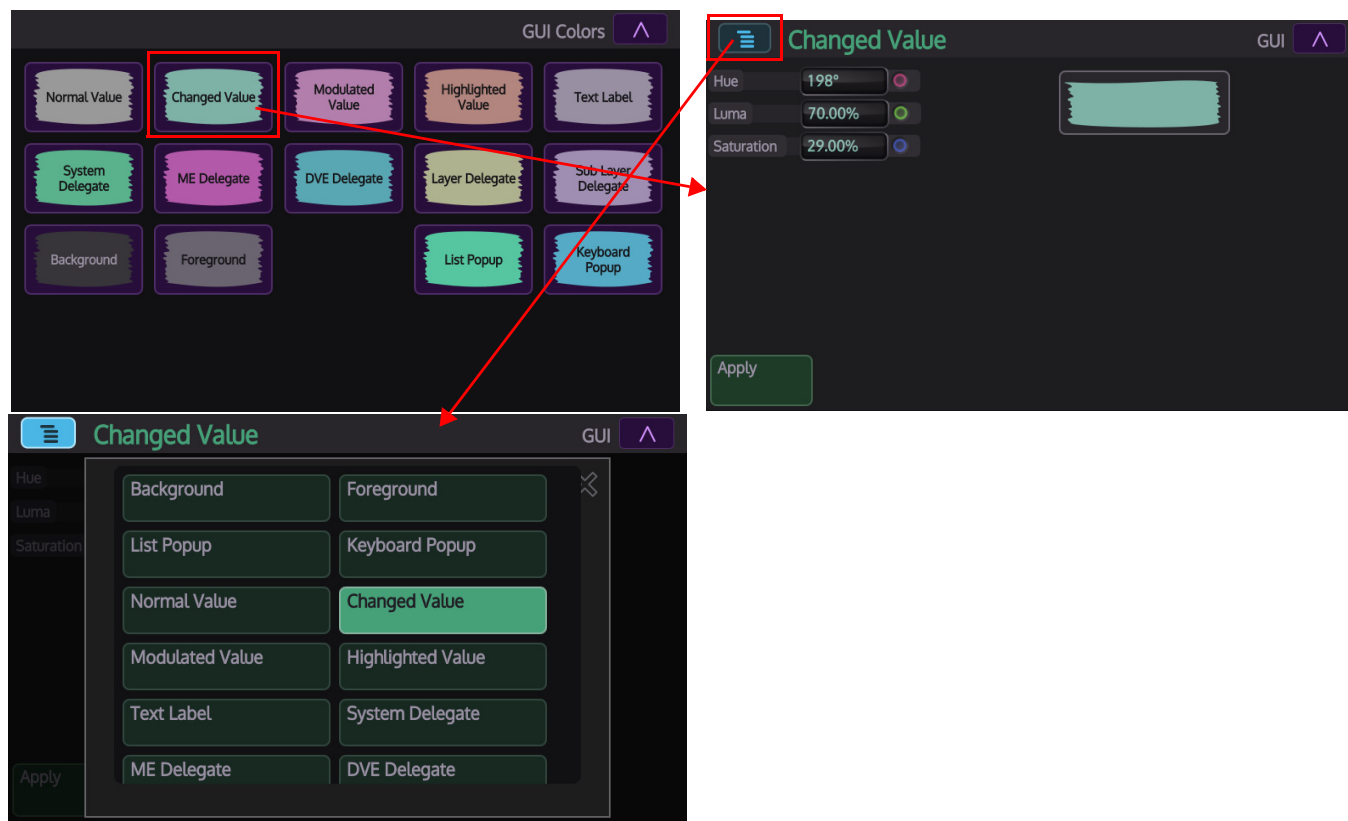
This menu allows the user to set different color schemes for individual M/Es on the control surface.



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.

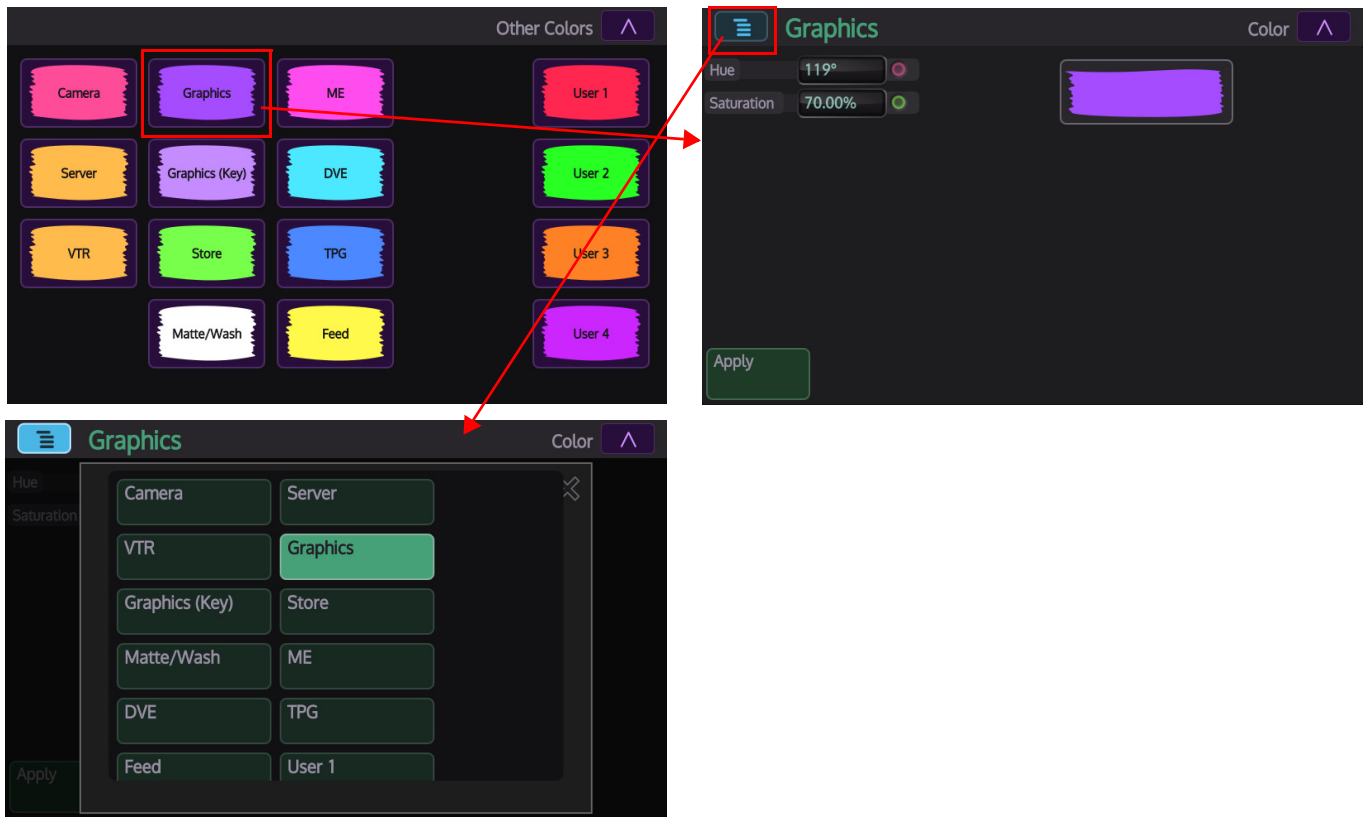


All of the **Preferences - Colors** menus allow the user to set their own color scheme preferences. Touch one of the options in one of the menus and a color adjustment menu will appear. Use the **Hue**, **Luma** and **Saturation** parameters to change the color scheme, when happy with the adjusted color, press the **{Apply}** button.

Each one of the items in the **GUI Colors** menu changes a different element of the MAV-GUI menu layout. These colors do not apply to any of the buttons in the MAV-GUI menu.

Misc Colors

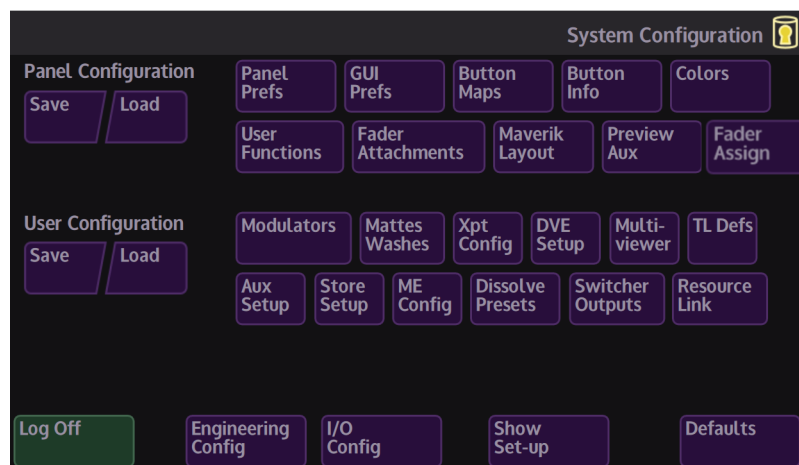
The Other Colors menu allows the user to change the preset color scheme of the Maverik Color crosspoint buttons.



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"**.



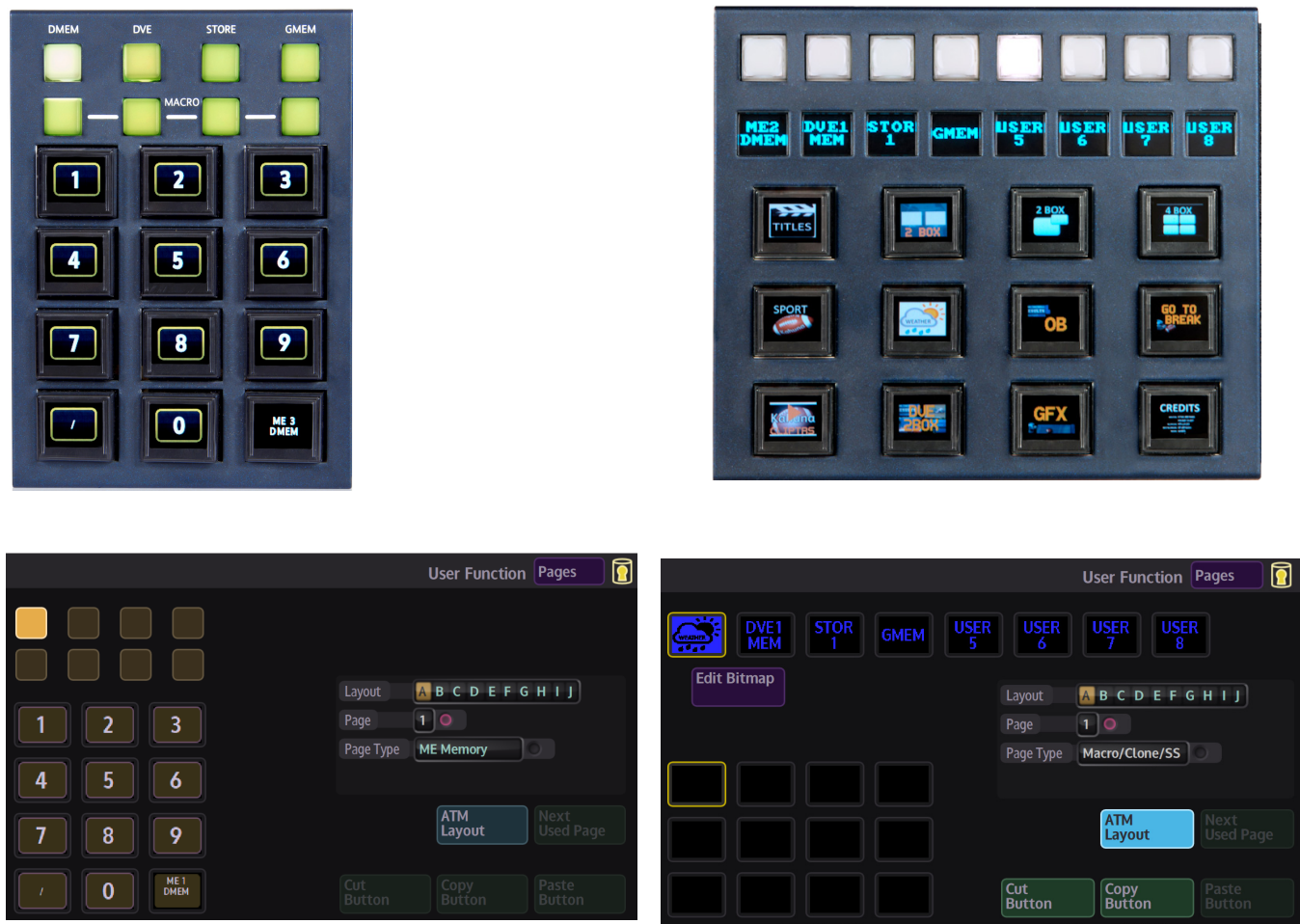
User Functions

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



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.

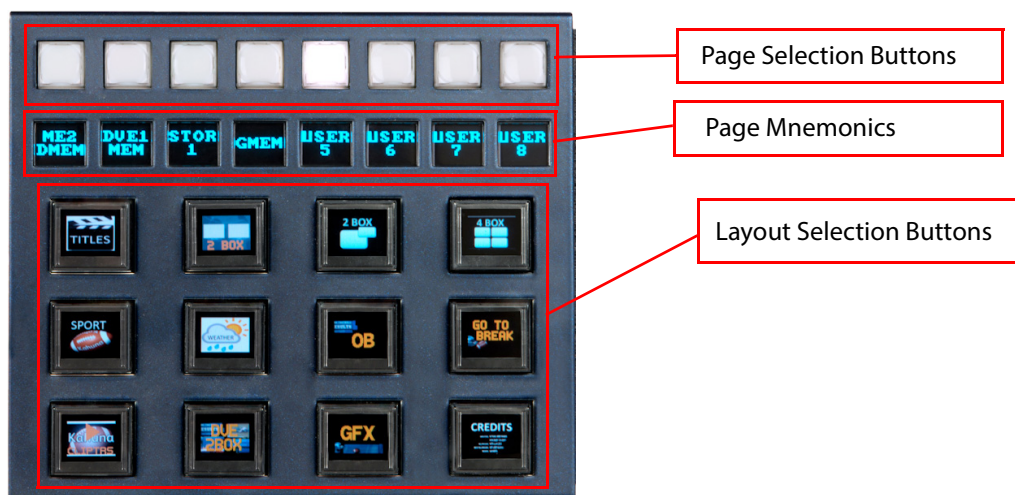


Macro - the macro User Function Buttons are setup and programmed by the user, so are empty until macros are loaded into them.

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.

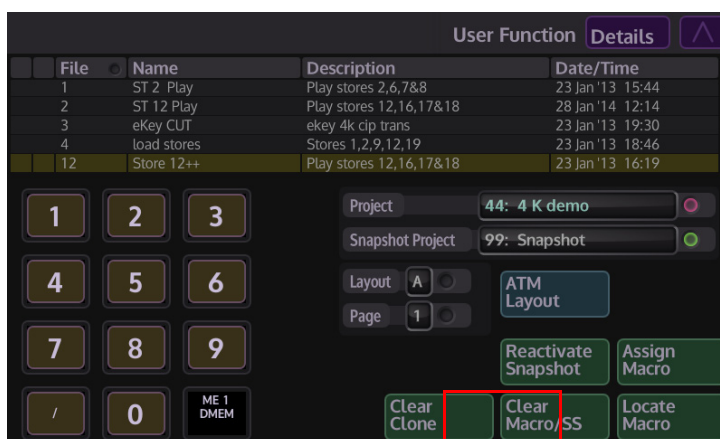
The same procedure as above will apply when loading a DVE or Store.

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.

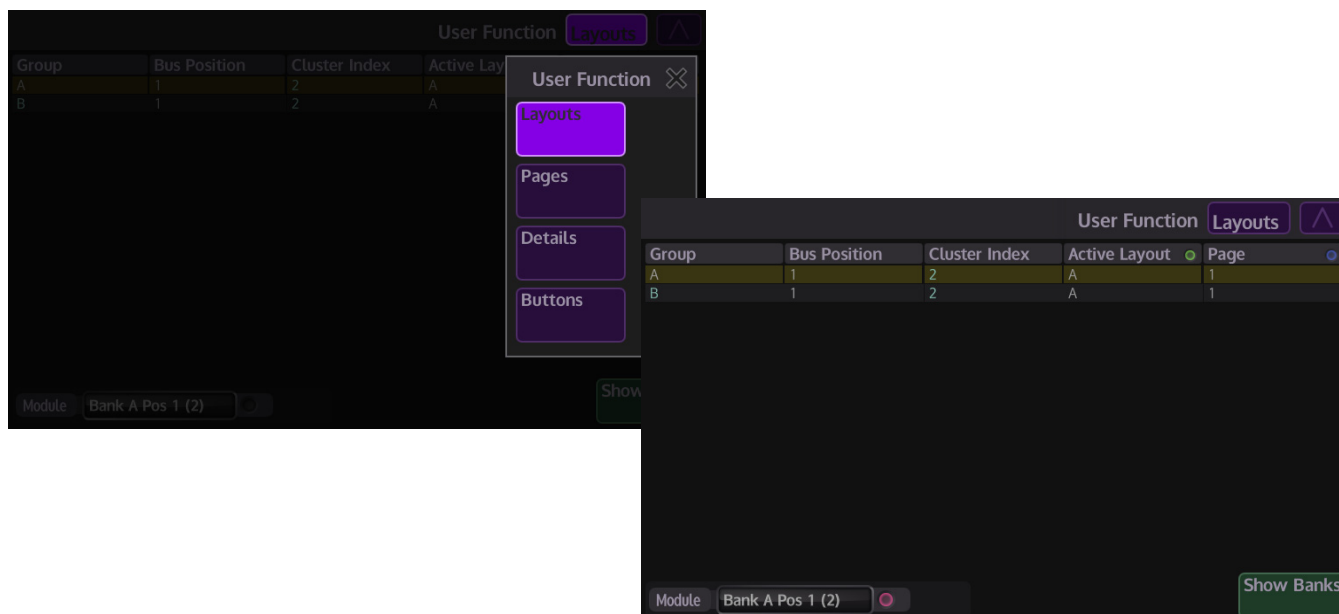
Each of the 4 Macro buttons has ten pages of layouts and each layout can have 10 macros attached to them, so, a MAV-UFBPAD can hold 400 macros.

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.



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.

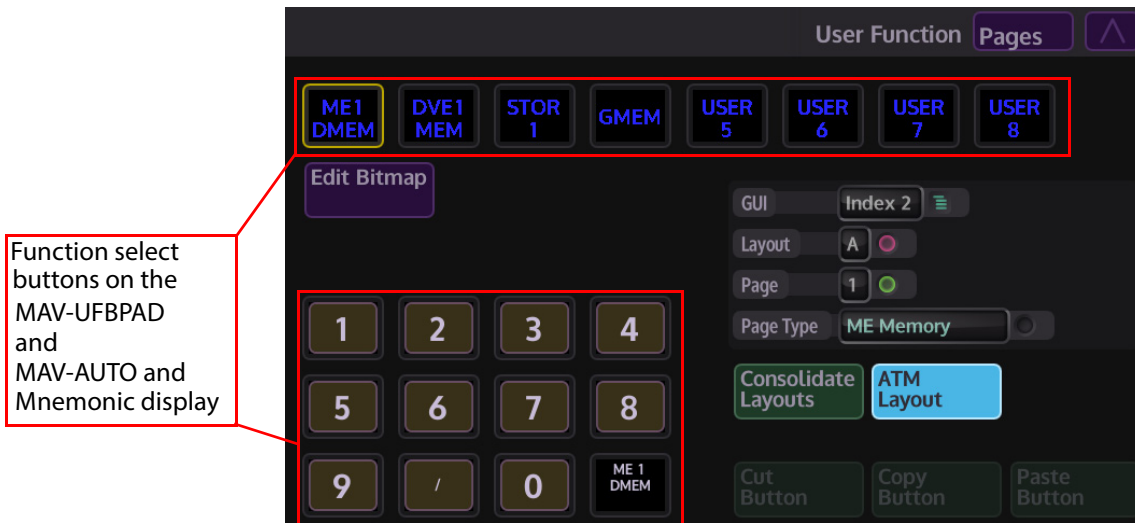
Active Layout - these are the layouts given to each individual MAV module, so that they can be given individual **Page** and **Button** layouts. Up to 10 different active layouts (A - J) are available. If MAV modules require the same layout, then the Active Layout letter should remain the same for each 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 first 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.



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.

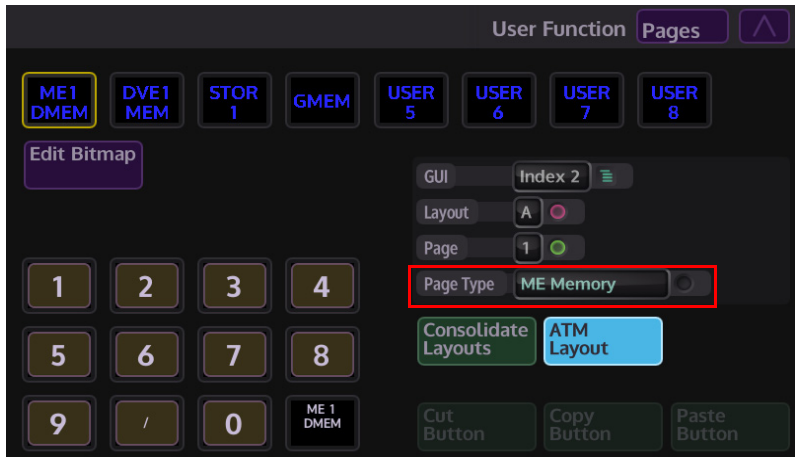
For the MAV-UFBPAD module, the page button layout will reflect by default the layout of the small white function buttons at the top of the module.

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)



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.

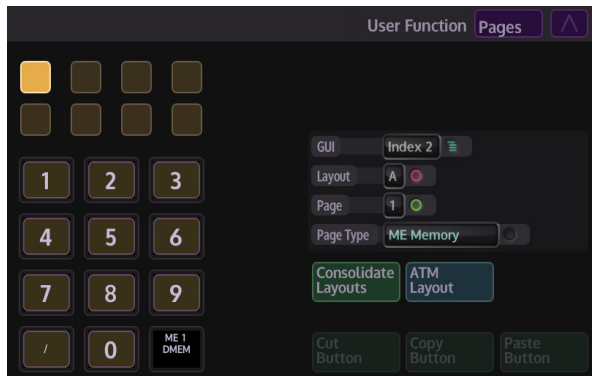
Store - this will set the selected OLED Button layout as a numeric keypad so that a Still or a Clip can be re-called.

GMEM - this will set the selected OLED Button layout as a numeric keypad so that a GMEM can be re-called.

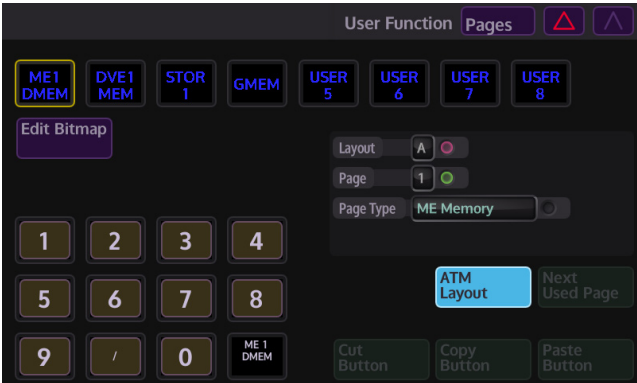
eKey - this turns the OLED buttons into M/E eKey "Cut", "Auto" and "Time" for the available eKeys for each M/E.

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



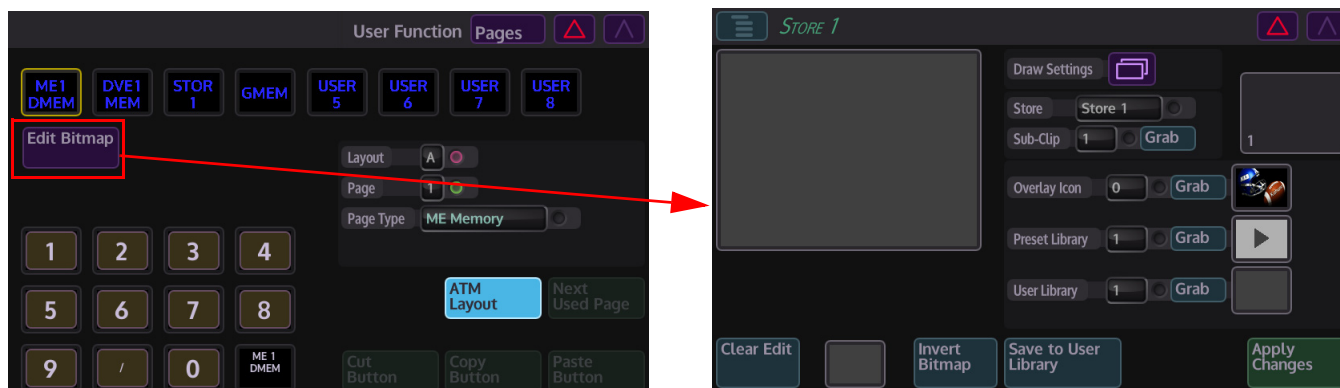
ATM - MAV-AUTO Layout

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.

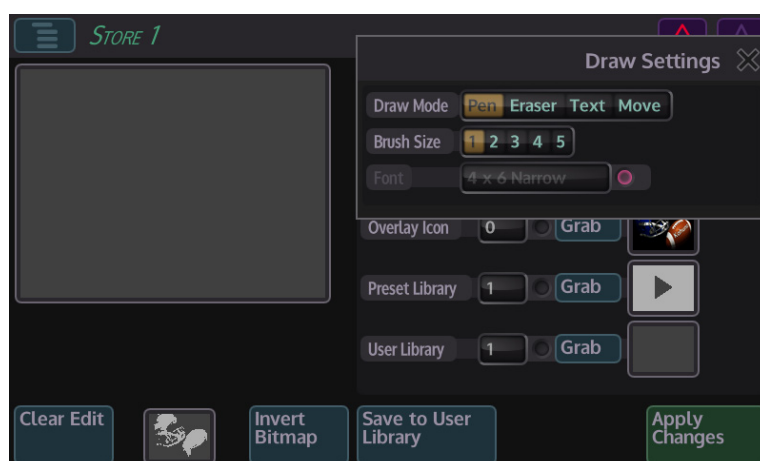


Grabbing an Overlay Icon or an image from the Preset/User Libraries

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.

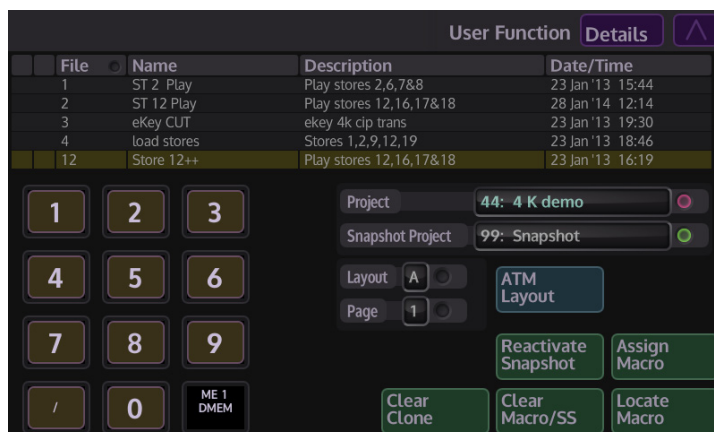
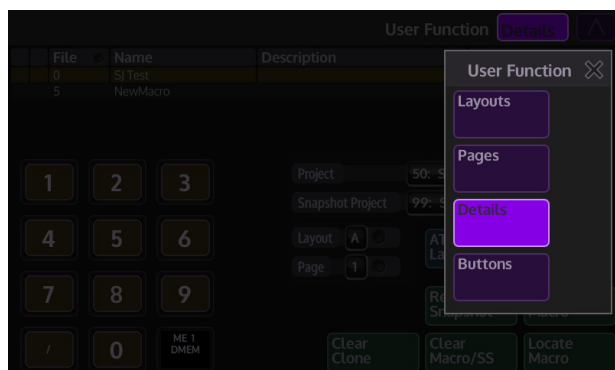
Text can also be saved into the User Library.



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.



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.

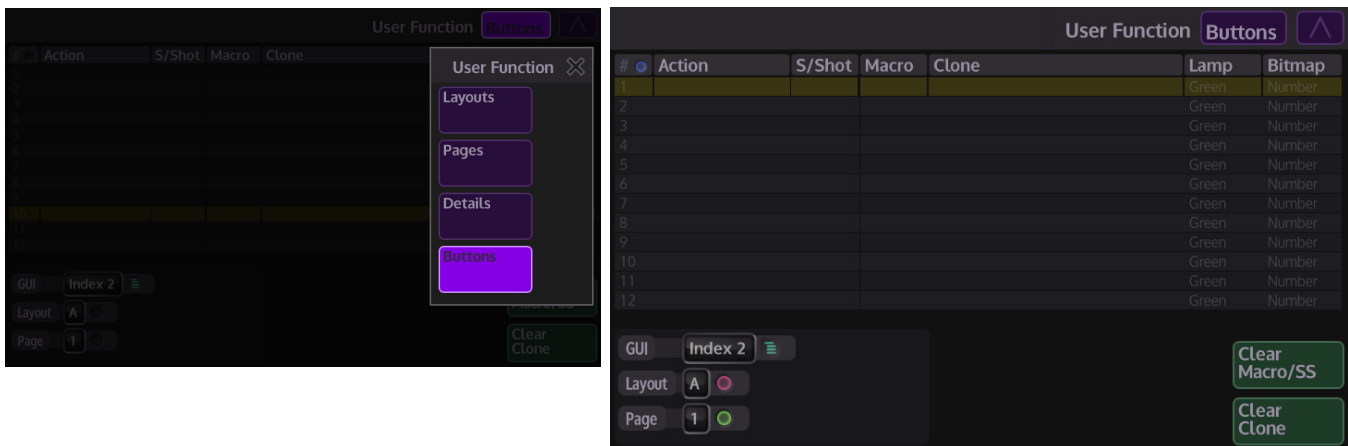


Table:

(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:

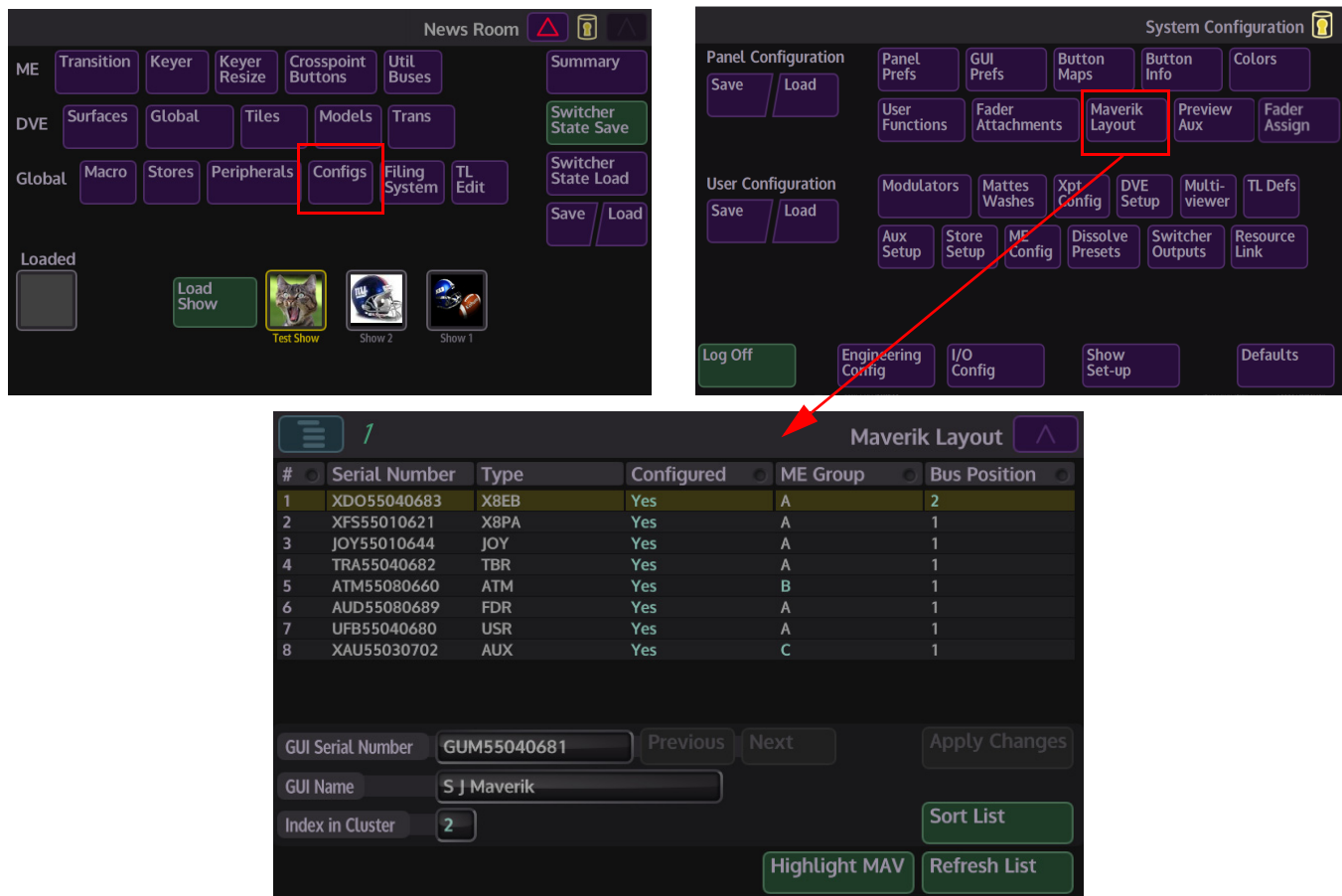
Clear Macro/Snapshot - will clear the macro or snapshot function from the table and Button.

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.

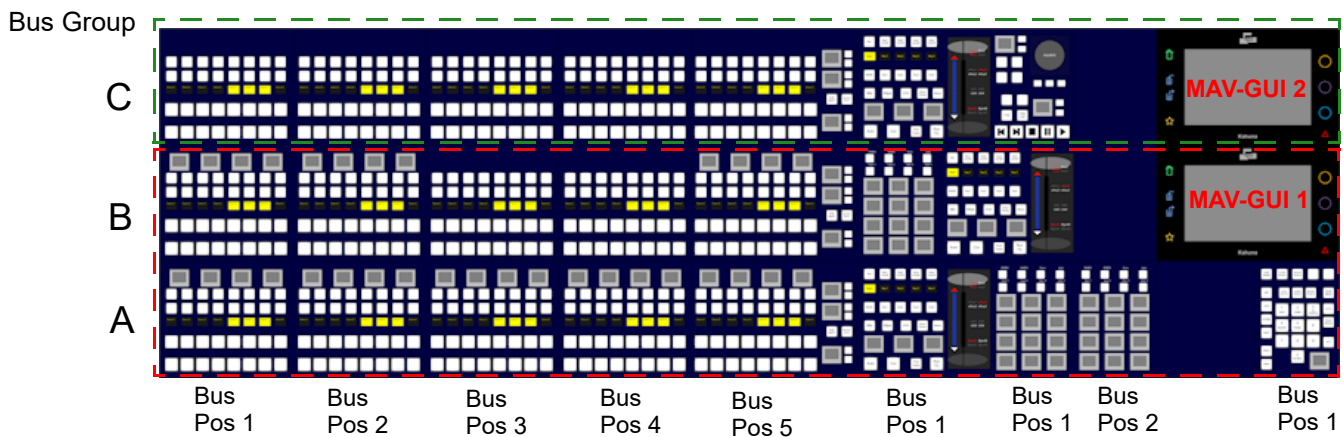
It is vital to set the layout of MAV Xpt modules correctly to make sure that the crosspoints run in the correct numbered sequence.

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.

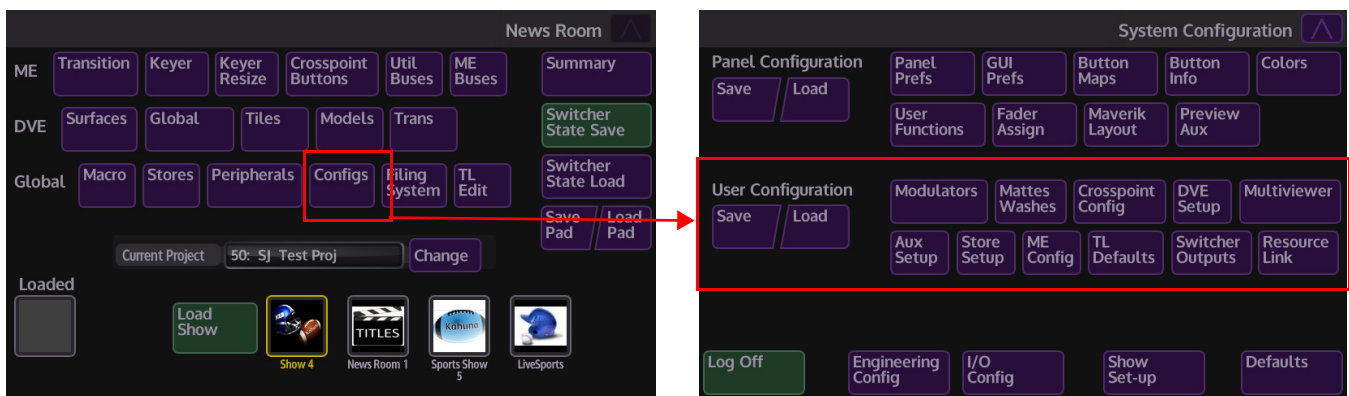
23

Global Configs - User Configuration

User Config

The User Config menus now have the addition of Modulators and the new Format independent multiviewer.

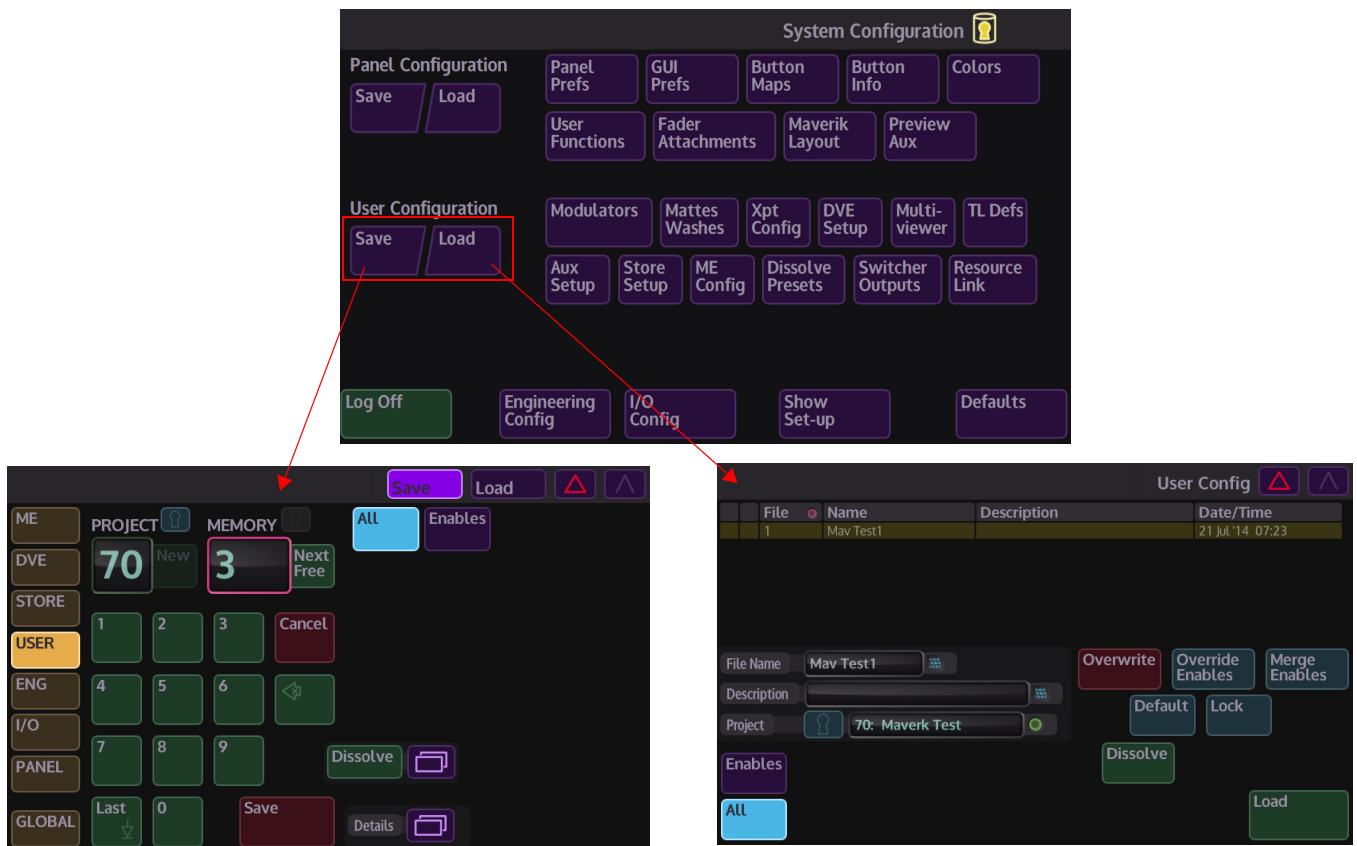
To get to the User Configuration menu, press the **{Configs}** button in the Home menu.



See the next page for the Save & Load menus.

Save & Load Menus

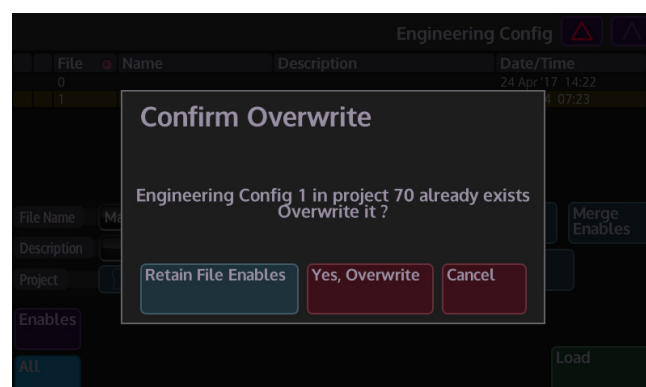
In the User Config menu, the user can access the “Save/Load” menus to create a new user config file or choose a pre-saved user config.



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 file 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.

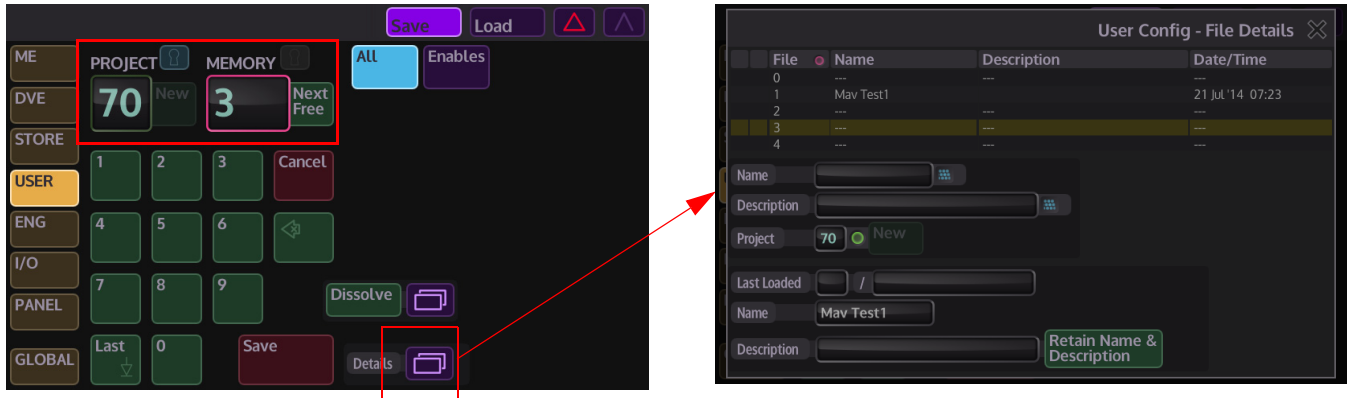
If changes are made, press the **{Overwrite}** button to overwrite the User Config. A dialog box will appear (below) and asks the user to confirm the overwrite.



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

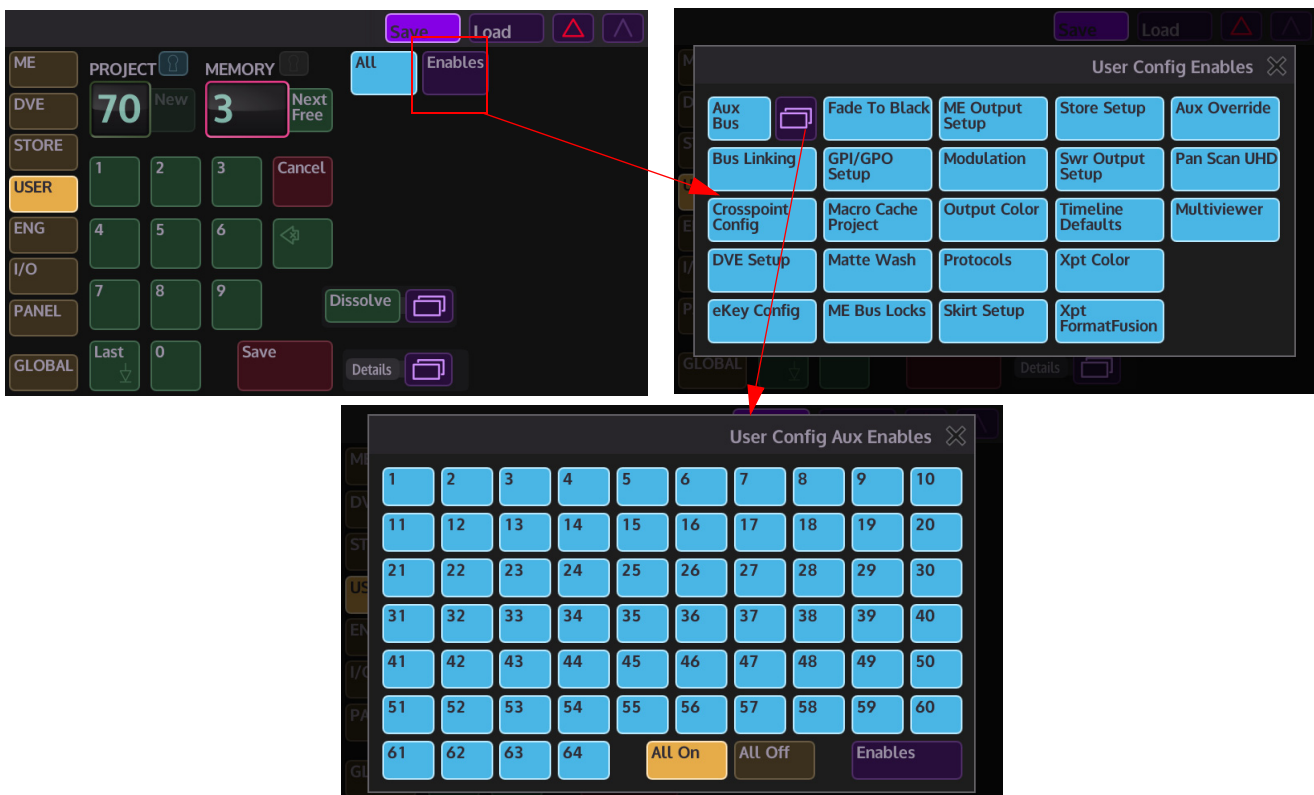
Merge Enables - this function merges the enables currently set in the switcher with the enables saved in the file is being loaded (a 'logical OR' of the enables).

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 User Config - File Details menu will be displayed.



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.



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.

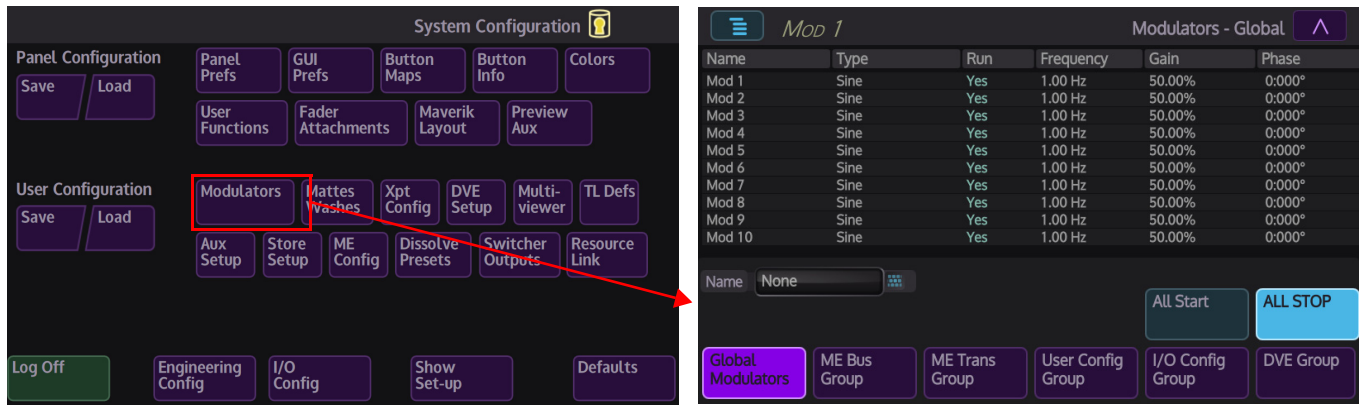
M/E Bus Group - displays modulator parameters within a Bus function, such as Transition of a Keyer.

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.



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:

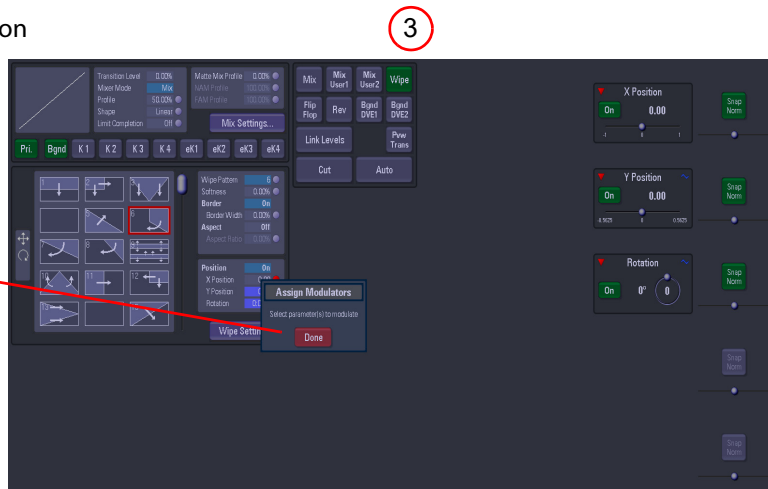
- 1 Select the function the modulation is going to be attached to, and touch the **{MOD ASSIGN}** button.
- 2 Select the parameter that the modulation will be attached to, and touch the **{SNAP NORM}** button to attach the modulator.
- 3 Touch the **{Done}** button in the dialog box.



Select a Function

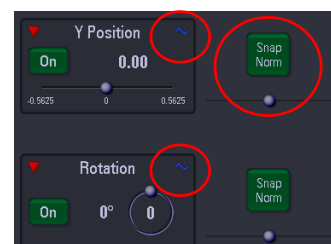
Select a Parameter to Modulate

Touch the **{Done}** Button

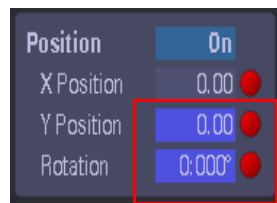


Select the function the modulation will affect, then select the parameter the modulation will be attached to.

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.

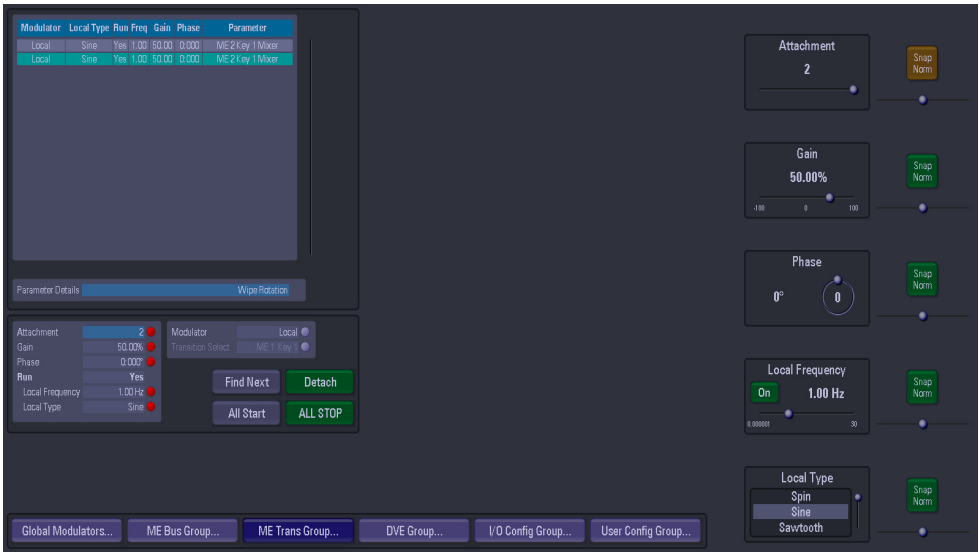


Also notice that the attacher that displays the parameter settings has turned blue as shown below.



Touch the {Modulate} button to display the modulator group menu, and you will be able to see the attached parameter function in the table.

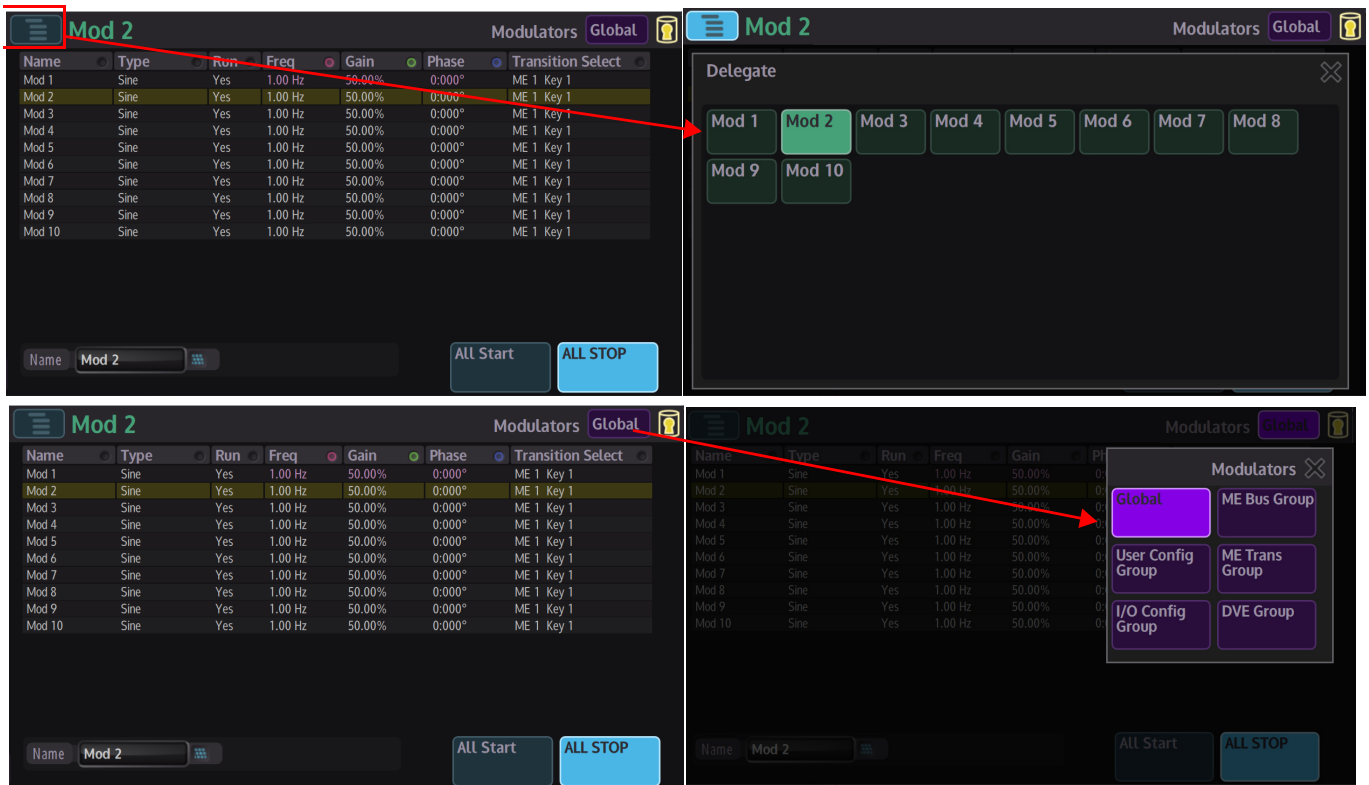
The specific modulator setup can now be adjusted using the Gain, Phase, Local Frequency and Local Type parameters.



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.



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.



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

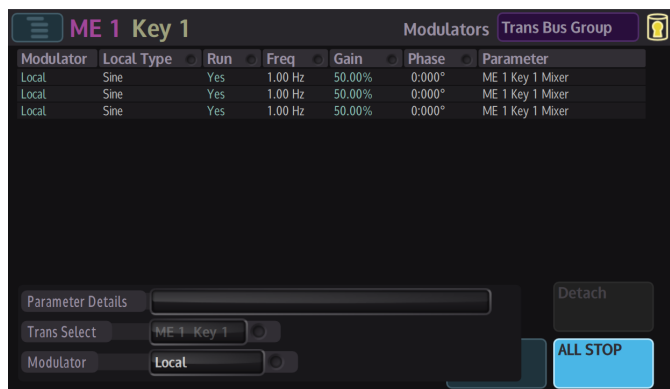
These four menus below work in exactly the same way as the Bus Config Group. They all have a “Local” type modulation setup or can be attached to a Global Modulations setup.

The **DVE Group** modulators are attached to parameters in the DVE Global, M and SURFACE menus.

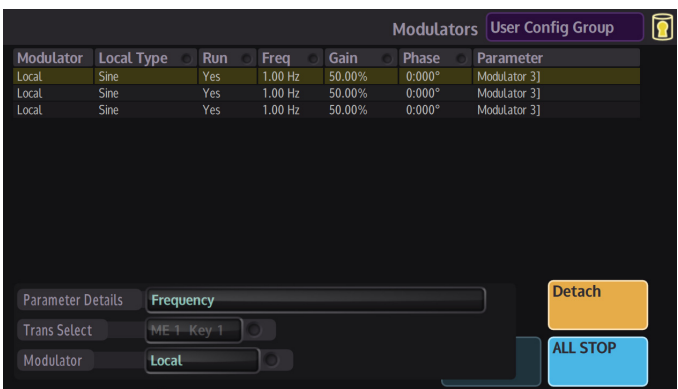
The **ME Trans Group** modulators are attached to Key and M/E Transitions

The **I/O Config Group** modulators are attached to parameters in the Input Color menu.

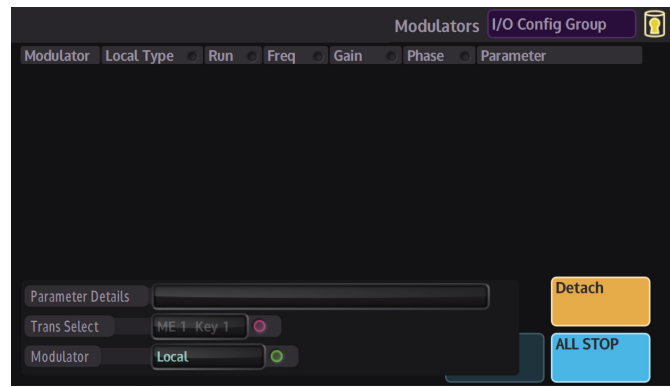
The **User Config Group** modulators are attached to parameters in the Output Color and Mattes & Washes menus.



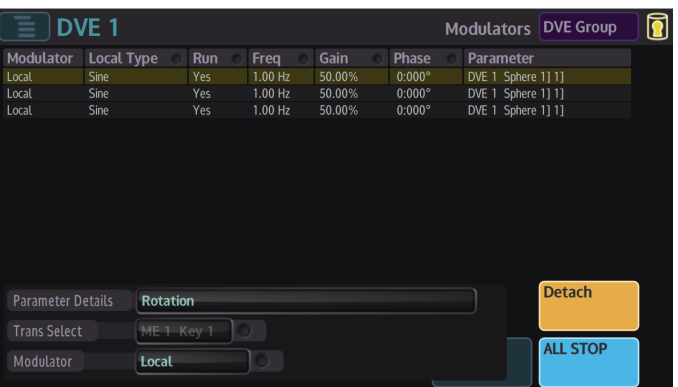
M/E Trans Group



User Config Group



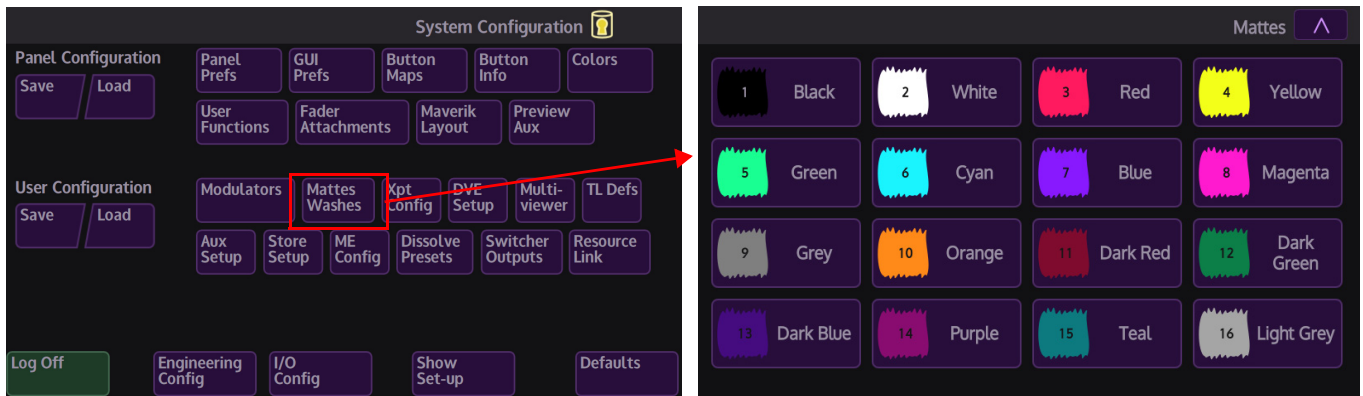
I/O Config Group



DVE Group

Mattes & Washes

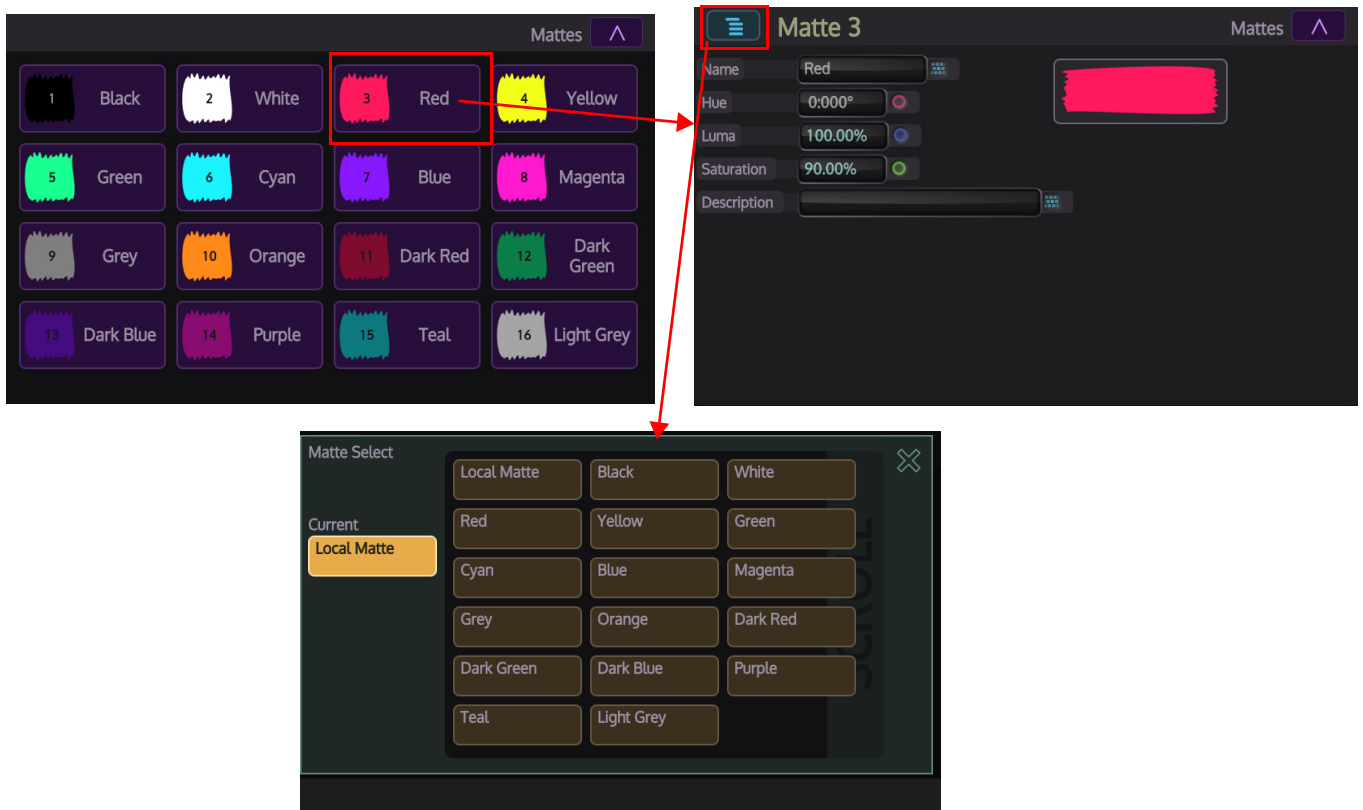
Mattes & Washes can be used as a background, a Fill or a border, they can be set on any crosspoint the in the same way as a Source Input, Store or a Wipe border.



Mattes

There are a total of 16 mattes that can be setup and used as a source.

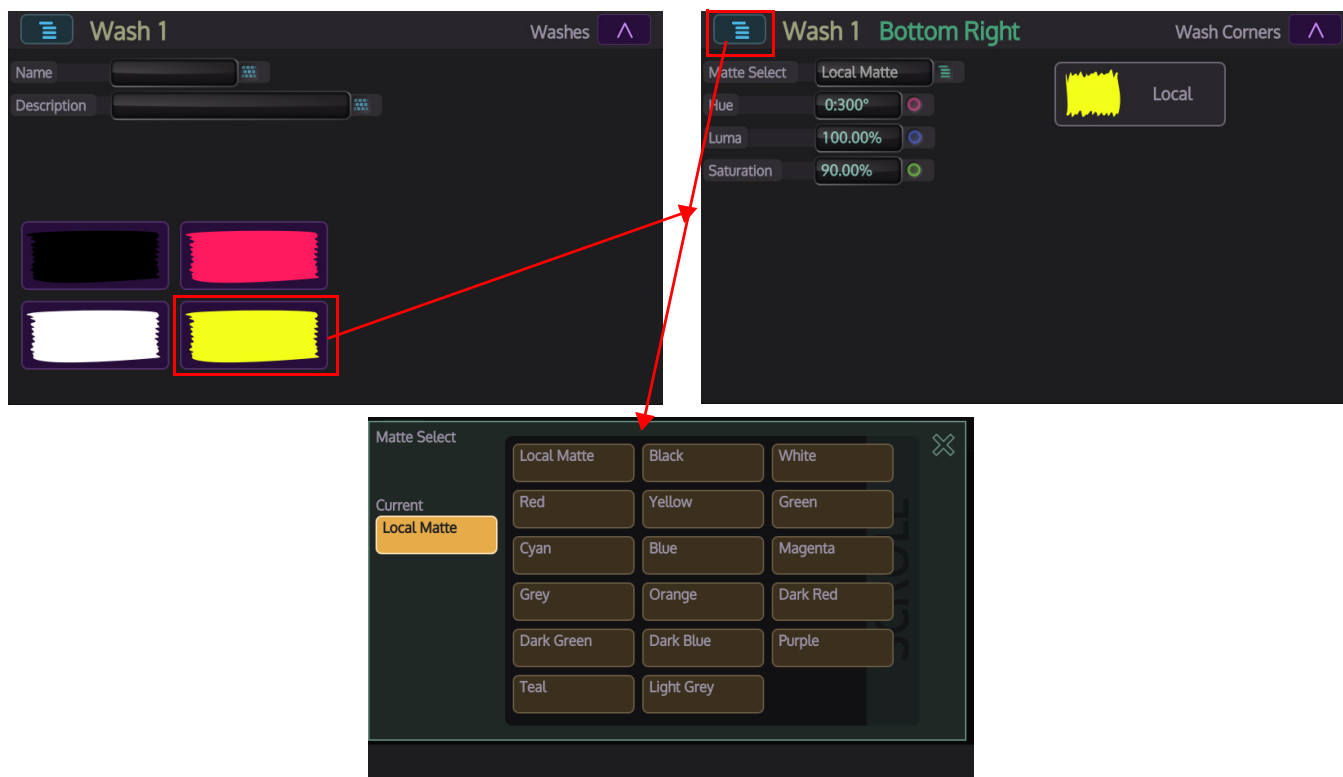
Touch a Matte color from the menu palette. A second Mattes menu appear, adjust the color using the Hue, Luma and Saturation, using the rotary controls.



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.

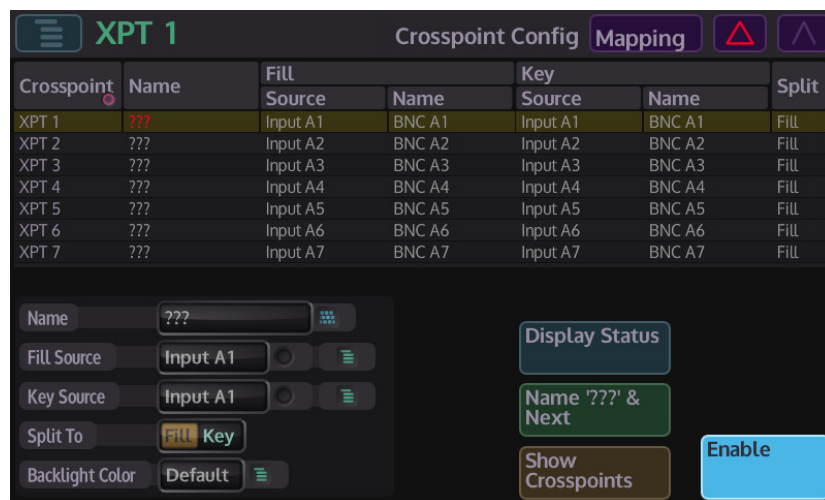
The attachers can be set to one of the 16 available Matte colors, or use the Hue, Luma or Sat parameters to adjust to the desired color mix.

Crosspoint Config

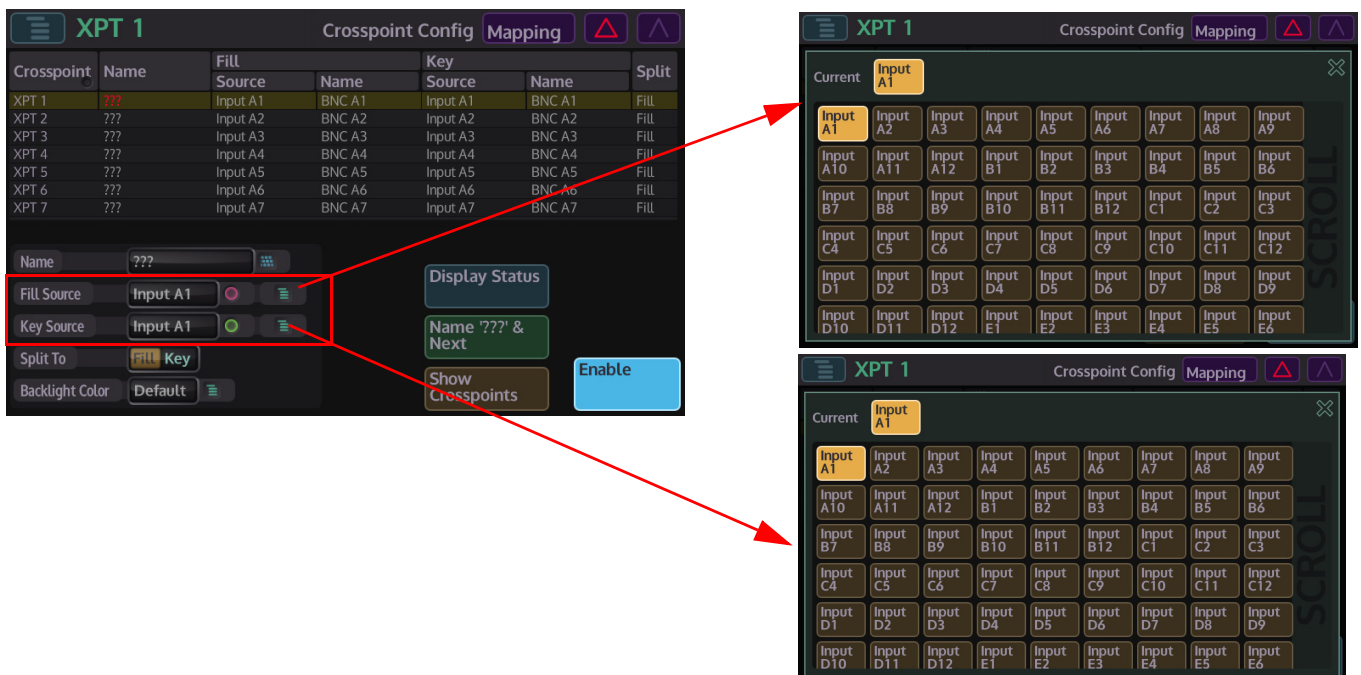
Mapping

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.

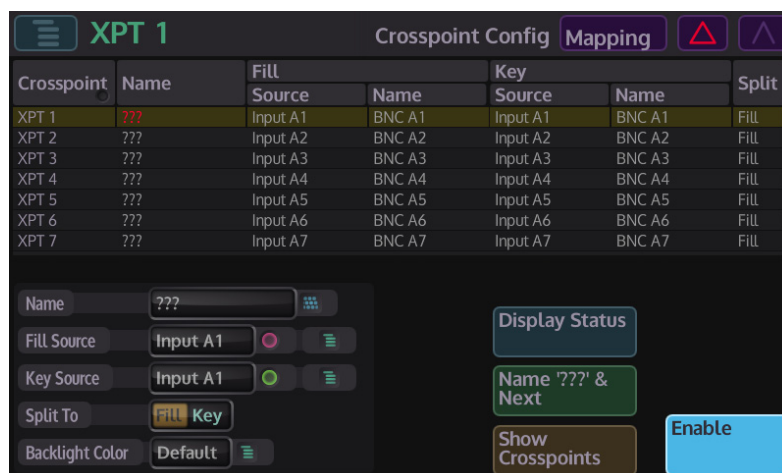


If the crosspoint map is going to be changed or modified, touch the “Fill Source” or “Key Source” popup menu buttons below, the user is able to map sources to crosspoints.



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.



Crosspoint	Name	Fill Source	Name	Key Source	Name	Split
XPT 1	???	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

Below the table, there are configuration options for the selected crosspoint (XPT 1):

- Name: ???
- Fill Source: Input A1
- Key Source: Input A1
- Split To: Fill/Key
- Backlight Color: Default
- Buttons: Display Status, Name '???' & Next, Show Crosspoints, Enable

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.

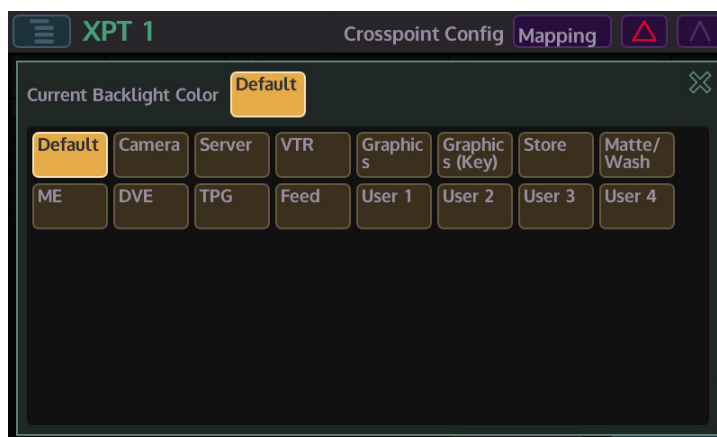
The next two columns are used to set the actual source to be mapped to the selected crosspoint and to give the source a name.

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.

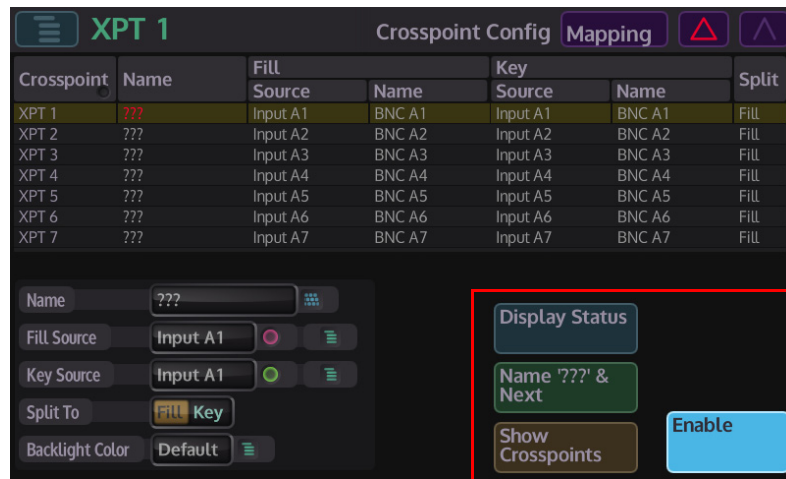
Key Source / Name - This column selects the Key Source which provides the Key (hole cut) signal when selected on a Key bus. It has no effect when selected on a background bus.

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.



Function Buttons



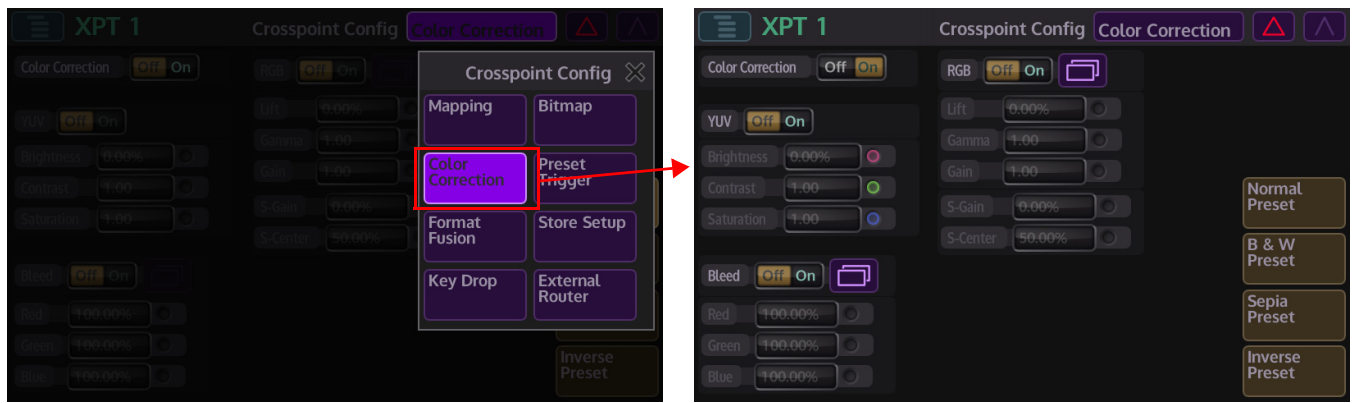
Enable - this function enables/disables the selected crosspoint. When disabled, the crosspoint "Name" will display as "Disabled" and the panel mnemonic is left blank.

{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

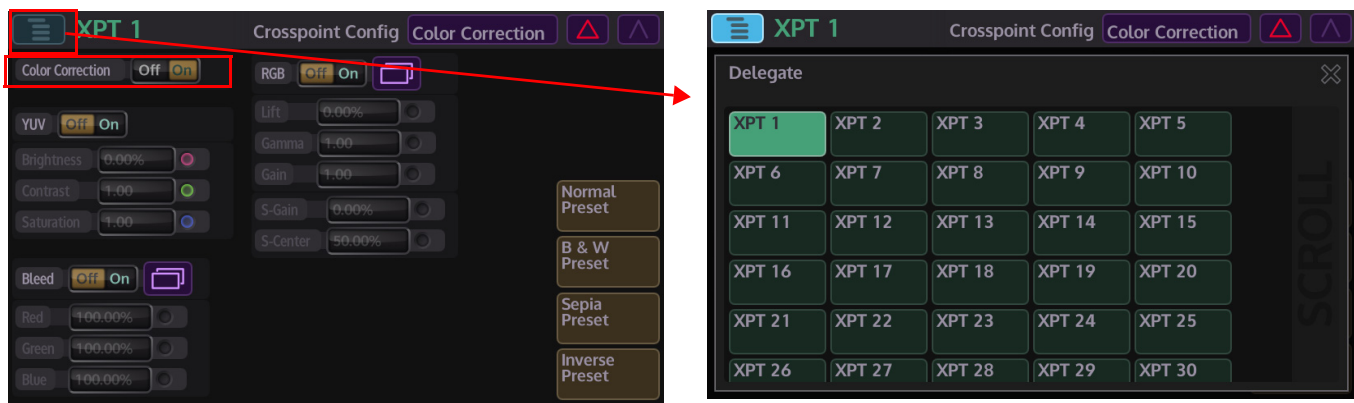
Crosspoint Color is applied on a crosspoint by crosspoint basis, and are saved when saving a User Config, so it is important to check that any work done was created in the required User Config before saving.



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.

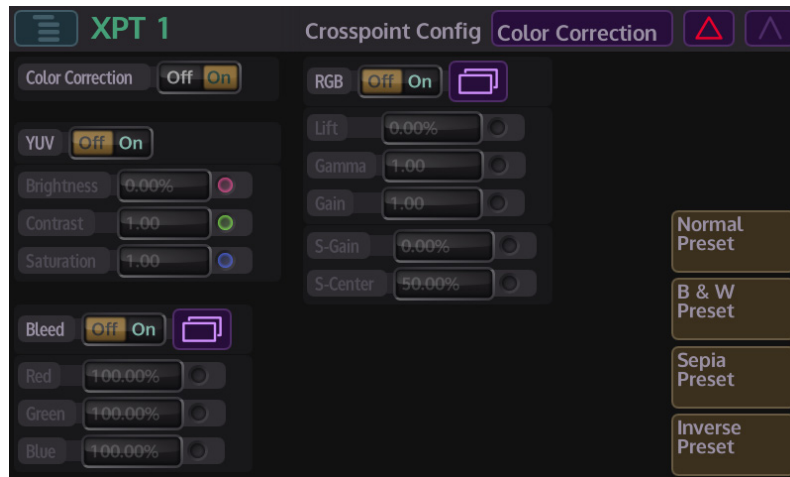
The different stages of crosspoint color correction can now be applied.



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.



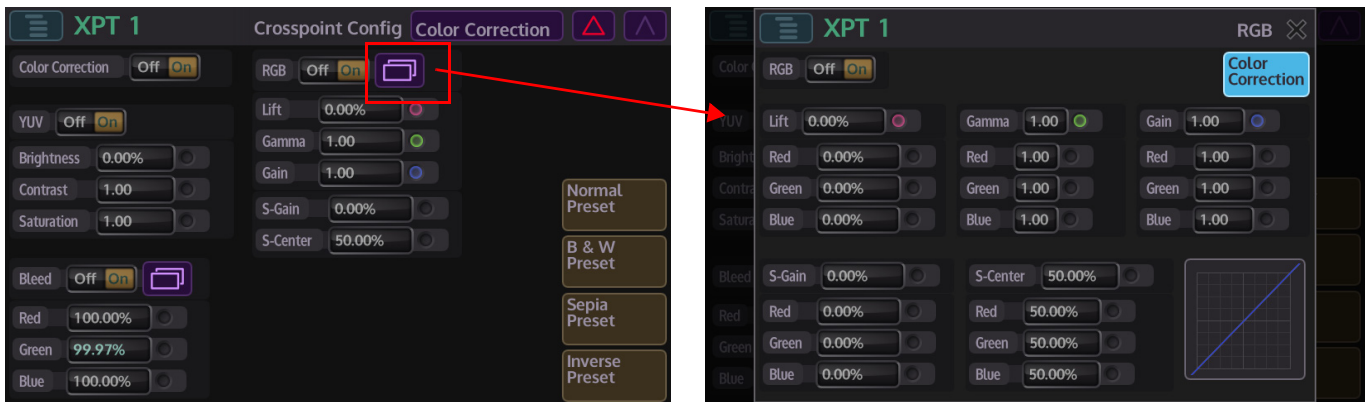
Touch the Brightness rotary control attacher and the Brightness, Contrast and Saturation of the Xpt can be adjusted.

- 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

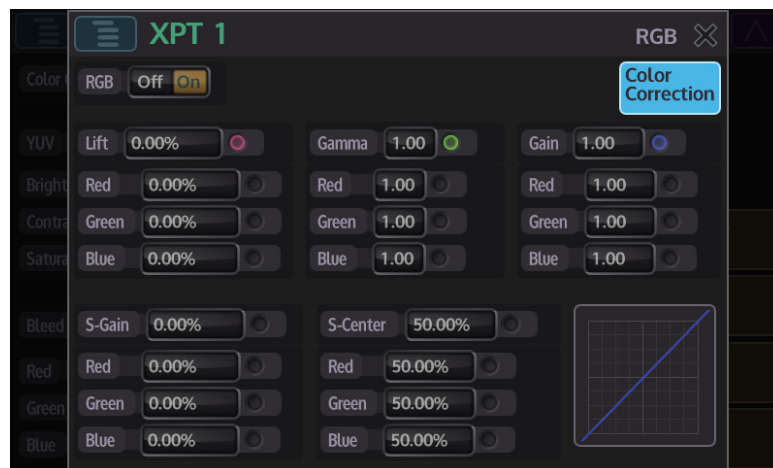
To start using the RGB color correction parameters, turn the RGB parameter "On" and the Lift, Gamma, Gain, S-Gain and S-Center parameters will light up.



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:



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.

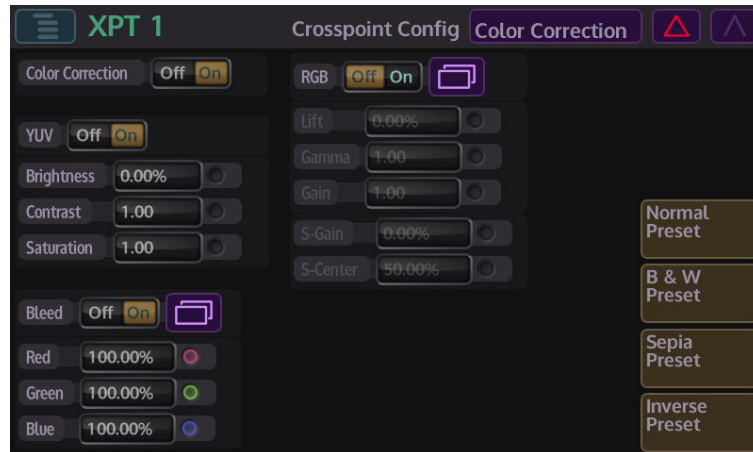
S Gain and S Center - the parameters adjust the gain mid tone levels of the S curve and the center point levels of the s curve.

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.

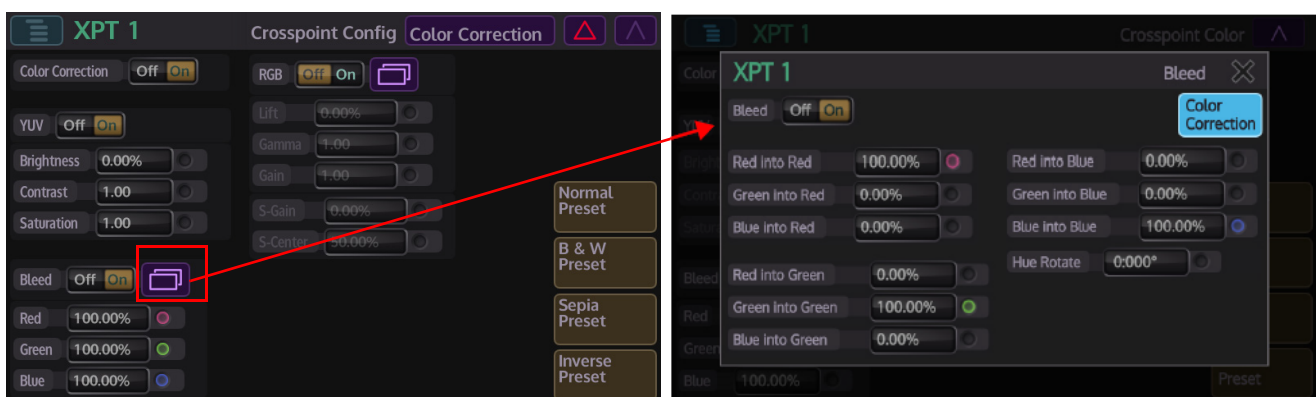


Again make sure the Color Correction is turned on.

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:

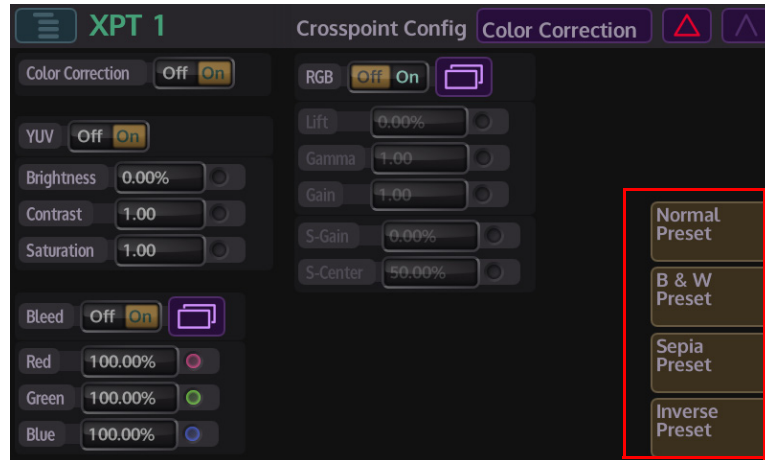
- Red into Red
- Green into Green
- Blue into Blue

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.



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.

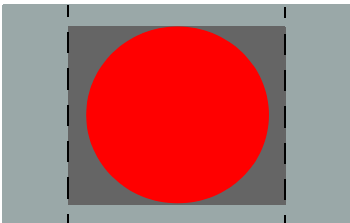
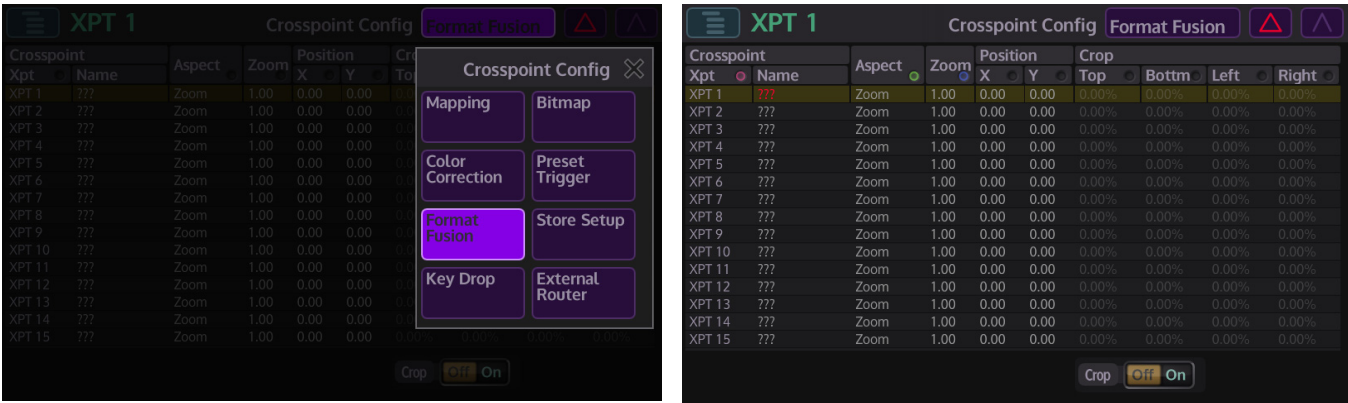
If the **Normal** preset option is selected, then all color correction controls are Grayed out preventing any adjustments. This is to make sure that the original crosspoint source can be recalled.

If **B&W**, **Sepia** and **Inverse** are selected, the preset levels can all be color corrected.

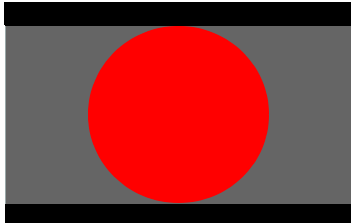
Format Fusion

The FormatFusion controls in this menu allow the user to change the aspect ratio, zoom and position of a crosspoint source.

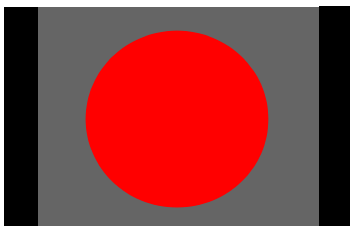
This function would most commonly be used to change the aspect ratio of a 525 or 625 4:3 source to a 16:9 aspect ratio, using the Kahuna Format Fusion engines.



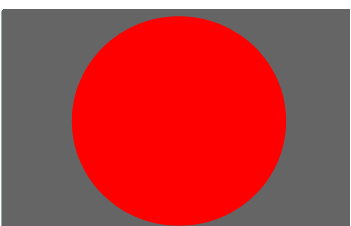
Original 4:3 Crosspoint Source on a 16:9 background



With Full Width Applied



With Full Height 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

Crosspoint ConfigFormat Fusion

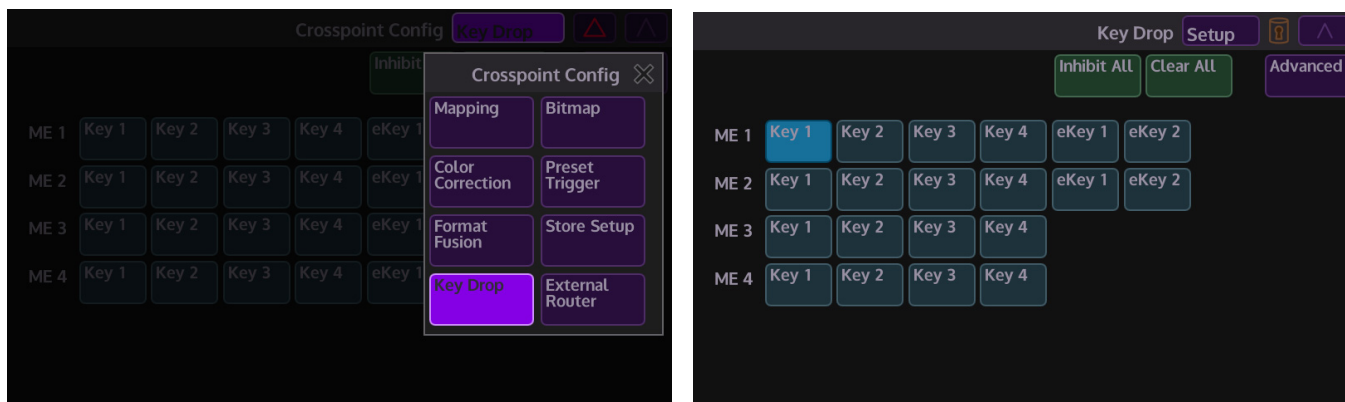
Crosspoint		Aspect	Zoom	Position		Crop			
Xpt	Name			X	Y	Top	Bottom	Left	Right
XPT 1	???	Zoom	1.00	0.00	0.00	0.00%	0.00%	0.00%	0.00%
XPT 2	???	Zoom	1.00	0.00	0.00	0.00%	0.00%	0.00%	0.00%
XPT 3	???	Zoom	1.00	0.00	0.00	0.00%	0.00%	0.00%	0.00%
XPT 4	???	Zoom	1.00	0.00	0.00	0.00%	0.00%	0.00%	0.00%
XPT 5	???	Zoom	1.00	0.00	0.00	0.00%	0.00%	0.00%	0.00%
XPT 6	???	Zoom	1.00	0.00	0.00	0.00%	0.00%	0.00%	0.00%
XPT 7	???	Zoom	1.00	0.00	0.00	0.00%	0.00%	0.00%	0.00%
XPT 8	???	Zoom	1.00	0.00	0.00	0.00%	0.00%	0.00%	0.00%
XPT 9	???	Zoom	1.00	0.00	0.00	0.00%	0.00%	0.00%	0.00%
XPT 10	???	Zoom	1.00	0.00	0.00	0.00%	0.00%	0.00%	0.00%
XPT 11	???	Zoom	1.00	0.00	0.00	0.00%	0.00%	0.00%	0.00%
XPT 12	???	Zoom	1.00	0.00	0.00	0.00%	0.00%	0.00%	0.00%
XPT 13	???	Zoom	1.00	0.00	0.00	0.00%	0.00%	0.00%	0.00%
XPT 14	???	Zoom	1.00	0.00	0.00	0.00%	0.00%	0.00%	0.00%
XPT 15	???	Zoom	1.00	0.00	0.00	0.00%	0.00%	0.00%	0.00%

CropOffOn

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.



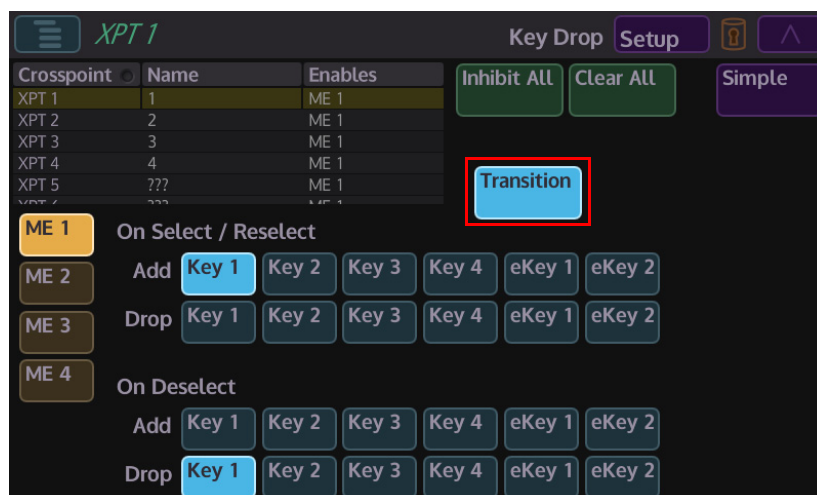
In this top menu or “simple” menu, the user can select a Key, from the list of available M/Es (the selected Key will turn blue).

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.



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.

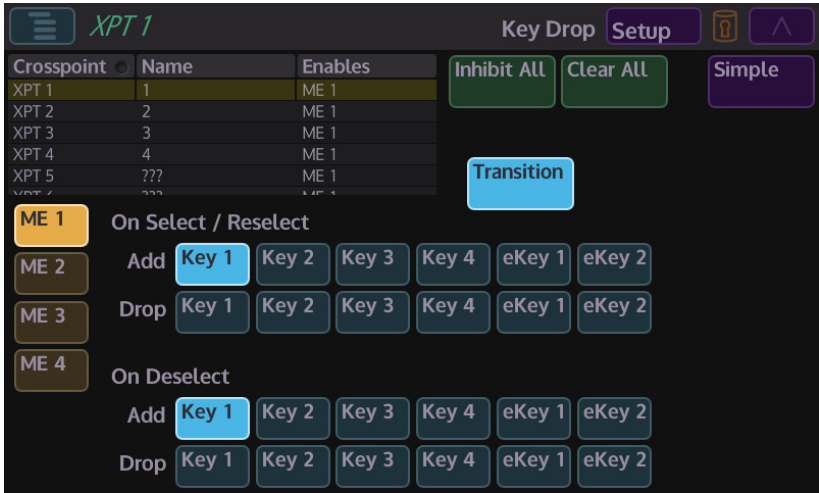
The Inhibit All and Clear All functions for Key Drop can also be found on these menu pages. Each source can have rules set to Add or Drop a specific Keyer on each ME whenever that source is selected on the Program or Bgnd A Bus of that ME.

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.



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

Touch {Key1} in the On Deselect control

Touch {Transition} to light this control.

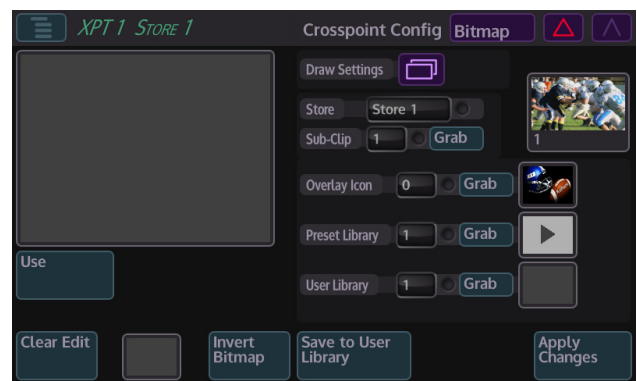
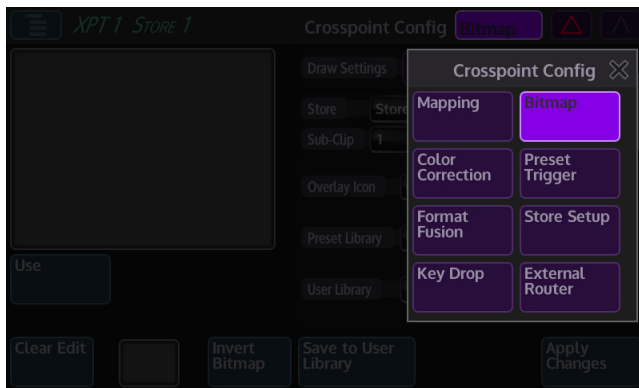
Every time the remote source is put on the output of ME1 the “Graphic” bug will be included the picture.

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

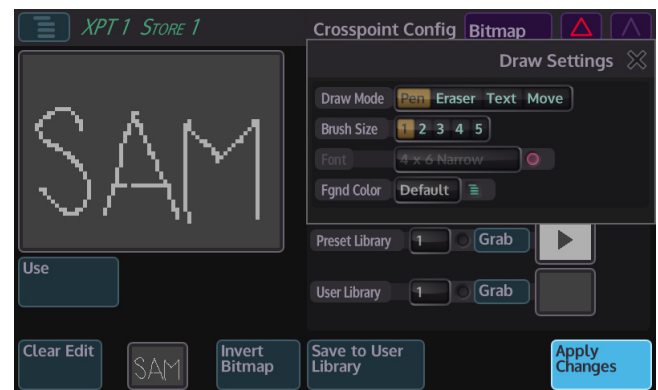
The bitmap function in the Crosspoint Config menu is used to create text or images, or place pre-made images on the mnemonic displays on the Xpt MAV modules.

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.



Use the **{Delegate}** button to open the Delegate popup. Here the user can select the Xpt that the bitmap will be applied to.

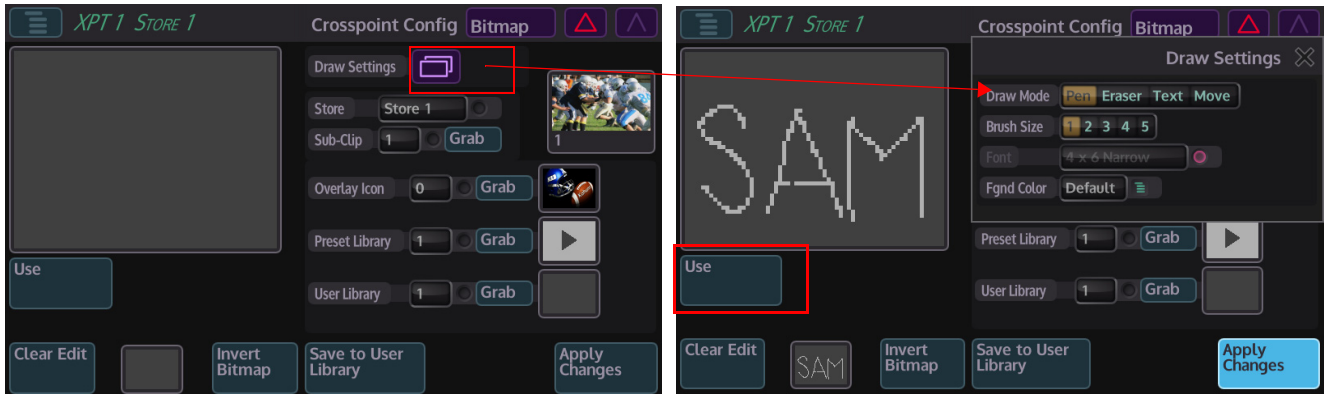
A bitmap from a pre-installed library can be selected using the **Preset Library** parameter. A mimic of the Icon will appear in the larger gray square to the left of the menu. Running through the library of bitmaps, a user defined library can also be created and selected in this way. Once the required 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.



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.

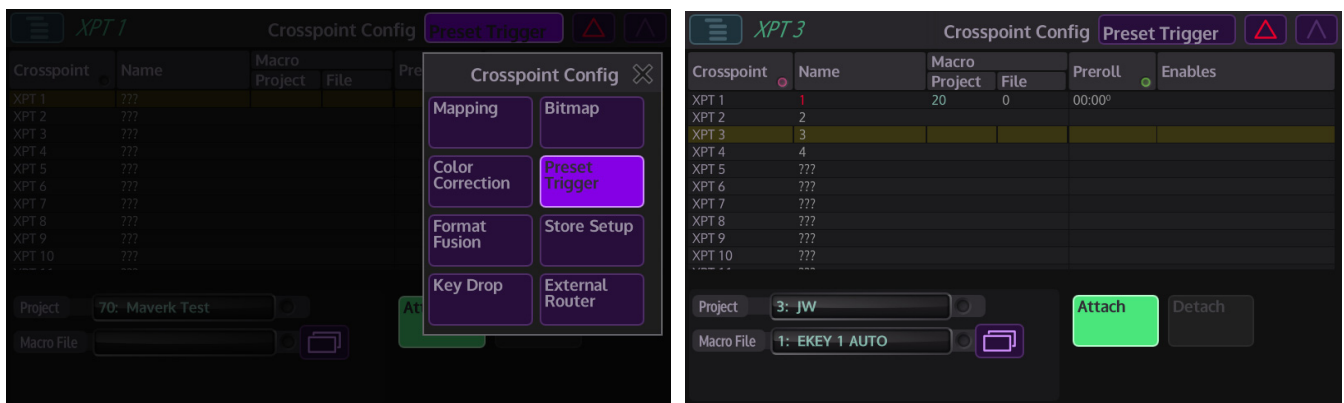
When finished touch the **{Use}** button to apply the bitmap to the selected Xpt.

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.

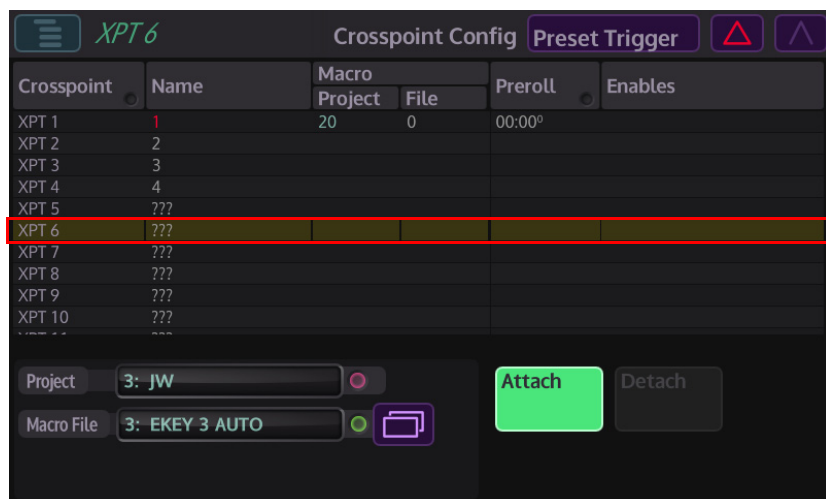
A Preroll Delay can be specified which will delay the actual transition for a specified duration after the Macro has been triggered.

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.

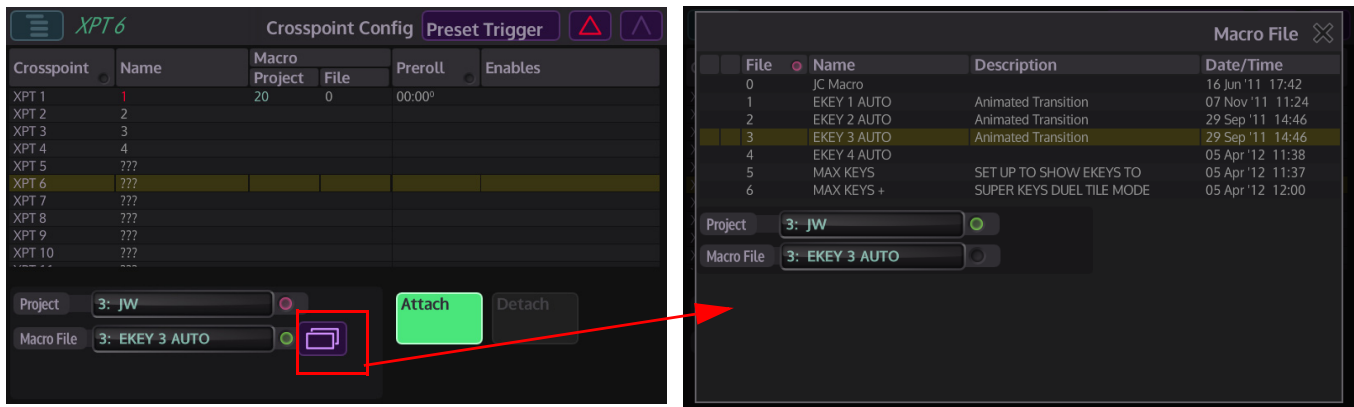


In the Crosspoint Config menu, touch the **{Preset Trigger...}** menu link button.

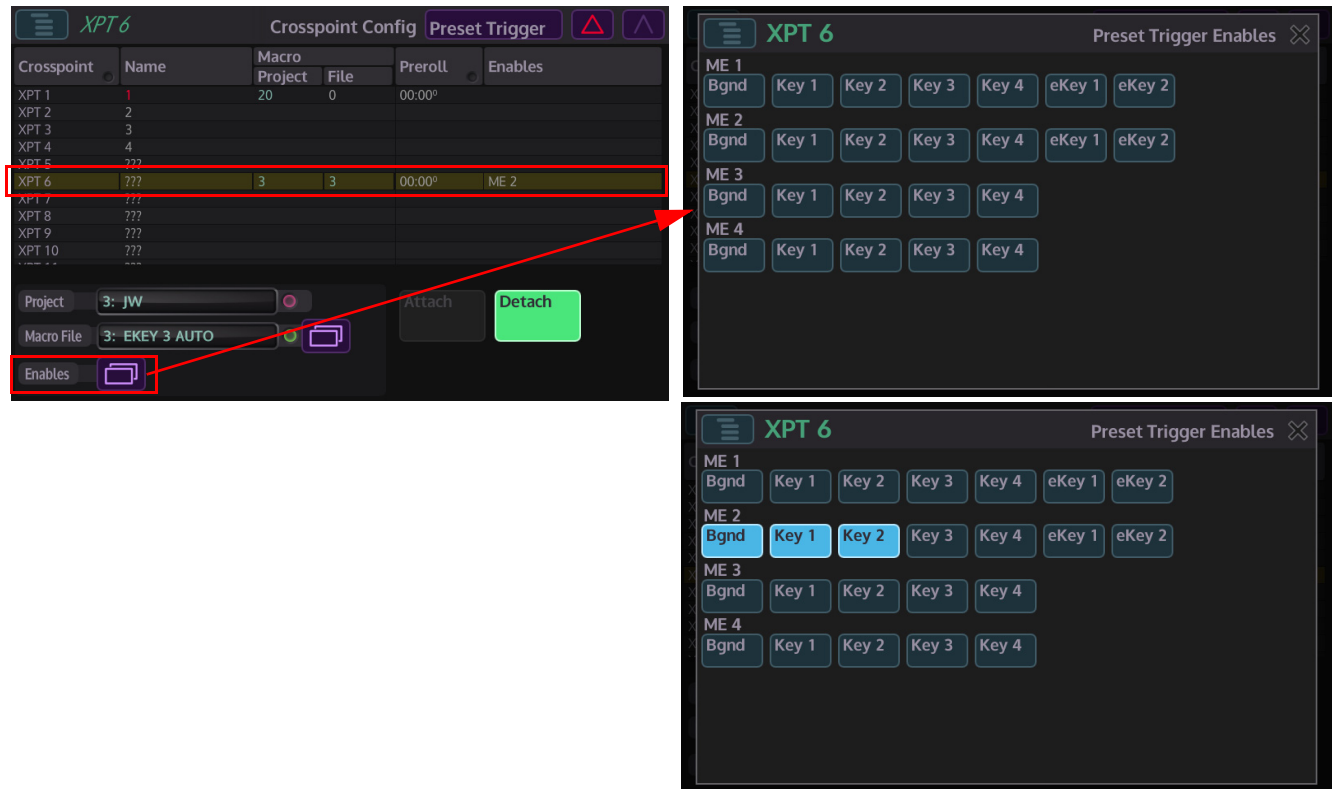
Firstly the operator needs to select the Xpt which will trigger the Macro. This is done either by touching the relevant Xpt in the top table, or by using the "Crosspoint" rotary parameter control.



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).

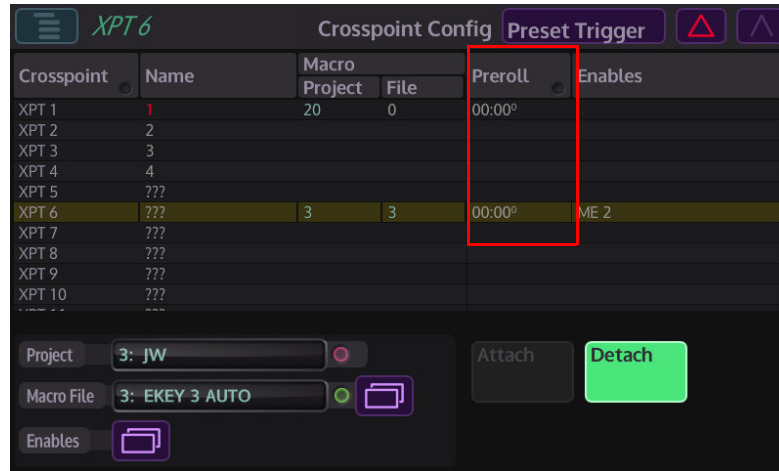


Once all the Project and Macro File are selected, back in the main preset Trigger menu, touch the **{Attach}** button to attach the macro to the selected crosspoint. Notice that an “Enables” selection parameter has now appeared in the menu. Touch the **{Enables...}** button to display the Enables options to set which M/E and which Bgnd, Key the transitions will actually trigger the Macro.



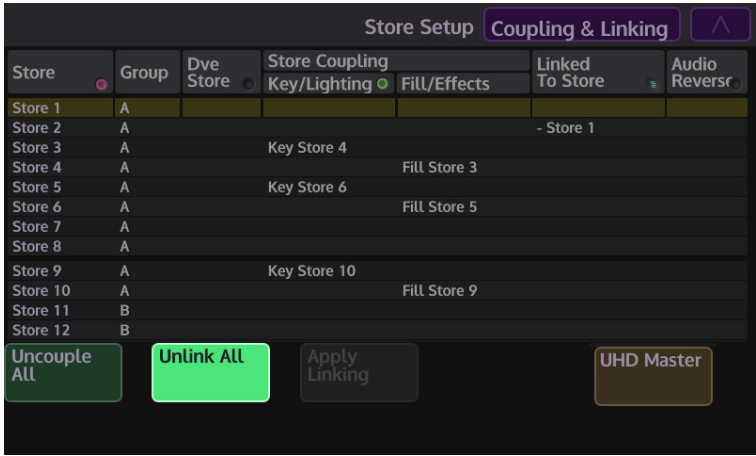
In the example above, by selecting Xpt 6, then selecting M/E2, Bgnd and Keys 1 and 2 the Macro will be triggered whenever a transition is made, which will bring “Xpt 6” onto the output of “ME2” using a transition on the Background or any of the 2 Keys.

A **Preroll** can be set which will delay the transition until a pre-determined time after the Macro has been triggered.



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.



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	Group	Dve Store	Store Coupling	Linked To Store	Audio Reversr
			Key/Lighting	Fill/Effects	
Store 1	A				
Store 2	A				- Store 1
Store 3	A		Key Store 4		
Store 4	A			Fill Store 3	
Store 5	A		Key Store 6		
Store 6	A			Fill Store 5	
Store 7	A				
Store 8	A				
Store 9	A		Key Store 10		
Store 10	A			Fill Store 9	
Store 11	B				
Store 12	B				

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.

Store Setup Coupling & Linking						
Store	Group	Dve Store	Store Coupling		Linked To Store	Audio Reverser
			Key/Lighting	Fill/Effects		
Store 1	A		Key Store 2			
Store 2	A			Fill Store 1		
Store 3	A					
Store 4	A					
Store 5	A		Key Store 6			
Store 6	A			Fill Store 5		
Store 7	A					
Store 8	A					
Store 9	A		Key Store 10			
Store 10	A			Fill Store 9		
Store 11	B					
Store 12	B					
Uncouple All Unlink All Apply Linking UHD Master						

UHD Master

Setting up UHD stills and clips in the internal clip store is done in a similar way to HD stores.

Note: Before setting up Coupling & Linking, a UHD still or clip will have been loaded into a store, in the Store menus.

Store Setup Coupling & Linking						
Store	Group	DVE Store	Store Coupling		Linked To Store	Audio Reverser
			Key/Lighting	Fill/Effects		
Store 1	A				UHD Master	
Store 2	A				- UHD Store 1	
Store 3	A				- UHD Store 1	
Store 4	A				- UHD Store 1	
Store 5	A					
Store 6	A					
Store 7	A					
Store 8	A					
Store 9	A					
Store 10	A					
Store 11	B					
Store 12	B					
Uncouple All Unlink All Apply Linking UHD Master						

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

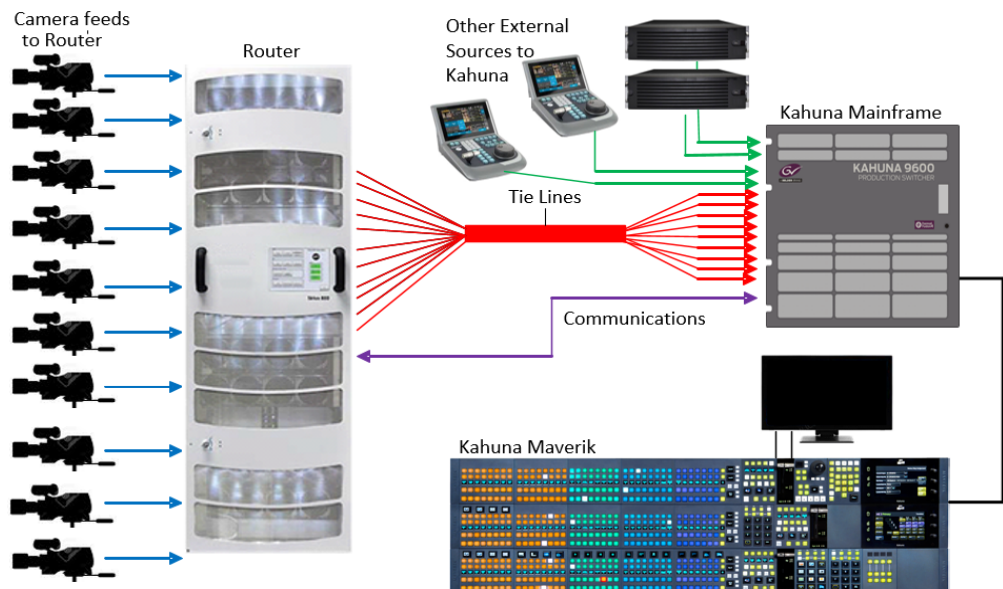
Kahuna has the mechanism to expand the number of sources coming into the mainframe using an external router. This is primarily due to a system setup running in UHD. Using this new feature, the number of sources to be used with the Kahuna, are expandable up to the size of the upstream router.

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 from 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.

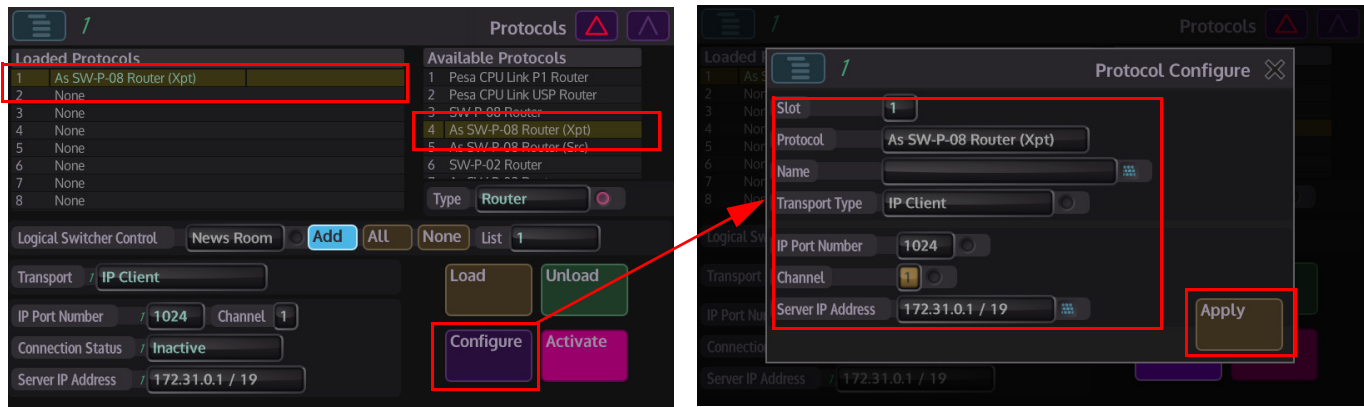
If the user requires external router sources on the A and B bus plus Key 1 and Key 2, this would require 4 Tie Lines.

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.



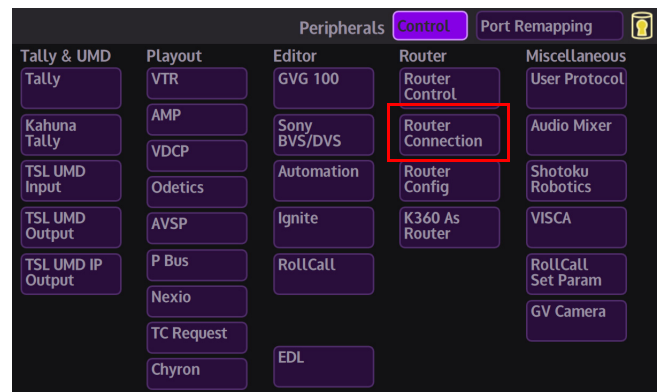
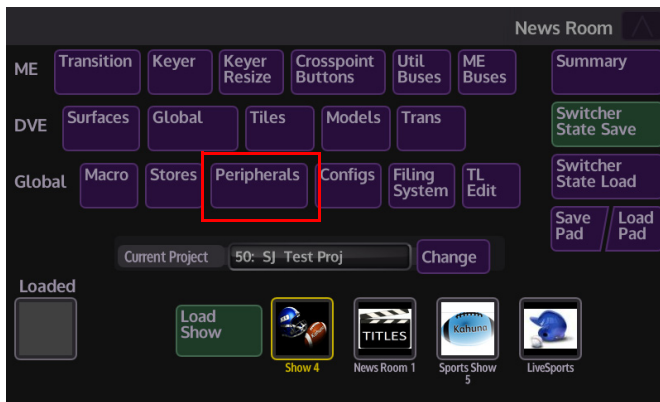
The user will now have to configure the protocol so that Kahuna can communicate with the router. Touch the {Configure...} menu link button and the "Protocol Config" menu is displayed. Use the "Transport Type" parameter to select the communications transport type, then, setup the "IP Client Configuration" details.

Once setup, touch the {Apply} button.

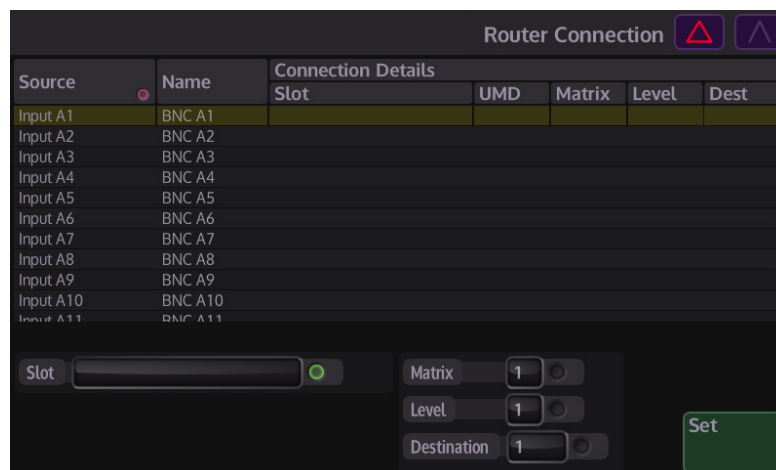
Then back in the Peripherals main menu, touch the {Activate} button to activate the protocol.

Peripherals Setup

Touch the **{PERIPH}** button to enter the “Peripherals” menu. Then touch the **{Router Connections...}** menu link button.



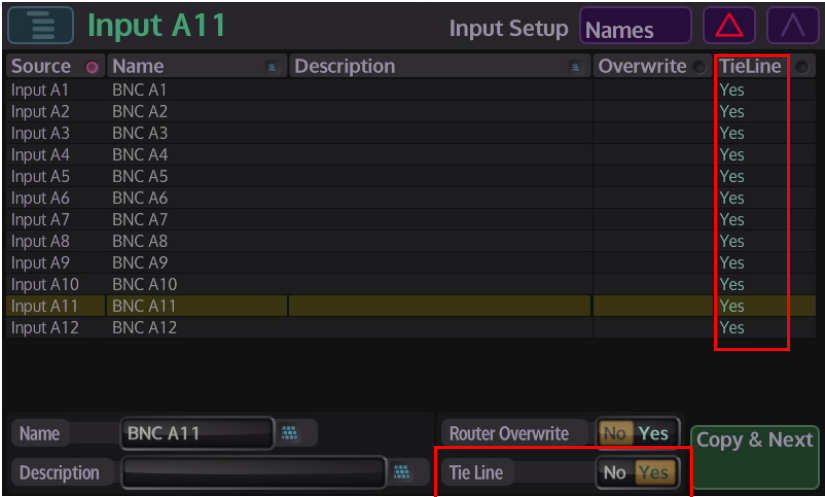
Here the physical router outputs (Including Matrix and Levels) need to be mapped to the physical Kahuna inputs. These connections will form the “Tie Lines”.



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.



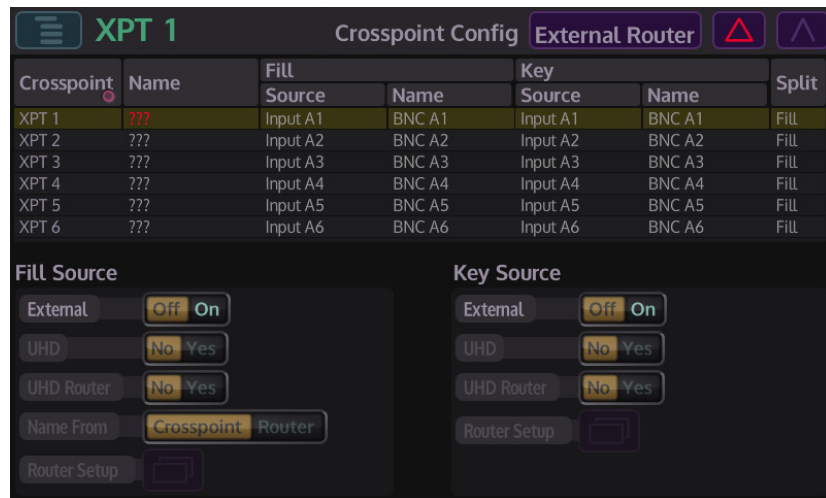
Note: For inputs that are set as “TieLines”, it is recommended that the “Source **Standard**” parameter (in the **Eng Config - Inputs** menu) is set to “Auto Standard” and the “Color **Correction**” function is set to “Off”. If color correction is required then it should be done on the external router 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.

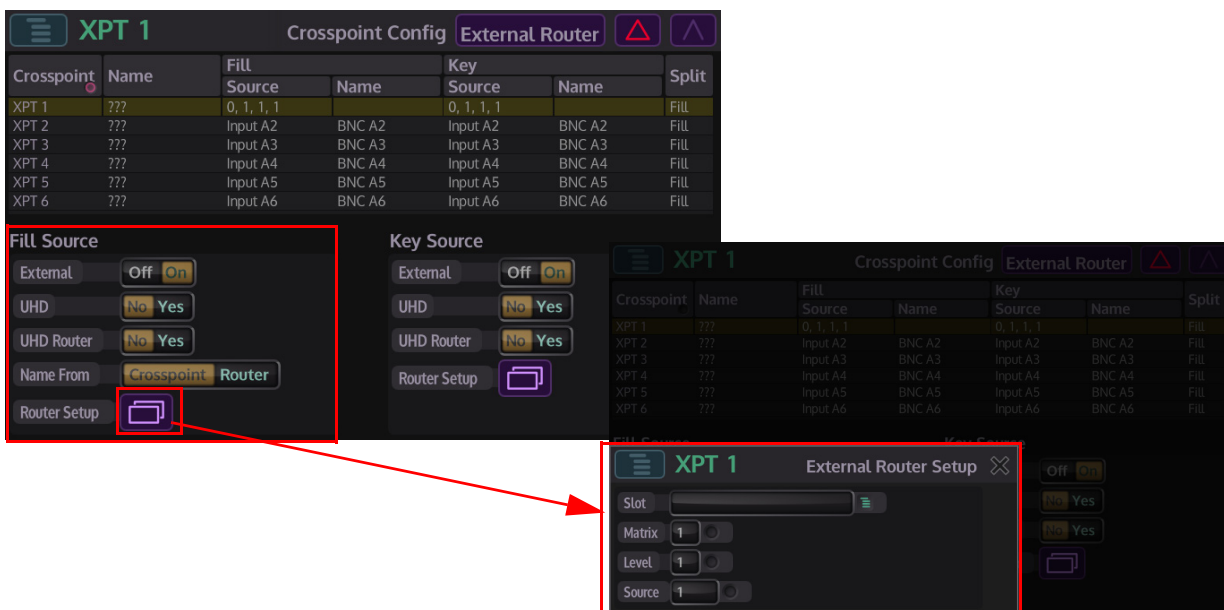
Setting up the User Config - Crosspoint Config - External Router configuration

In the **User Config - Crosspoint Mapping** menu, touch the **{External Router...}** menu link button.



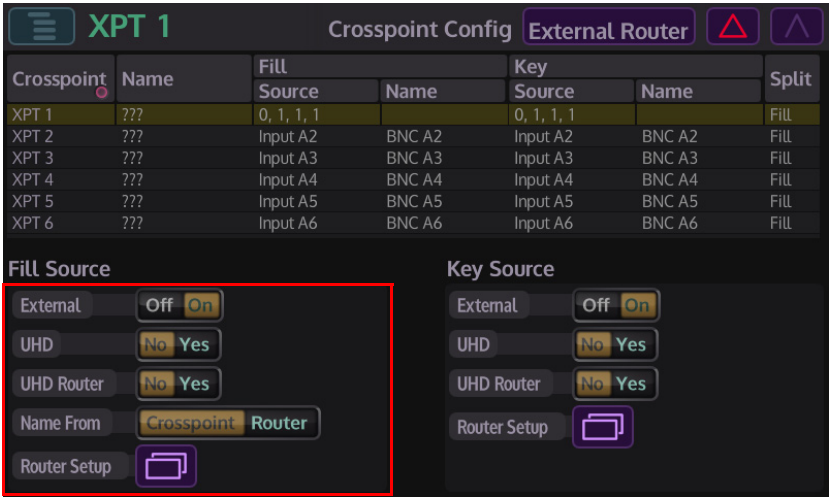
In the “External **Router**” menu, select free Xpts that are not being currently used, there are a total of 160 variable Xpts available. Each external router source required on the Kahuna will need its own router Xpt.

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.



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.

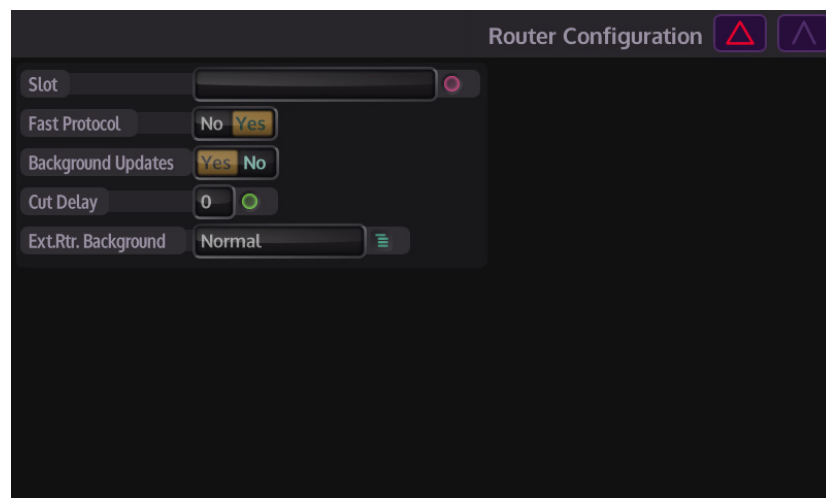
Timing

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.

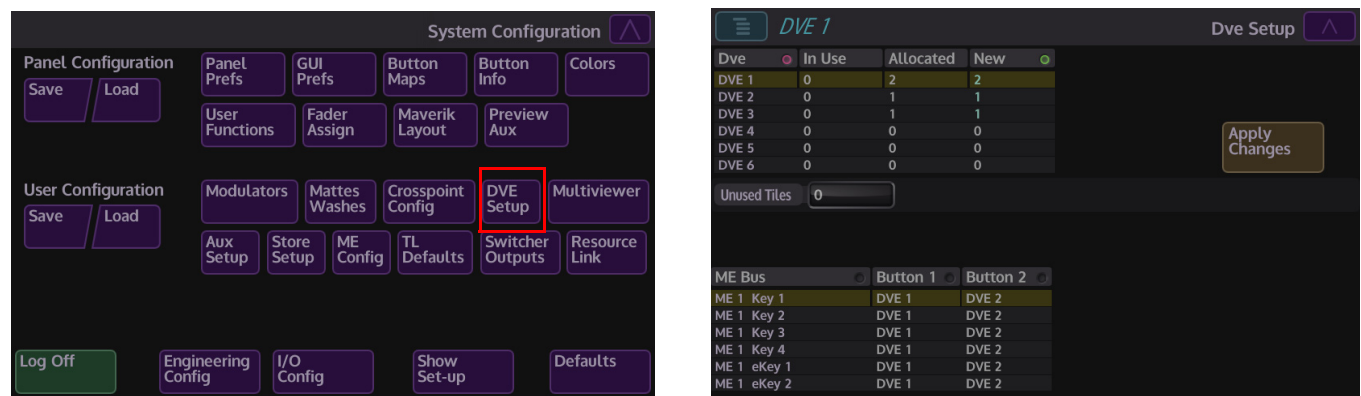
For routers that use the Grass Valley SWP08 protocol the Fast Protocol selection can be enabled. This sends out multiple commands per video field. It will depend on the implementation of SWP08 whether this mode works.



DVE Setup

- Note: Prior to Login:
- Note: DVE Channel Assignment between Logical Switchers has to be setup prior 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 be used in a single DVE channel. There are 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 through 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.

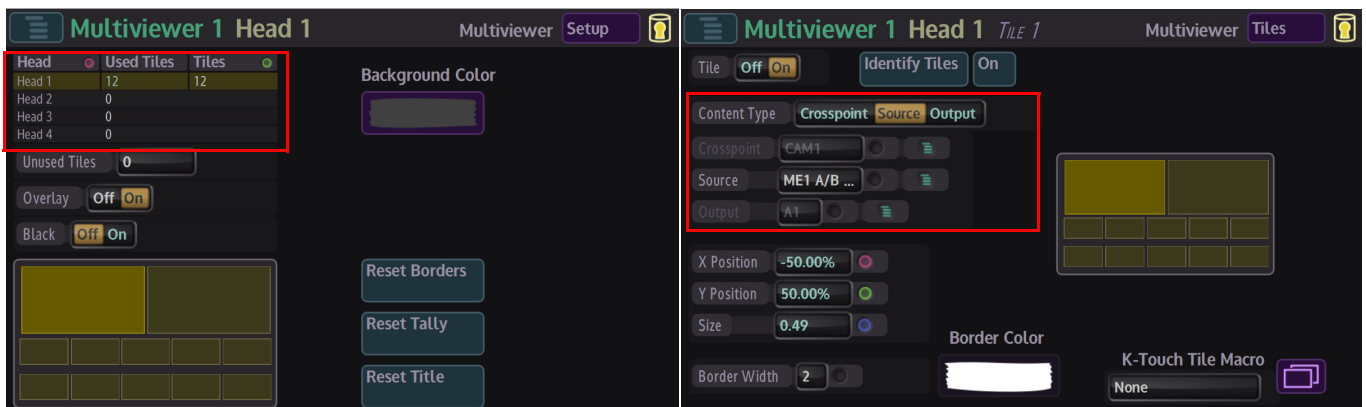
Multiviewer

The format independent multiviewer provides great flexibility with its preset and user-defined layouts, and features the following:

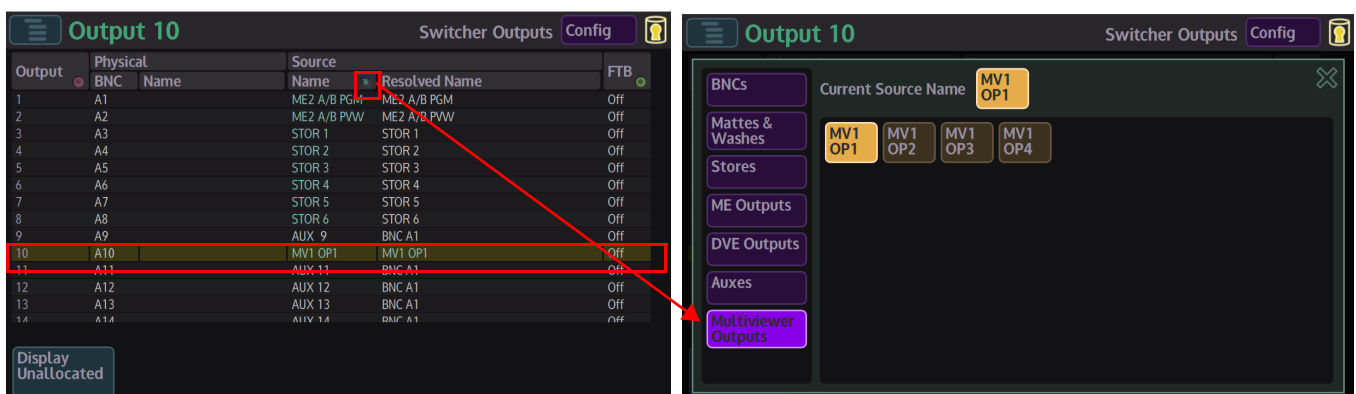
- Up to 8 flexible output heads (Kahuna 9600 with two Router cards)
- Up to 24 windows (Kahuna 9600 with two Router cards)
- All external and internal sources selectable to all heads and all windows
- Instant preset layouts
- Clear and follow-through labeling
- Red and green tallies
- Assign to any output
- 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.



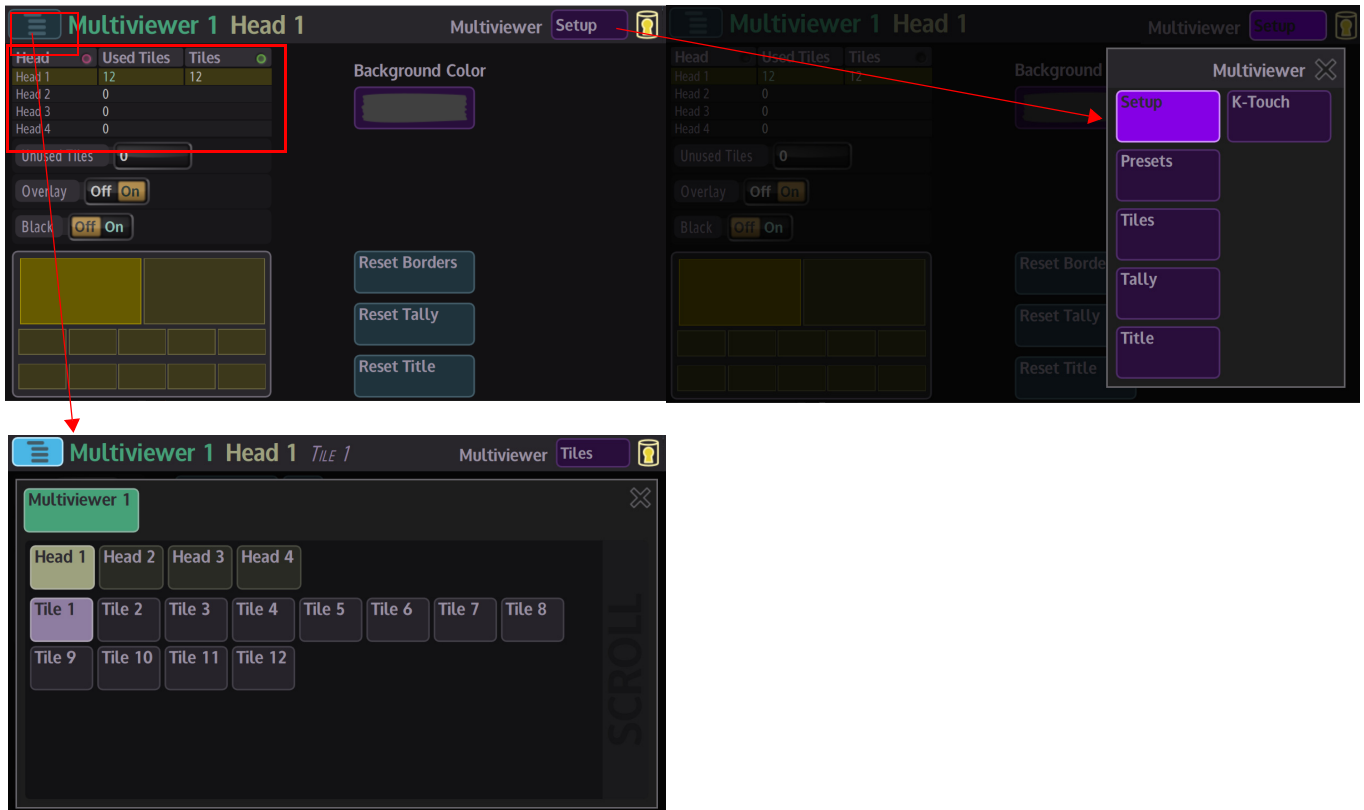
Output from the multiviewer are assigned to the outputs from the mainframe like any other output, this is done in the **Use Config - Switcher Outputs** menu, see below.



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.

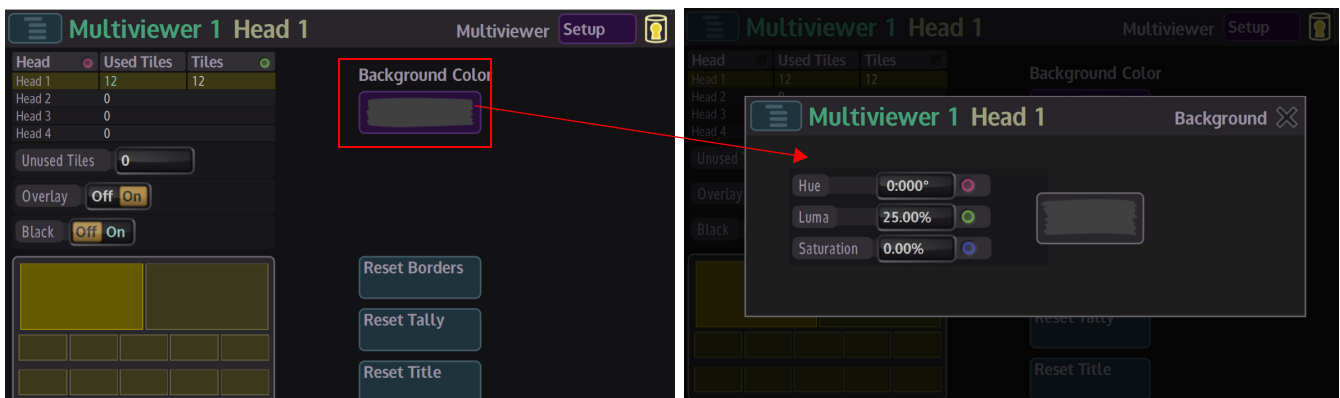


As can be seen in the diagram above, the rotary controls are used to select the required multiviewer head (or use the Delegate button, then select a Head from the list), then used to assign tiles to the head. The number of tiles assigned to a head is important because it will restrict the number of preset 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.

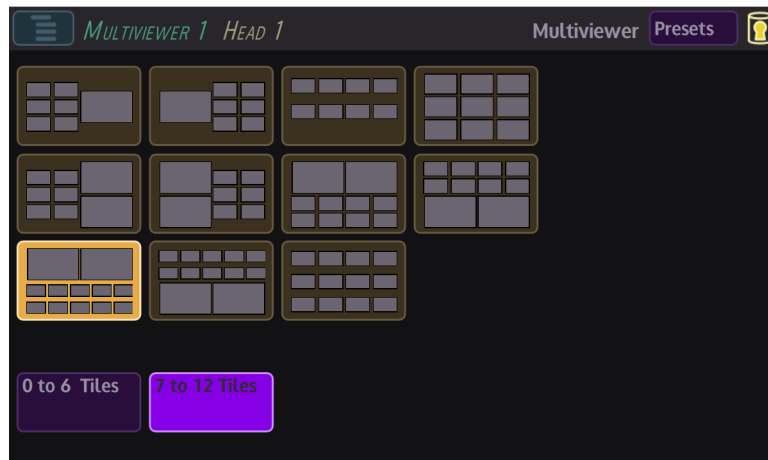
The background color behind the multiviewer tiles can be set by the user, touch the "Background Color" swatch and a dialog box will appear.



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.

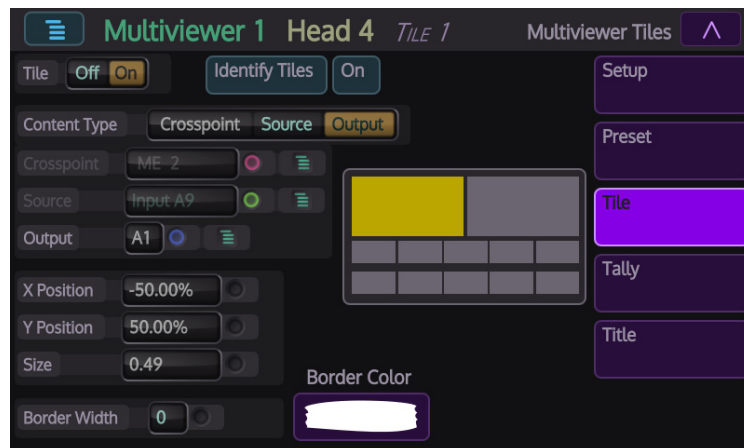


To use the preset layouts, make sure there are enough tiles allocated, then touch one of the preset layouts. Once selected, the layout image will light up.

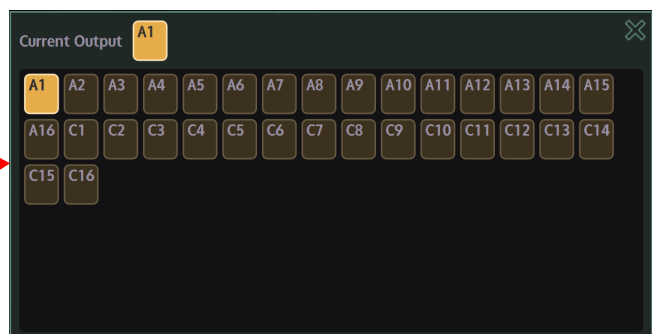
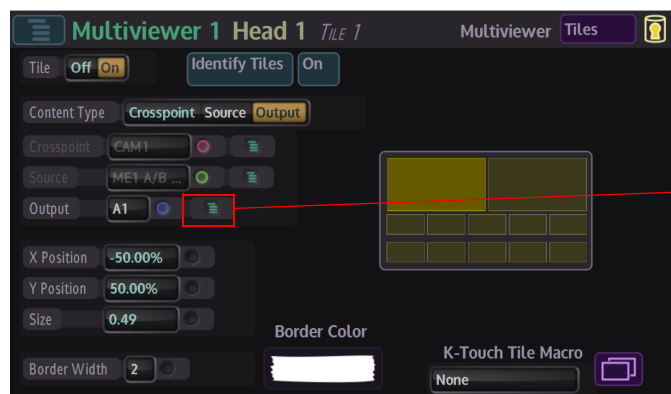
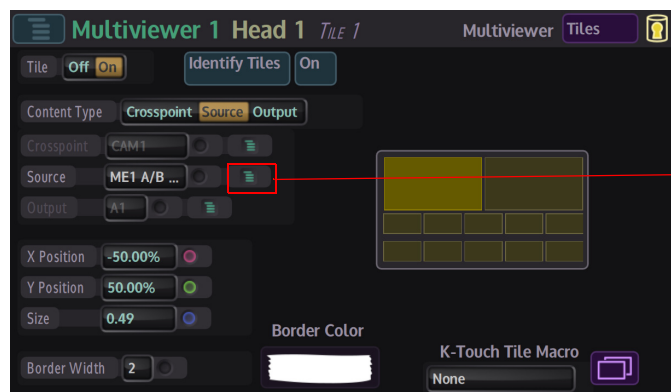
A user defined layout can be created by selecting a preset layout and using the Tile menu to reposition and size the tiles where as required.

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.

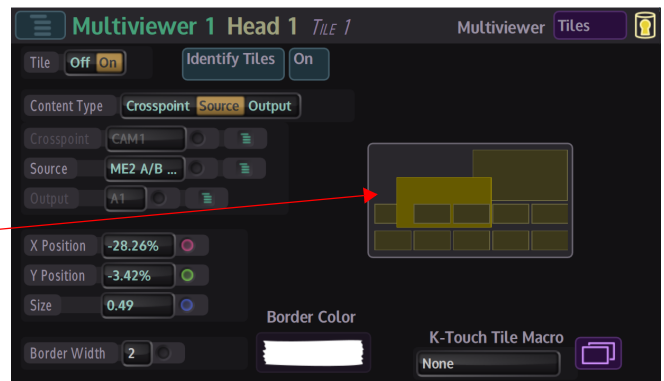
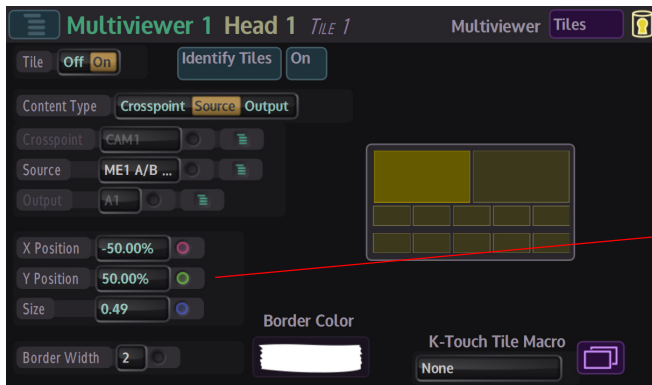


The next step is to select the type of source for the selected tile, there are 3 options to select from the “**Content Type**” parameter:

- 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.

Tiles can be freely moved around the multiviewer screen area using the X, Y and Size parameters.



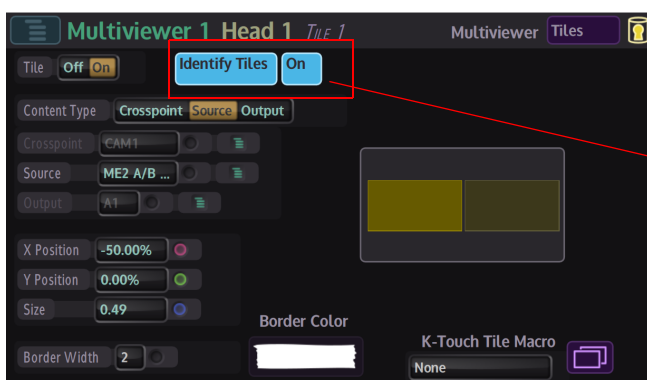
Use the rotary controls to position and size the selected tile as required.

The border around the edge of selected tiles can also be changed, touch the border width



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.

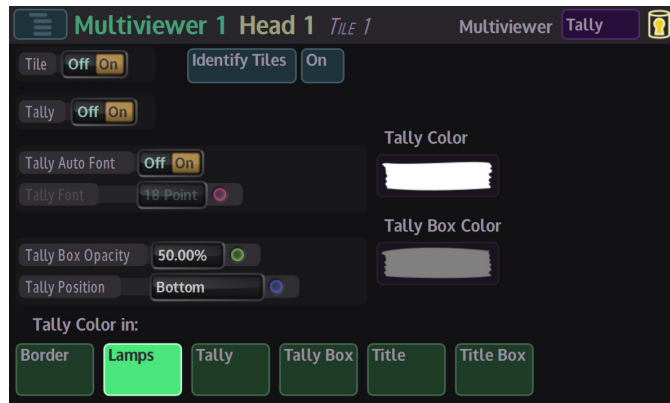
Touching the “**Identify Tiles**” button will display in the center of the tile the Tile Number, the multiviewer and head being used, the source feeding the tile and the output standard. the tile information will turn off once the button is let go.



Touch the “**On**” button will make the tile information stay on screen until the “**On**” button is pressed once more.

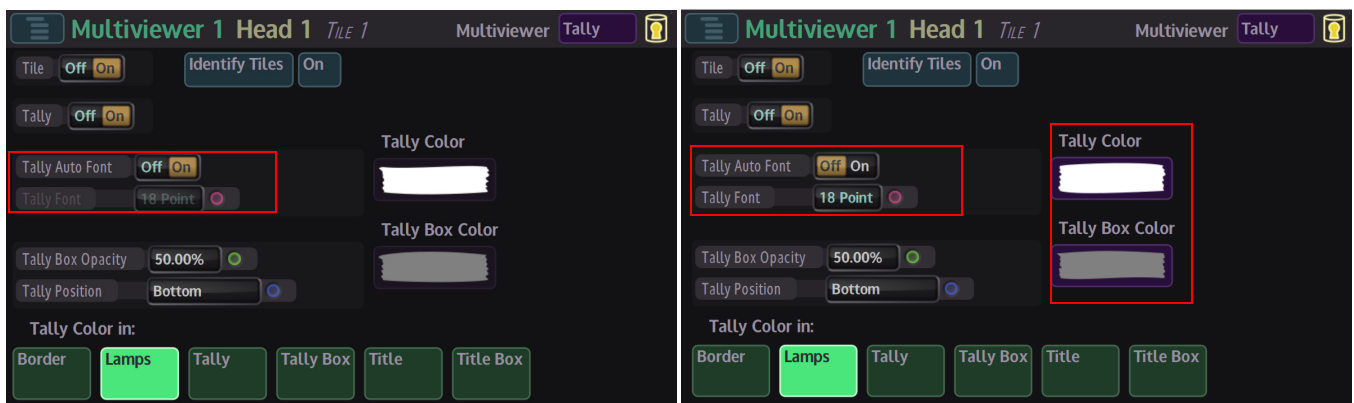
Tally

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.



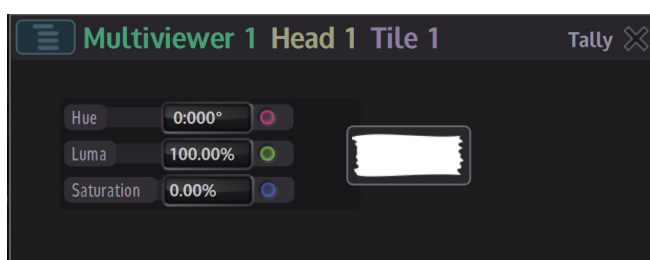
With the tally option now turned on for the selected tile, the source information is displayed in the center of the tally box i.e. ME2 OP1 or CAM1 etc. (the source information is automatically displayed when the sources for the tiles are setup in the Tile menu).

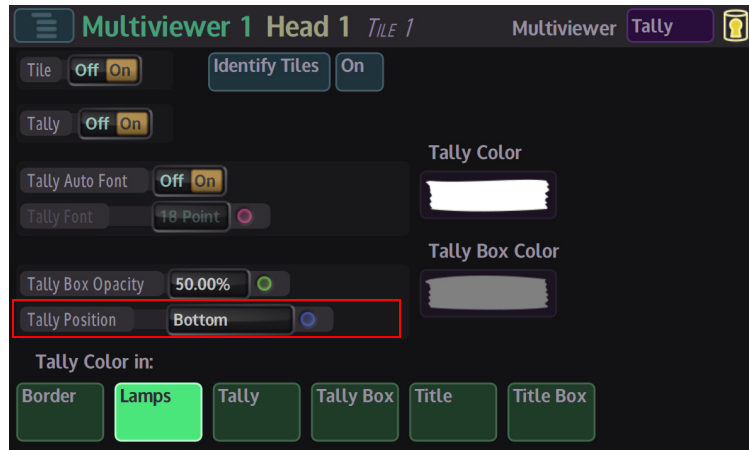
By default the **“Tally Auto Font”** parameter is set to **“On”**, this means that for the larger size tiles have a default font size of 18 point and the smaller tiles have a font size of 10 Point.



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) and adjusting the Hue, Luma and Saturation parameters (shown below).





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

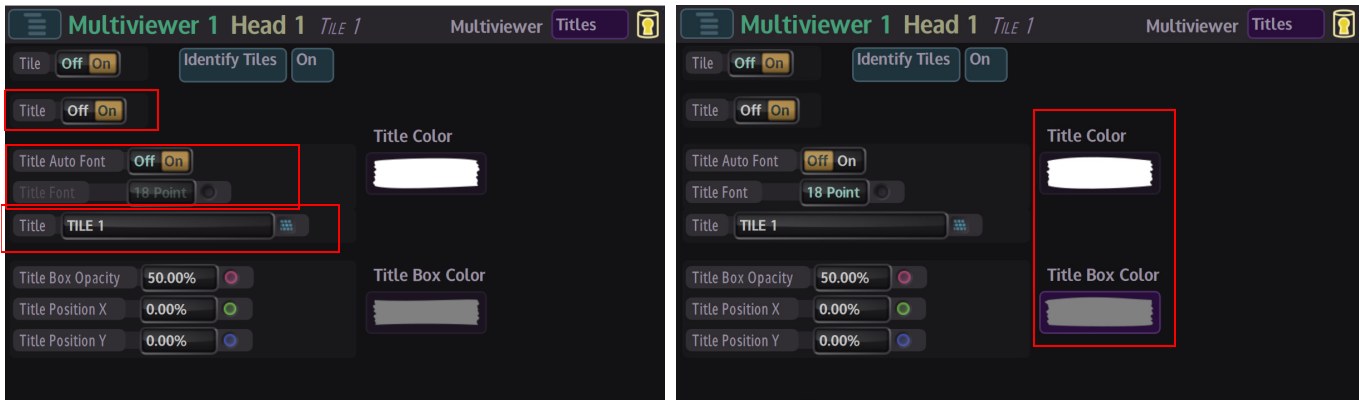
Over & Border - places the tally indicators above, outside the tile with a border around the tally indicator as well as the tile

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

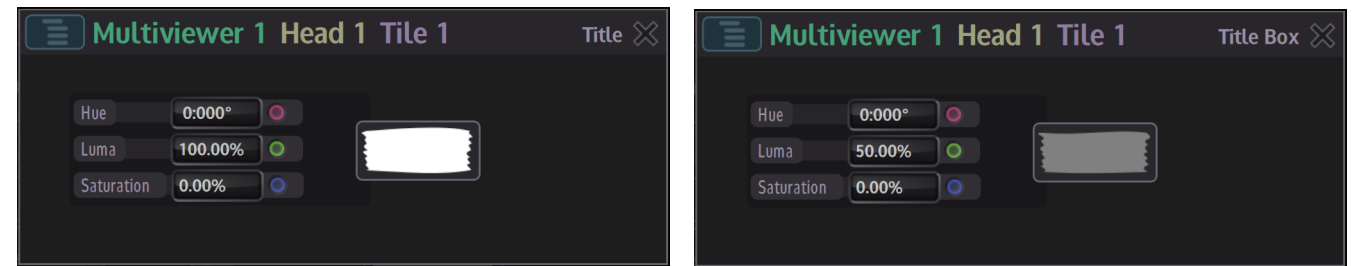
The **Title** menu as the name suggests, allows the user to place a title onto the selected tile. Use the **"Title"** parameter to turn the Title and Title Box **"On"**, with the **"Title Auto Font"** turned On, the title font defaults to 18 Point. Turn the Title Auto Font parameter off and the font 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.



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.



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

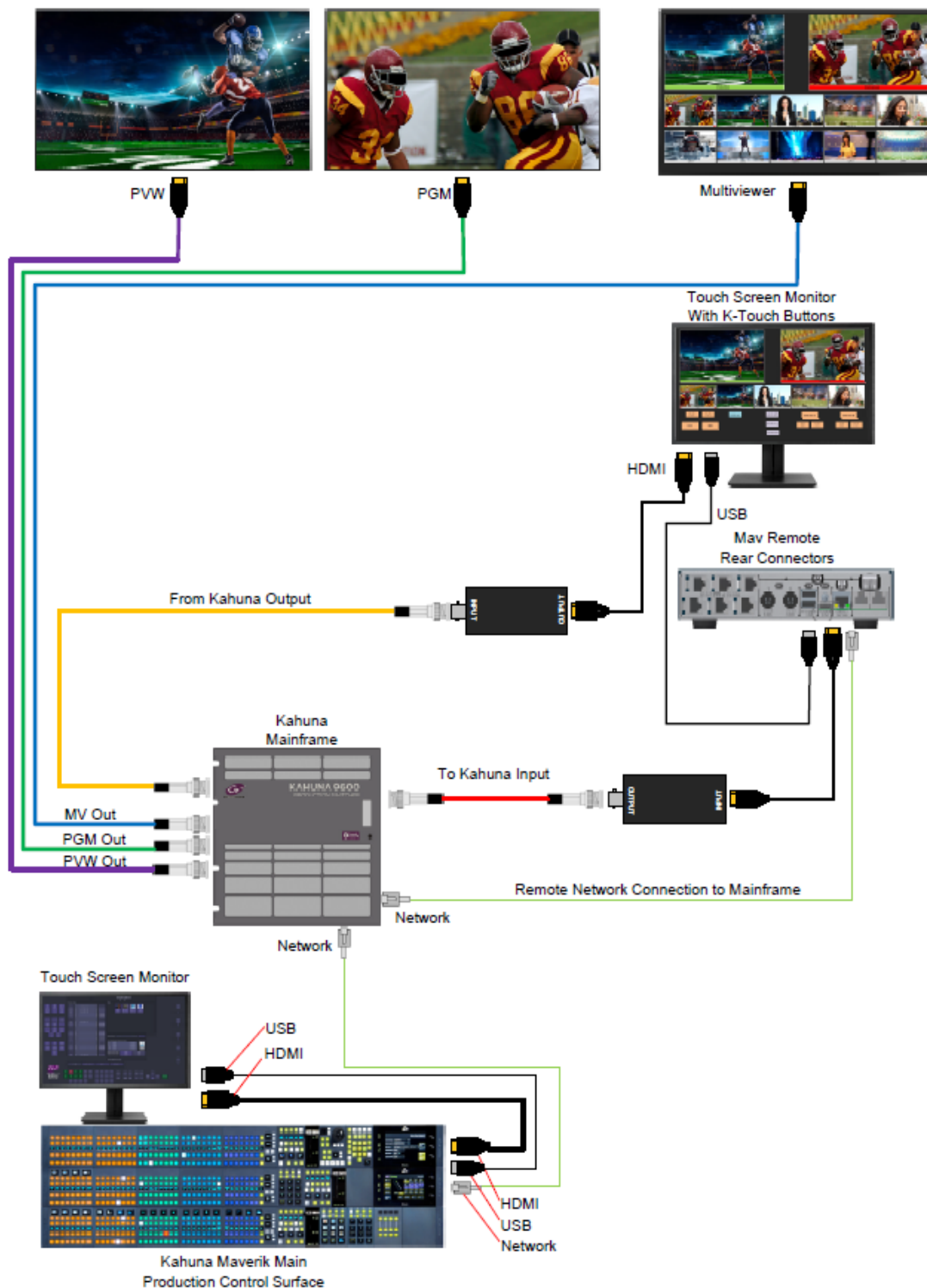
To use K-Touch, the Kahuna system requires a second interface controller to allow the touch screen monitor to communicate with the mainframe. An optional Mav Remote ancillary panel can be purchased.



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.

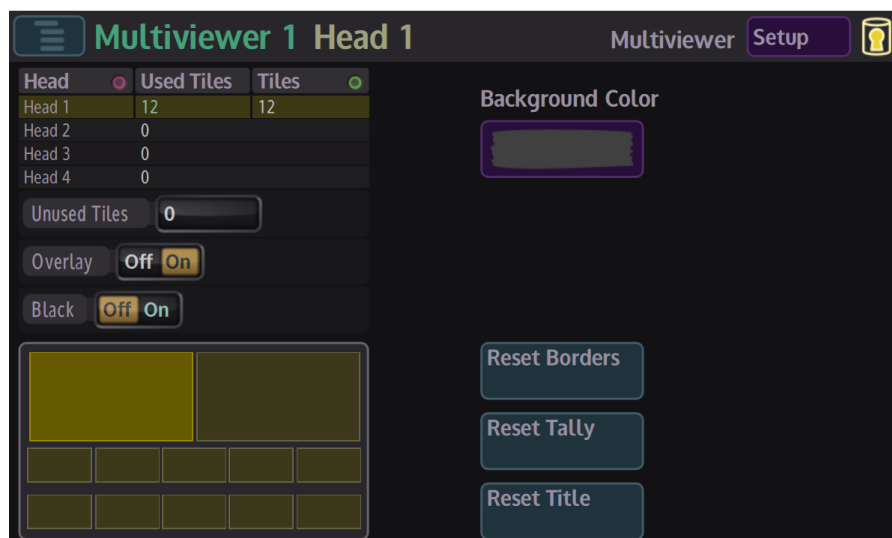
K-Touch Setup

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.

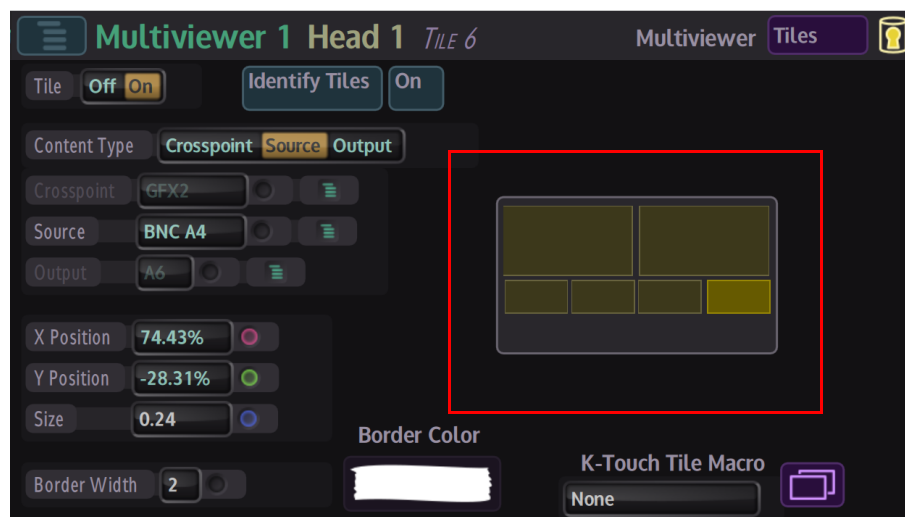
To setup the K-Touch multiviewer tiles, using the unused tiles on Multiviewer 1, for example if **"Head 1"** is allocated 6 tiles for the multiviewer and then allocate 6 tiles to **"Head 2"** for K-Touch. If you have a second "Router Card", then all 12 tiles for Multiviewer 2 can be used for K-Touch.

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.

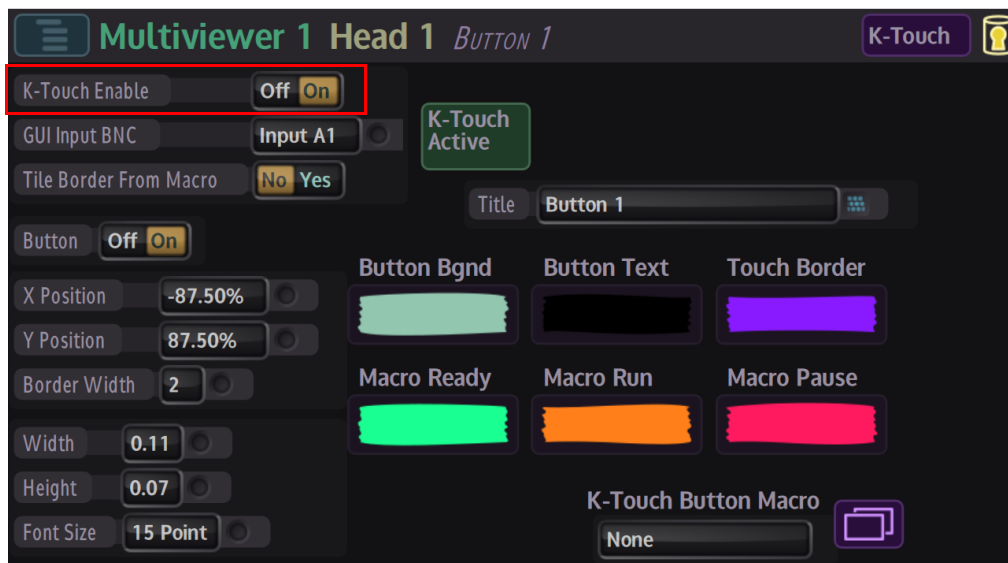


Touch the **{Tiles...}** button to open the **"Multiviewer - Tiles"** menu, here you can position the multiviewer tiles to the required position within the K-Touch window.



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.

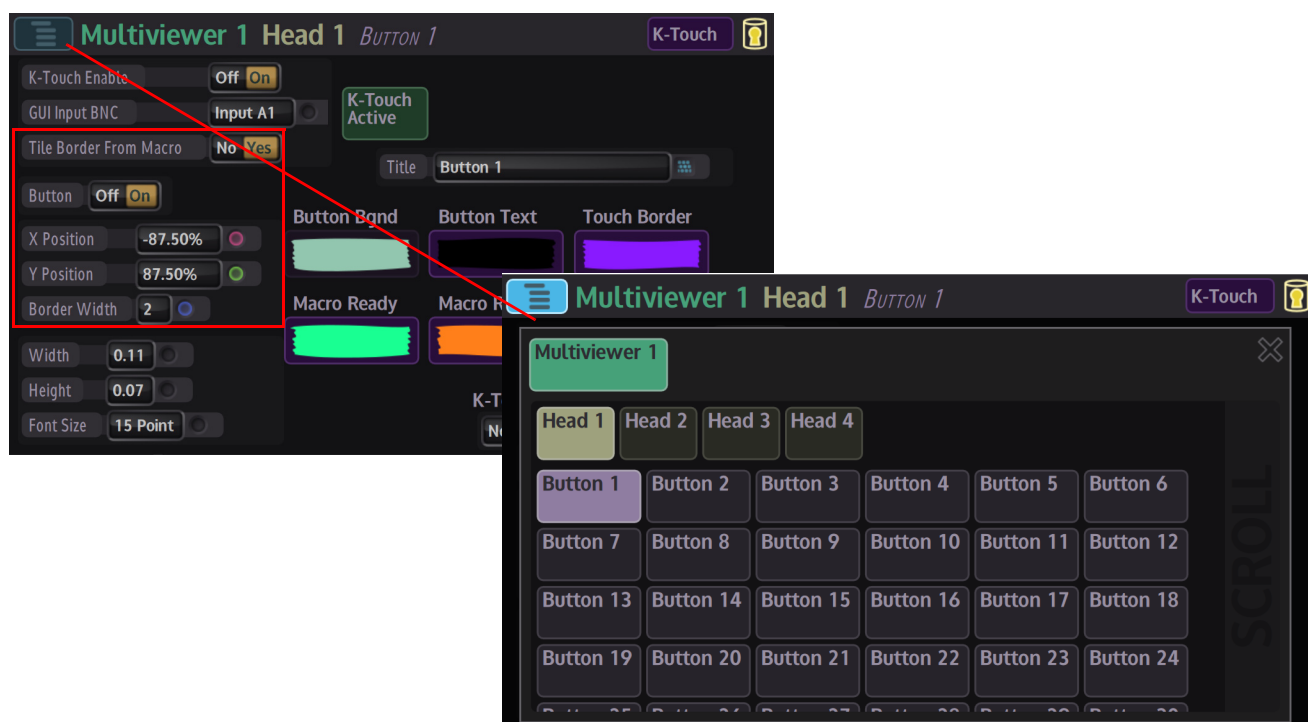
Touch the **{K-Touch...}** menu link button to open the “**K-Touch Setup**” menu.
In this menu, you can now setup on-screen touch buttons that can be linked to macros or using the “Clone” function, clone button functions onto the touch screen buttons.



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.

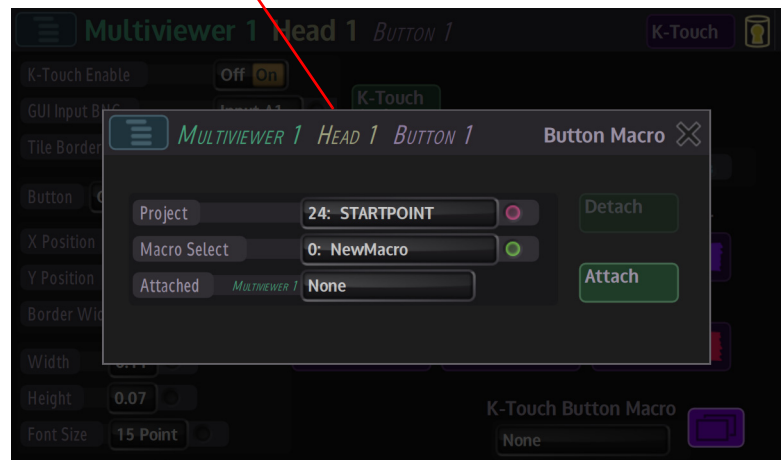
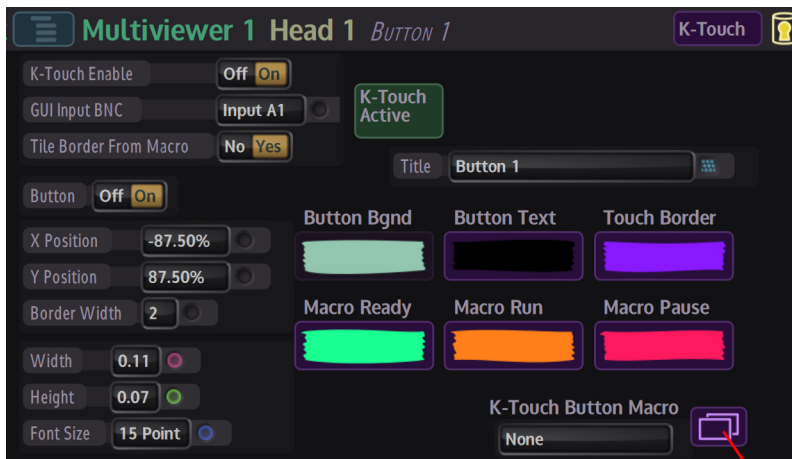


To start adding buttons, touch the **{Delegate}** button to display the button selection, then touch “**Button 1**”. Finally, touch the “**Button**” **{On}** button. A small yellow rectangle will be displayed in the top right of the K-Touch screen.

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.

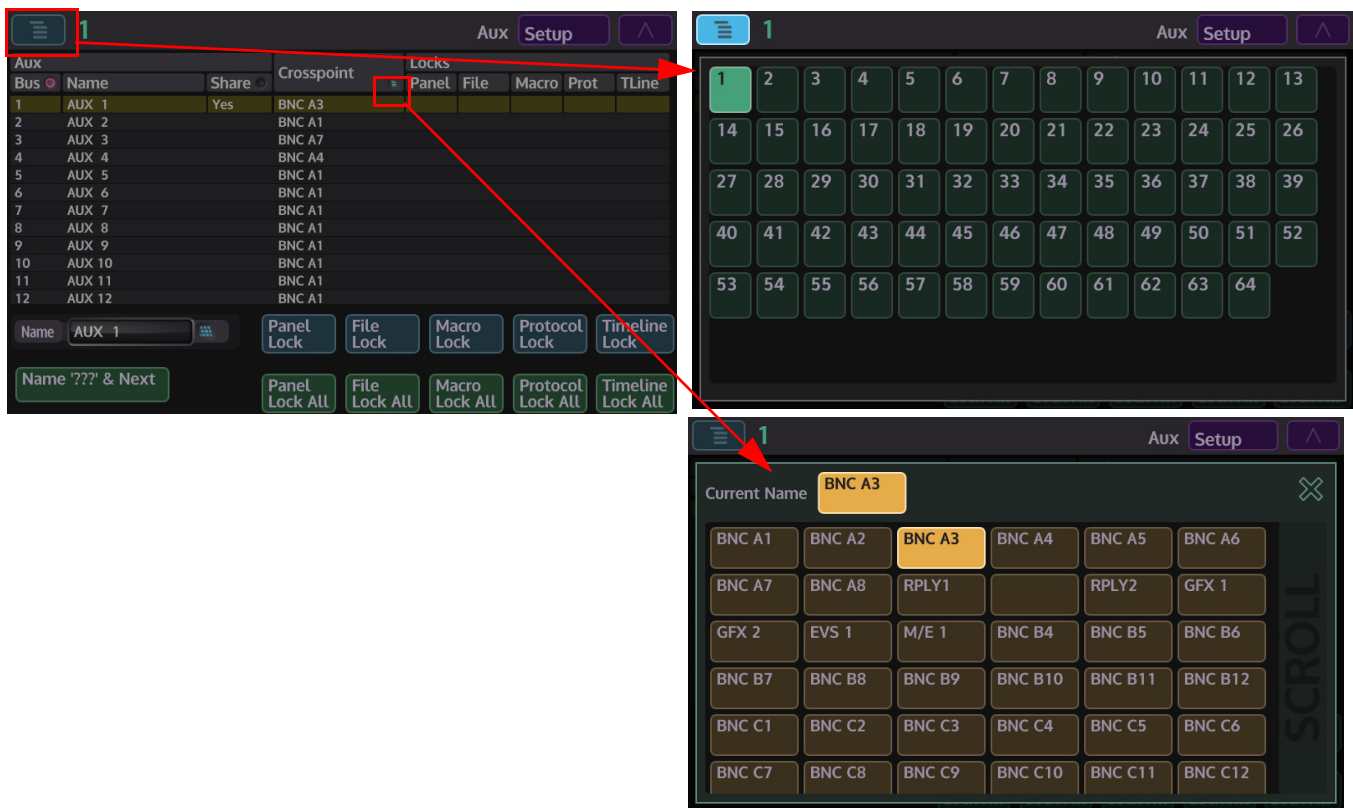


You can also use the “**Copy Clone**” function to copy a button function from the control surface or from another menu, and attach to the K-Touch button.

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.



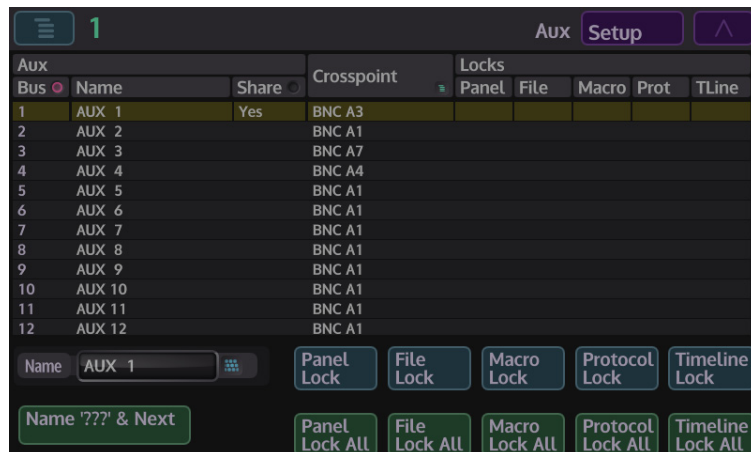
The Kahuna mainframe has freely assignable outputs; which means that any output can be assigned to be either a M/E output or an Aux output using the **Swr Outputs** menu in the **User Config** menu. The table in the center of the menu displays the setup of the Aux Buses and the sources that are assigned 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

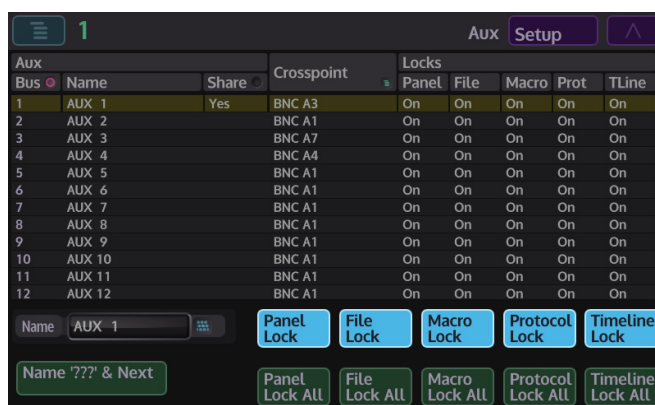
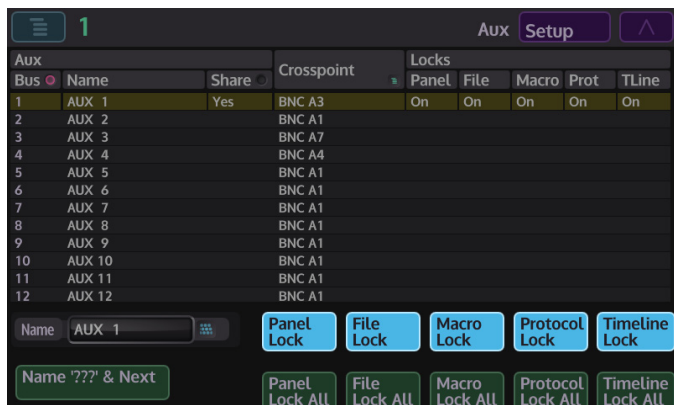
To setup an aux bus, use the **Bus** parameter to select the required aux and the **Crosspoint** popup list selector to select the source for the Aux bus

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.



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.



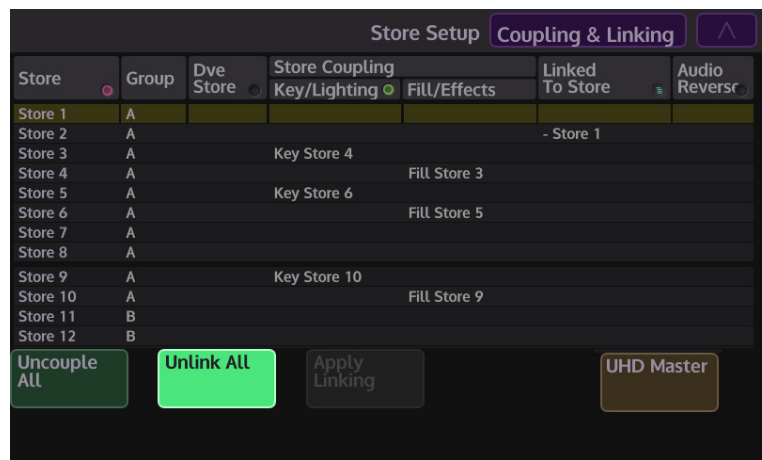
The **Panel Lock**, lock out the selected crosspoint assigned to the Aux Panel so that when the button is pressed, the crosspoint does not operate.

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.



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	Group	Dve Store	Store Coupling		Linked To Store	Audio Reversr
			Key/Lighting	Fill/Effects		
Store 1	A				- Store 1	
Store 2	A					
Store 3	A		Key Store 4			
Store 4	A			Fill Store 3		
Store 5	A		Key Store 6			
Store 6	A			Fill Store 5		
Store 7	A					
Store 8	A					
Store 9	A		Key Store 10			
Store 10	A			Fill Store 9		
Store 11	B					
Store 12	B					

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.

Store Setup Coupling & Linking						
Store	Group	Dve Store	Store Coupling		Linked To Store	Audio Revers
			Key/Lighting	Fill/Effects		
Store 1	A		Key Store 2			
Store 2	A			Fill Store 1		
Store 3	A					
Store 4	A					
Store 5	A		Key Store 6			
Store 6	A			Fill Store 5		
Store 7	A					
Store 8	A					
Store 9	A		Key Store 10			
Store 10	A			Fill Store 9		
Store 11	B					
Store 12	B					

Uncouple All Unlink All Apply Linking UHD Master

UHD Master

Setting up UHD stills and clips in the internal clip store is done in a similar way to HD stores.

Note: Before setting up Coupling & Linking, a UHD still or clip will have been loaded into a store, in the Store menus.

Store Setup Coupling & Linking						
Store	Group	DVE Store	Store Coupling		Linked To Store	Audio Revers
			Key/Lighting	Fill/Effects		
Store 1	A				UHD Master	
Store 2	A				- UHD Store 1	
Store 3	A				- UHD Store 1	
Store 4	A				- UHD Store 1	
Store 5	A					
Store 6	A					
Store 7	A					
Store 8	A					
Store 9	A					
Store 10	A					
Store 11	B					
Store 12	B					

Uncouple All Unlink All Apply Linking UHD Master

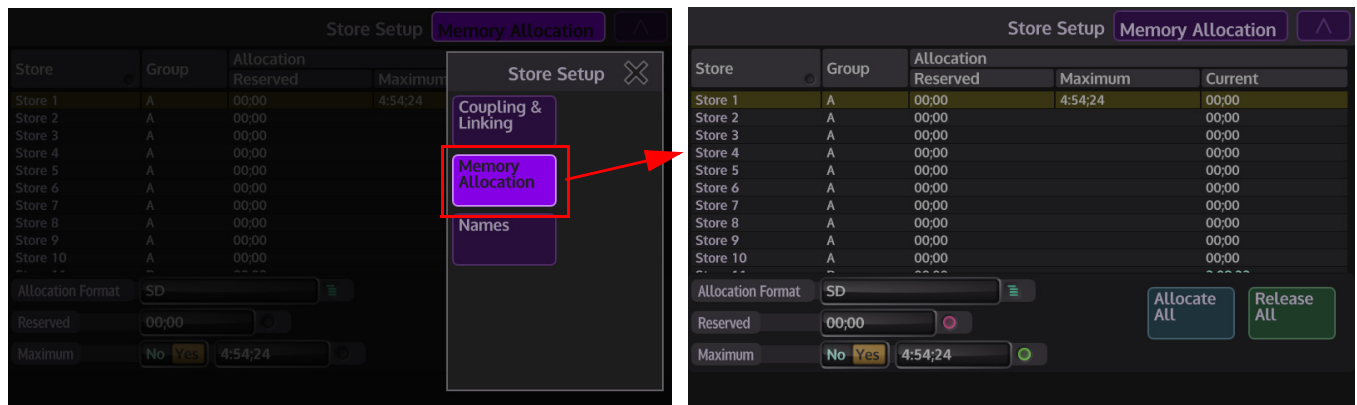
Select the store with the UHD still or clip and then touch the **{UHD Master}** button. It will automatically link the next 3 Stores to the Master Store.
If the file loaded is a UHD clip, when the clip is played, the Master Store will automatically play the three linked stores in sync with the Master 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.

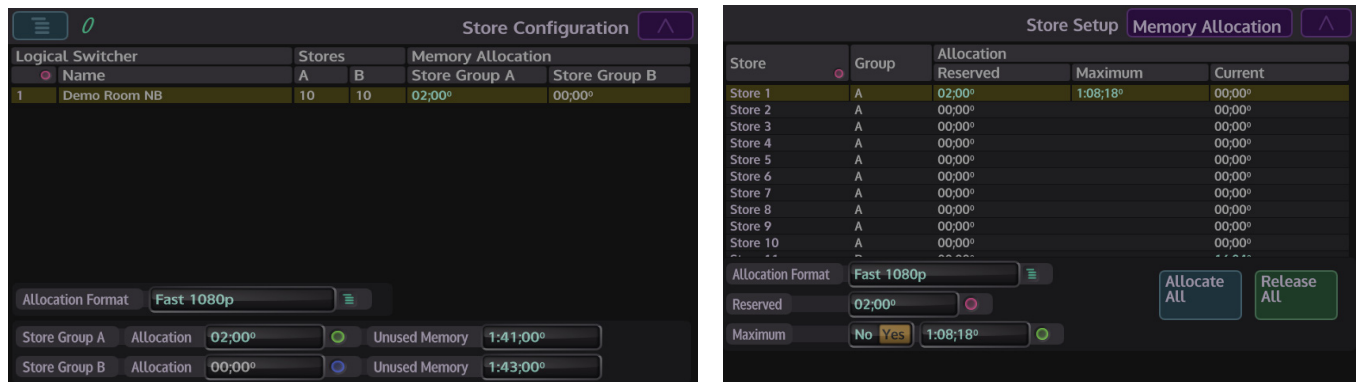
Up to 64Gb of ClipStore memory can be purchased for the Kahuna Stores (32Gb per Control Card). A system with 64Gb is capable of handling over:

- 40 minutes of SD Video
- 8 minutes of HD Video
- 4 minutes of 1080p Video



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.

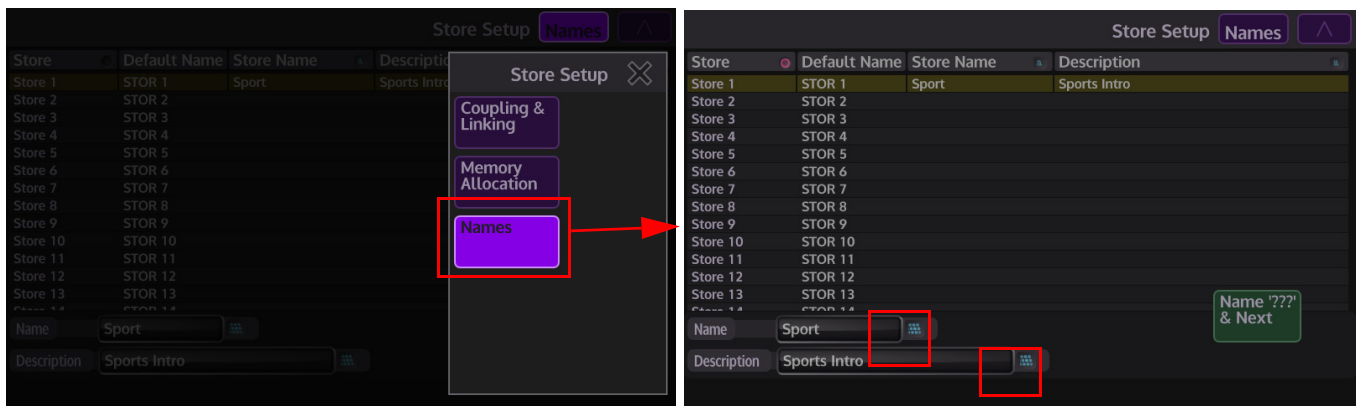


In the **Engineering Config - Store Setup** menu (above left), “chunks” of the overall **ClipStore** memory can be allocated to individual Logical Switchers. The allocated memory can then be allocated to individual stores in the Reserved store memory column in the **User Config Store Memory Allocation** 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.



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.

Output	Name	Trans	Bgnd	Key	eKey
				1 2 3 4	1 2 3 4
ME1 Op1		Primary	A/B	Pg Pg Pg Pg	Pg Pg Pg Pg
ME1 Op2		Primary	A/B	Pg Pg Pg Pg	Pg Pg Pg Pg
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
ME2 Op1		Primary	A/B	Pg Pg Pg Pg	Pg Pg Pg Pg
ME2 Op2		Primary	A/B	Pg Pg Pg Pg	Pg Pg Pg Pg
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

ME 2 1

ME Config

Outputs 1

Output	Name	Trans	Bgnd	Key				eKey				
				1	2	3	4	1	2	3	4	
ME1 Op1		Primary	A/B	Pg	Pg	Pg	Pg	Pg	Pg	Pg	Pg	Pg
ME1 Op2		Primary	A/B	Pg	Pg	Pg	Pg	Pg	Pg	Pg	Pg	Pg
ME1 Op3		Primary	A/B	Pg	Pg	Pg	Pg	Pg	Pg	Pg	Pg	Pg
ME1 Op4		Primary	A/B	Pg	Pg	Pg	Pg	Pg	Pg	Pg	Pg	Pg
ME1 Op5		Primary	A/B	Pg	Pg	Pg	Pg	Pg	Pg	Pg	Pg	Pg
ME1 Op6		Primary	A/B	Pg	Pg	Pg	Pg	Pg	Pg	Pg	Pg	Pg
ME1 Op7		Primary	A/B	Pg	Pg	Pg	Pg	Pg	Pg	Pg	Pg	Pg
ME1 Op8		Primary	A/B	Pg	Pg	Pg	Pg	Pg	Pg	Pg	Pg	Pg
ME2 Op1		Primary	A/B	Pg	Pg	Pg	Pg	Pg	Pg	Pg	Pg	Pg
ME2 Op2		Primary	A/B	Pg	Pg	Pg	Pg	Pg	Pg	Pg	Pg	Pg
ME2 Op3		Primary	A/B	Pg	Pg	Pg	Pg	Pg	Pg	Pg	Pg	Pg
ME2 Op4		Primary	A/B	Pg	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

ME 1 1

ME Config

Outputs 2

Output	Name	Preview	Key Of
ME1 Op1			
ME1 Op2			
ME1 Op3			
ME1 Op4			
ME1 Op5			
ME1 Op6			
ME1 Op7			
ME1 Op8			
ME2 Op1			
ME2 Op2			
ME2 Op3			
ME2 Op4			

ME Config

Outputs 1

Outputs 2

Skirts

Bus Locking

eKey Setup

ME 2 1

ME Config

Outputs 2

Output	Name	Preview	Key Of	Ancillary	Follow	Source
ME1 Op1				ME Background		Input A1
ME1 Op2				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				ME Background		Input A1
ME2 Op3				ME Background		Input A1
ME2 Op4				ME Background		Input A1

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.

ME 1 2

ME Config

Outputs 2

Output	Name	Preview	Key Of	Ancillary	Follow	Source
ME1 Op1				ME Background		Input A1
ME1 Op2				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				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.

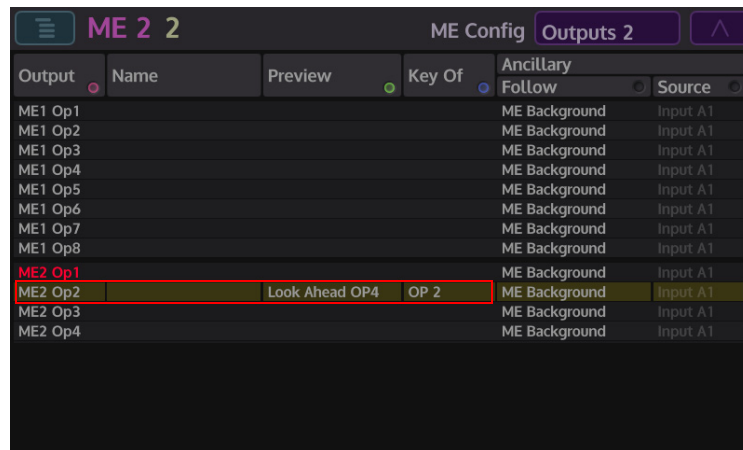
If the Key layer is on-air, the monitor attached to ME1 will show the Pvw output for M/E1 since, by definition of the Key layer being on-air, the Pgm output of M/E1 will be displayed on the Pgm output monitor of M/E2 (since it is the output M/E).

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.



Output	Name	Preview	Key Of	Ancillary	Source
ME1 Op1				ME Background	Input A1
ME1 Op2				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		Look Ahead OP4	OP 2	ME Background	Input A1
ME2 Op3				ME Background	Input A1
ME2 Op4				ME Background	Input A1

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.

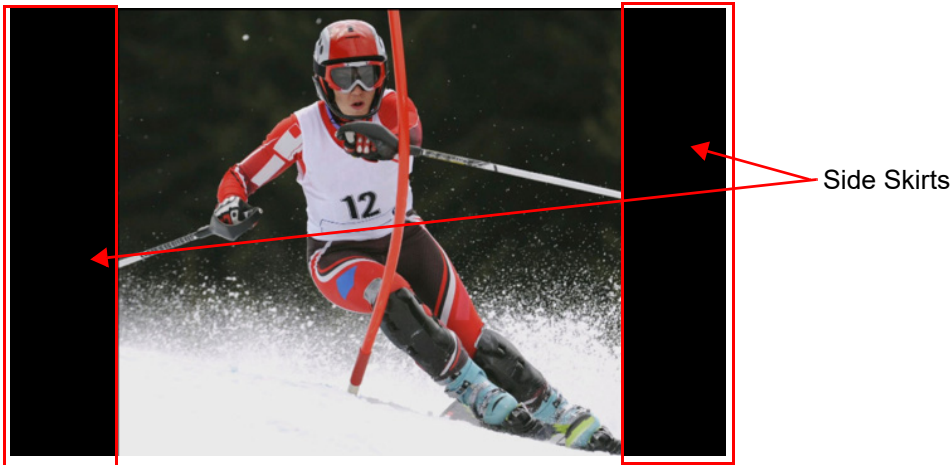
If **Source** is selected in the **Follow** parameter, the **Source** parameter becomes active, this will allow the user to select a direct input to the mainframe as the audio source.

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**”.

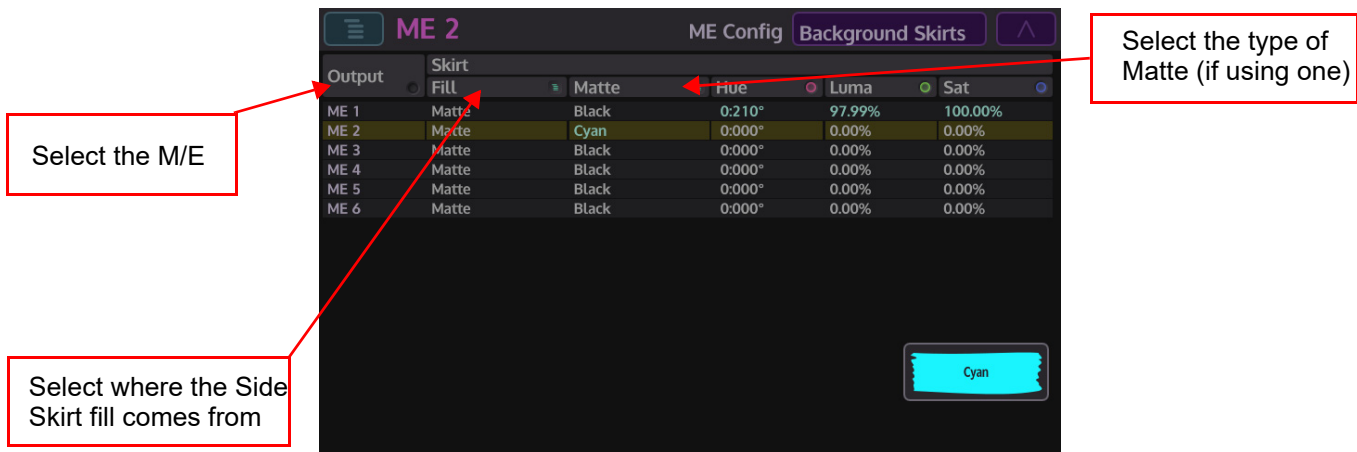
If **Use Default Std** (in the **Eng Config - Input Setup**) parameter is set to **No** and the mainframe **System Standard** is set to **1080i/59.94** for example. If the mainframe then receives an SD 4:3 source on its input and the source is selected on a crosspoint (M/E background Bus), the source 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**”.

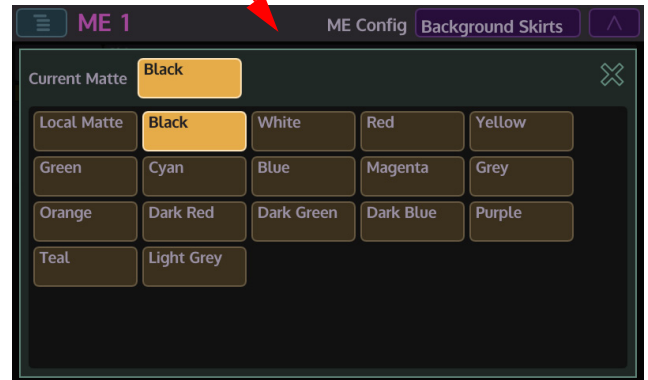
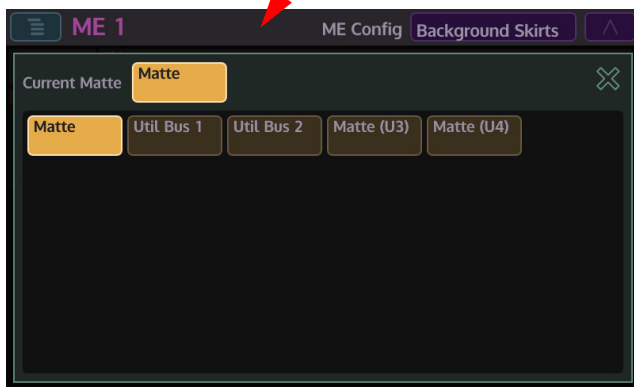
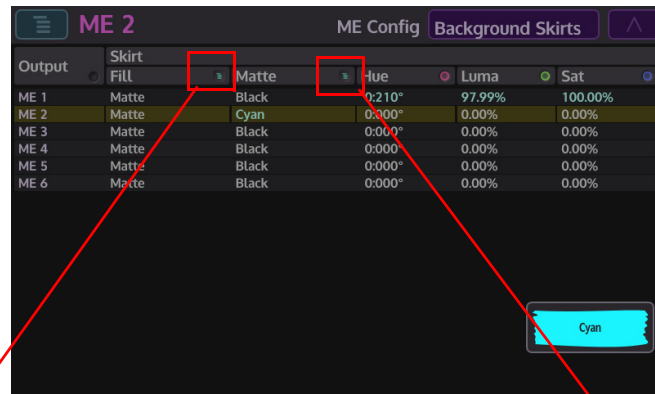
The side skirts can be filled using the **Skirt Setup** menu in the **User Config** menu as explained on the next page.

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



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.



With Matte Side Skirts

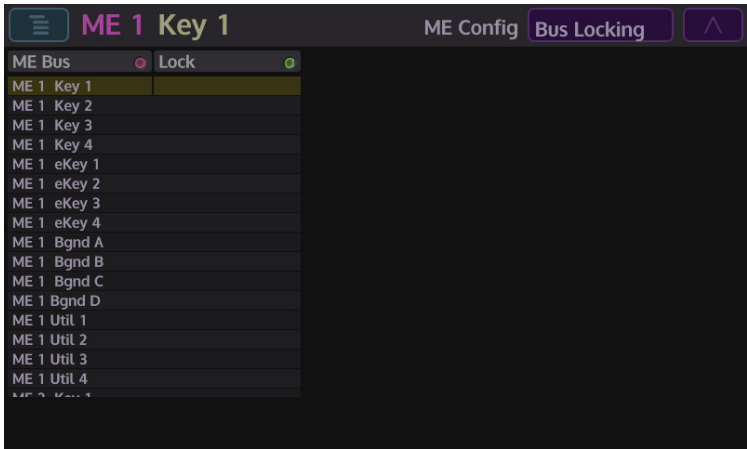


With Utility Bus Side Skirts

Note: 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.



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.



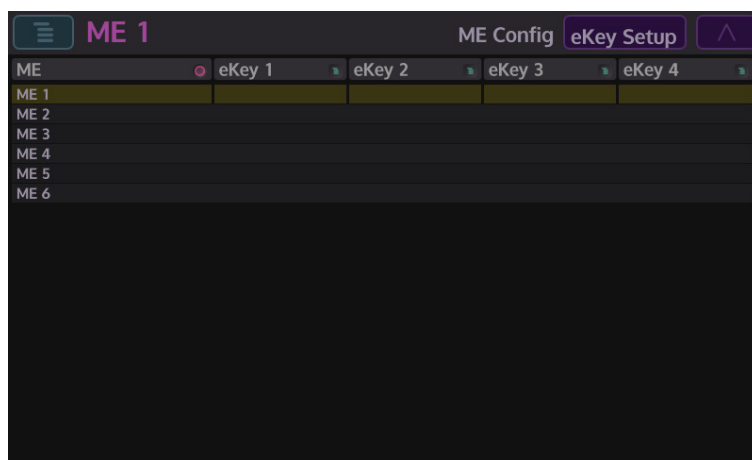
eKey Setup

Note: Please read the Keying section of the manual in conjunction with this section.

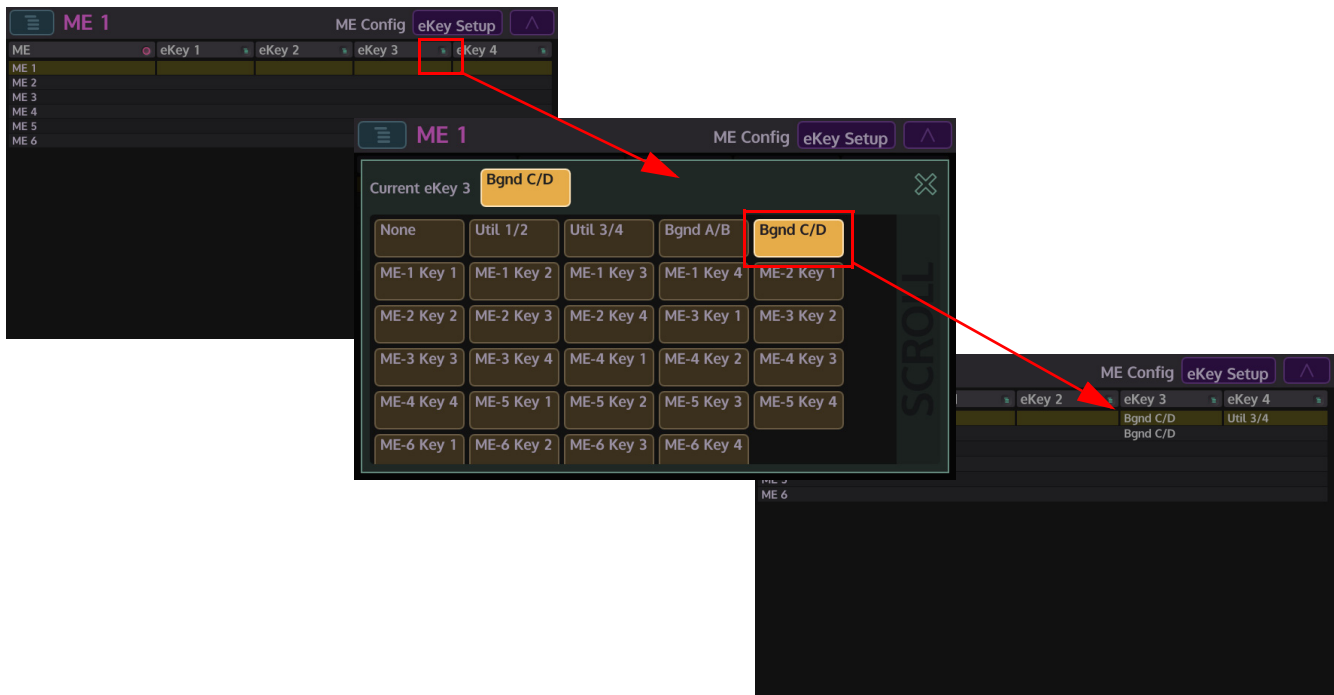
A Kahuna has 8 Key layers per M/E made up of 4 SuperKey layers and 4 extra Key layers that are called “**eKeys**”. Each M/E will have 2 permanent eKeys, these will not need to use any spare Util buses or backgrounds (when selected, the user cannot assign any buses from the Delegates menu).

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.



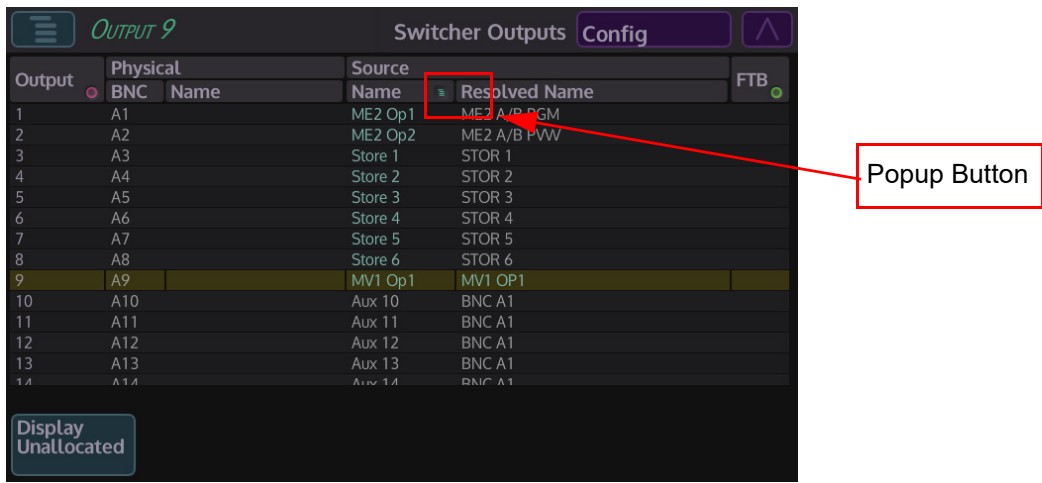
Touching the popup menu expander for eKey 3 or 4 will allow the user to select a bus for the eKey.



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.



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:

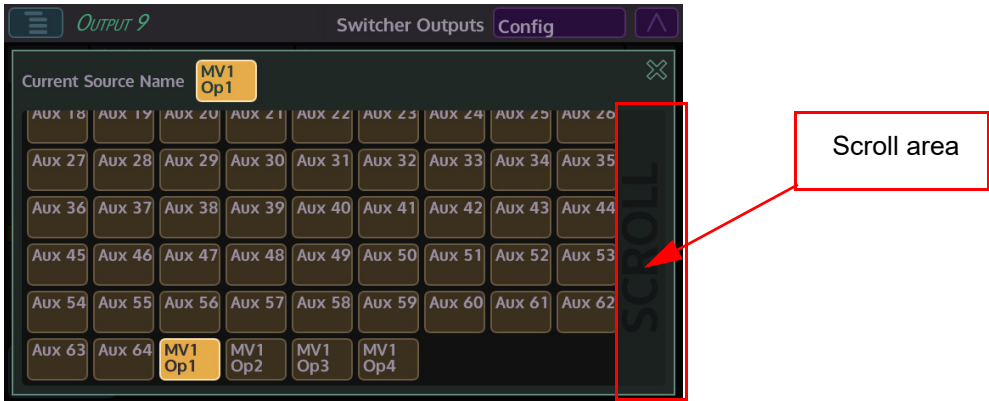
Output is the output designated in the Mainframe Config menu and depending on the way that the mainframe configuration is setup may not run sequentially. If for example Swr Output 1 has been moved to BNC A12, A12 will have an Astrix (A12*) next to it to signify that it has been changed.

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.

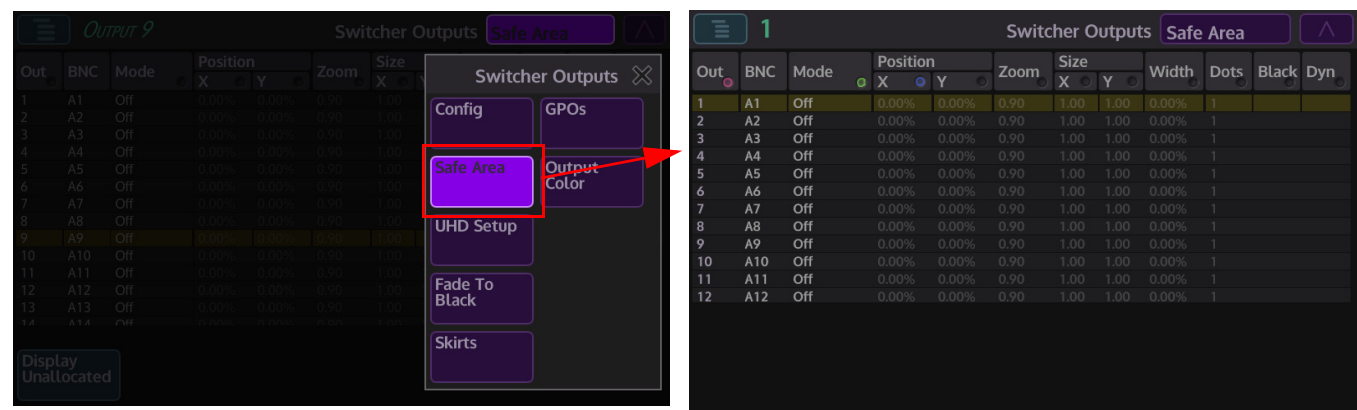
The **Output** parameter allows the user to select a physical BNC connector on the back of the Kahuna mainframe, then using the **Source** parameter the user can assign a source to the selected BNC output.

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”.



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.

The screenshot shows the 'Safe Area' sub-menu with a table of output settings.

Out	BNC	Mode	Position X	Position Y	Zoom	Size X	Size Y	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%	0.00%	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	0.00%	1		
11	A11	Off	0.00%	0.00%	0.90	1.00	1.00	0.00%	1		
12	A12	Off	0.00%	0.00%	0.90	1.00	1.00	0.00%	1		

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.

Switcher Outputs Safe Area												
Out	BNC	Mode	Position		Zoom	Size		Width	Dots	Black	Dyn	
			X	Y		X	Y					
1	A1	User	0.00%	0.00%	0.90	1.00	1.00	0.00%	1			
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	0.00%	1			
11	A11	Off	0.00%	0.00%	0.90	1.00	1.00	0.00%	1			
12	A12	Off	0.00%	0.00%	0.90	1.00	1.00	0.00%	1			

In User Mode

Switcher Outputs Safe Area												
Out	BNC	Mode	Position		Zoom	Size		Width	Dots	Black	Dyn	
			X	Y		X	Y					
1	A1	16:9 Mark	0.00%	0.00%	0.90	1.00	1.00	0.00%	1			
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	0.00%	1			
11	A11	Off	0.00%	0.00%	0.90	1.00	1.00	0.00%	1			
12	A12	Off	0.00%	0.00%	0.90	1.00	1.00	0.00%	1			

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.

A1

Switcher Outputs

UHD Setup

Physical		Output	Pan and Scan				
BNC	Name		Enable	Control	Position X	Position Y	Width
A1		1	Off	Protocol	0.00%	0.00%	0.50
A2		1	Off	Protocol	0.00%	0.00%	0.50
A3		1	Off	Protocol	0.00%	0.00%	0.50
A4		1	Off	Protocol	0.00%	0.00%	0.50
A5		5	Off	Protocol	0.00%	0.00%	0.50
A6		6	Off	Protocol	0.00%	0.00%	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

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.

A1

Switcher Outputs

UHD Setup

Physical		Output	Pan and Scan				
BNC	Name		Enable	Control	Position X	Position Y	Width
A1		1	Off	Manual	0.00%	0.00%	0.50
A2		1	Off	Manual	0.00%	0.00%	0.50
A3		1	Off	Manual	0.00%	0.00%	0.50
A4		1	Off	Manual	0.00%	0.00%	0.50
A5		5	Off	Protocol	0.00%	0.00%	0.50
A6		6	Off	Protocol	0.00%	0.00%	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

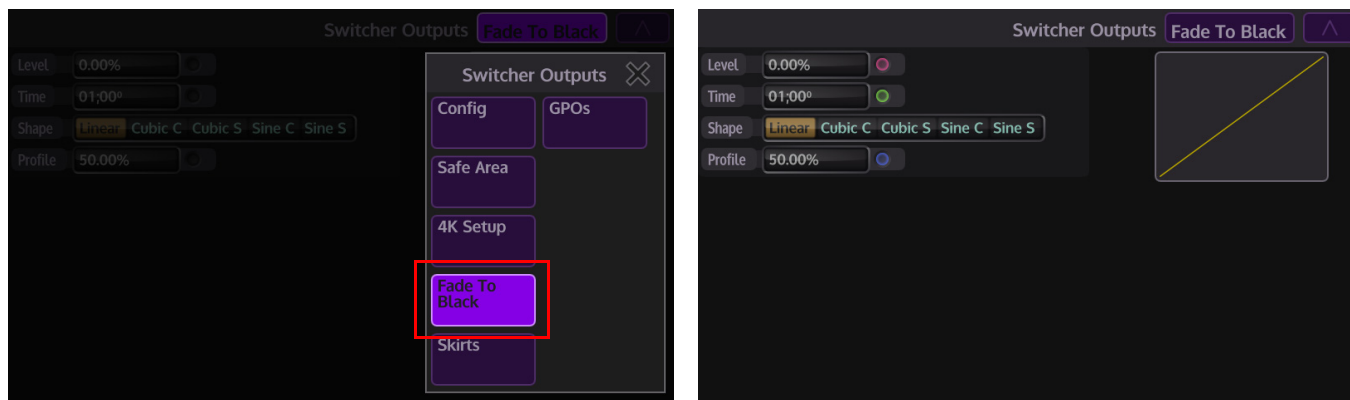
This will allow the user to manually adjust the Position X/Y and adjust the width.

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.



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.

		Switcher Outputs					
		Skirts					
Output	Physical BNC Name	Skirt Source	Matte	Hue	Luma	Sat	
1	A1	BNC A1	Local Matte	0:000°	0.00%	0.00%	
2	A2	BNC A1	Local Matte	0:000°	0.00%	0.00%	
3	A3	BNC A1	Local Matte	0:000°	0.00%	0.00%	
4	A4	BNC A1	Local Matte	0:000°	0.00%	0.00%	
5	A5	BNC A1	Local Matte	0:000°	0.00%	0.00%	
6	A6	BNC A1	Local Matte	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%	

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:

The screenshot shows the 'Output Setup' menu for output A1. The 'Output Standard' is set to '525/59.94 4:3'. The '4K Mode' is set to 'Off'. The 'New Standard' is also set to '525/59.94 4:3'. The 'UHD Quadrant' and 'UHD Downconvert' are both set to 'Off'.

Physical Output	Description	Output Standard	4K Mode
BNC	Name	Default	Custom
A1		No	525/59.94 4:3
A2		No	525/59.94 4:3
A3		1080i/59.94	1080i/59.94
A4		1080i/59.94	1080i/59.94
A5		1080i/59.94	1080i/59.94
A6		1080i/59.94	1080i/59.94
A7		1080i/59.94	1080i/59.94
A8		1080i/59.94	1080i/59.94
A9		1080i/59.94	1080i/59.94

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)

The screenshot shows the 'Output Skirts' menu for output A1. The '4:3 Letterbox' is set to 'Yes'. The '4:3 Letterbox Mode' is set to 'Always'. The 'Paired' button is visible.

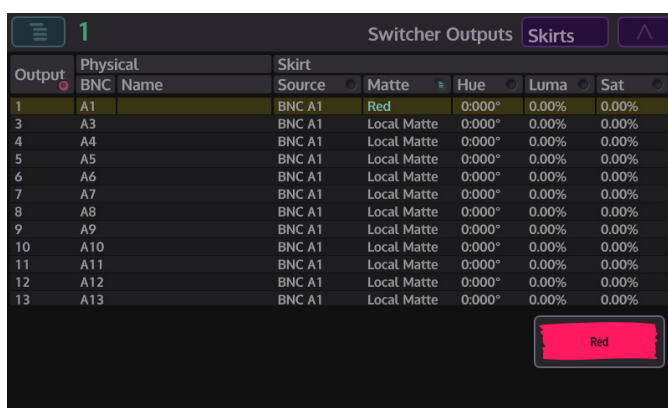
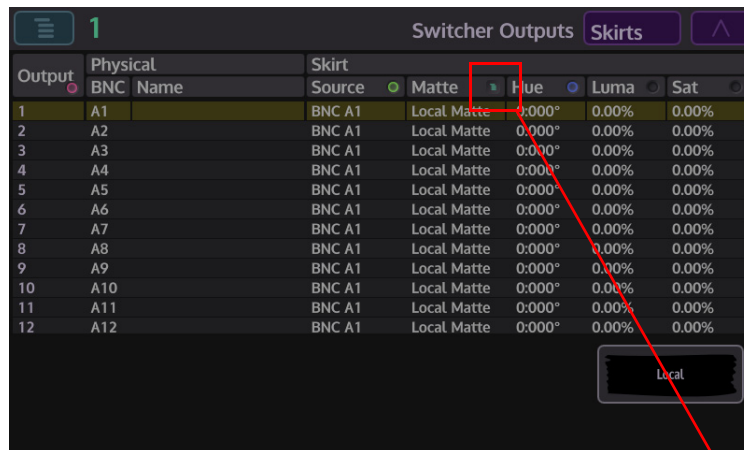
Physical Output	Paired	Skirts Mode
BNC	Name	
A1		Always
A2		Always
A3		
A4		
A5		
A6		
A7		
A8		
A9		

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.

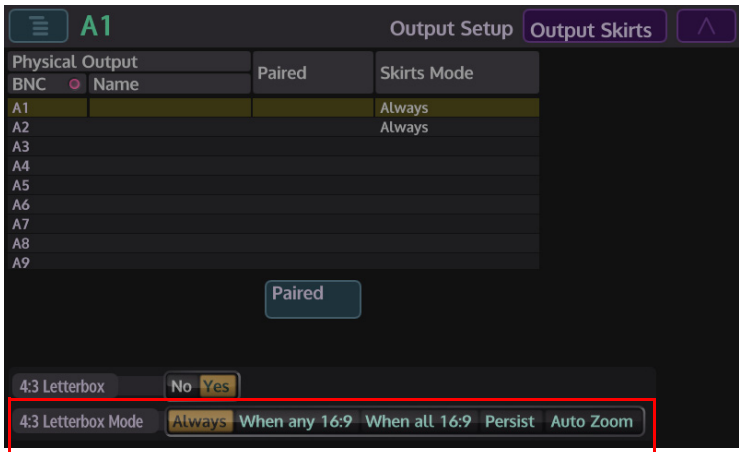


The diagram shows a 16:9 source displayed on a 4:3 output. The fill for the top and bottom skirts, as mentioned earlier, is setup in the **Switcher Output- Skirts** menu, in the default state only a Matte fill can be selected.



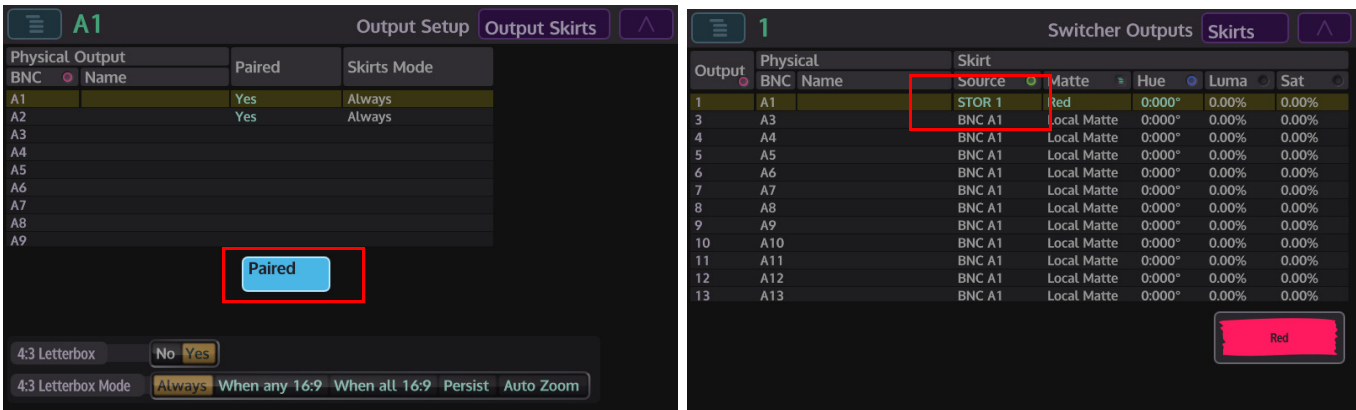
To select a Matte Fill, touch the popup selector (shown above) and then select a matte from the list.

Go back to the **Eng Config - Output Setup - Output Skirts** menu, the user now has several modes that can be selected.



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.



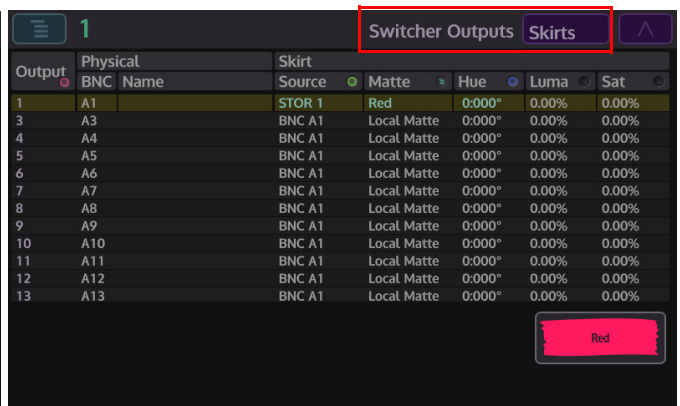
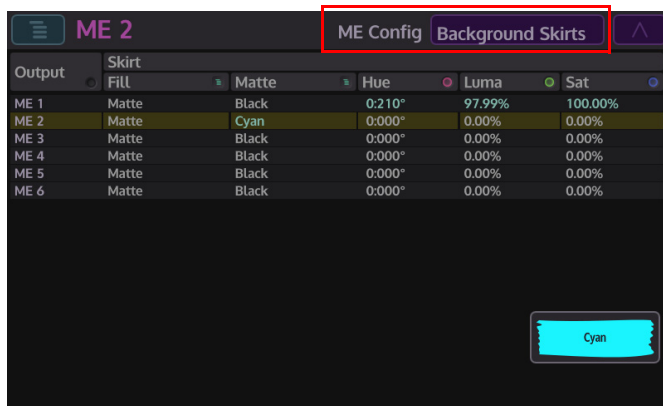
As mentioned earlier, the fill for output skirts is by default a Matte, but physical outputs can also be paired together using the **{Paired}** button (shown above), which will allow the output skirts top and bottom to be filled with any source Video, Still, Wash, DVE output or ME output. Output skirts 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.



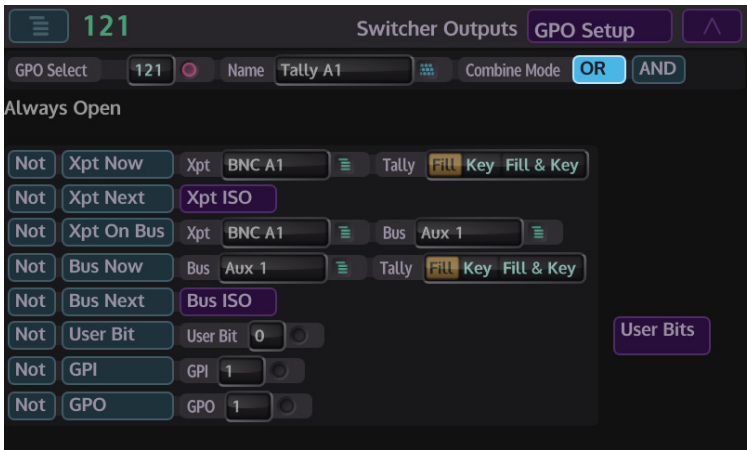
**4:3 source on a 4:3 output
Matte side skirts with Store
letterbox skirts**

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.



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.

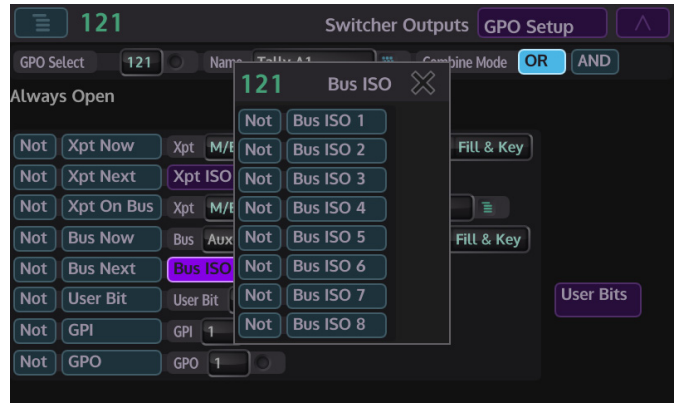
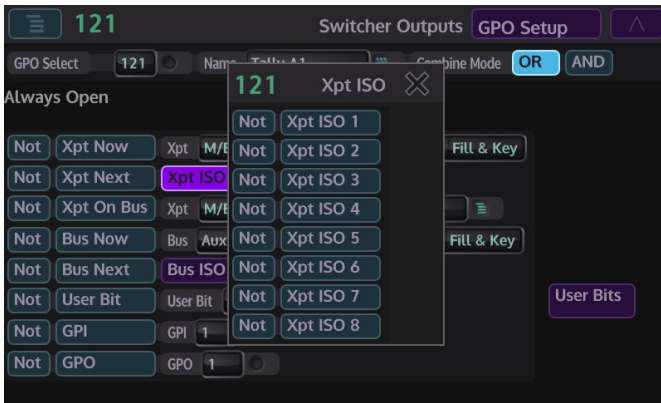


This menu allows the user to trigger a GPO or GPI when for example a crosspoint is setup to trigger a GPO, or an Aux is setup to trigger a Bus tally.
The GPO parameters will change allowing the user to setup a GPO trigger.
For a crosspoint tally for example, use the **GPO Select** parameter to the required 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.



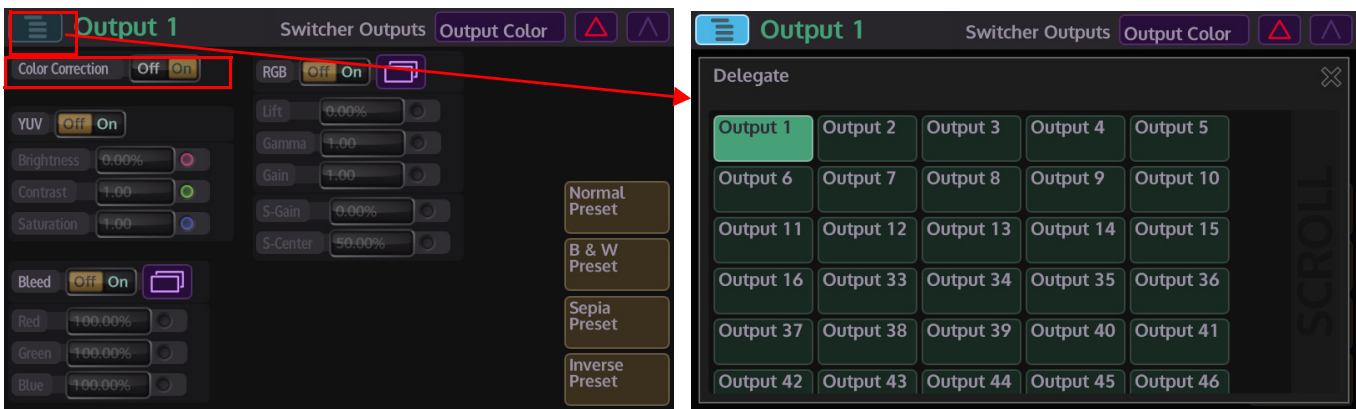
Output Color

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 color allows the user to change the color balance on each individual output, there are 4 types of control, YUV, RGB, Bleed and Preset.

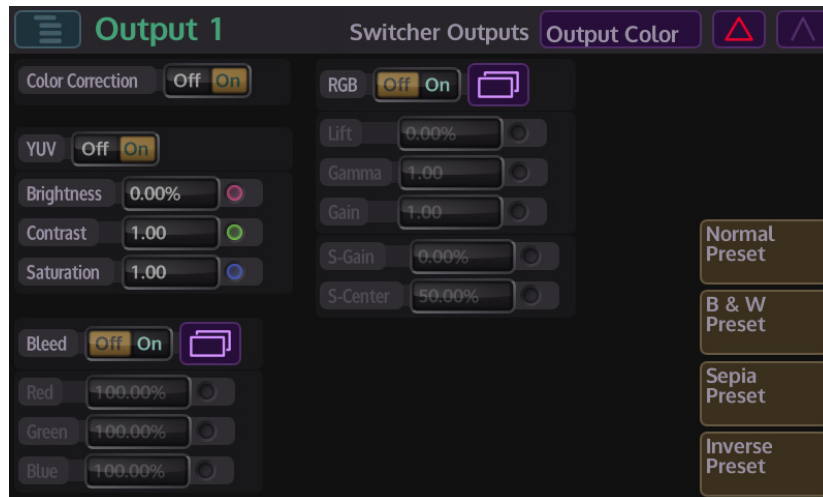
In the Output Color main menu, turn “On” the Color Correction parameter, then touch the Delegate button to select which output the color correction is going to applied to. The different stages of output color correction can now be applied.



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.



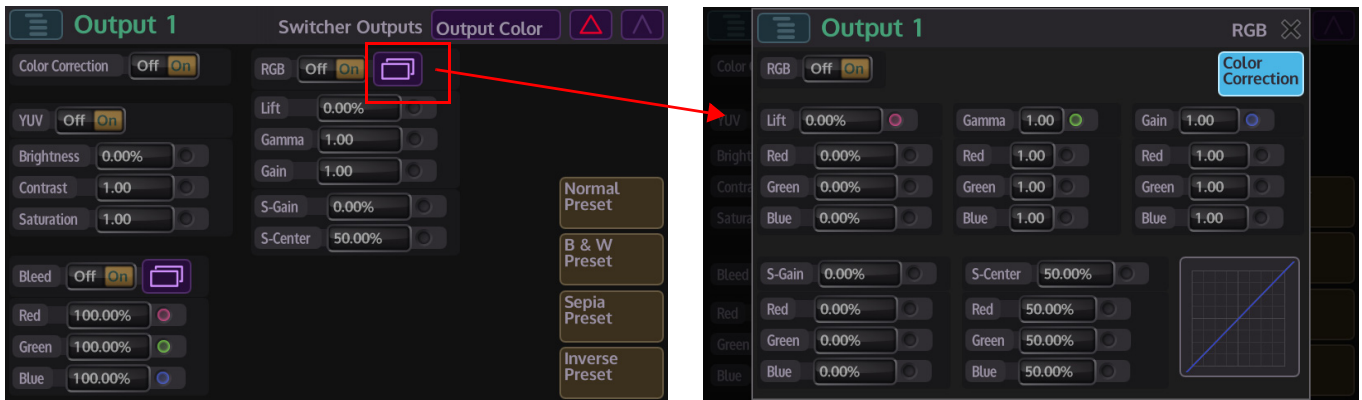
Touch the Brightness rotary control attacher and the Brightness, Contrast and Saturation of the output can be adjusted.

- 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

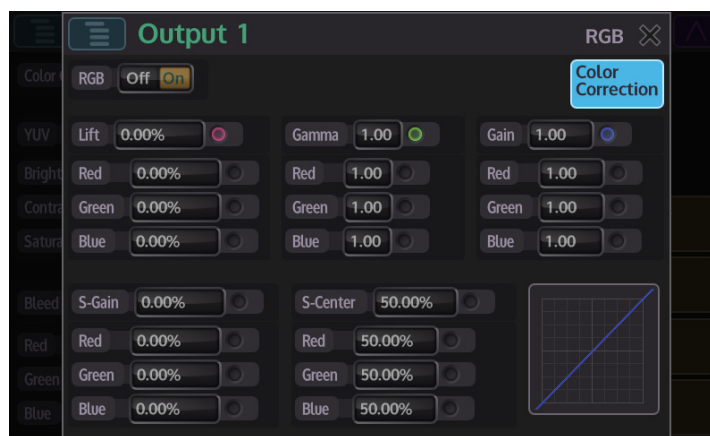
To start using the RGB color correction parameters, turn the RGB parameter “On” and the Lift, Gamma, Gain, S-Gain and S-Center parameters will light up.



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:



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.

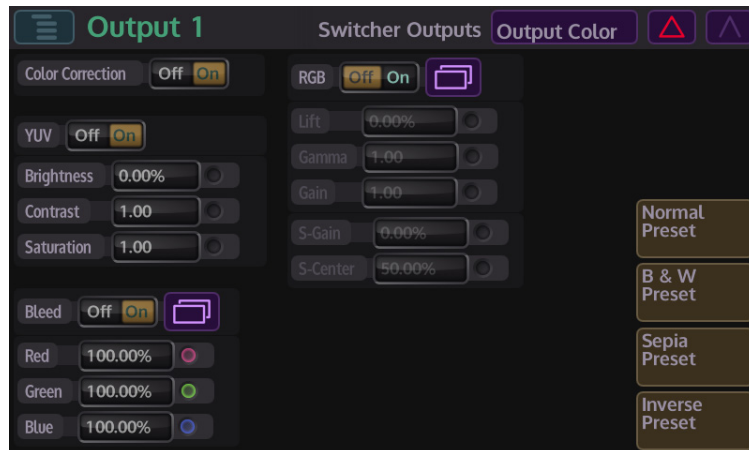
S Gain and S Center - the parameters adjust the gain mid tone levels of the S curve and the center point levels of the s curve.

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.

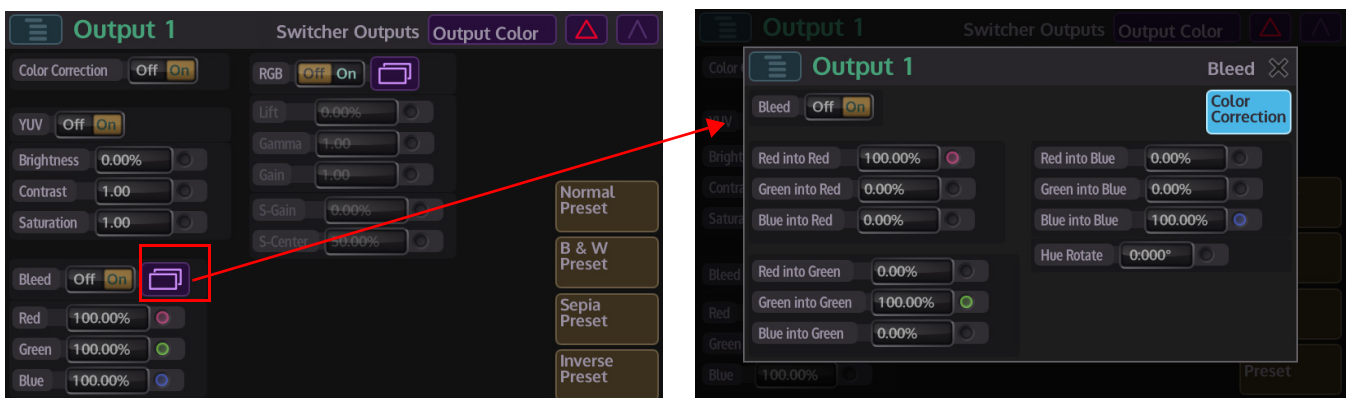


Again make sure the Color Correction is turned on.

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:

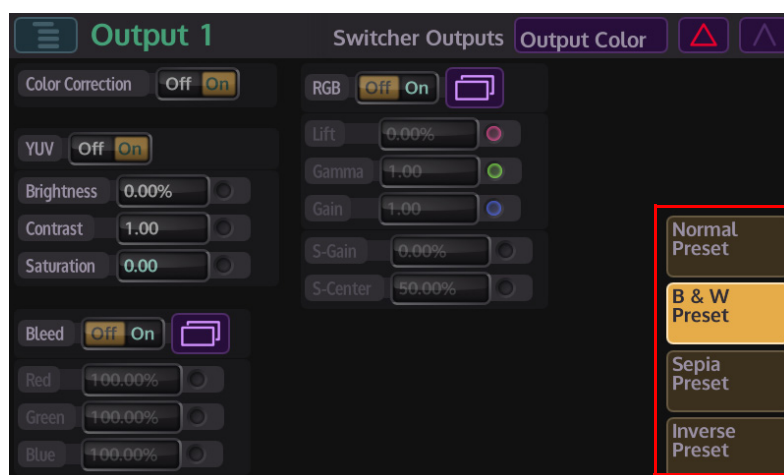
- Red into Red
- Green into Green
- Blue into Blue

Touch the sub menu expand menu link button to open the menu with the individual Bleed parameter controls. 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.



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.

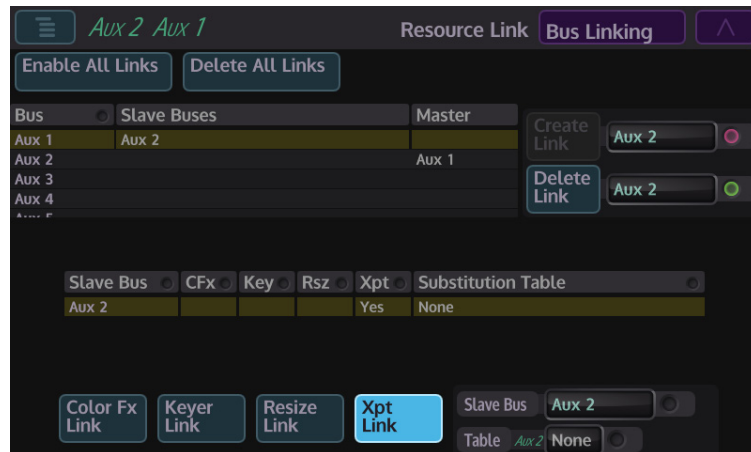
If **B&W**, **Sepia** and **Inverse** are selected, the preset levels can all be color corrected.

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



Parameter Controls

Enable All Links - turns the bus linking option On/Off

Delete All Links - deletes all master/slave links that have been created

Bus - selects the Master Bus

Create Link - creates a new master/slave link

Delete Link - deletes the selected bus link

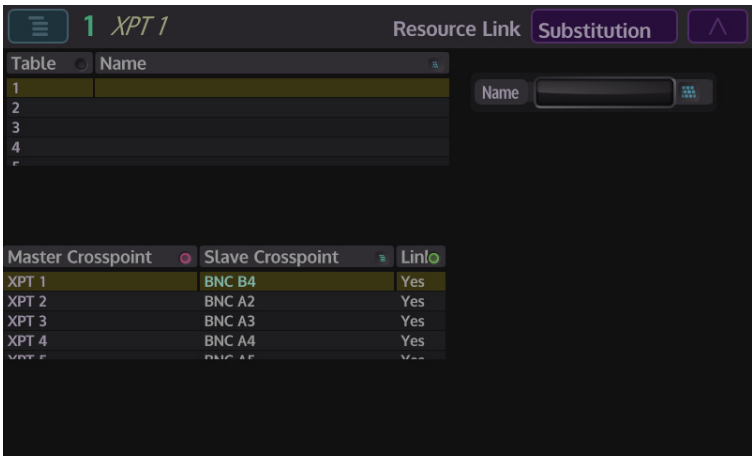
Slave Bus - selects the Slave Bus

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.



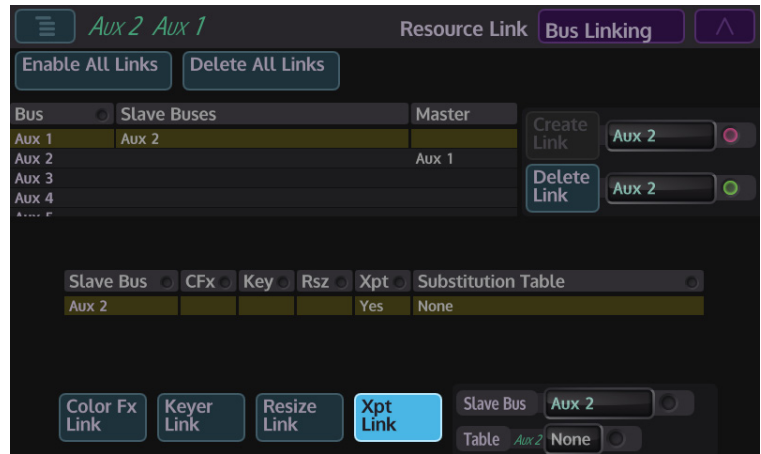
Master/Slave Crosspoint - selects the master/slave crosspoint link, as the crosspoint mapping is setup, the mapping will be automatically saved into the substitution table

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}**.



By default the links are 1-1 links e.g. Xpt1 on the Master will select Xpt1 on the Slave, although the bus linking can be further enhanced by use of substitution tables, where new crosspoint links can be created.

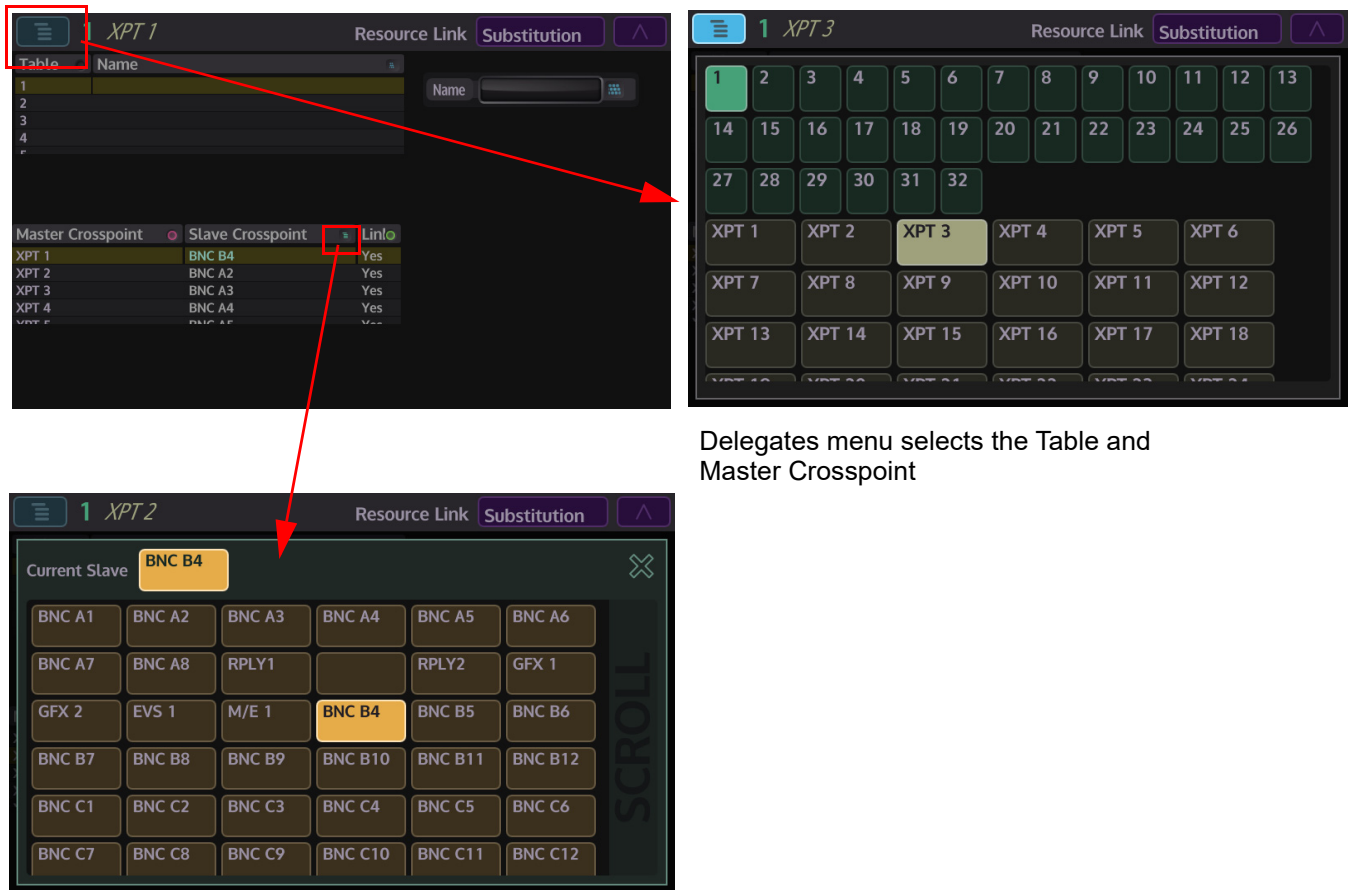
A **Substitution Table** can be generated where there is no link for some crosspoints (e.g. selecting a crosspoint on the Master Bus will not select a crosspoint on the Slave Buses), a single Substitution Table can be used multiple times.

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.



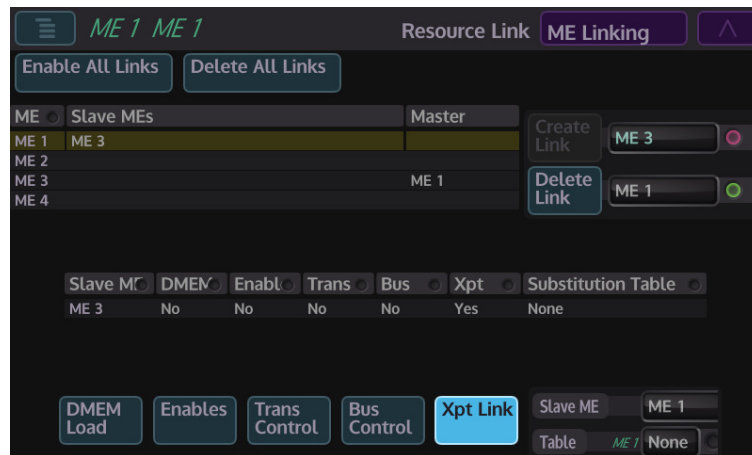
Delegates menu selects the Table and Master Crosspoint

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.

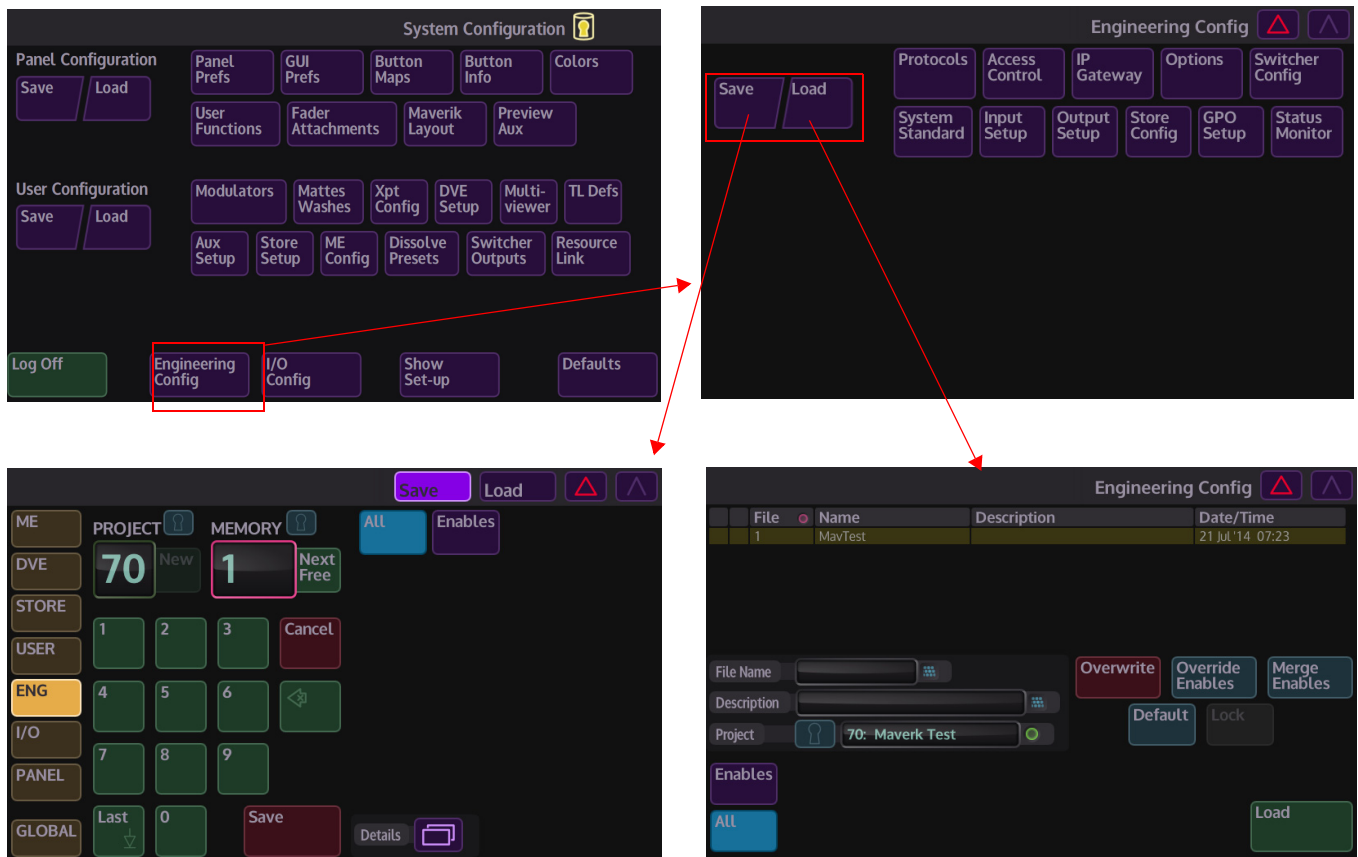
Substitution Table - assigns Links to a table (1 to 32 available) the selected table is where the Master Slave bus link will be saved

Global Configs - Engineering Configuration

Engineering Config

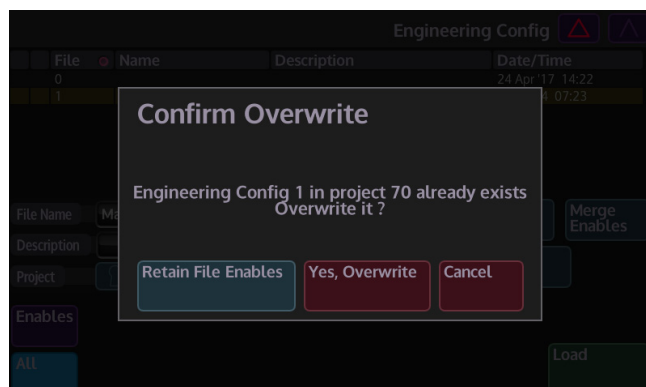
The Engineering Configuration is one of 4 main configuration functions on the Kahuna mainframe and is a very important part of a system setup. In this menu the source Inputs, Outputs, System video Standards, Store Config etc. are all accessed, It is important to understand how to navigate the main menu 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 file 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.

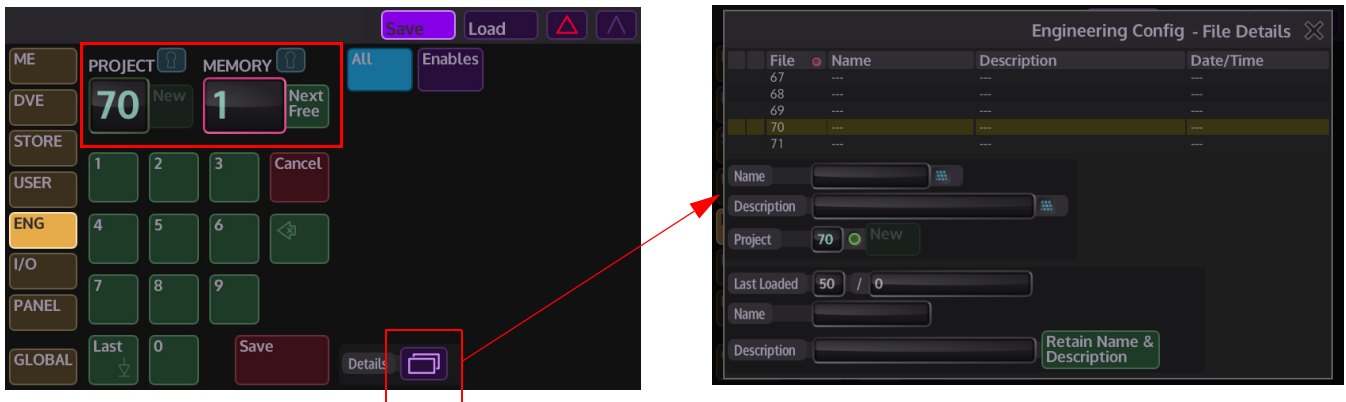


Override Enables - will override any enables that have been de-selected and turn the enable on.

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.

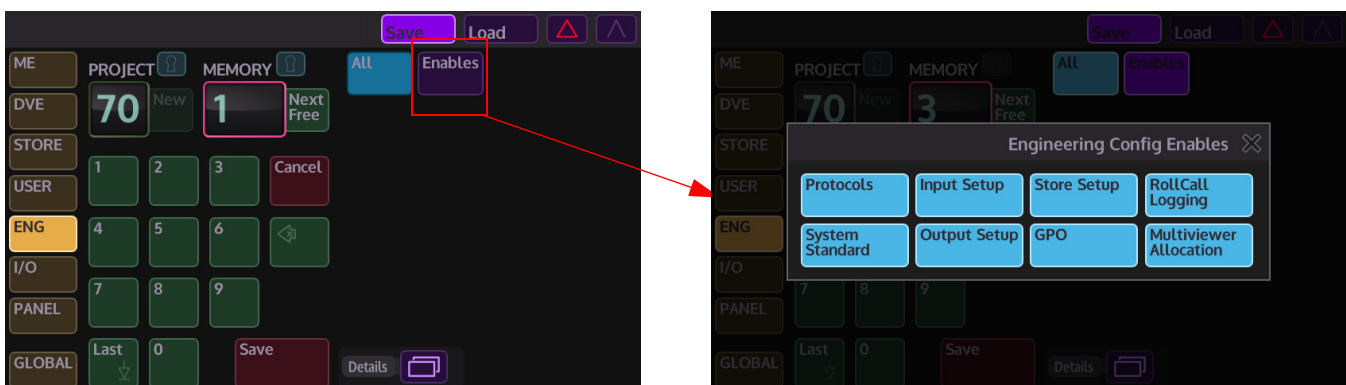
To create a new file within a project, touch the **{Details}** menu link button and the Engineering Config - File Details menu will be displayed.



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.

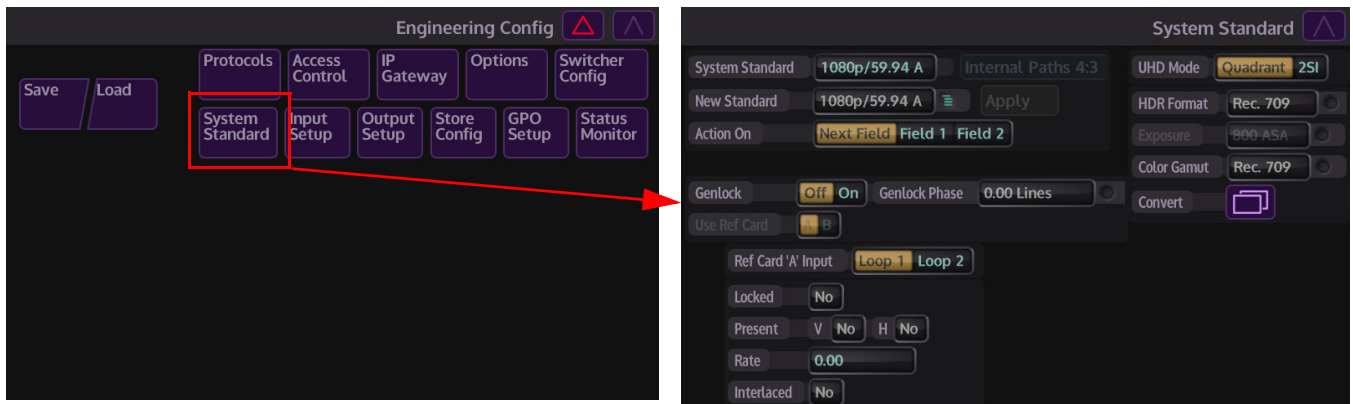
Back in the Save main menu, touch the **{Enables}** button and the **Engineering Config - Enables** will be displayed. The menu allows the user to Enable/Disable enables options that will be saved with the new Eng Config file.



All - enables all Enables

System Standard

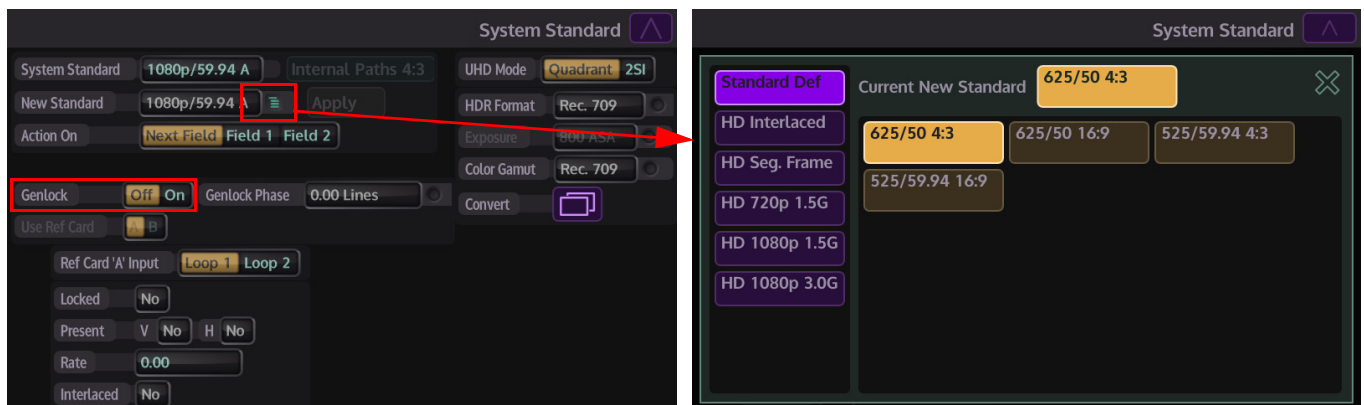
The System Standard menu allows the user to set the System Video Standard for the mainframe. This will take affect the Input and Output setup menus.



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.



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.

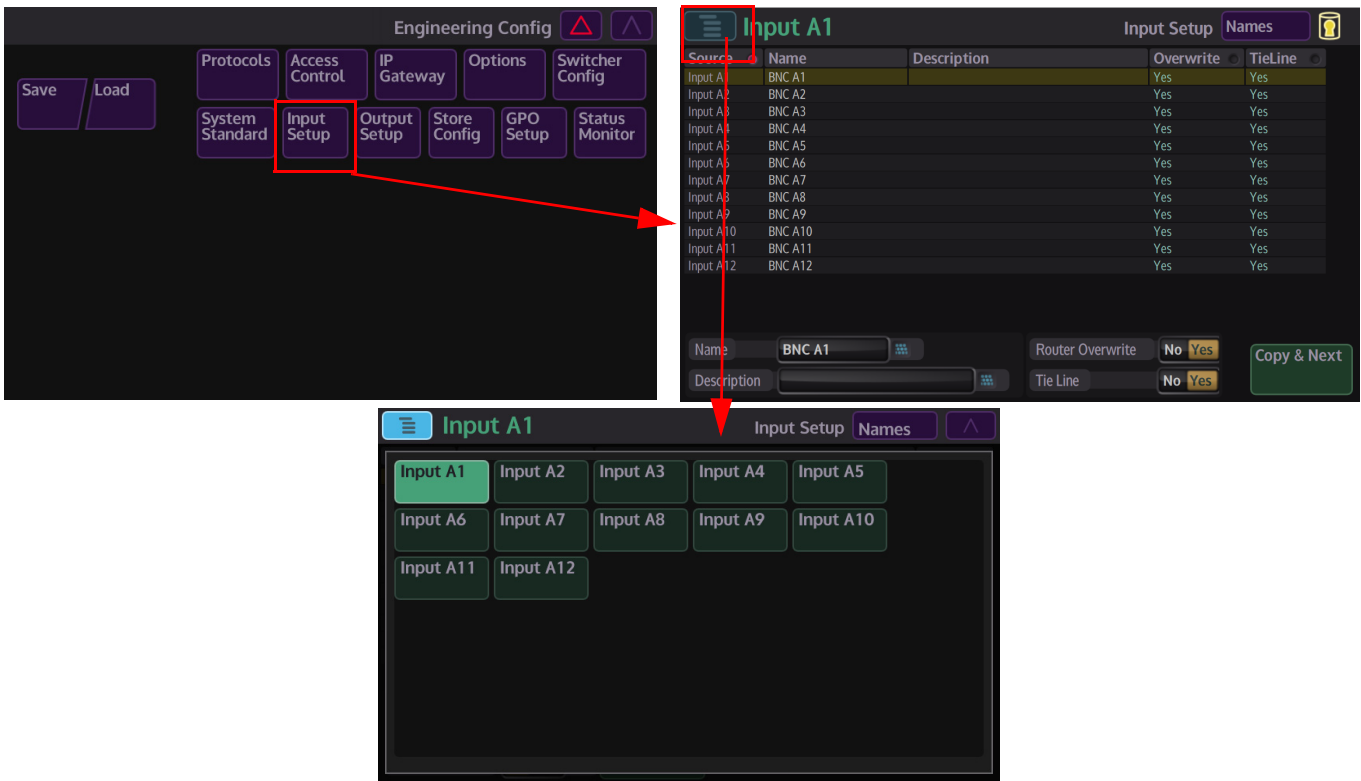
- A or B - **Locked** - Yes = genlocked
- A or B - **V Present** - Yes = vertical sync detected
- A or B - **H Present** - Yes = horizontal sync detected
- A or B - **Interlaced/Progressive** - Yes = interlaced
- A or B - **Rate** = frame rate in Hz

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.

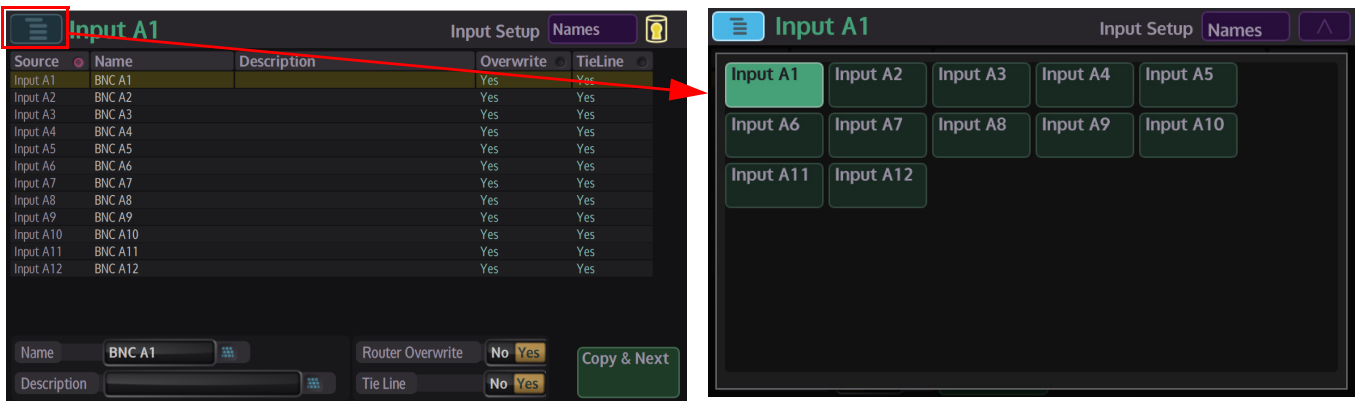


The **Delegates** button is used to select an input, touch the delegates button and a list of available inputs will be displayed (the number of inputs depends on the amount purchased with the mainframe). Inputs can be selected in this way in all of the Input Setup menus.

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

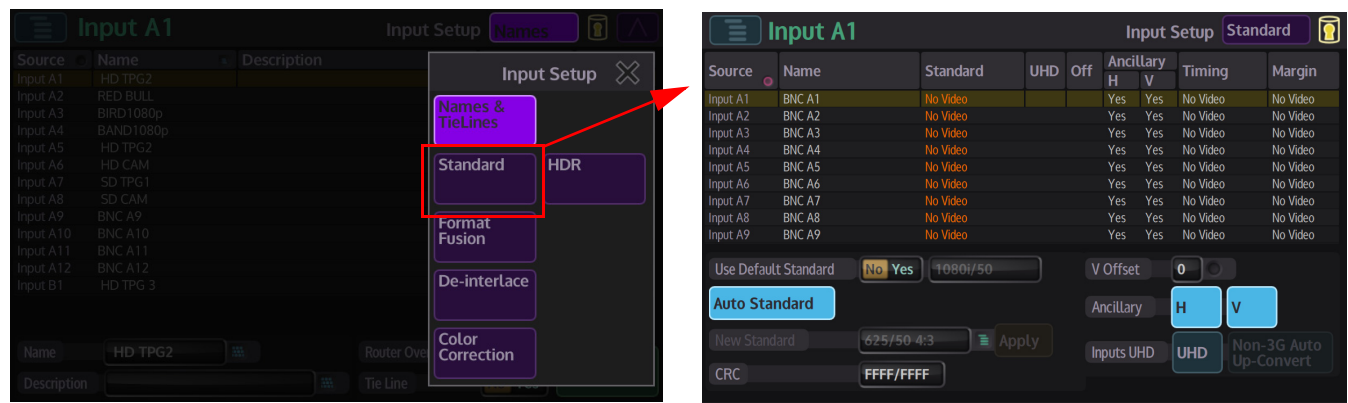


The **Router Overwrite** parameter when set to **{Yes}** will allow an externally connected router to rename a source.

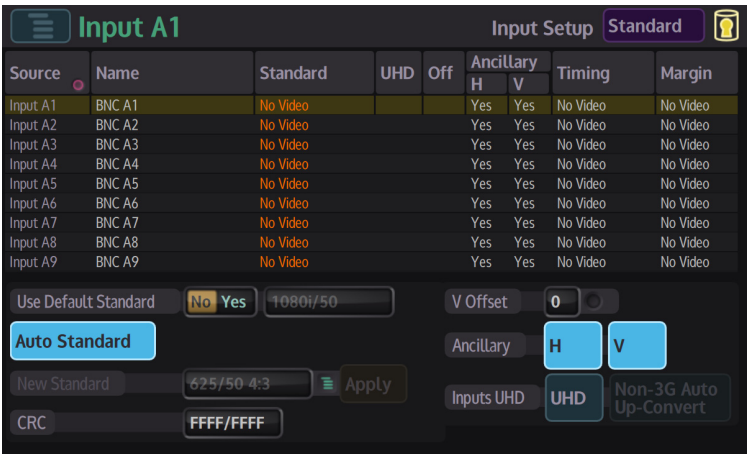
The **{Copy & Next}** button is a quick short cut function forcing the switcher to take the name from the current Source, and then jumps on to the next Source in the list - this makes naming all of the sources much easier and quicker.

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



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.



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.

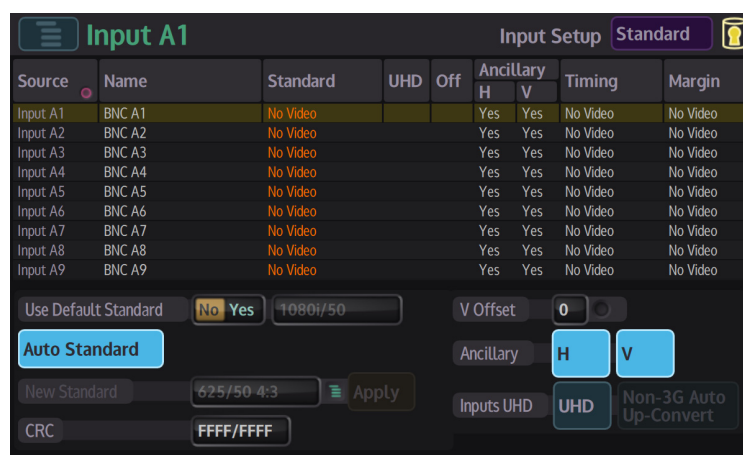
The ancillary data is part of the horizontal and vertical blanking portion of the video signal and is known as **HANC (Horizontal Ancillary Data)** and **VANC (Vertical Ancillary Data)**, the portion of the ancillary data we are interested in is **Embedded Audio**.

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™, 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.



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 be 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.

Source	Name	Standard	UHD	Off	Ancillary H V	Timing	Margin
Input A1	BNC A1	No Video	Yes		Yes Yes	No Video	No Video
Input A2	BNC A2	No Video	Yes		Yes Yes	No Video	No Video
Input A3	BNC A3	No Video	Yes		Yes Yes	No Video	No Video
Input A4	BNC A4	No Video	Yes		Yes Yes	No Video	No Video
Input A5	BNC A5	No Video			Yes Yes	No Video	No Video
Input A6	BNC A6	No Video			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

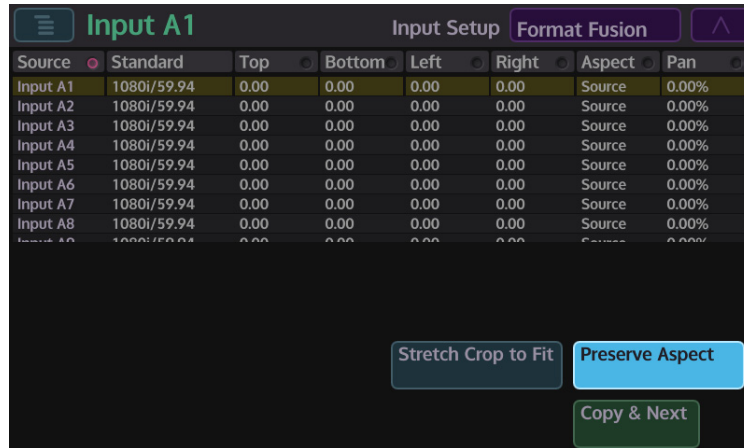
Use Default Standard: ☐ No ☒ Yes 1080i/50
 Auto Standard
 New Standard: 625/50 4:3 Apply
 CRC: FFFF/FFFF
 V Offset: 0
 Ancillary: H V
 Inputs UHD: UHD Non-3G Auto Up-Convert

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™

The FormatFusion™ 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.



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.

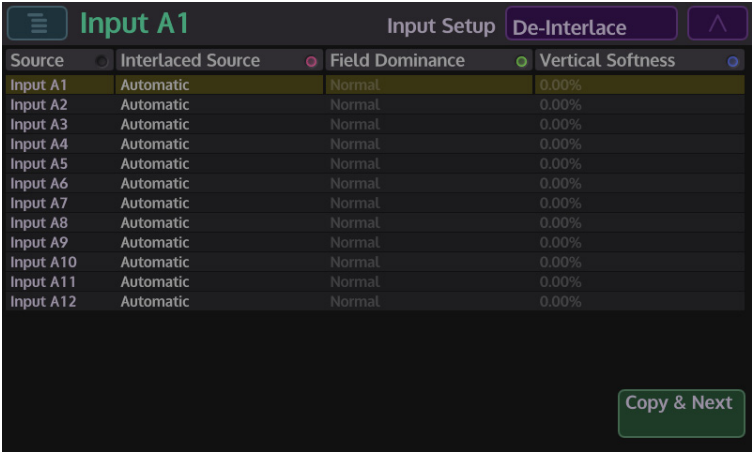
When the **Stretch Crop to Fit** parameter is enabled the cropped picture content will stretched to fill the 16:9 area.

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.

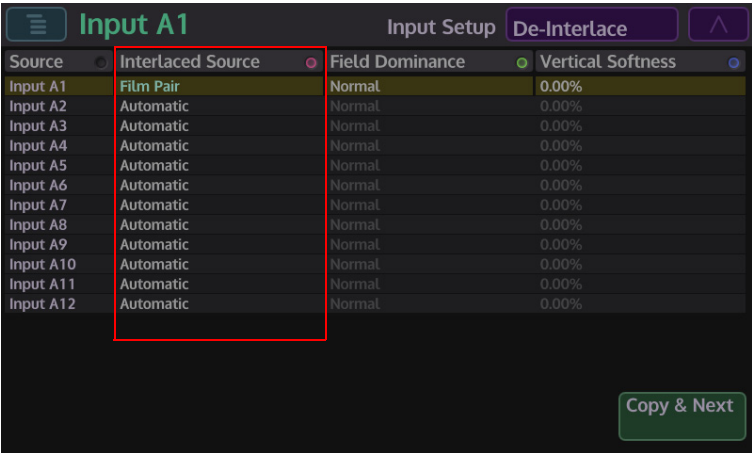
Note: This may cause a very small amount of the source material around the edge of the source to be lost.

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.



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.



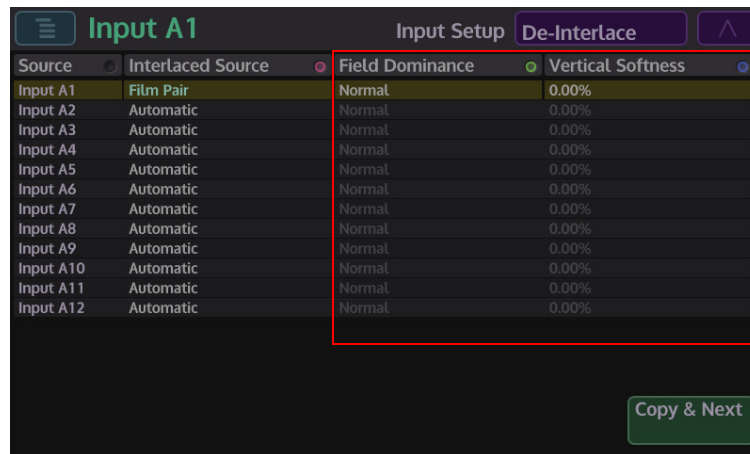
The Interlaced Source has 4 parameter settings, these settings are listed below:

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 Softness can only be used with selected Interlaced Source settings.

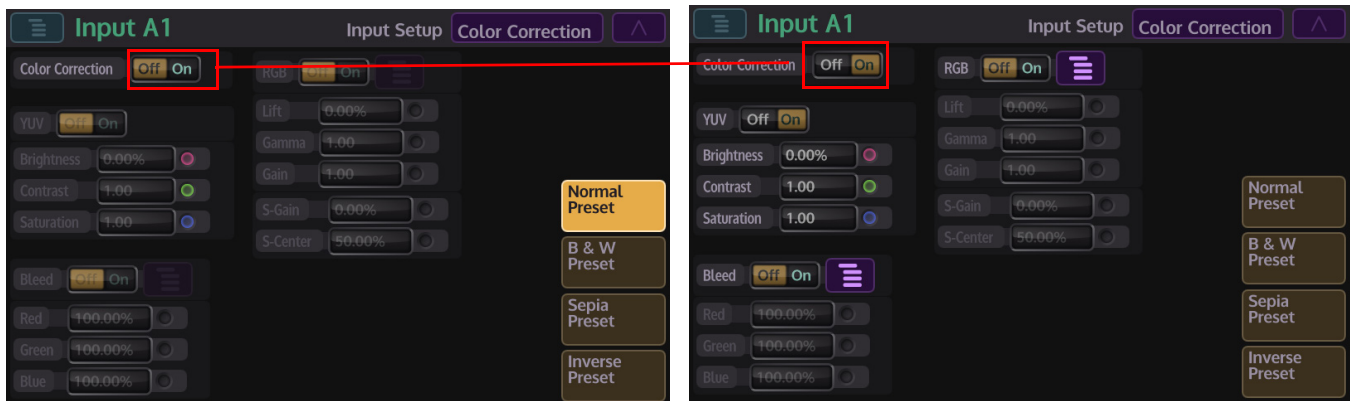
The **Field Dominance** control selects which field comes first. The **Normal** setting is the default field setting for the input standard, the **Reversed** setting should only be used to correct sources that have incorrect field order (swapped fields). Swapped fields will manifest as very jittery motion.

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

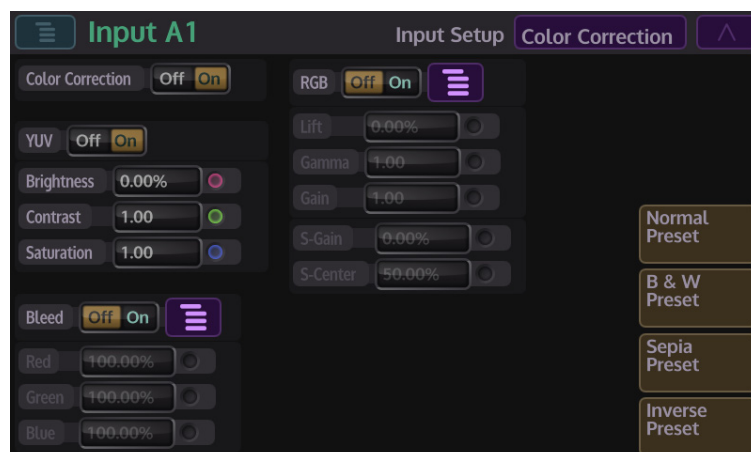
Touch the menu link button at the top of the menu and select “Color Correction”. The **Input Setup - Color Correction** menu allows the user to change the color balance on each individual crosspoint, there are 4 types of control, YUV, RGB, Bleed and Preset. To turn this menu on, touch the Color Correction **{On}** button.



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 be lost, they will all become active again when the Color Correction button is turned On.



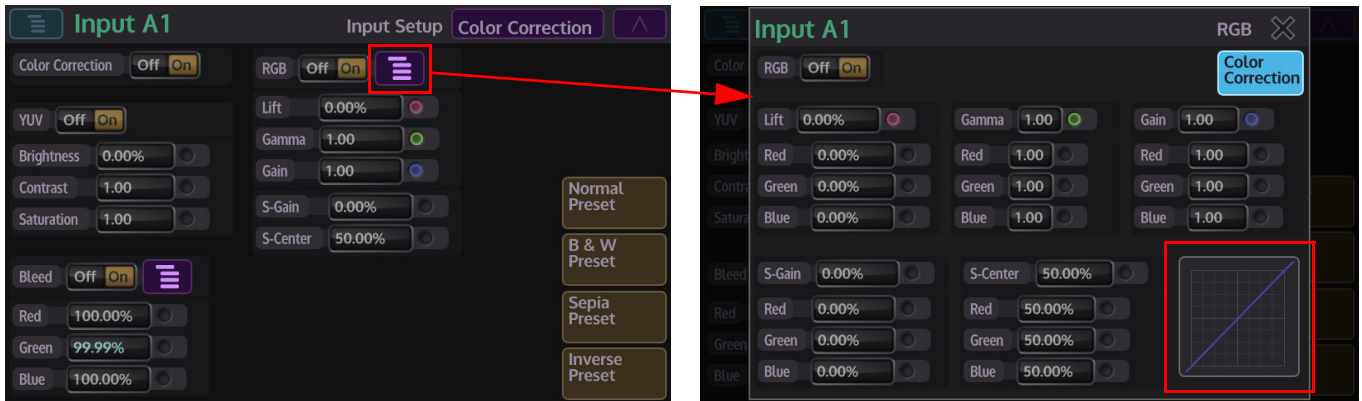
Touch the Brightness attacher and the Brightness, Contrast and Saturation parameters will become active and can be adjusted with the rotary parameter controls.

- 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.



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.



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.

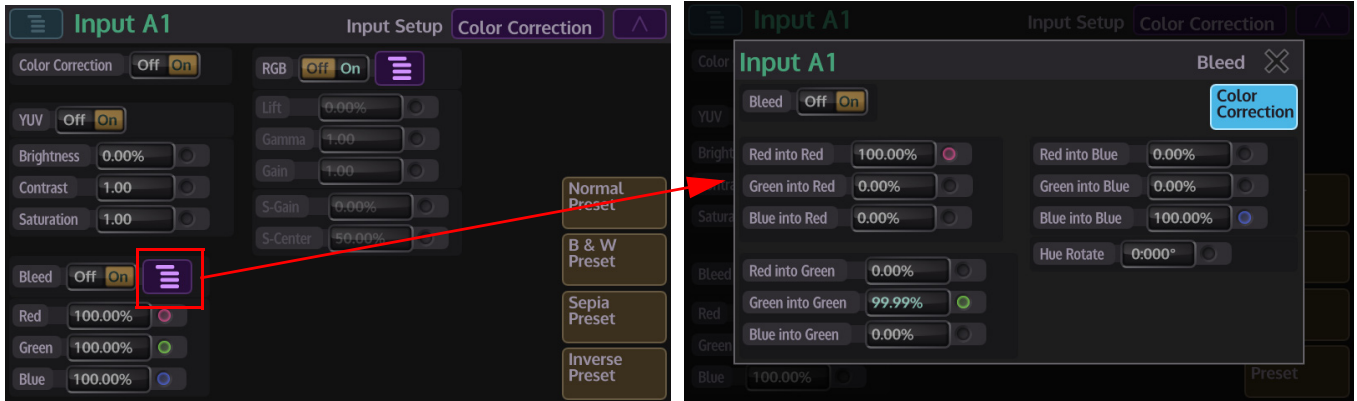
Gamma - parameters adjust the levels between dark/shadow and the mid tones, where the mid tones become brighter or darker; depending on the adjustment made.

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.



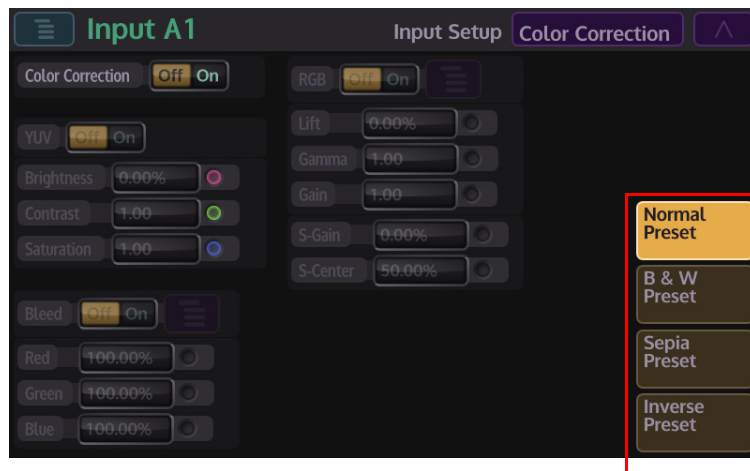
Touch the menu link button to open the full Bleed menu. The initial menu has a default state where a single adjustment for each parameter menu is active; this will allow the adjustment of the main RGB bleed parameters:

- 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™ - HDR

What is HDR

Note: You will only be able to use the HDR and SDR settings if you have a FormatFusion4™ option license. If you would like to upgrade your Kahuna, please contact Grass Valley Service Support.

The introduction of FormatFusion4™, 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)

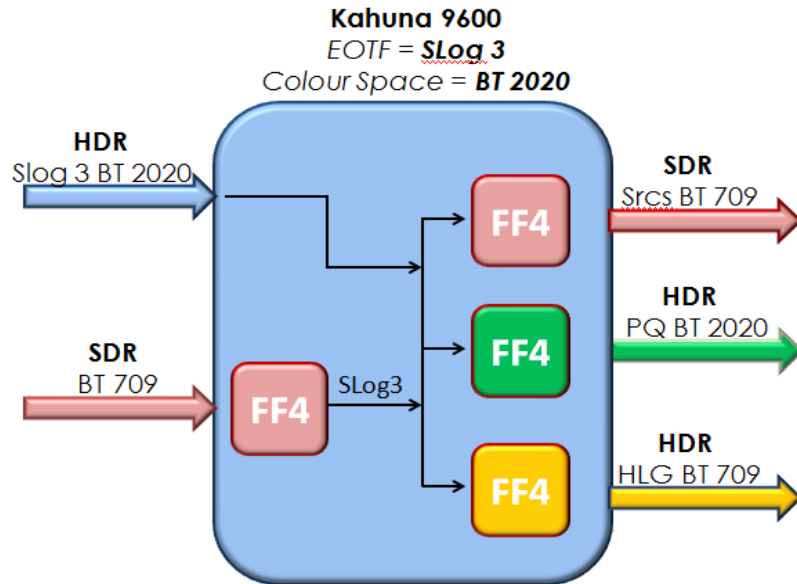
Also Kahuna supports Wide Color Gamuts (WCG):

- BT 709
- BT 2020
- S-Gamut3
- DCI-P3
- Arri Wide

The Kahuna Platform will allow a combination of the declared EOTFs and WCGs 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.

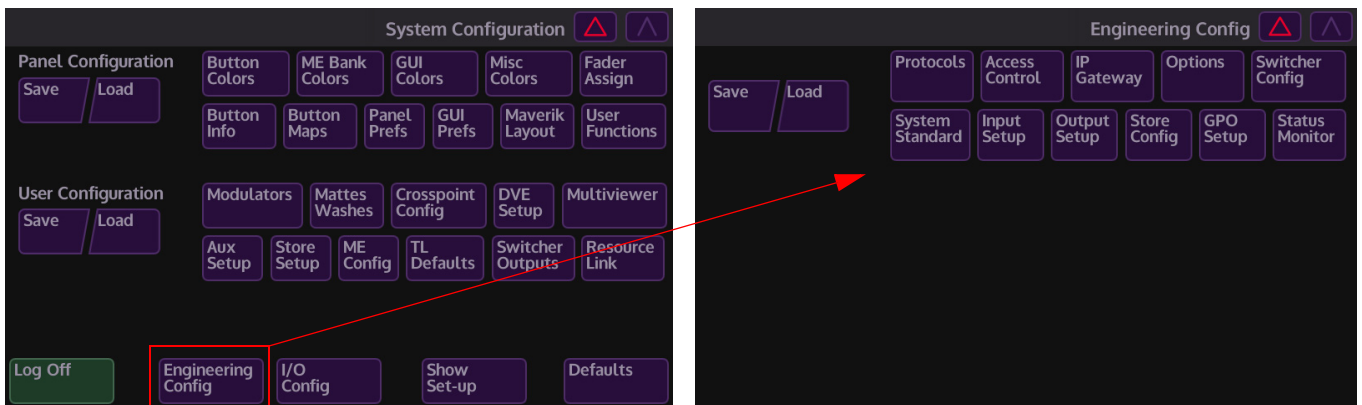
Using FormatFusion4™ HDR on Kahuna

This document will outline how to setup HDR on the Maverik MAV-GUI.

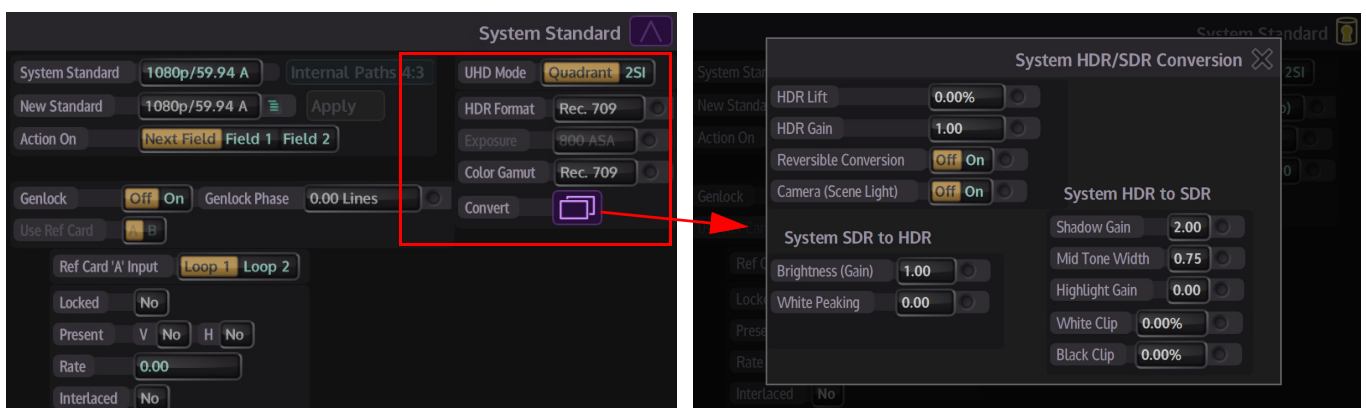
System Standard

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.



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

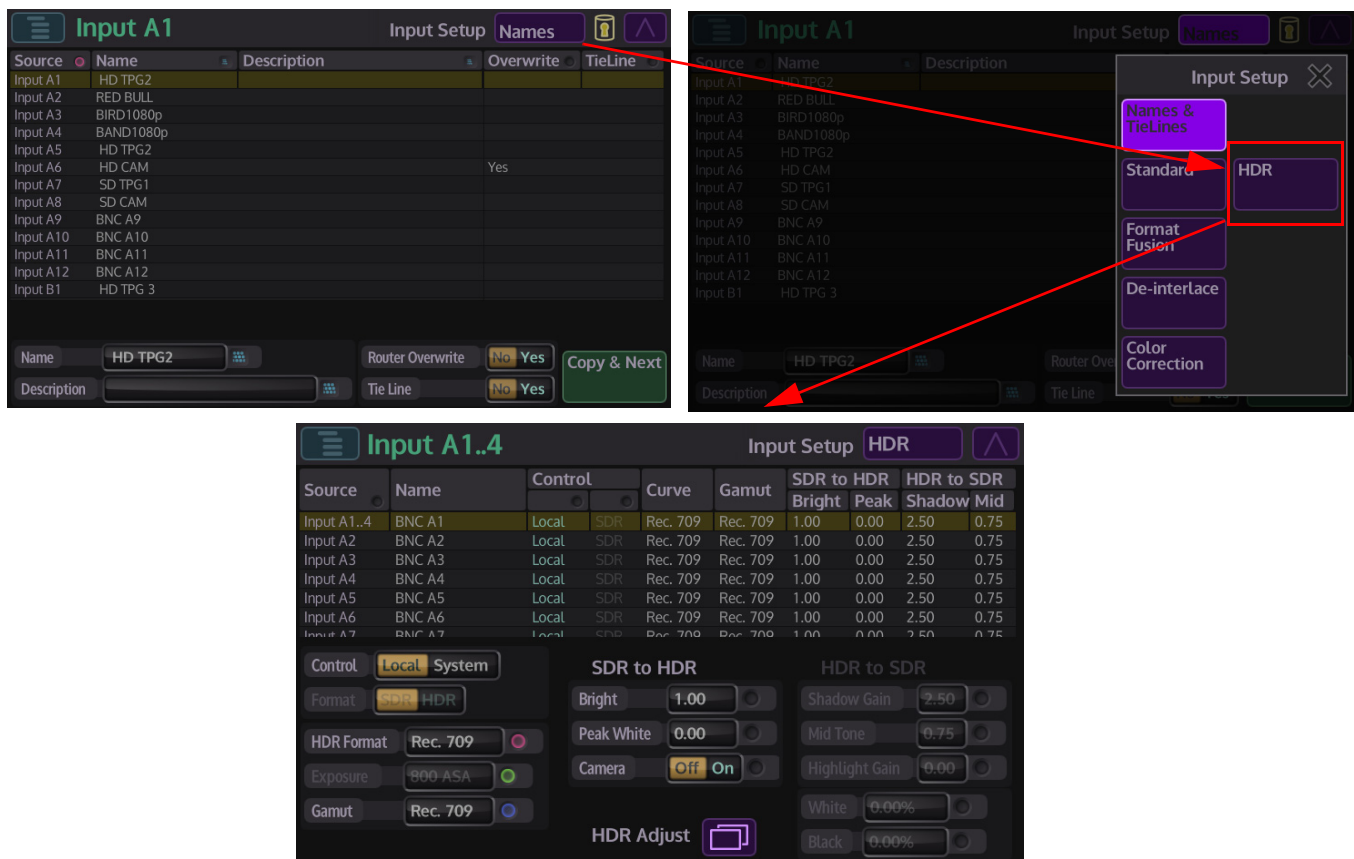
Wide Color space as per ITU-R BT.2020. This is the new broadcast format.

“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.



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.



"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

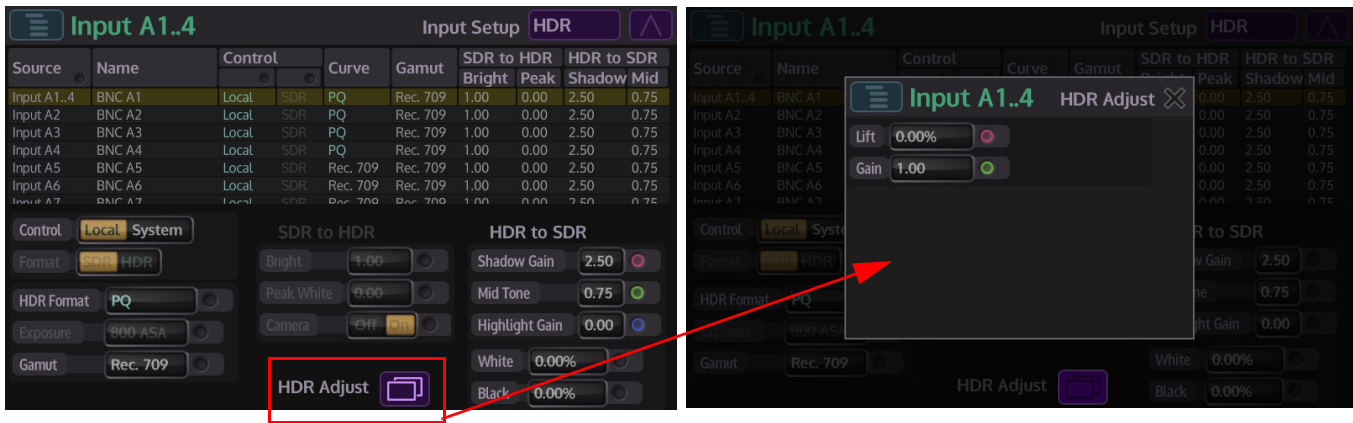
Lift may also need adjustment with linear keying to ensure there is no change in background level when turning a key layer on and off.

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.



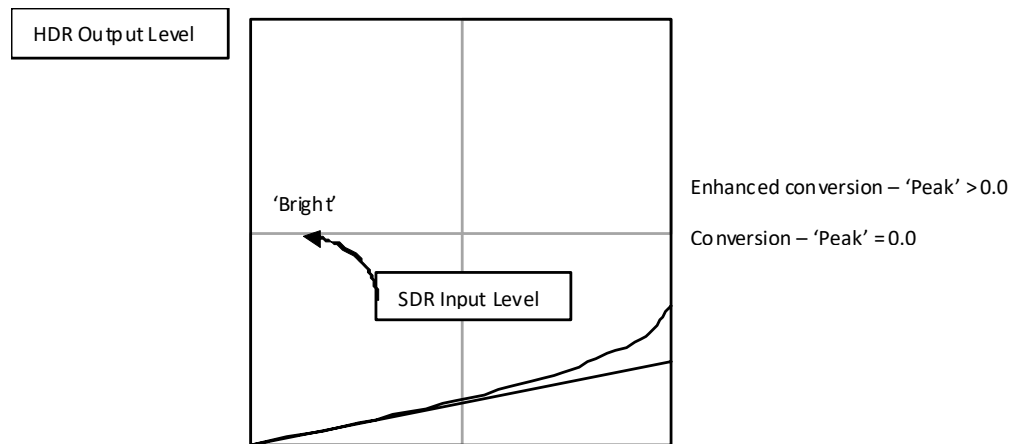
The parameters available to the user are the down conversion parameters to an SDR format.

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.



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

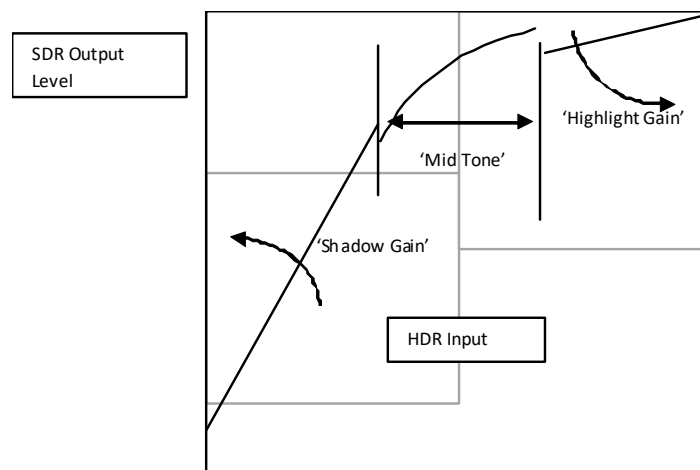
This conversion employs gain and soft clipping of the HDR version. HDR content is processed in two stages.

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.



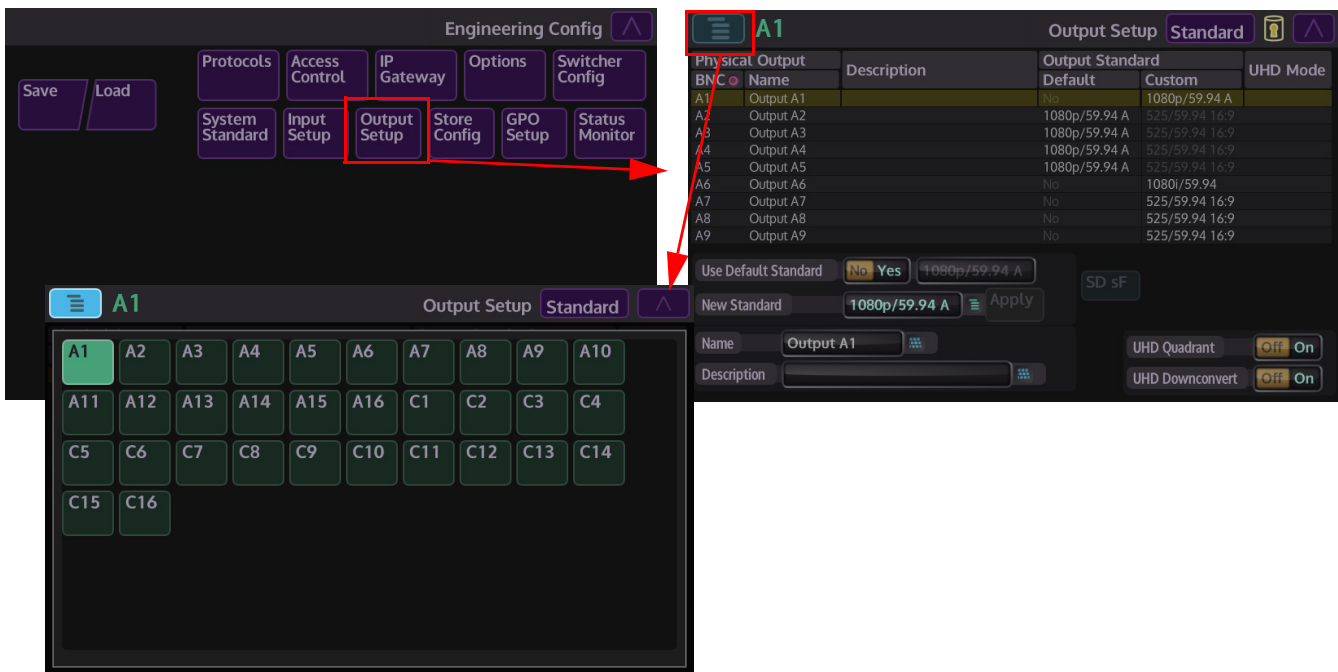
Output Setup

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

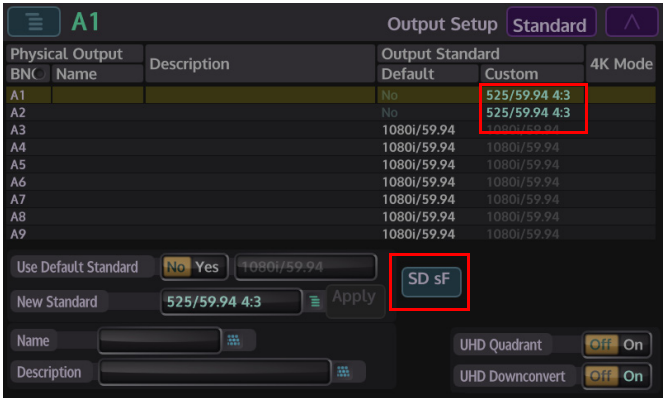
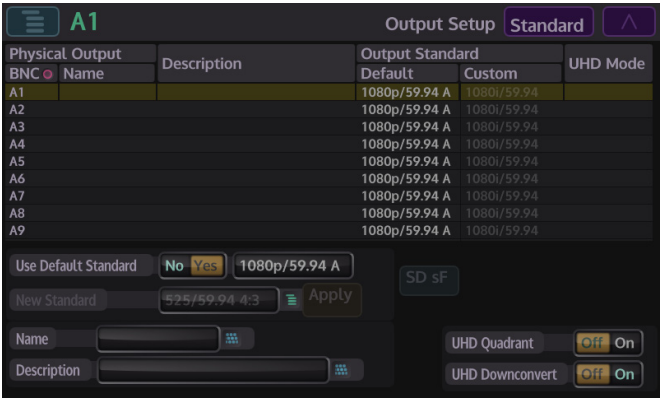
Standard

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.



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 sF - 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.

Interlaced Source (SD sF 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 be 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...

Physical Output BNC	Name	Description	Output Standard		UHD Mode
			Default	Custom	
A1			1080p/59.94 A	1080i/59.94	UHD T.L.
A2			1080p/59.94 A	1080i/59.94	UHD T.R.
A3			1080p/59.94 A	1080i/59.94	UHD B.L.
A4			1080p/59.94 A	1080i/59.94	UHD B.R.
A5			1080p/59.94 A	1080i/59.94	
A6			1080p/59.94 A	1080i/59.94	
A7			1080p/59.94 A	1080i/59.94	
A8			1080p/59.94 A	1080i/59.94	
A9			1080p/59.94 A	1080i/59.94	

Use Default Standard: No Yes 1080p/59.94 A SD sF

New Standard: 525/59.94 4:3 Apply

Name: Description:

UHD Quadrant: Off On

UHD 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.

Physical Output BNC	Name	Description	Output Standard		UHD Mode
			Default	Custom	
A1			1080p/59.94 A	1080i/59.94	UHD Down
A2			1080p/59.94 A	1080i/59.94	UHD Down
A3			1080p/59.94 A	1080i/59.94	UHD Down
A4			1080p/59.94 A	1080i/59.94	UHD Down
A5			1080p/59.94 A	1080i/59.94	
A6			1080p/59.94 A	1080i/59.94	
A7			1080p/59.94 A	1080i/59.94	
A8			1080p/59.94 A	1080i/59.94	
A9			1080p/59.94 A	1080i/59.94	

Use Default Standard: No Yes 1080p/59.94 A SD sF

New Standard: 525/59.94 4:3 Apply

Name: Description:

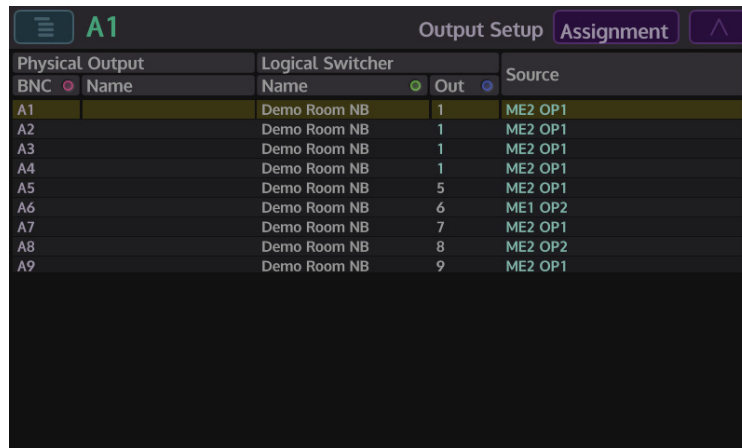
UHD Quadrant: Off On




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.



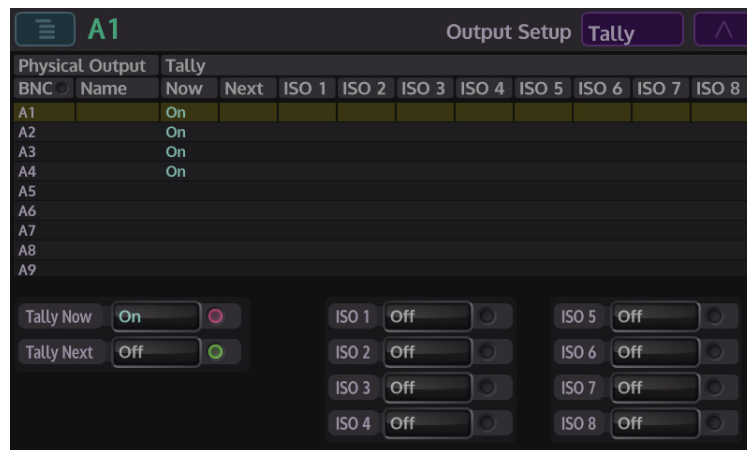
Physical Output	Logical Switcher	Source
BNC  Name	Name  Out 	
A1	Demo Room NB 1	ME2 OP1
A2	Demo Room NB 1	ME2 OP1
A3	Demo Room NB 1	ME2 OP1
A4	Demo Room NB 1	ME2 OP1
A5	Demo Room NB 5	ME2 OP1
A6	Demo Room NB 6	ME1 OP2
A7	Demo Room NB 7	ME2 OP1
A8	Demo Room NB 8	ME2 OP2
A9	Demo Room NB 9	ME2 OP1












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.



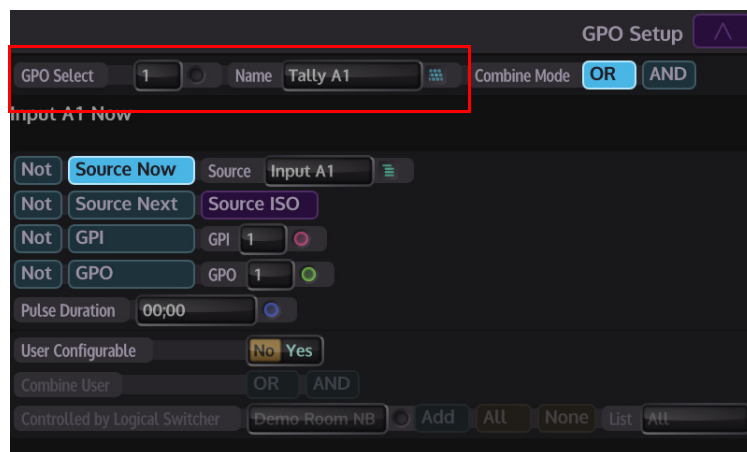
Physical Output	Tally	ISO
BNC  Name	Now  Next 	ISO 1  ISO 2  ISO 3  ISO 4  ISO 5  ISO 6  ISO 7  ISO 8 
A1	On	
A2	On	
A3	On	
A4	On	
A5		
A6		
A7		
A8		
A9		

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.



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.

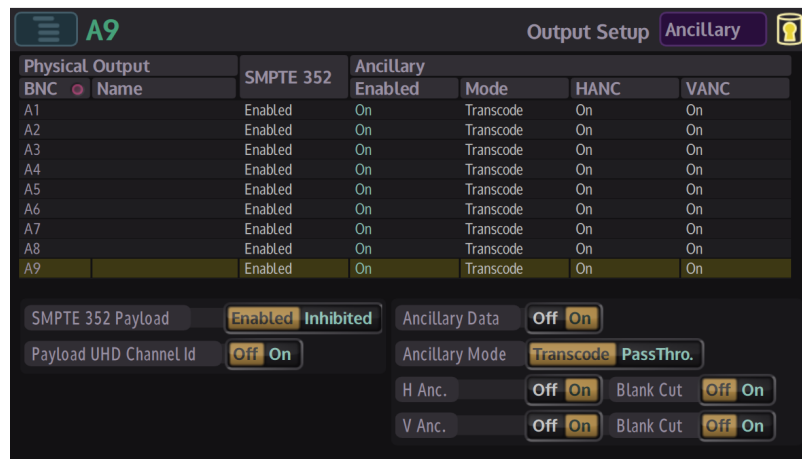
The ISO Tallies can be "OR"ed or "AND"ed with any other GPO enables to Tallies.

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.



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!

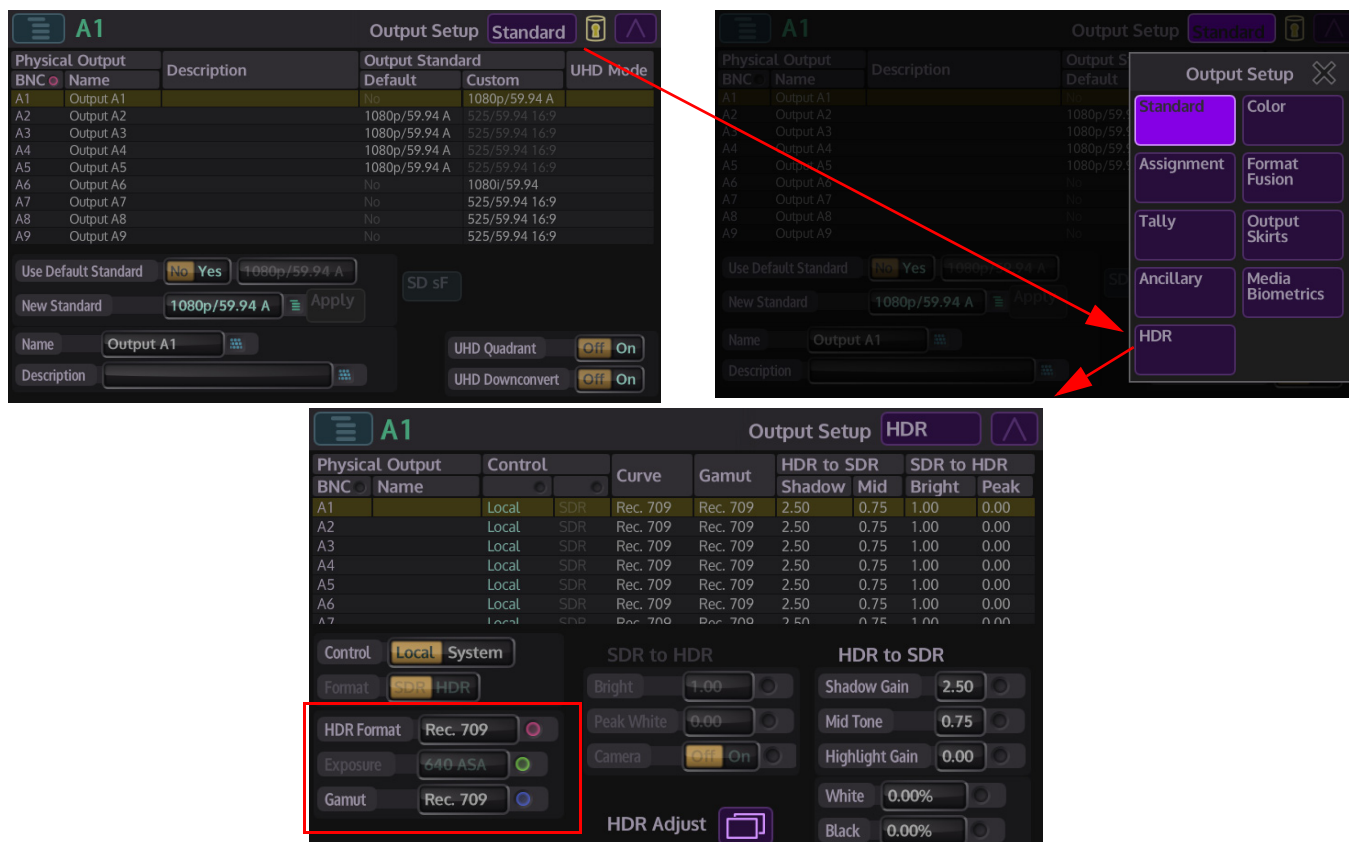
From the Transcoder, the embedded data takes the form of two groups of 4 channels. Each channel is mono and independent. However, the user could set Group 1 CH1 and CH2 for a stereo source and Group 1 CH3 and CH4 for another stereo source. Similarly for Group 2.

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.



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.

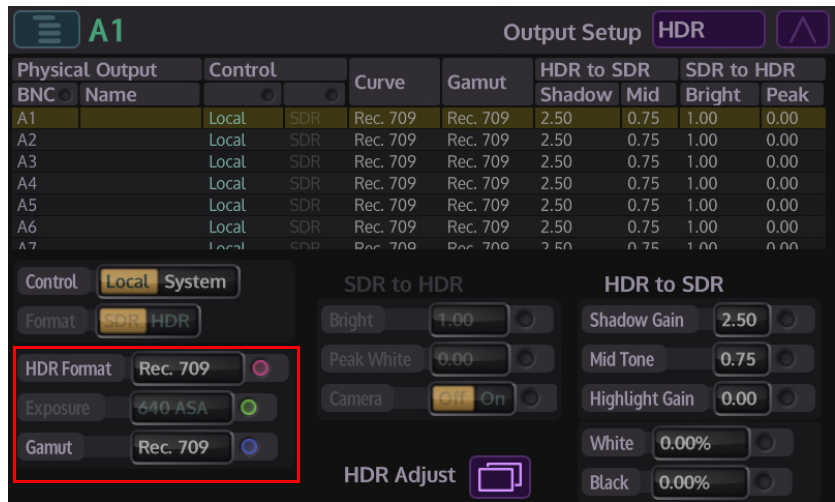
System HDR To SDR Highlight Gain- controls the gain at high Luma levels.

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.



"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.

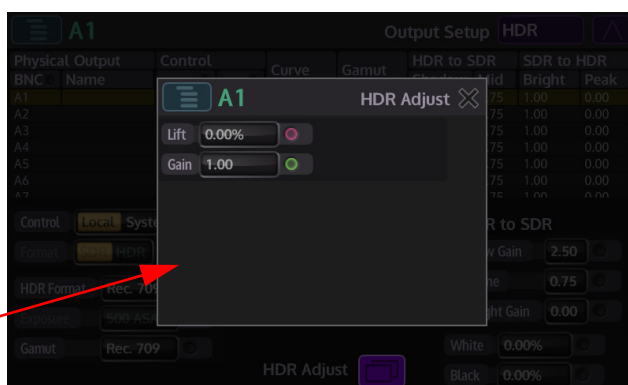
Keying

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.



The parameters available to the user are the down conversion parameters to an SDR format and are the same as the input parameters.



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.

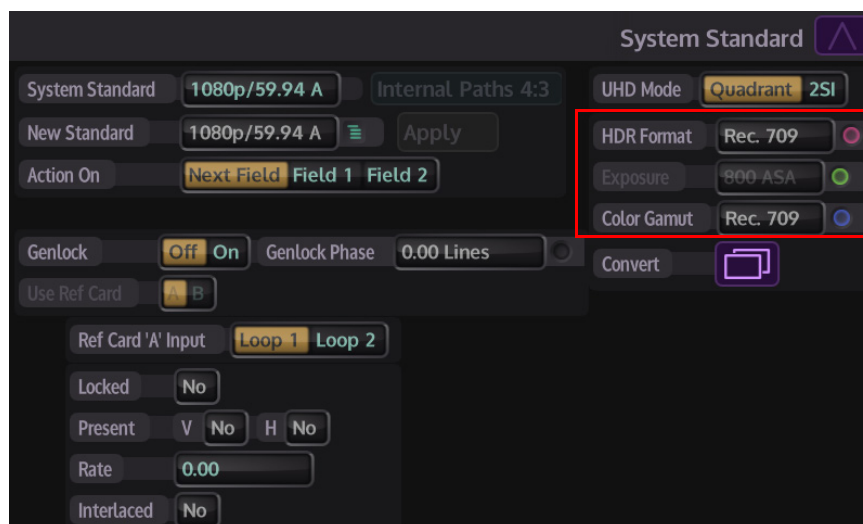
What format do you want to work in? SDR or HDR

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.



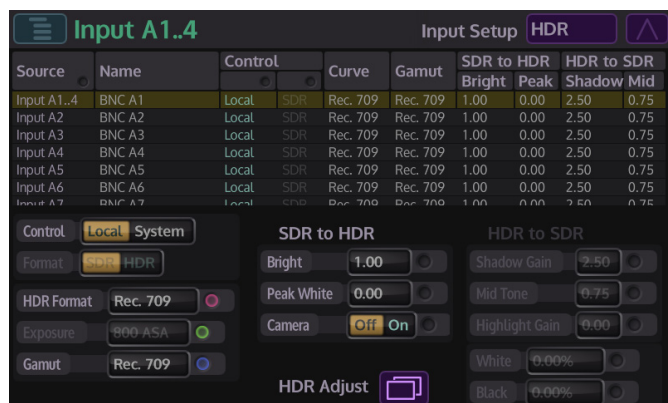
Working in SDR - If making an SDR only production but have a few HDR sources, the switcher should be in SDR (system HDR format of 'Rec. 709') and those HDR inputs will then be down converted at the input.

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.



Using SDR or HDR when Keying Graphics

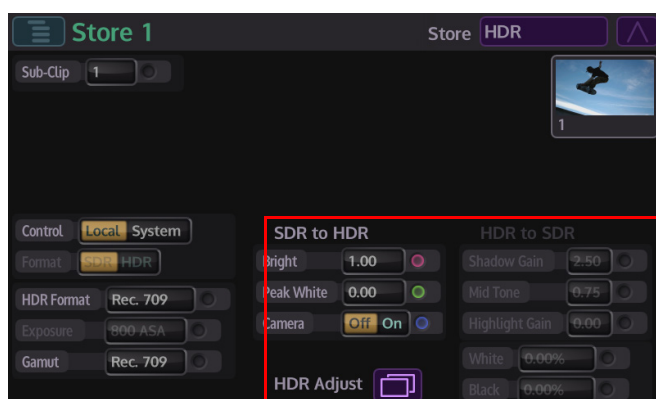
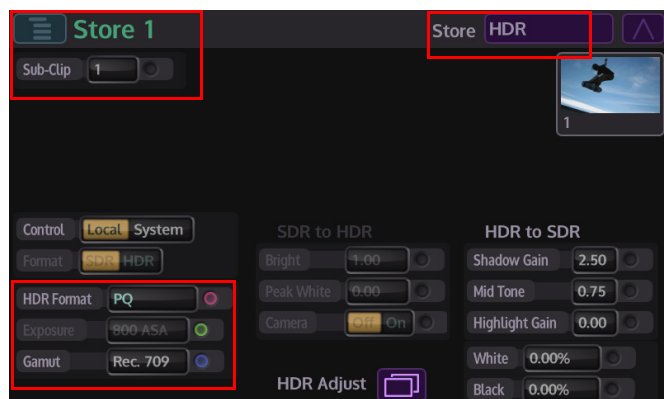
It is assumed that a lower 3rd store is being used as a Key over a background. In the Store Load menu, touch the menu link button at the top of the menu to display the popup and then touch the **{HDR}** button. The HDR menus below will be displayed.

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 use 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.

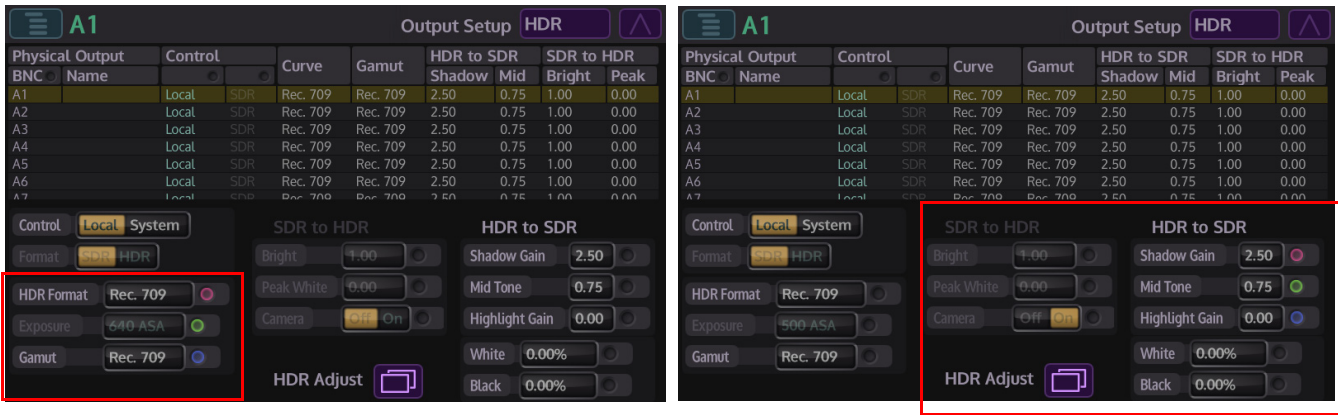


Note: Loading a store will clear down the HDR/WCG settings to SDR/Rec. 709.

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.

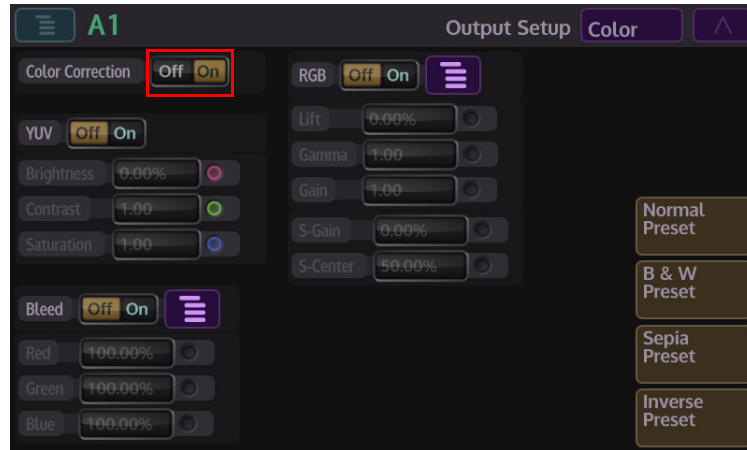
If the system format is HDR and an output is SDR the output 'HDR to SDR' conversion controls will be active allowing adjustment of the conversion process. If the system format is SDR and an output is HDR the output 'SDR to HDR' conversion controls will be active.



Use the parameter controls to setup the selected output to the required picture quality.

Color Correction

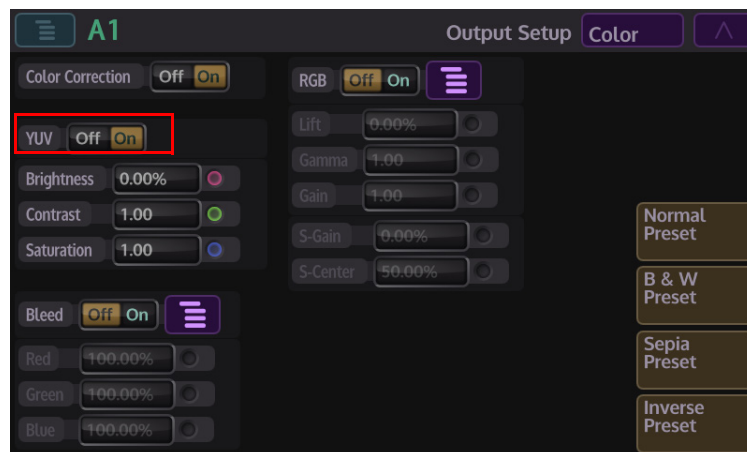
This menu allows the user to add color correction to the output selected in the Output Standard menu. The menus are very similar to the other color correction menus in the Kahuna software. There are 4 types of control, YUV, RGB, Bleed and Preset. To turn this menu on, touch the Color Correction **{On}** button.



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.



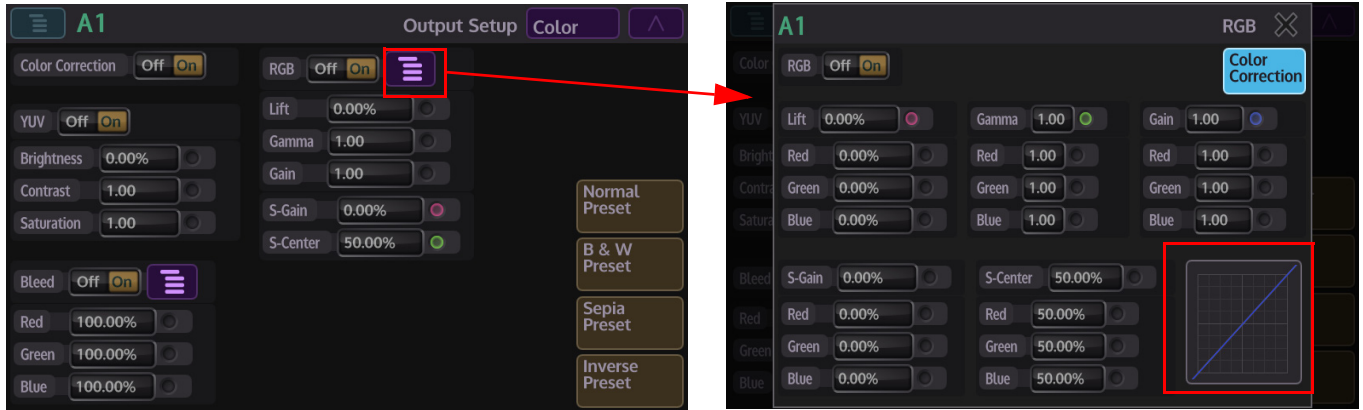
Touch the Brightness attacher and the Brightness, Contrast and Saturation parameters will become active and can be adjusted with the rotary parameter controls.

- 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.

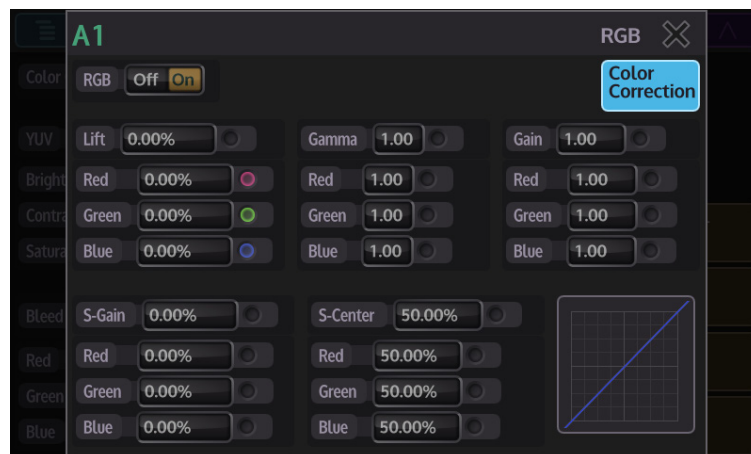
RGB

Touch the RGB {On} button to activate the parameters.



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.



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.

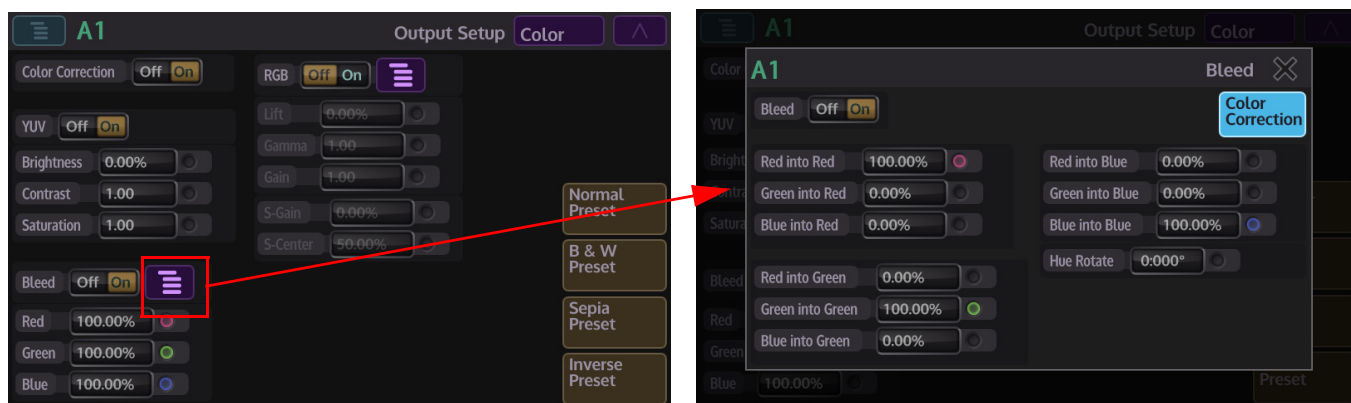
Gamma - parameters adjust the levels between dark/shadow and the mid tones, where the mid tones become brighter or darker; depending on the adjustment made.

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.



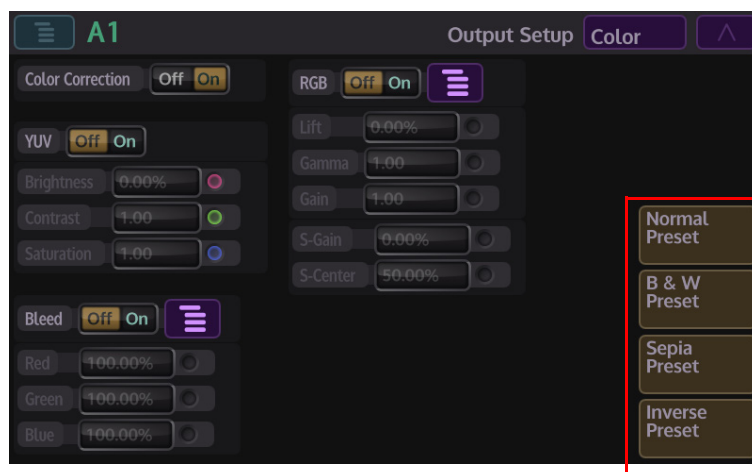
Touch the menu link button to open the full Bleed menu. The initial menu has a default state where a single adjustment for each parameter menu is active; this will allow the adjustment of the main RGB bleed parameters:

- 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.

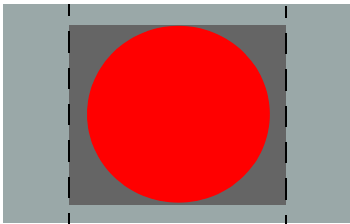
Format Fusion

This menu is used to change the aspect of an SD source before the source leaves the mainframe through the BNC outputs.

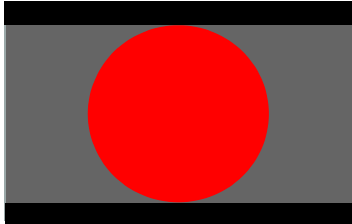
Physical Output		Aspect		Zoom		Position		Anti-Alias Filter	
BNC	Name					X	Y	Mode	Strength
A1		Zoom		1.00		0.00	0.00	Auto	0.20
A2		Zoom		1.00		0.00	0.00	Auto	0.20
A3		Zoom		1.00		0.00	0.00	Auto	0.20
A4		Zoom		1.00		0.00	0.00	Auto	0.20
A5		Zoom		1.00		0.00	0.00	Auto	0.20
A6		Zoom		1.00		0.00	0.00	Auto	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

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.

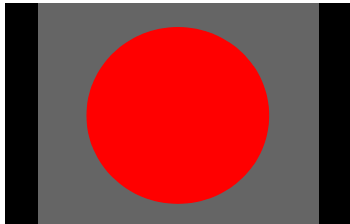
Aspect Mode has 3 settings: **Zoom**, **Full Width** and **Full Height**. The **Zoom** parameter allows the source to be zoomed out to fill the 16:9 aspect, when the source is zoomed to 16:9; it will appear slightly larger. The zoom function will not work if the aspect is set to Full Width or Full Height.
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.



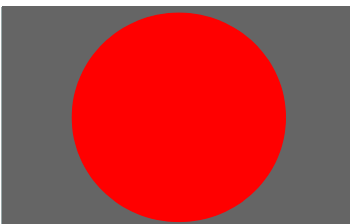
Original 4:3 Source on a 16:9 background



With Full Width Applied



With Full Height Applied



With Zoom Applied to fill 16:9 Aspect

Physical Output		Output Setup				Format Fusion	
BNC	Name	Aspect	Zoom	Position		Anti-Alias Filter	
				X	Y	Mode	Strength
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
...	

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 1

Switcher Outputs

Config

Output	Physical	Name	Source	Resolved Name	FTB
1	A1		ME2 A/B PGM	ME2 A/B PGM	
2	A2		ME2 A/B PVW	ME2 A/B PVW	
3	A3		STOR 1	STOR 1	
4	A4		STOR 2	STOR 2	
5	A5		STOR 3	STOR 3	
6	A6		STOR 4	STOR 4	
7	A7		STOR 5	STOR 5	
8	A8		STOR 6	STOR 6	
9	A9		AUX 9	BNC A1	
10	A10		AUX 10	BNC A1	
11	A11		AUX 11	BNC A1	
13	A13		AUX 13	BNC A1	
14	A14		AUX 14	BNC A1	
15	A15		AUX 15	BNC A1	

Display Unallocated

ME 2

ME Config

Background Skirts

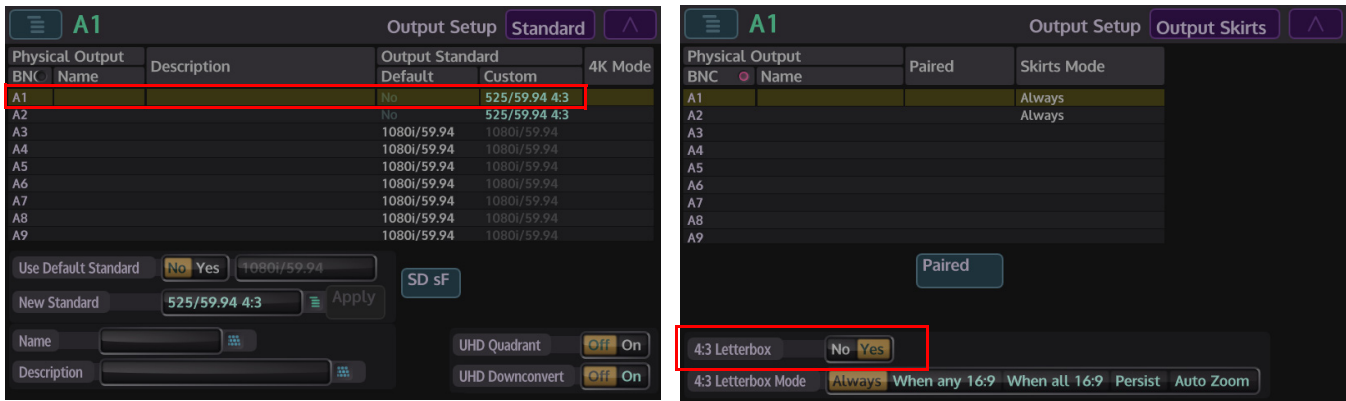
Output	Skirt	Fill	Matte	Hue	Luma	Sat
ME 1	Matte	Black	0:210°	97.99%	100.00%	
ME 2	Matte	Cyan	0:000°	0.00%	0.00%	
ME 3	Matte	Black	0:000°	0.00%	0.00%	
ME 4	Matte	Black	0:000°	0.00%	0.00%	
ME 5	Matte	Black	0:000°	0.00%	0.00%	
ME 6	Matte	Black	0:000°	0.00%	0.00%	

Cyan

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.

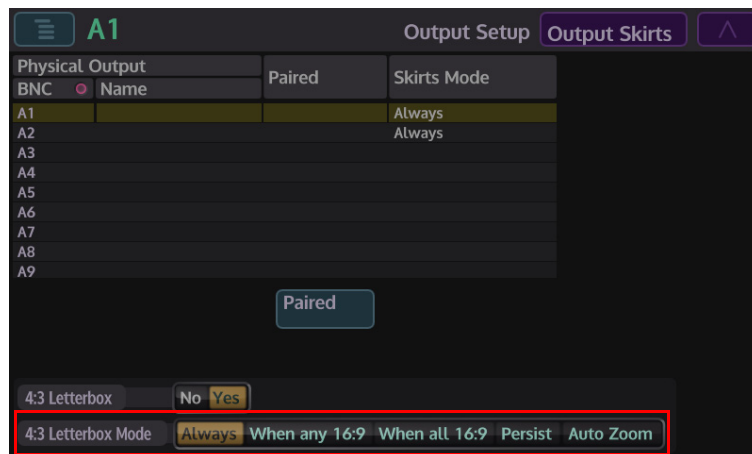


This will allow the user to turn On the **4:3 Letterbox** function in the **Output Skirts** menu. With the letterbox mode setup, now go to the **User Config - Skirt Setup** menu where the letterbox skirts can be setup. Once 4:3 letterbox has been turned the output will look like the diagram below.



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.



Using the 4:3 Letterbox Mode parameter, letterbox can be set to:-

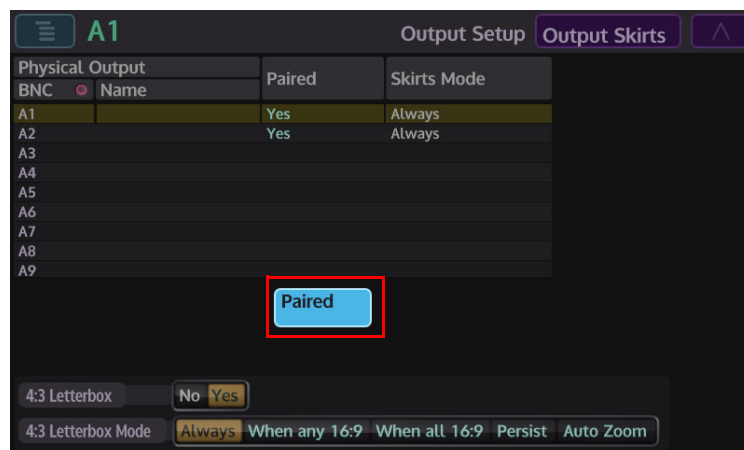
Always - all sources will be placed into a 16:9 letterbox; when 4:3 sources are selected, they will get both top/bottom skirts and side skirts.

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.



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						
Output	Physical	Skirt				
	BNC	Name	Source	Matte	Hue	Luma Sat
1	A1		STOR 1	Red	0:000°	0.00% 0.00%
3	A3		BNC A1	Local Matte	0:000°	0.00% 0.00%
4	A4		BNC A1	Local Matte	0:000°	0.00% 0.00%
5	A5		BNC A1	Local Matte	0:000°	0.00% 0.00%
6	A6		BNC A1	Local Matte	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%

Red

ME 2 ME Config Background Skirts						
Output	Skirt					
	Fill	Matte	Hue	Luma	Sat	
ME 1	Matte	Black	0:210°	97.99%	100.00%	
ME 2	Matte	Cyan	0:000°	0.00%	0.00%	
ME 3	Matte	Black	0:000°	0.00%	0.00%	
ME 4	Matte	Black	0:000°	0.00%	0.00%	
ME 5	Matte	Black	0:000°	0.00%	0.00%	
ME 6	Matte	Black	0:000°	0.00%	0.00%	

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			
16Gb 10 Outputs			Total
Allocation Format	Group A (16GB)	Group B (0GB)	
SD	10:20:20	00:00:00	10:20:20
1080i/Slow 1080p	2:04:04	00:00:00	2:04:04
Fast 1080p	1:02:02	00:00:00	1:02:02
720p	2:20:13	00:00:00	2:20:13
Audio	6:14:10	00:00:00	6:14:10
SD Frames	15520	0	15520
HD 1080 Frames	3104	0	3104
HD 720 Frames	6984	0	6984
Audio Frames	558720	0	558720
Chunks	388	0	388
32Gb 10 Outputs			Total
Allocation Format	Group A (32GB)	Group B (0GB)	
SD	20:41:15	00:00:00	20:41:15
1080i/Slow 1080p	4:08:08	00:00:00	4:08:08
Fast 1080p	2:04:04	00:00:00	2:04:04
720p	4:39:09	00:00:00	4:39:09
Audio	12:28:20	00:00:00	12:28:20
SD Frames	31040	0	31040
HD 1080 Frames	6208	0	6208
HD 720 Frames	13968	0	13968
Audio Frames	1117440	0	1117440
Chunks	776	0	776
32Gb 20 Outputs			Total
Allocation Format	Group A (16GB)	Group B (16GB)	
SD	10:20:20	10:20:20	20:41:15
1080i/Slow 1080p	2:04:04	2:04:04	4:08:08
Fast 1080p	1:02:02	1:02:02	2:04:04
720p	2:20:13	2:20:13	4:39:09
Audio	6:14:10	6:14:10	12:28:20
SD Frames	15520	15520	31040
HD 1080 Frames	3104	3104	6208
HD 720 Frames	6984	6984	13968
Audio Frames	558720	558720	1117440
Chunks	388	388	776
48Gb 20 Outputs			Total
Allocation Format	Group A (32GB)	Group B (16GB)	
SD	20:41:15	10:20:20	31:02:05
1080i/Slow 1080p	4:08:08	2:04:04	6:12:12
Fast 1080p	2:04:04	1:02:02	3:06:06
720p	4:39:09	2:20:13	6:59:24
Audio	12:28:20	6:14:10	18:42:30
SD Frames	31040	15520	46560
HD 1080 Frames	6208	3104	9312
HD 720 Frames	13968	6984	20952
Audio Frames	1117440	558720	1676160
Chunks	776	388	1164
64Gb 20 Outputs			Total
Allocation Format	Group A (32GB)	Group B (32GB)	
SD	20:41:15	20:41:15	41:22:30
1080i/Slow 1080p	4:08:08	4:08:08	8:16:16
Fast 1080p	2:04:04	2:04:04	4:08:08
720p	4:39:09	4:39:09	9:18:18
Audio	12:28:20	12:28:20	24:57:10
SD Frames	31040	31040	62080
HD 1080 Frames	6208	6208	12416
HD 720 Frames	13968	13968	27936
Audio Frames	1117440	1117440	2234880
Chunks	776	776	1552

59.94			
16Gb 10 Outputs			Total
Allocation Format	Group A (16GB)	Group B (0GB)	
SD	10:08:14	00:00:00	10:08:14
1080i/Slow 1080p	1:43:16	00:00:00	1:43:16
Fast 1080p	00:51:38	00:00:00	00:51:38
720p	1:56:30	00:00:00	1:56:30
Audio	6:14:10	00:00:00	6:14:10
SD Frames	18236	0	18236
HD 1080 Frames	3104	0	3104
HD 720 Frames	6984	0	6984
Audio Frames	558720	0	558720
Chunks	388	0	388
32Gb 10 Outputs			Total
Allocation Format	Group A (32GB)	Group B (0GB)	
SD	20:16:28	00:00:00	20:16:28
1080i/Slow 1080p	3:27:04	00:00:00	3:27:04
Fast 1080p	1:43:16	00:00:00	1:43:16
720p	3:53:00	00:00:00	3:53:00
Audio	12:28:20	00:00:00	12:28:20
SD Frames	36472	0	36472
HD 1080 Frames	6208	0	6208
HD 720 Frames	13968	0	13968
Audio Frames	1117440	0	1117440
Chunks	776	0	776
32Gb 20 Outputs			Total
Allocation Format	Group A (16GB)	Group B (16GB)	
SD	10:08:14	10:08:14	20:16:28
1080i/Slow 1080p	1:43:16	1:43:16	3:27:04
Fast 1080p	00:52:13	00:52:13	1:43:16
720p	1:56:30	1:56:30	3:53:00
Audio	6:14:10	6:14:10	12:28:20
SD Frames	18236	18236	36472
HD 1080 Frames	3104	3104	6208
HD 720 Frames	6984	6984	13968
Audio Frames	558720	558720	1117440
Chunks	388	388	776
48Gb 20 Outputs			Total
Allocation Format	Group A (32GB)	Group B (16GB)	
SD	20:16:28	10:08:14	30:24:12
1080i/Slow 1080p	3:27:04	1:43:16	5:10:20
Fast 1080p	1:43:16	00:52:13	2:35:29
720p	3:53:00	1:56:30	5:49:30
Audio	12:28:20	6:14:10	18:42:30
SD Frames	36472	18236	54708
HD 1080 Frames	6208	3104	9312
HD 720 Frames	13968	6984	20952
Audio Frames	1117440	558720	1676160
Chunks	776	388	1164
64Gb 20 Outputs			Total
Allocation Format	Group A (32GB)	Group B (32GB)	
SD	20:16:28	20:16:28	40:33:26
1080i/Slow 1080p	3:27:04	3:27:04	6:54:08
Fast 1080p	1:43:16	1:43:16	3:27:02
720p	3:53:00	3:53:00	7:46:00
Audio	12:28:20	12:28:20	24:57:10
SD Frames	36472	36472	72944
HD 1080 Frames	6208	6208	12416
HD 720 Frames	13968	13968	27936
Audio Frames	1117440	1117440	2234880
Chunks	776	776	1552

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).

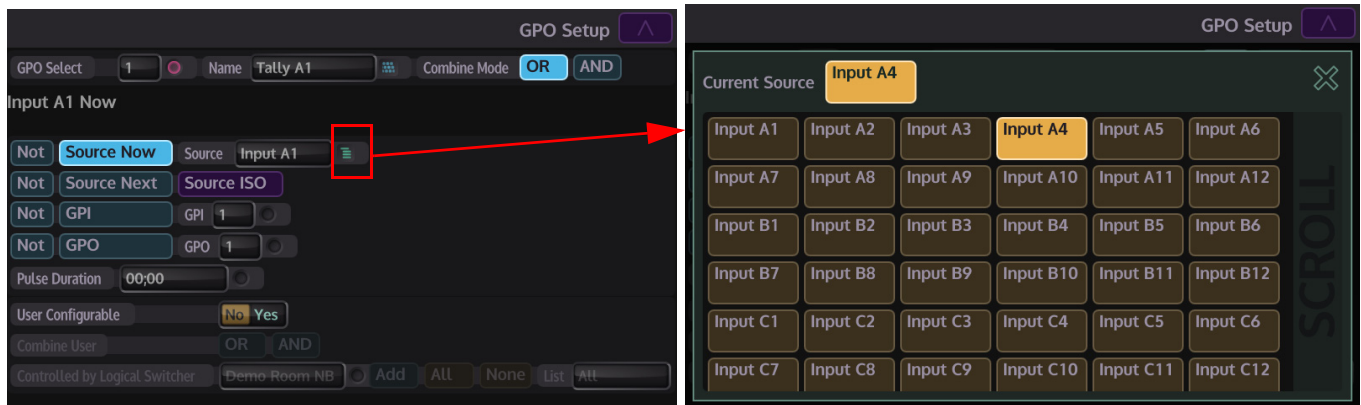
This is a "source" based GPO setup menu, meaning that it is used to tally on sources coming into the Kahuna mainframe.

The physical relay tallies 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

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 None List All

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

The screenshot shows the 'GPO Setup' window. At the top, there's a 'GPO Select' dropdown set to '1', a 'Name' field with 'Tally A1', and a 'Combine Mode' section with 'OR' and 'AND' buttons. Below this is the 'Input A1 Now' section, which includes a 'Not' button and a 'Source Now' button. The 'Source' field is set to 'Input A1'. There are also 'Source Next' and 'Source ISO' buttons. Below these are 'GPI' and 'GPO' buttons, each with a 'Not' button and a value of '1'. The 'Pulse Duration' is set to '00:00'. The 'User Configurable' section has 'No' and 'Yes' buttons, with 'Yes' being selected. The 'Combine User' section has 'OR' and 'AND' buttons. The 'Controlled by Logical Switcher' section has a dropdown set to 'Demo Room NB' and buttons for 'Add', 'All', 'None', 'List', and '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.

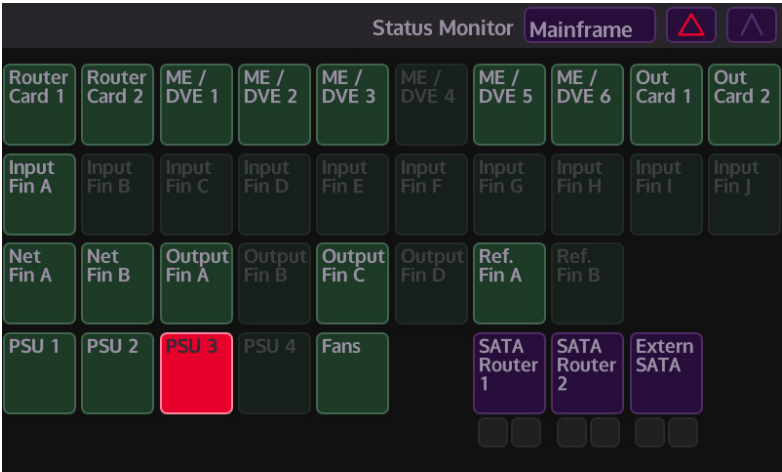
Make sure that the **User Configurable** parameter is set to “**Yes**”. Notice that the “Controlled by Logical Switcher” **{Add}**, **{All}** and **{None}** buttons come alive. The **Controlled by Logical Switcher** parameter can be adjusted to select a logical switcher.

If **{All}** is selected, then all GPOs are selected. If **{None}** is selected then no GPOs are selected.

Status Monitor

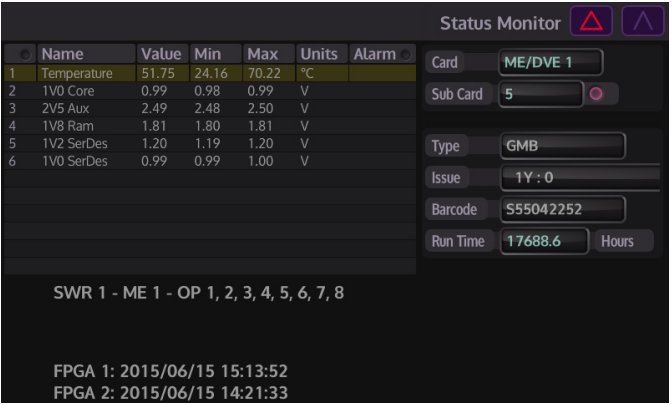
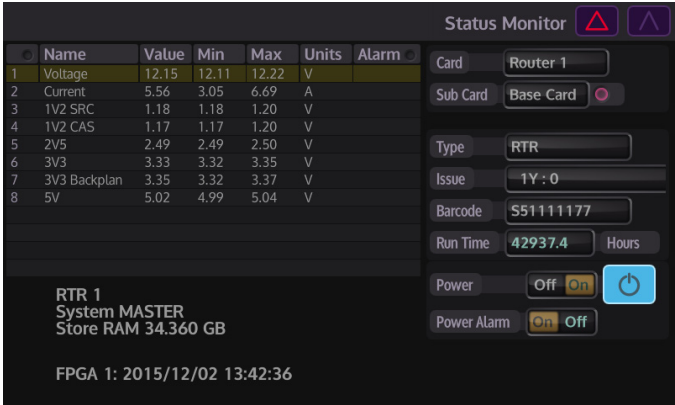
The Status Monitor function monitors the overall health of the mainframe allowing the user to easily see any problems in the unlikely event that the Kahuna mainframe should have a fault.

Note: Please also see the “Status Alert” section in the “GUI and Menu Familiarization” chapter.



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.

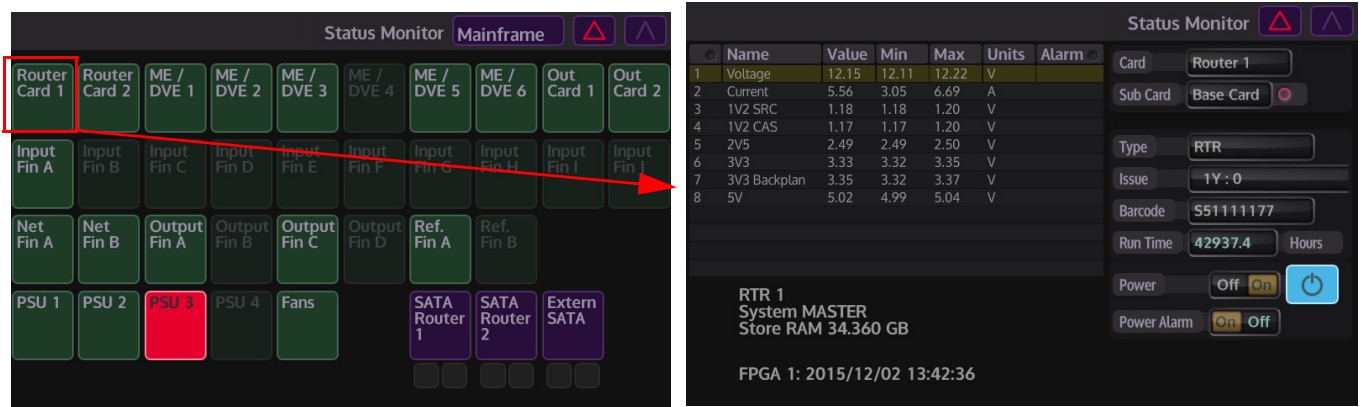
The menu will also display information related to the card, such as FPGA info, RAM (if applicable) and Card issue, Run Time and the On/Off status. Obviously this information changes depending on the type of card being looked at.



The menus above display the Base Card selected (left) and Sub Card “5” GMB status.

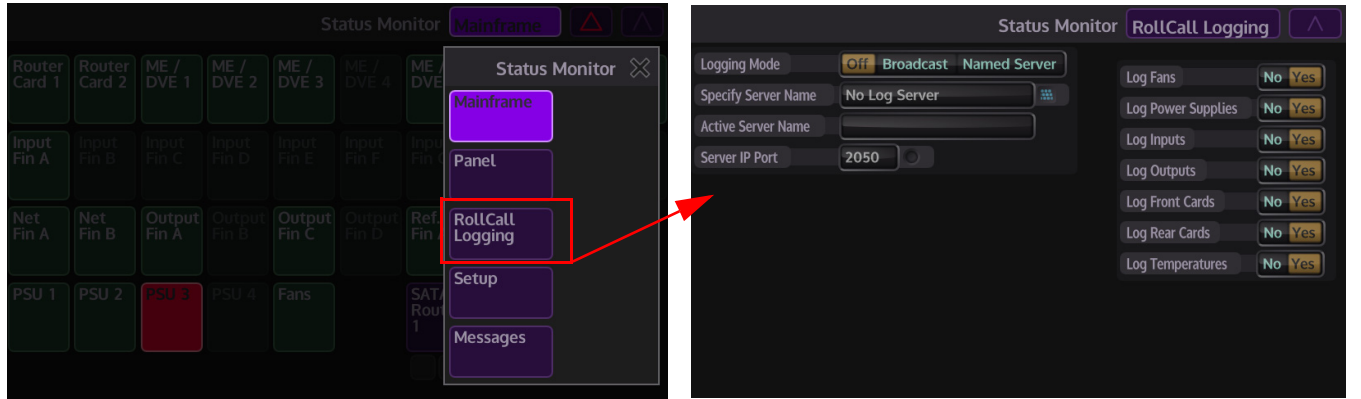
Card Selection

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).



RollCall Logging

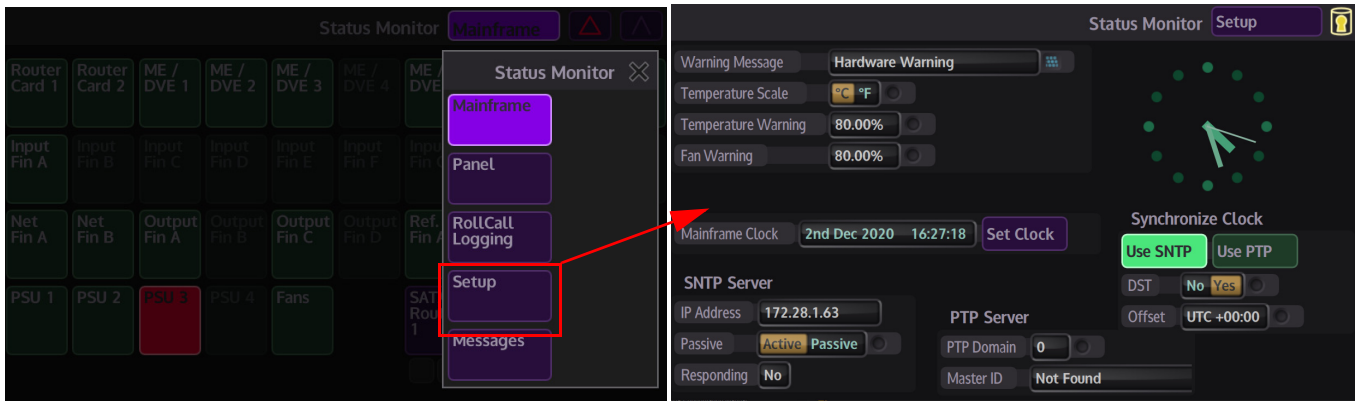
At the top of the Status Monitor main menu, touch the {Mainframe} menu link button to display the Status Monitor sub menu buttons. The RollCall Logging menu allows the user to enable/disable different data types listed in the menu, the data can be monitored by an external RollCall log server.



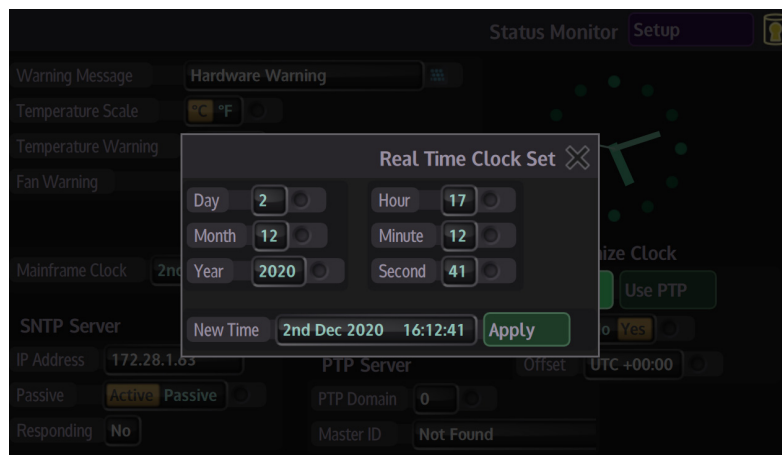
By default all of the logging data is enabled.

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.



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.



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
Time	Message
14:31:50	Insufficient Router Tie Lines
14:31:50	Insufficient Router Tie Lines
14:31:50	Insufficient Router Tie Lines
14:31:49	Insufficient Router Tie Lines
14:31:49	Insufficient Router Tie Lines
14:31:49	Insufficient Router Tie Lines
14:31:49	Insufficient Router Tie Lines
14:31:49	Insufficient Router Tie Lines
14:31:49	Insufficient Router Tie Lines
14:31:49	Insufficient Router Tie Lines
14:31:49	Insufficient Router Tie Lines
14:31:49	Insufficient Router Tie Lines
14:31:49	Insufficient Router Tie Lines
14:31:49	Insufficient Router Tie Lines
14:31:49	Insufficient Router Tie Lines
14:31:49	Insufficient Router Tie Lines
14:31:49	Insufficient Router Tie Lines
14:31:49	Insufficient Router Tie Lines
14:31:49	Insufficient Router Tie Lines
Current Time	7th Jun 2017 15:32:49

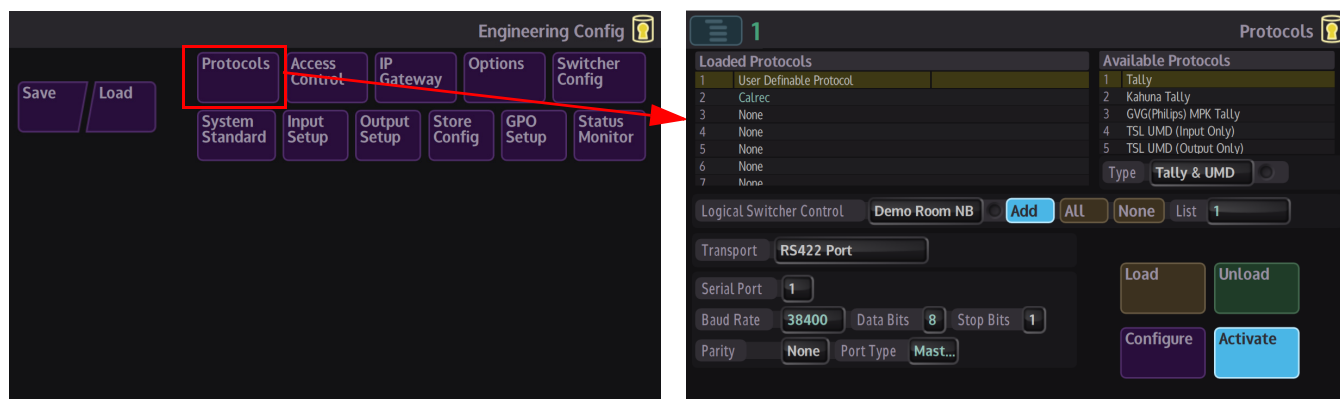
Protocols

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.

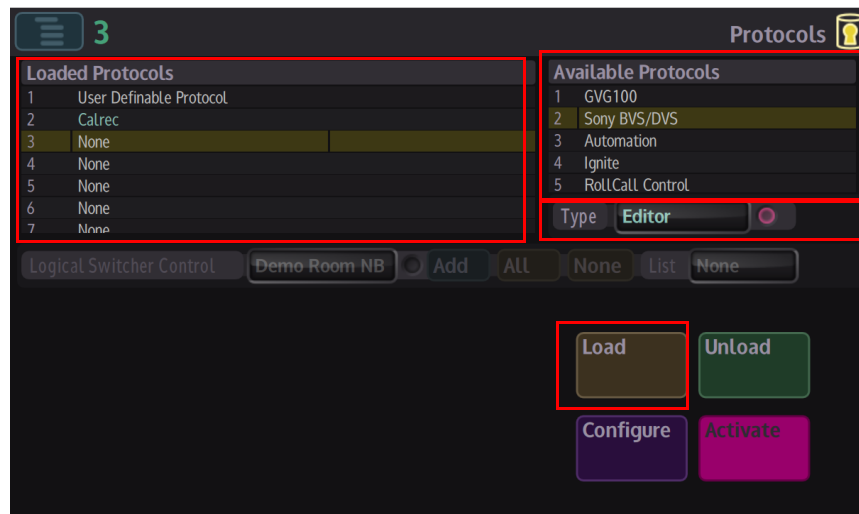
To get to the Protocols menu, in the **"Home"** menu, touch the **"Global - Configs"** menu link button, then in the **"System Configuration"** main menu, touch the **"Engineering Config"** menu link button. Finally in the Engineering Config menu, touch the **"Protocols"** menu link button.



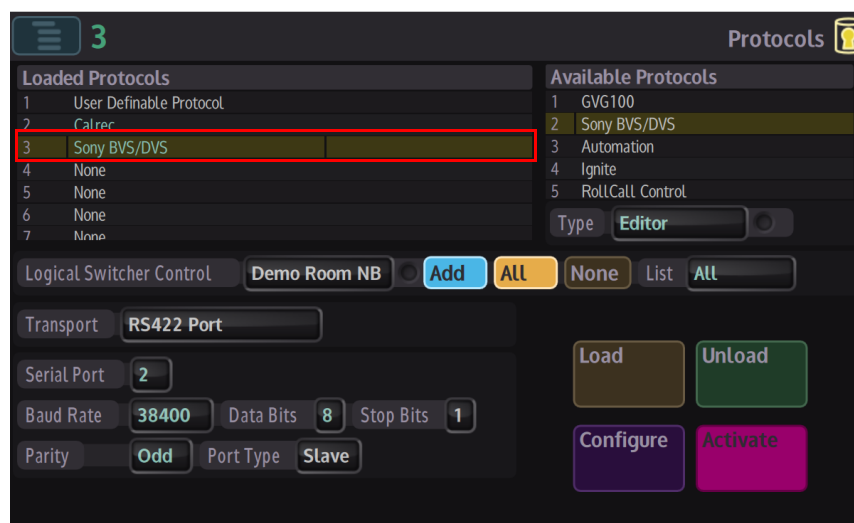
The next step is to setup the protocol ready to use the required Peripheral.

The method for setting up a protocol is exactly the same for all protocols, which will be explained over the next couple of pages.

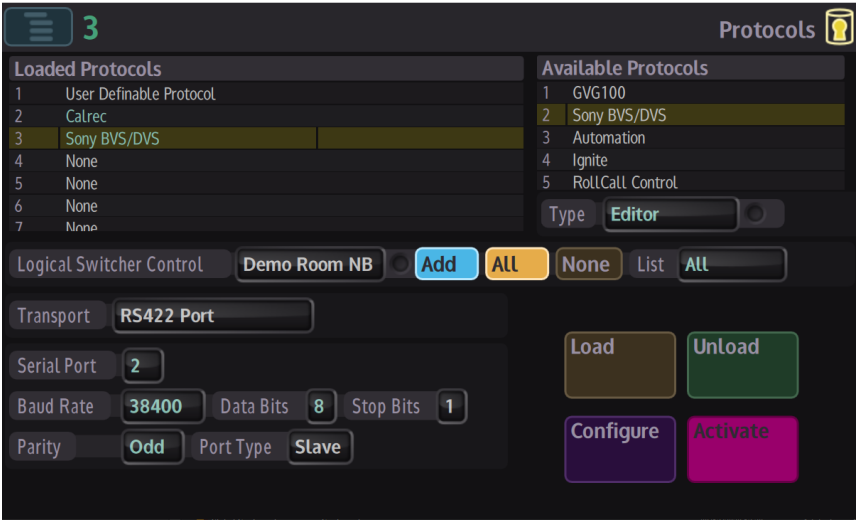
How to Setup a Protocol



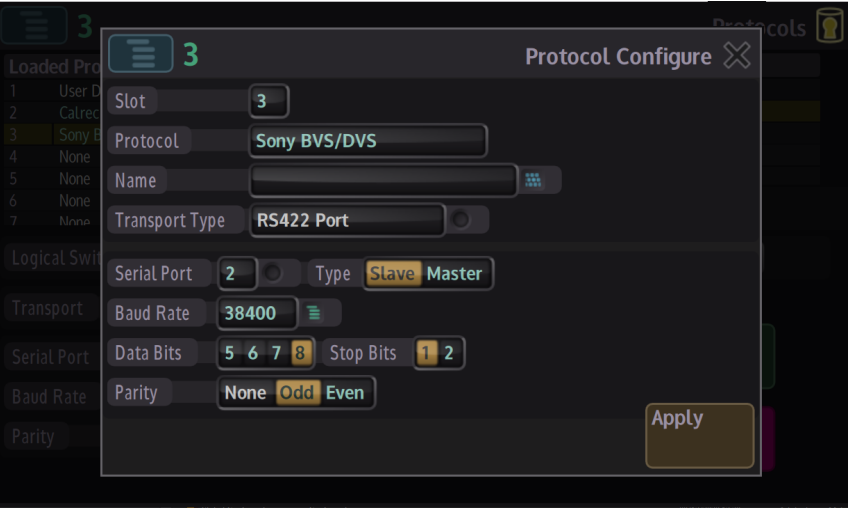
Use the “**Type**” parameter is used to scroll through the protocol sets to the required protocols. Then touch the **Available Protocols** parameter to select a protocol from the list, if there are more protocols, use a finger to scroll down/up the list of protocols. The number of protocols available 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).



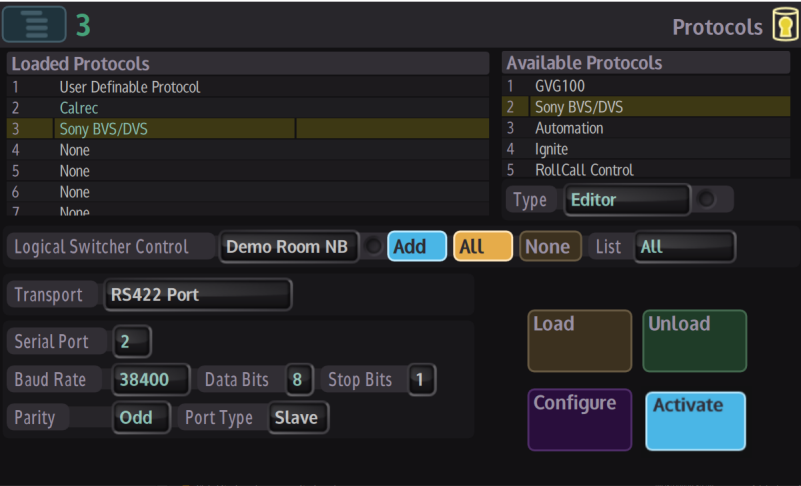
The next step is to configure the protocol.



Touch the **{Configure}** menu link button to enter the “**Protocol Configure**” menu.

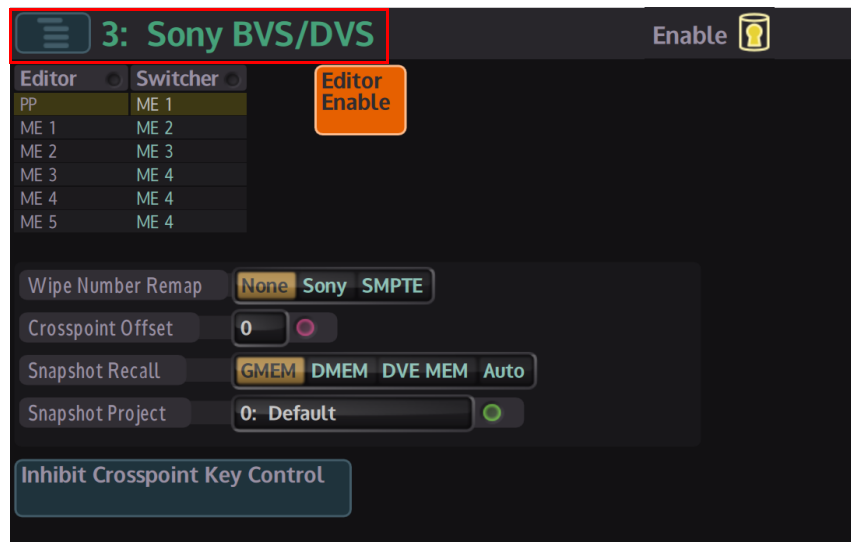


The user is able to select the type of connection to the external equipment that is required, using the “**Transport Type**” parameter i.e Serial or IP.
If a specific setup is needed, the user is able to setup the protocol using the parameters in this menu, as shown above. When the parameters have been set correctly press the **{Apply}** button. The menu will now return to the main menu.



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.



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.

ID	Name	Enabled	Full Control
1	Ken	Yes	Yes
2	User	Yes	Yes
3	Simon Eng	Yes	Yes
4	Simon Power User	Yes	Yes
5	Simon User	Yes	Yes
6	User 6	Yes	No
7	User 7	Yes	Yes
8	Richard	Yes	Yes

New User ID: Next Free
New Icon: 0
Enable: No Yes
Name: Ken
Comments:
Password: No password

Create User Delete User
Update Icon Delete Icon
Update Password Reset Password Control Rights

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.

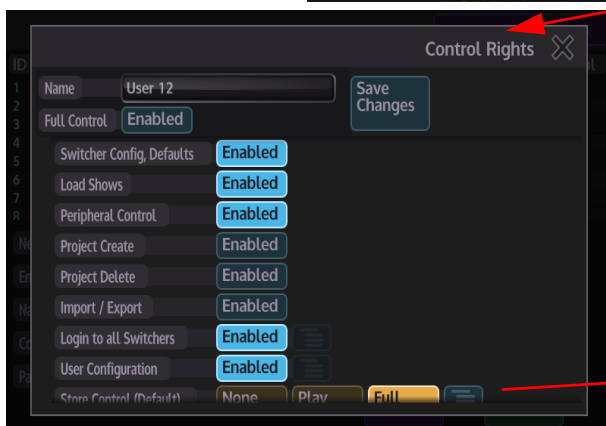
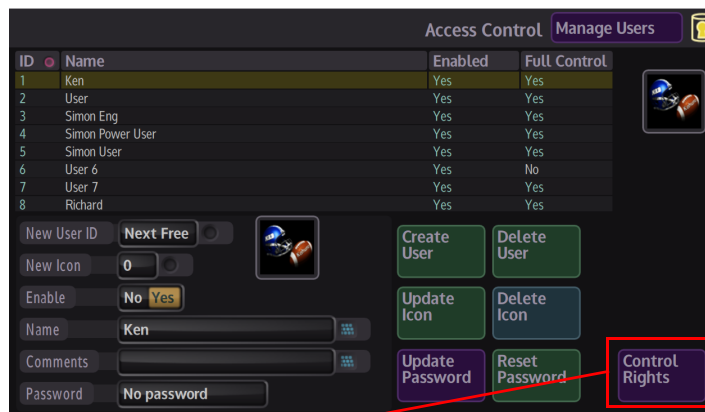
Enter new password

1 2 3
4 5 6
7 8 9
← 0 Next

An "Icon" can be selected to associate with a user. Use the "Icon" 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 their 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.

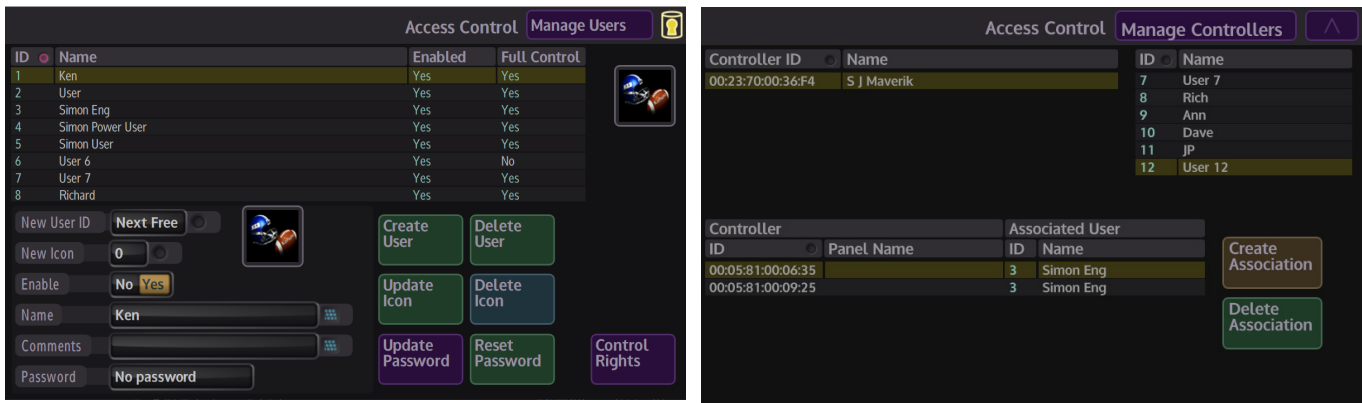
Access control can be limited by using the **{Enabled}** button next to the options running down the menu.

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.



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.

#	Gateway	Destination Network
0		
1		
2		
3		
4		
5		
6		
7		

IP Address of Gateway: 0.0.0.0 / 0

IP Address of Destination: 0.0.0.0 / 0

Add Gateway Remove Gateway

Ping Time: 0.0 us 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:

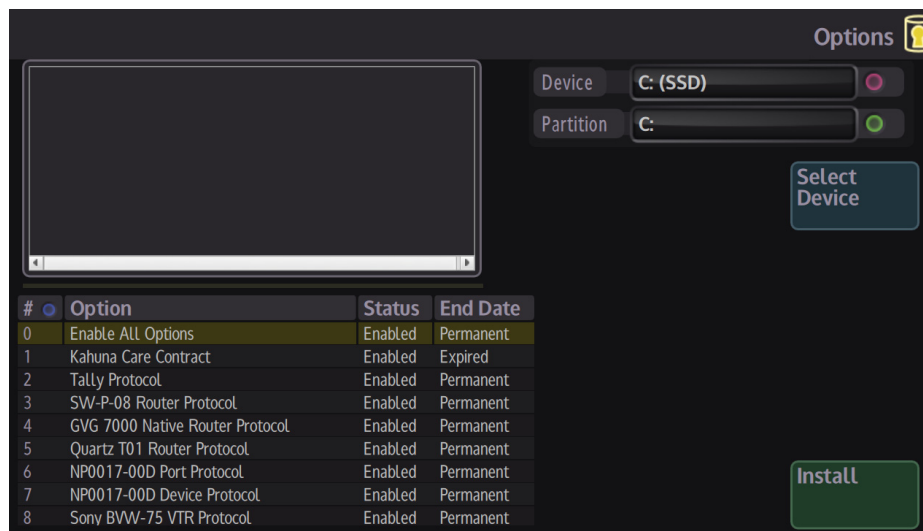
"Good" **"Fair"** may give occasional "Lumpy" controls

"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.

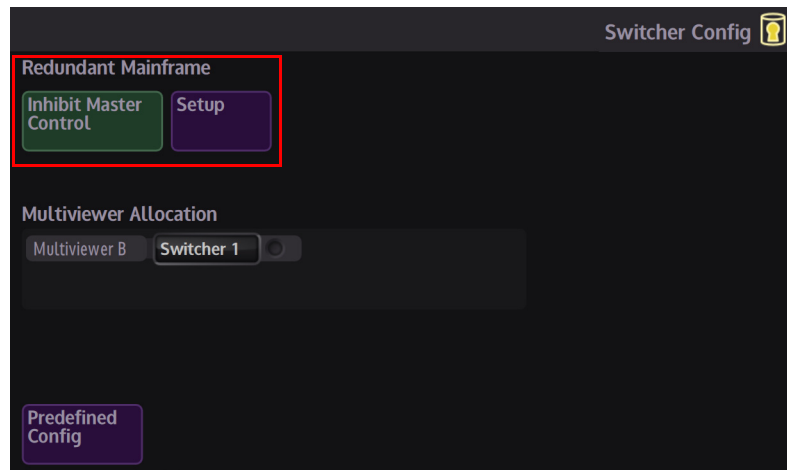
Touch to select the new option file, finally press **{Install}** and the option file will be installed into the mainframe.

After installing a new option, the mainframe has to be re-booted.

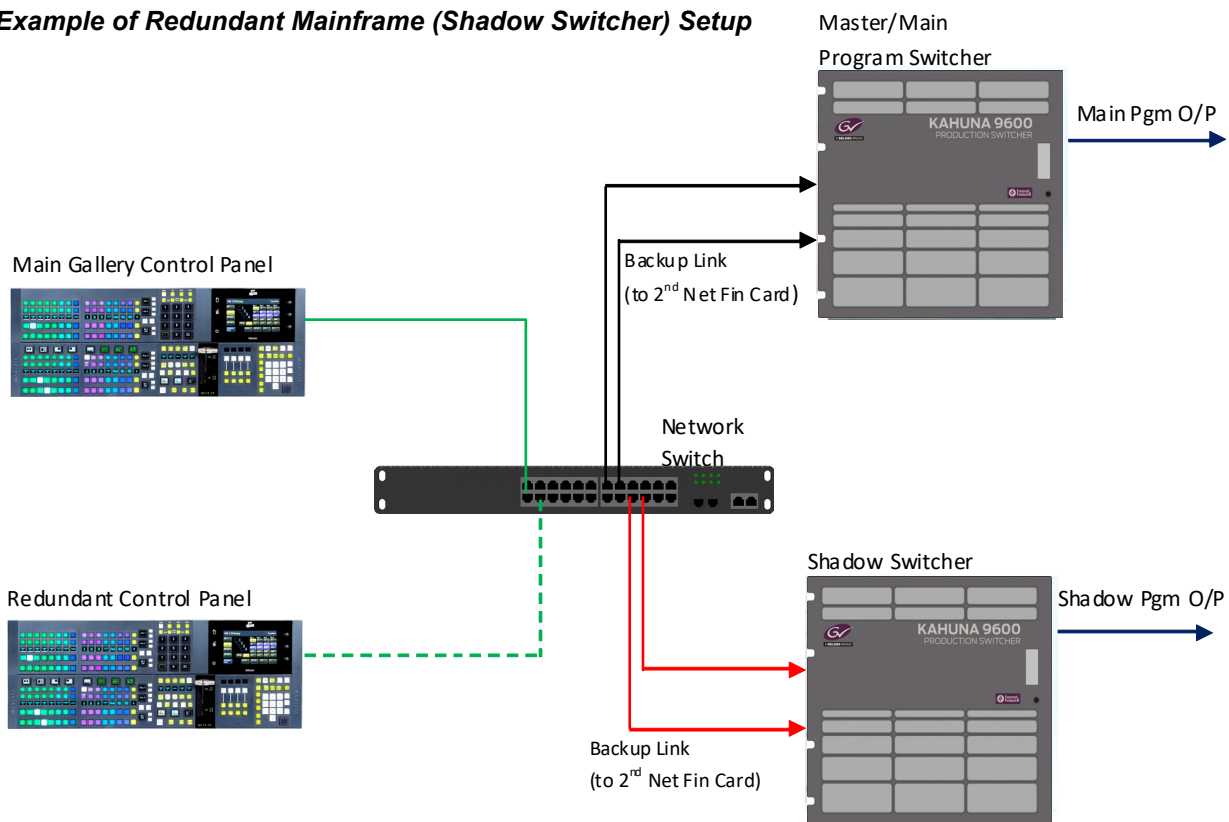
Redundant Mainframe

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



Example of Redundant Mainframe (Shadow Switcher) Setup

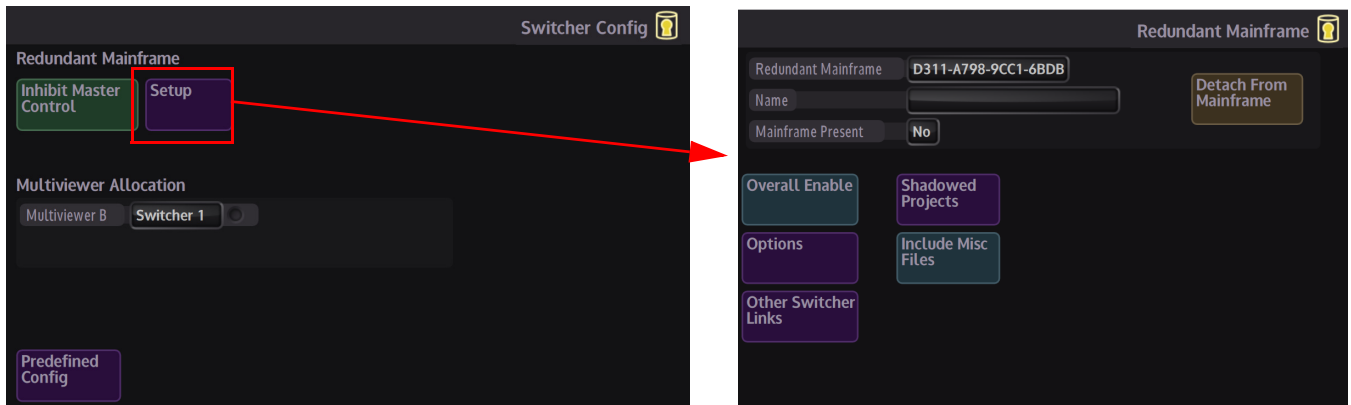


The diagram on the previous page is an example that shows a Maverik Control Panel in the main gallery connected to a (customer provided) Ethernet Switch. This could be two separate Ethernet switches for redundancy. From this Switch there are two connections to the Master

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.

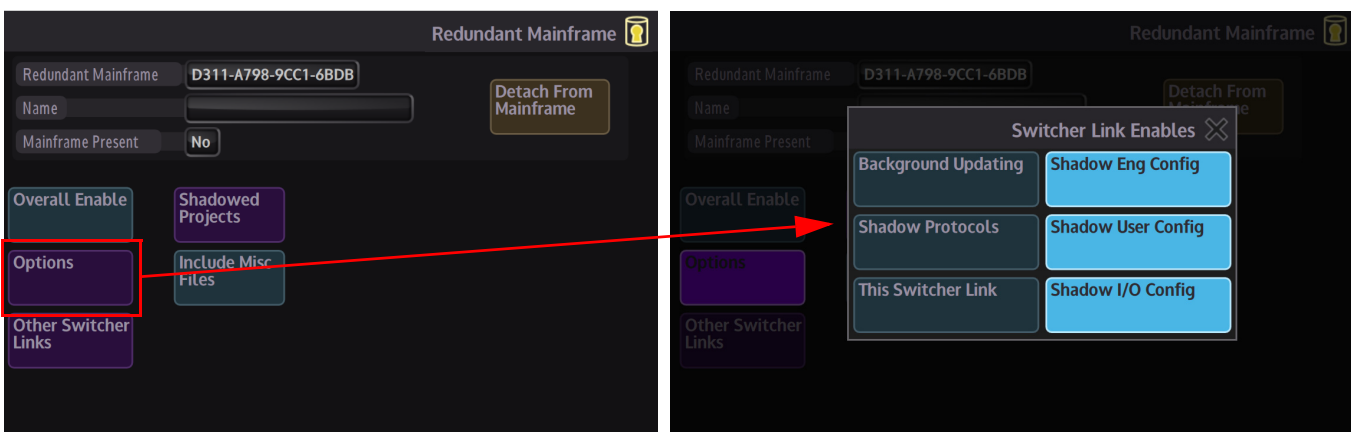
The switch has also two connections to the Shadow Switcher mainframe, again to both Net Fins. The Master switcher mainframe communicates to the Shadow Switcher via a connection through the Ethernet switch.

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.



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.

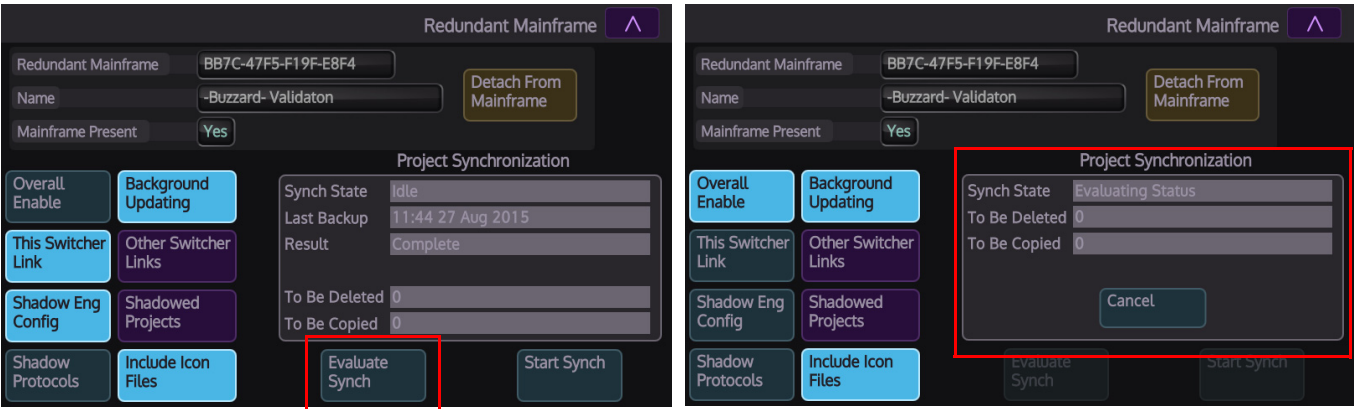
On the **Master** mainframe go to **Global - Configs - Engineering Config** menu and touch the **{Redundant Mainframe}** button. The Redundant Mainframe mainframe will display all mainframes that the master mainframe is able to see over a network, select the mainframe that will become the shadow switcher from the list and press the **{Attach To Mainframe}** button.



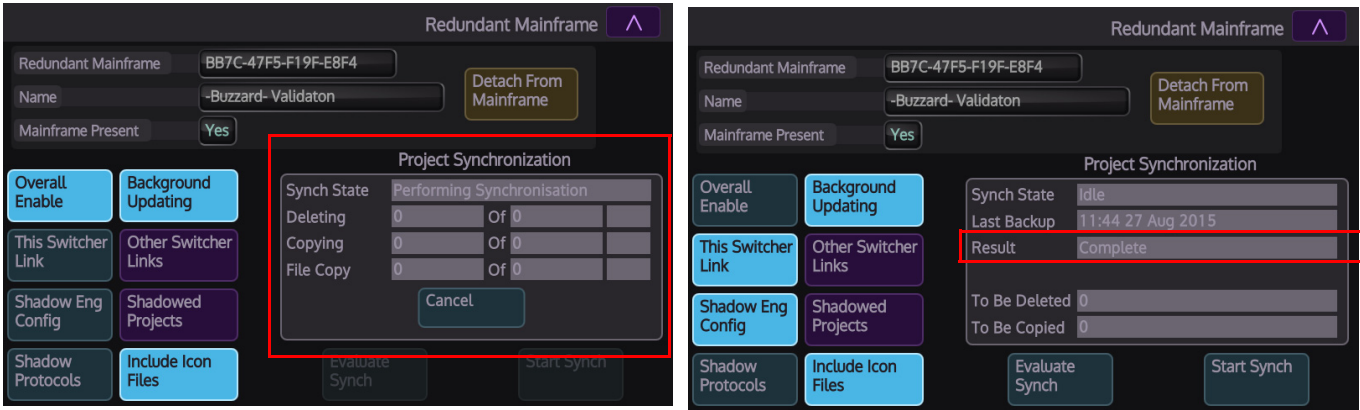
The next menu that will be displayed is the Redundant Mainframe menu, from here the user will setup the shadow switching functions as required.

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.



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.



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

Redundant Mainframe

Redundant Mainframe

BB7C-47F5-F19F-E8F4

Name

-Buzzard- Validaton

Mainframe Present

Yes

Detach From Mainframe

Overall Enable

Background Updating

This Switcher Link

Other Switcher Links

Shadow Eng Config

Shadowed Projects

Shadow Protocols

Include Icon Files

Evaluate Synch

Start Synch

Project Synchronization

Synch State

Idle

Last Backup

11:44 27 Aug 2015

Result

Complete

To Be Deleted

0

To Be Copied

0

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

Redundant Mainframe

Redundant Mainframe

BB7C-47F5-F19F-E8F4

Name

Mainframe Pre

Overall Enable

This Switcher Link

Shadow Eng Config

Shadow Protocols

Include Icon Files

Evaluate Synch

Start Synch

Switcher Link Enables

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

Other Switcher Links - select additional /multiple switcher links to be enabled

Shadow Eng Config - Enables Eng Config loaded on the master to be shadowed

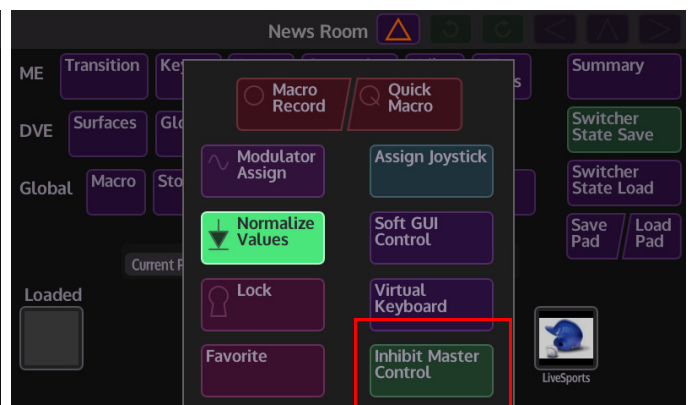
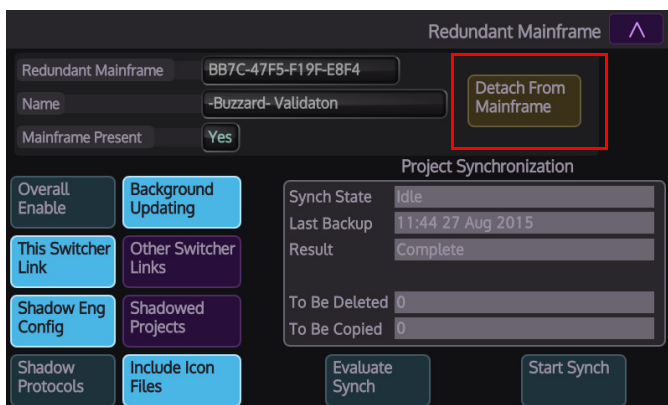
Shadowed Projects - Select which projects will be shadowed by the shadow switcher



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.

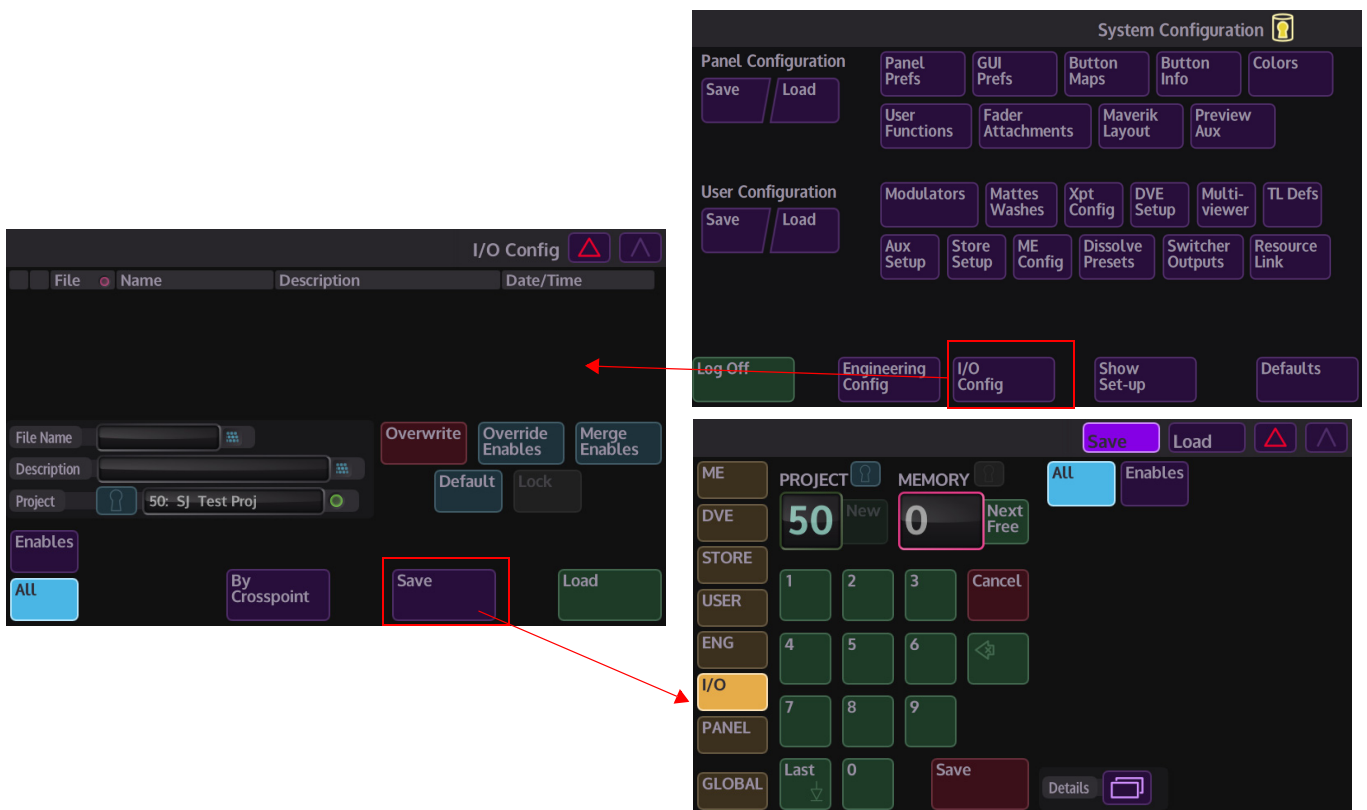


25 Global Configs - I/O Configuration

I/O Config

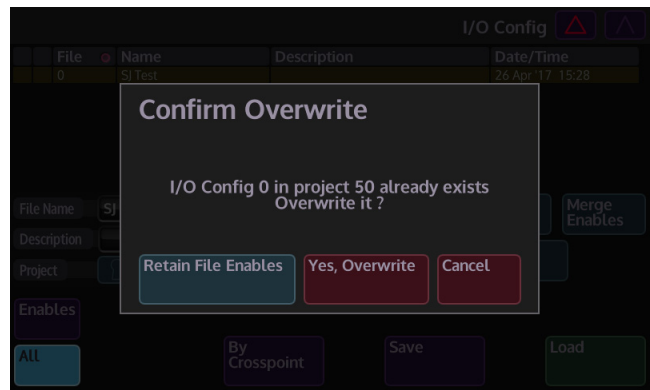
Note: A full explanation of Input/Output User Configuration features, is in the Kahuna 9600/6400 User Manual, supplied with this system.

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.



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 file will be displayed in a table in the top half of the menu), then press the {Load} button.

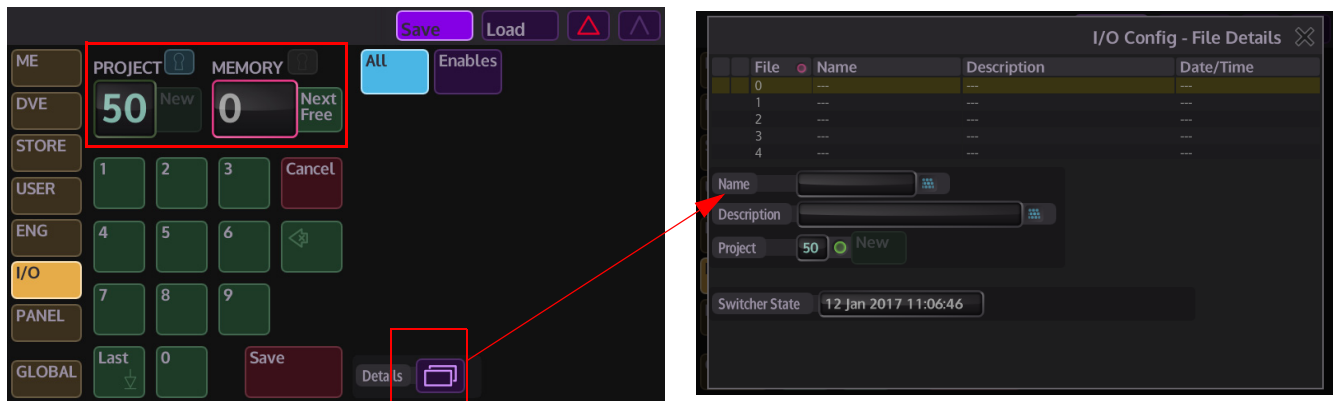
Pressing the **{Default}** button will load the default user config file.
If changes are made, press the **{Overwrite}** button to overwrite the User Config. A dialog box will appear (below) and asks the use to confirm the overwrite.



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

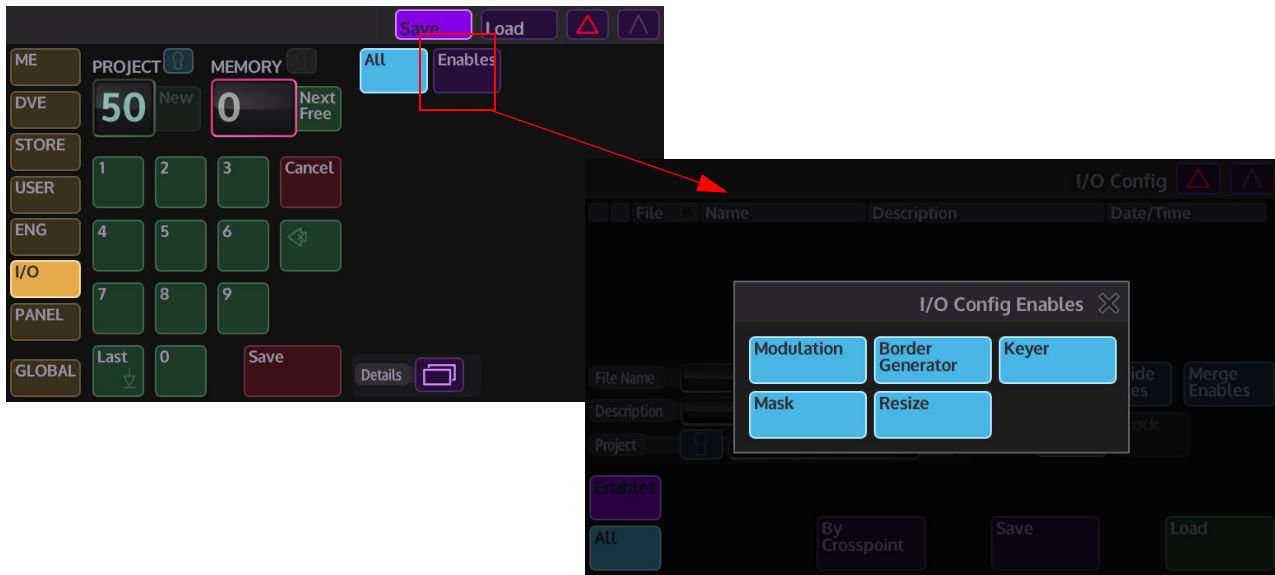
Merge Enables - this function merges the enables currently set in the switcher with the enables saved in the file is being loaded (a 'logical OR' of the enables).

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).

26

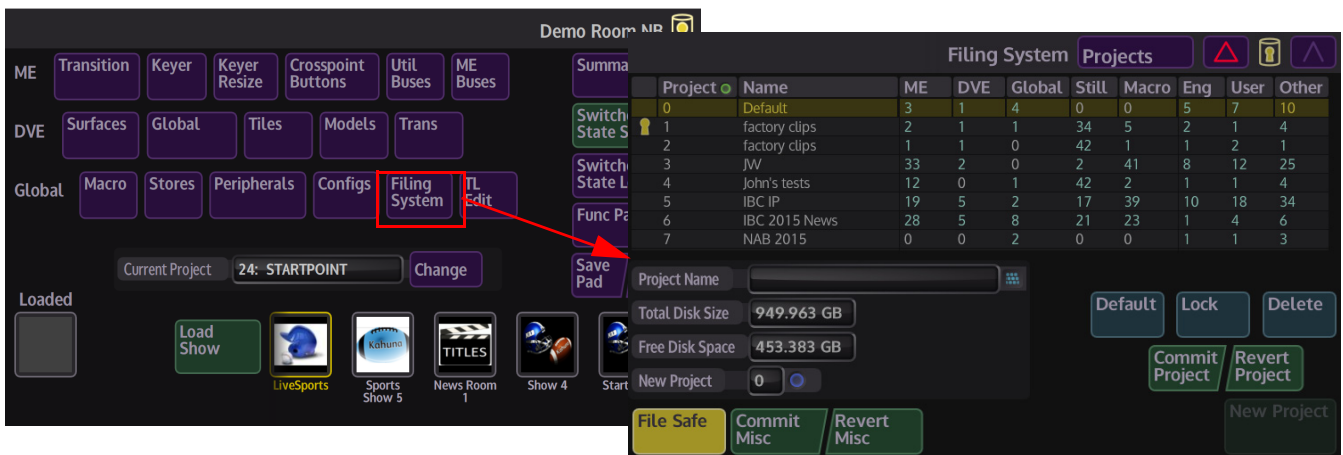
Global - Filing System

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.

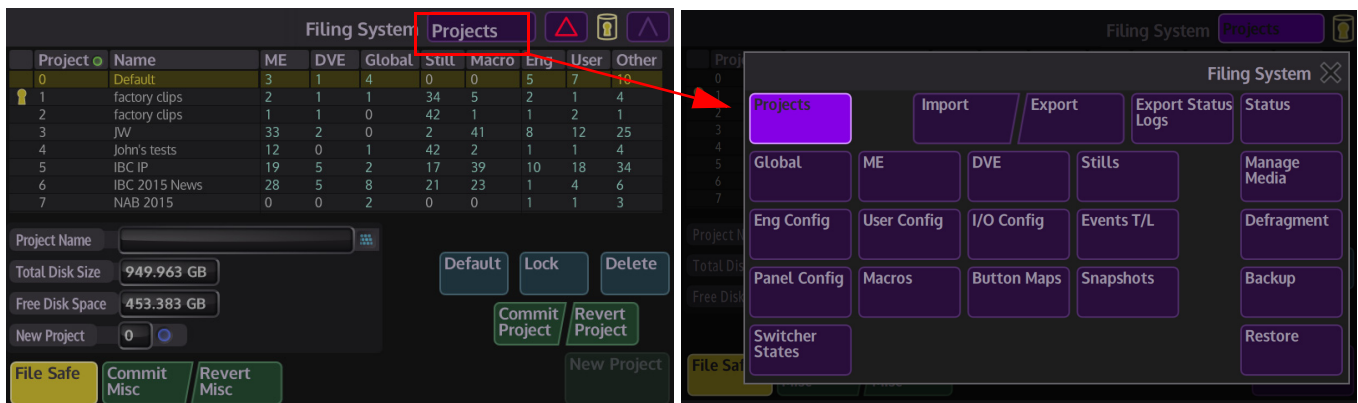
Note: Filing System menus allow the user to create a New Project file and Load, Delete, set as Default and Lock files. Files cannot be saved within these menus. Saving files is done within the individual Eng Config, User Config, Macros etc. menus.

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.



File Safe

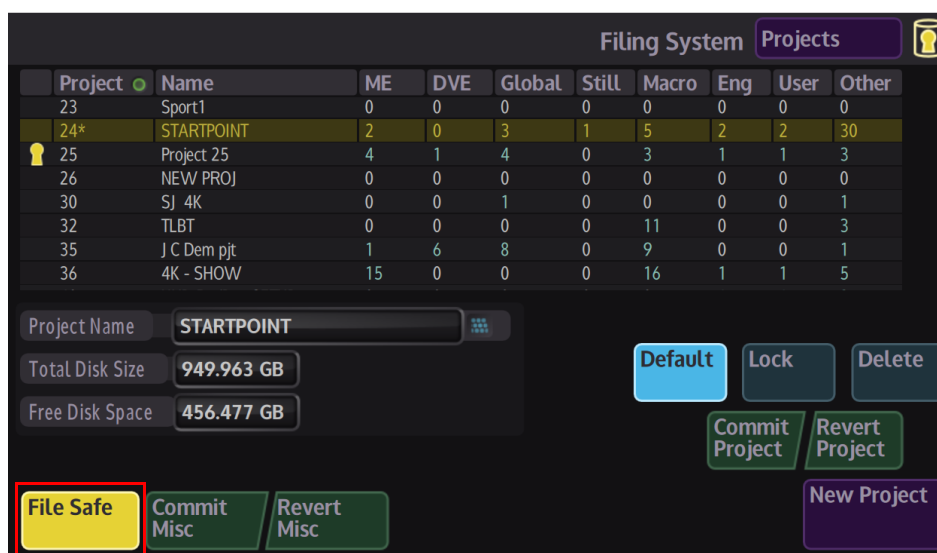
What is File Safe

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.

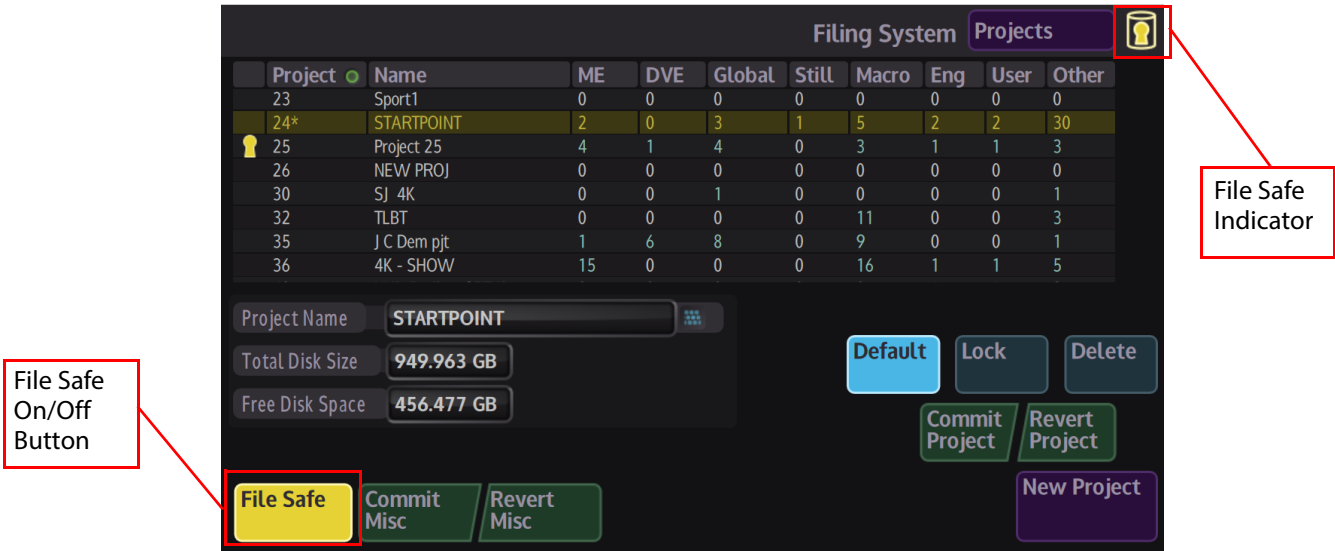
The user has the option to either Commit or Revert on a per file, per project or all files basis. File Safe is easy to setup and gives a visual indication to the user that critical setups are not being overwritten unless the user wants them to be. Then after using the system, the user can quickly go back to the original file setup.



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

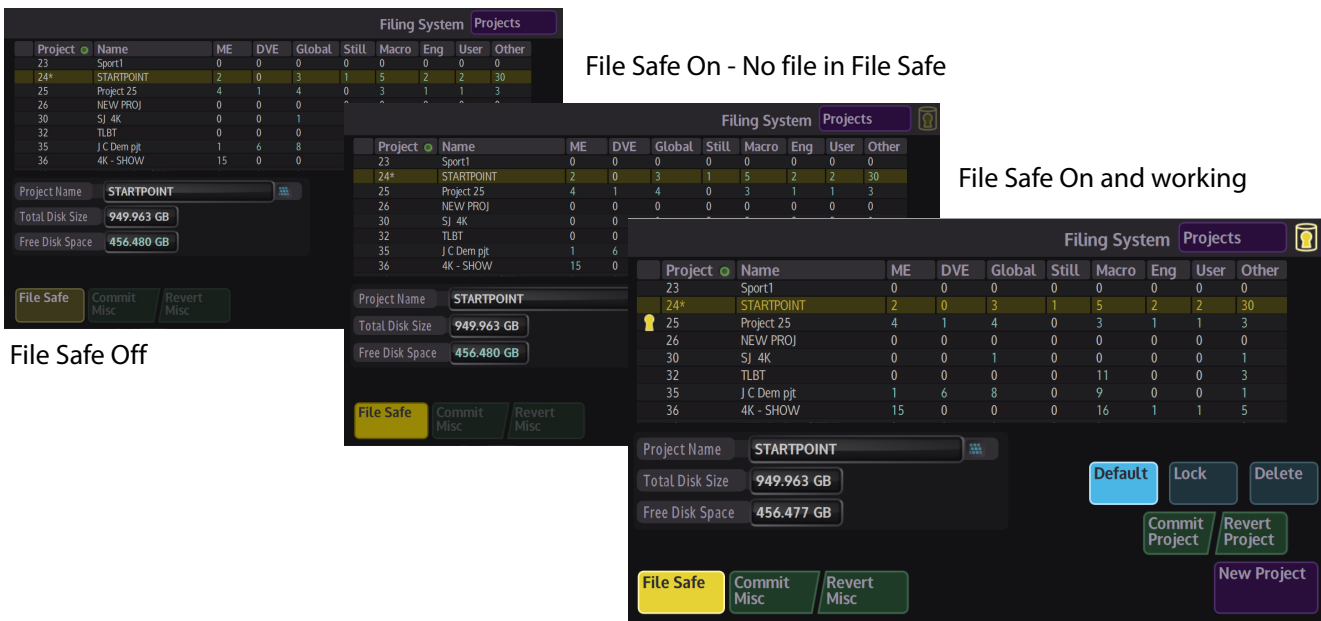
The user can select a project that contains the setup files for a “Show” and then turn File Safe “On” by touching the {File Safe} button. The button will go green and an “FS” indicator is displayed in the center top bar area of the menu. The “FS” indicator is also green indicating that File Safe is active.



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”.



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.

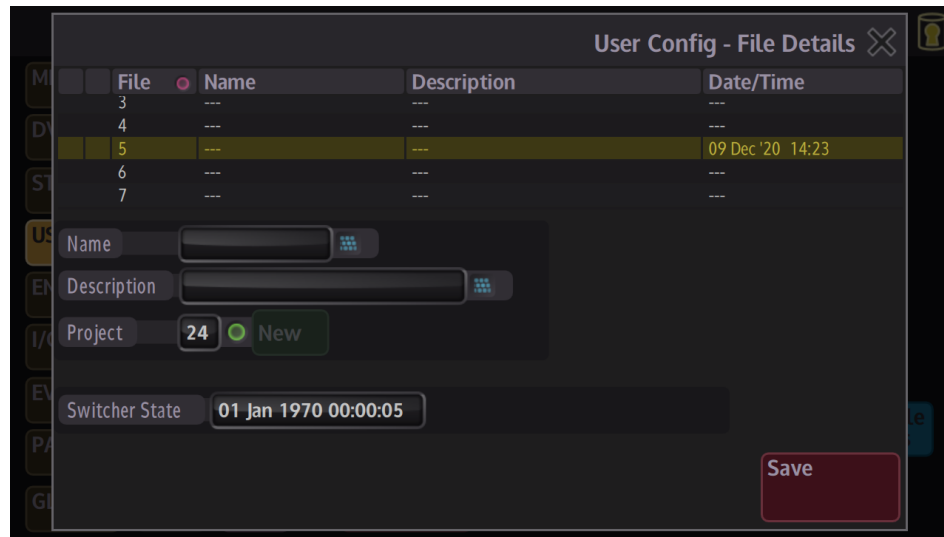
Commit Misc - Will commit Filing System changes when Commit is pressed in the pop up dialog box, any filing system changes that have been performed after File Safe has been enabled will now become the current files and the File Safe will be emptied.

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.



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.

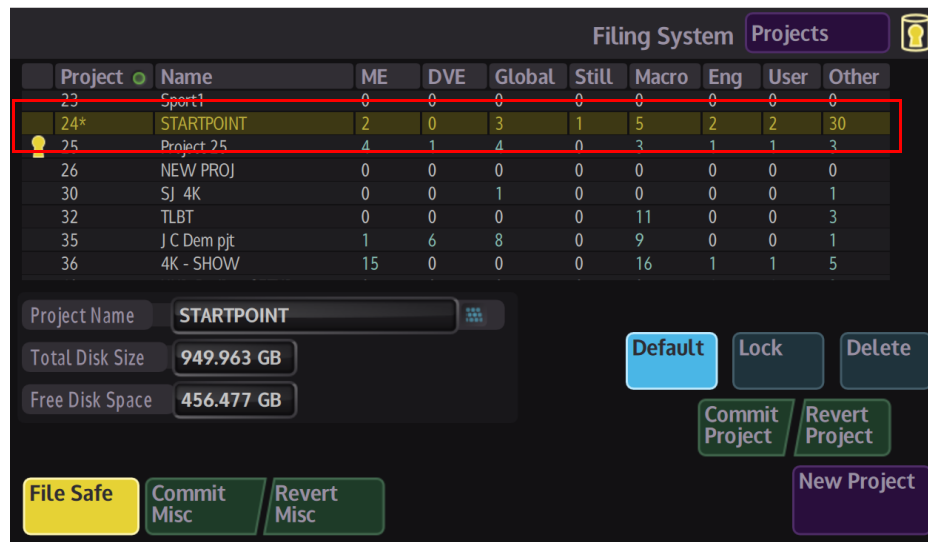
Note: This can not be undone.

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).

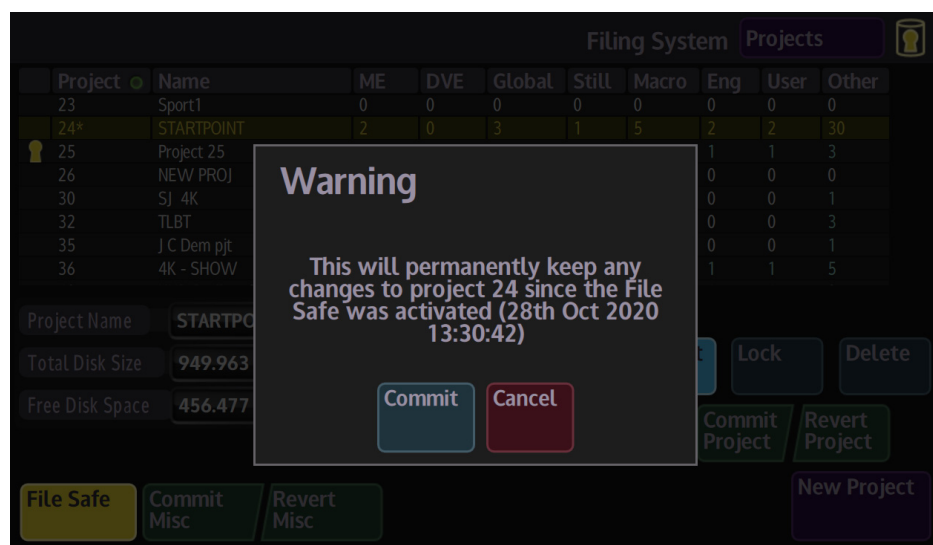
If the user commits the file, then this will now become an original file; therefore the next overwrite will copy the committed file into the File Safe.

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.



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.



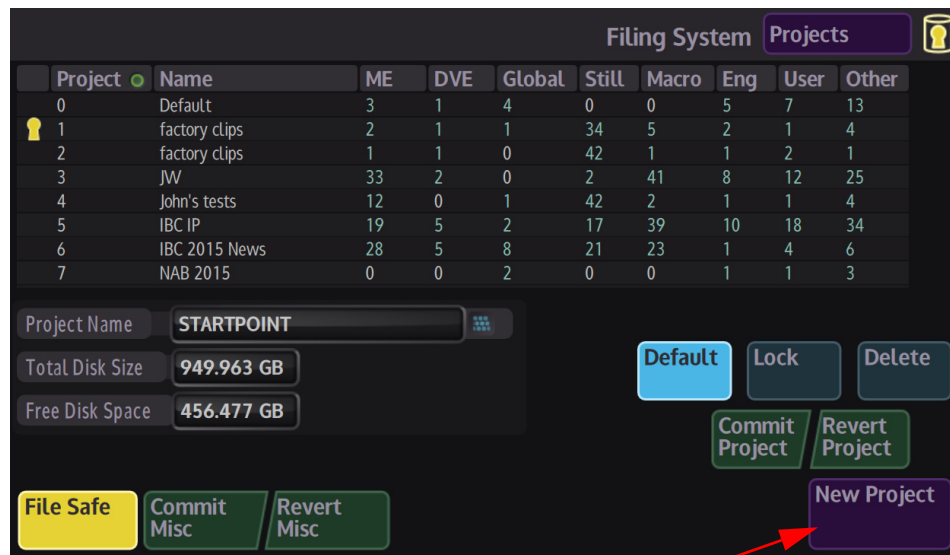
A warning dialog box will appear asking if the user really wants to commit filing system changes since File Safe was activated.

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.

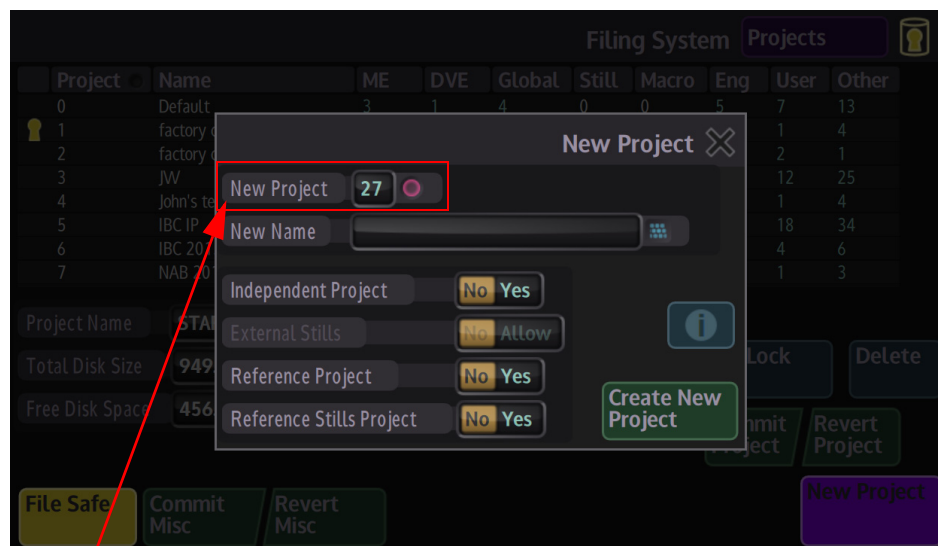
How to create a new Project

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.



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.

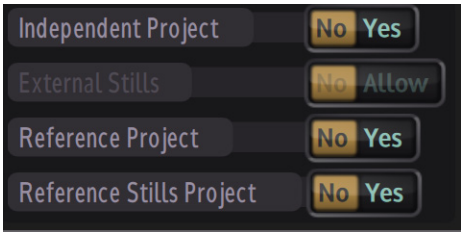


Project Number

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** - "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.

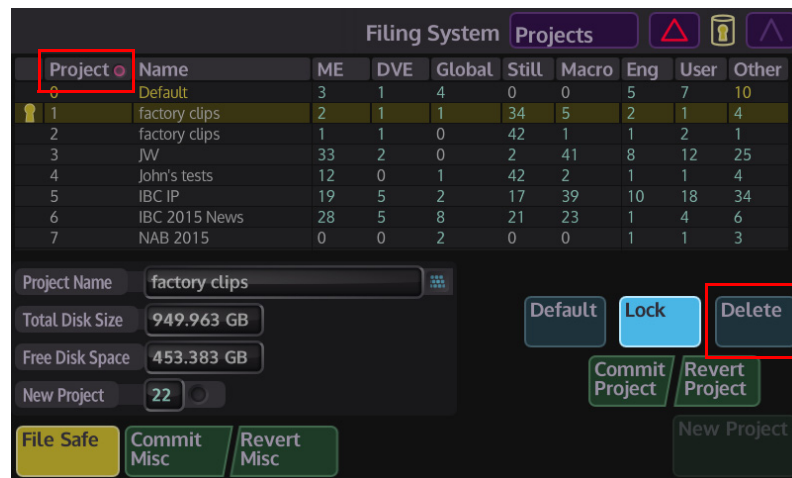
Once you have selected the type of project you want to create, you can add a name by touching the "New Name" parameter. A keyboard will be displayed allowing you to type in a name. Touch {Enter} when done.



When done, touch the {Create New Project} button, and a new project is added to the table in the main project menu.

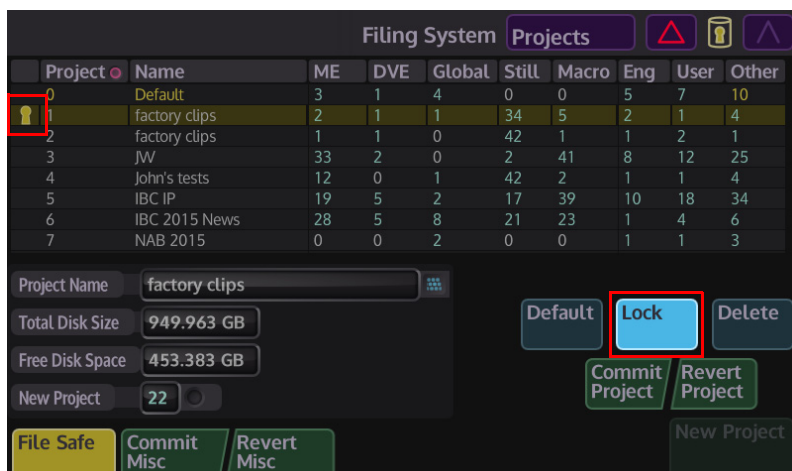
Delete a Project

To delete a project, select a project using the "Project" parameter control then press **{Delete}**. A message will appear requesting confirmation of deletion.



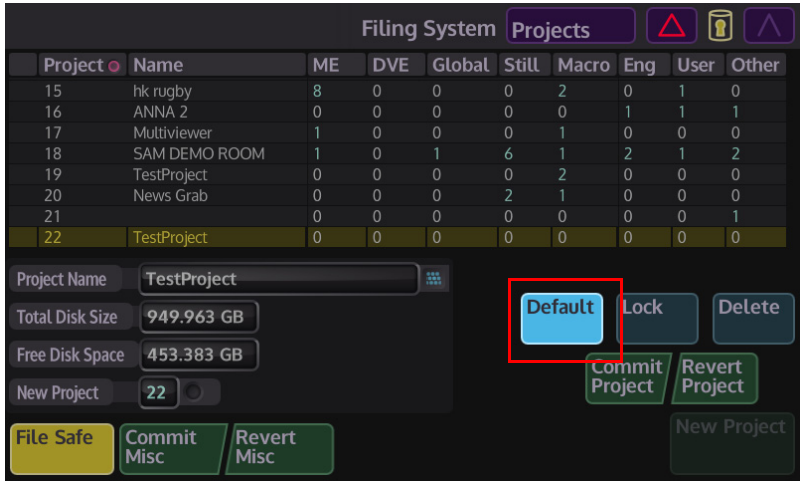
Project Locking

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.



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.

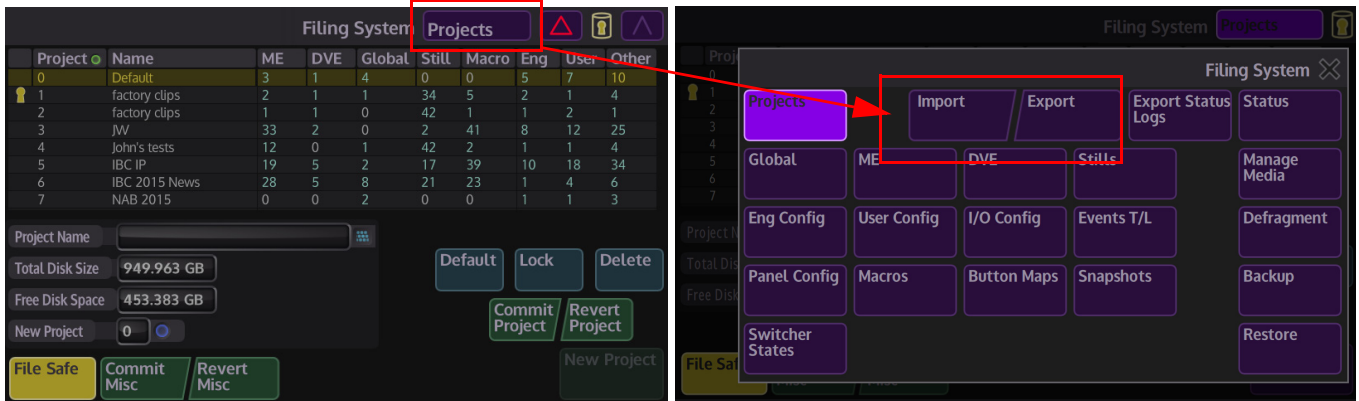


Import / Export

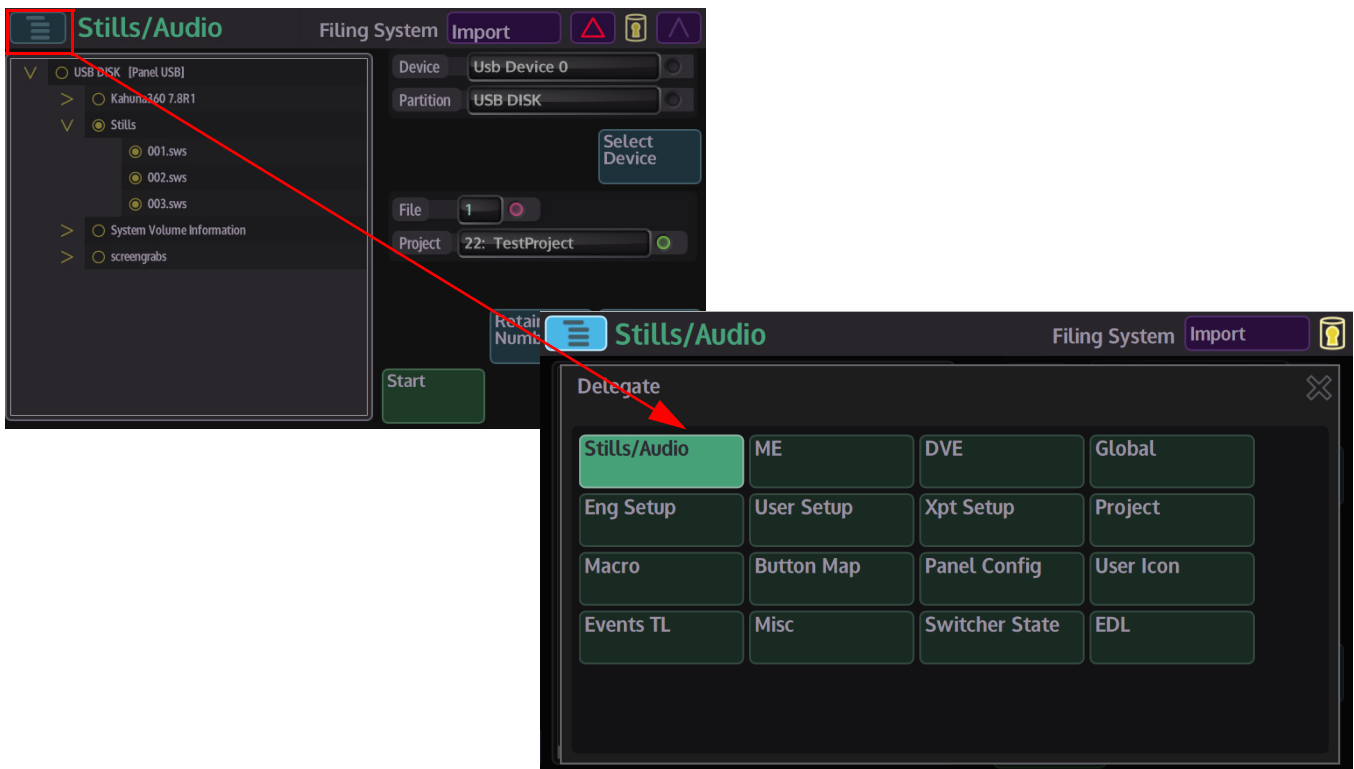
The Import/Export menus, as the name suggests are used to import/export Projects, Stills, ME and Global memory files, Macros and configurations from or to a USB/eSATA memory device.

Kahuna can Import 98 projects, and 1000 (0 - 999) Configs, Stills, Clips, Macros etc into each project.

Touch the **{Projects}** menu link button to open the Filing System options menu.

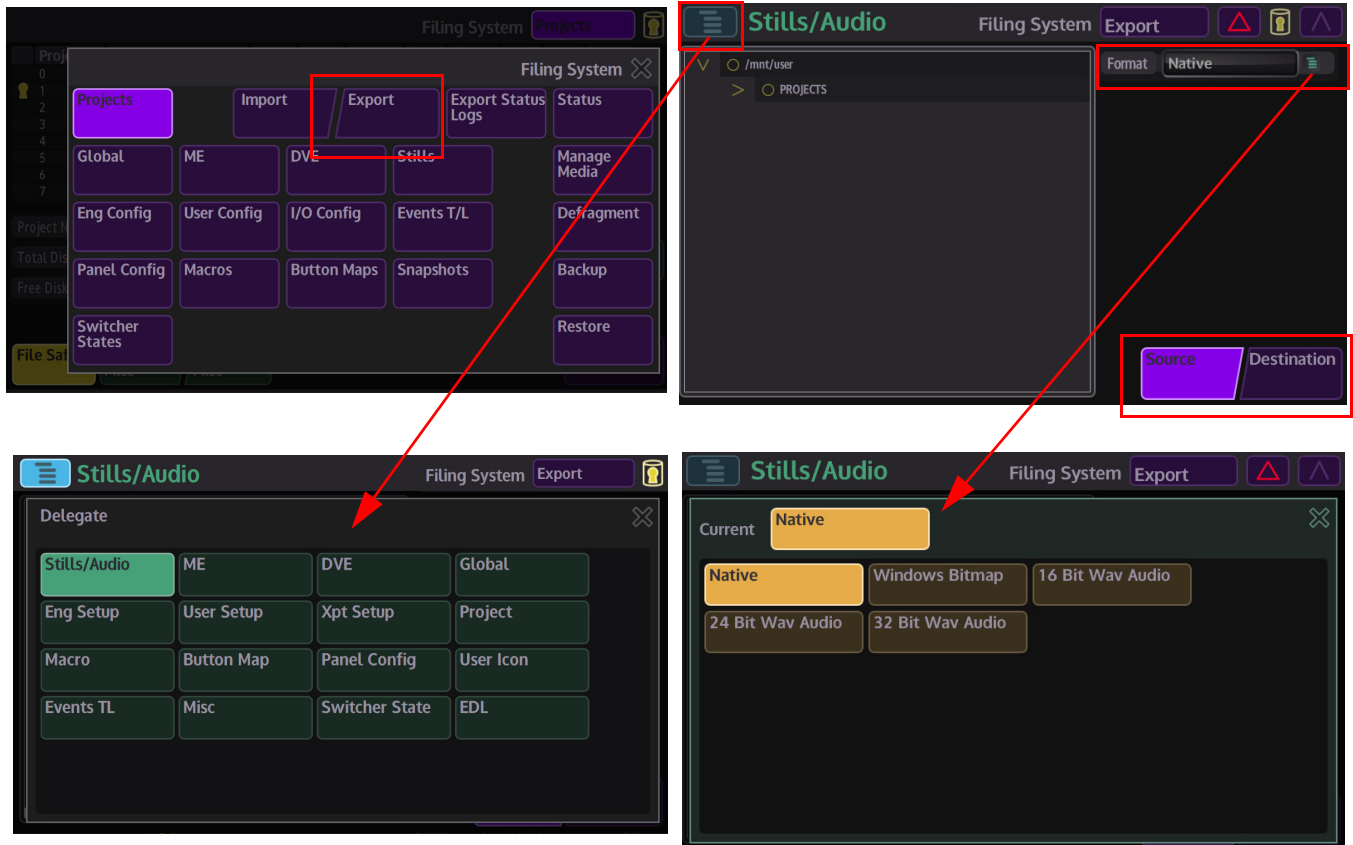


The Import and Export menus both work in the same way, where the user will select a Project or individual file to import or export, the menu displays a familiar folder structure which is easy to navigate and use. This will be explained in detail over the next few pages.

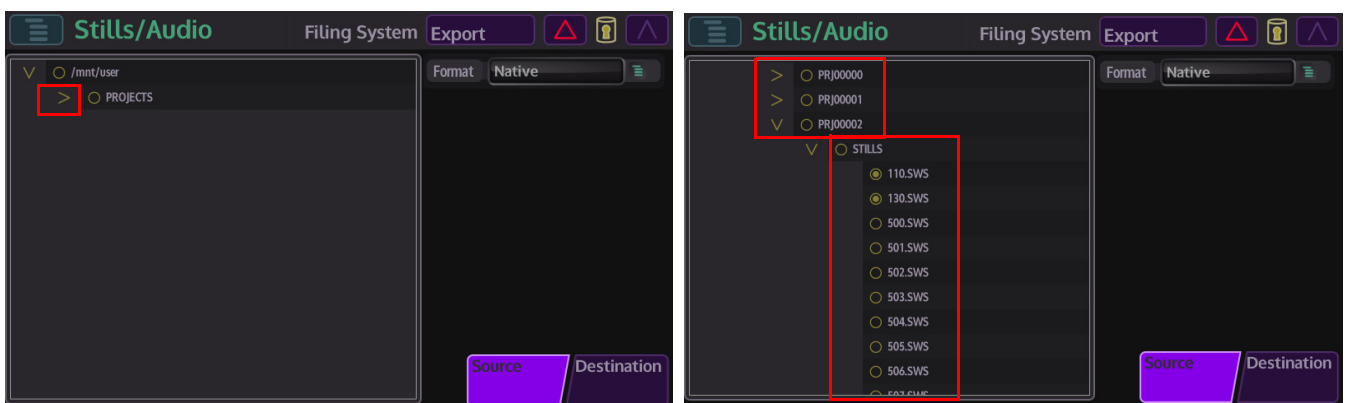


Exporting

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.

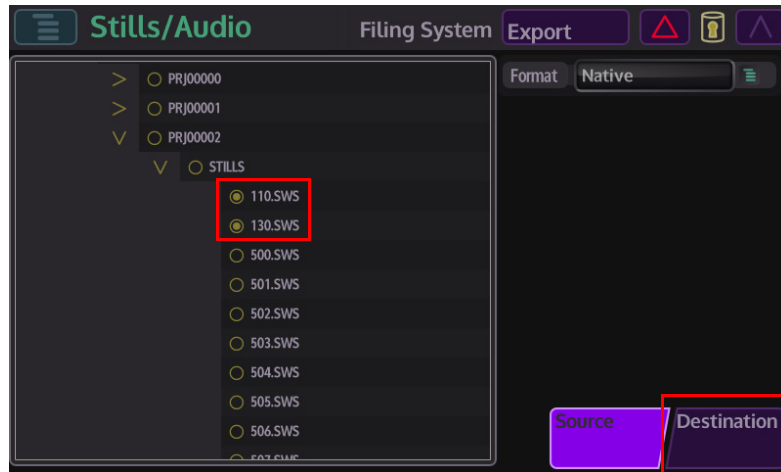


In the Export - Source menu (in this example exporting Stills), use the **"Format"** parameter (shown above) to select the type of format the files will be exported in, then touch the "x" button to go back to the Export menu.

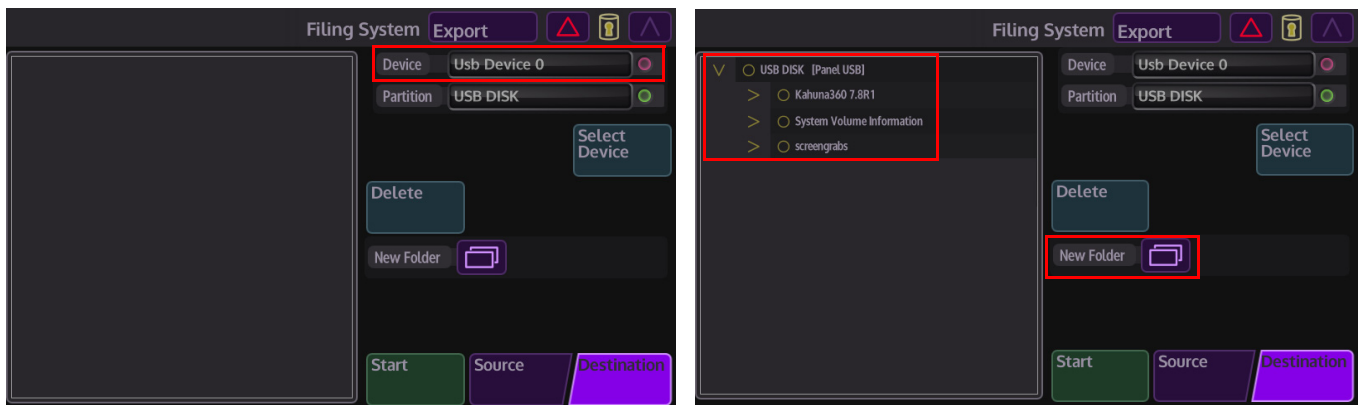


Touch the Export menu, touch the ">" next to the **"O PROJECTS"** (shown above left) and a folder list of "PRJ" projects will be displayed, touch the ">" next to the project containing the files to be exported. The selected project will open and because **"Stills/Audio"** was selected in the **"Delegate"** menu, the Stills folder can be opened displaying all the stills in that project.

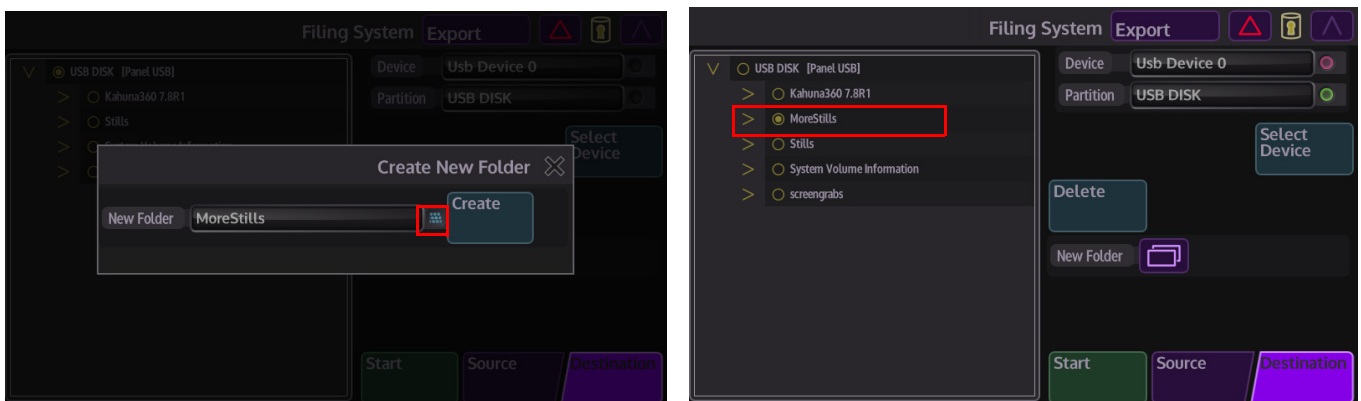
Touch the required Stills **“.SWS”** file, notice that the **“O”** next to the.SWS file is now filled displaying that it is selected.



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.

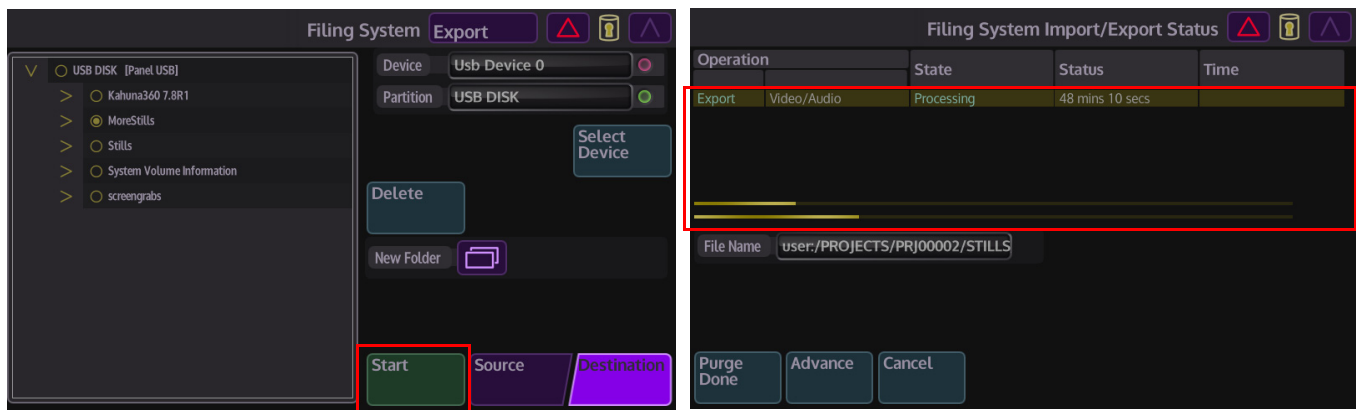


Use the **“Device”** parameter to select the memory device/hard drive the files will be exported to. Once found, touch the **{Select Device}** button and the device will be displayed in the gray area on the left of the menu (as shown in the diagram above right). If a new folder needs to be created on 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.



A new folder has now been created on the memory device.

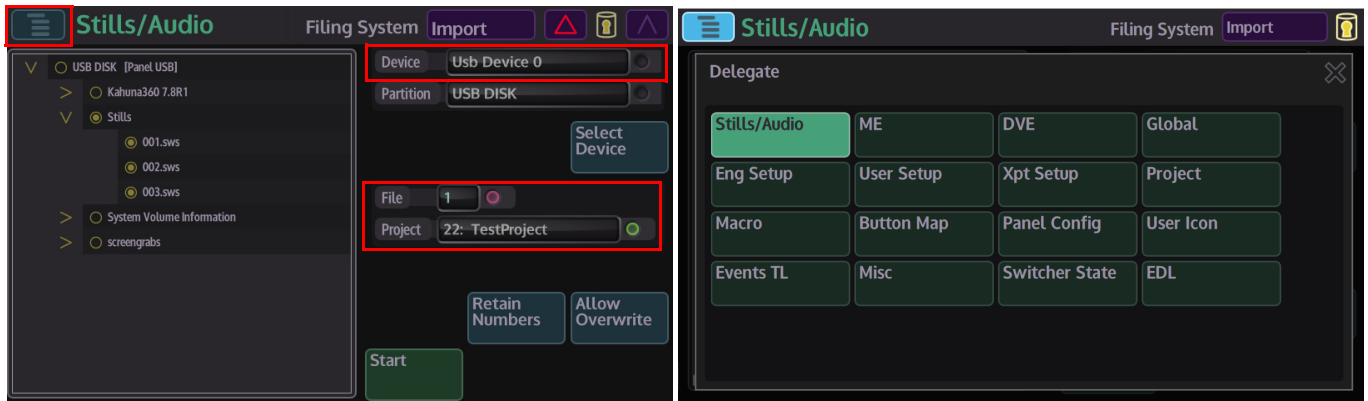
Touch the **“O”** next to the name of the new folder to select the folder and then touch the **{Start}** button.



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).



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.

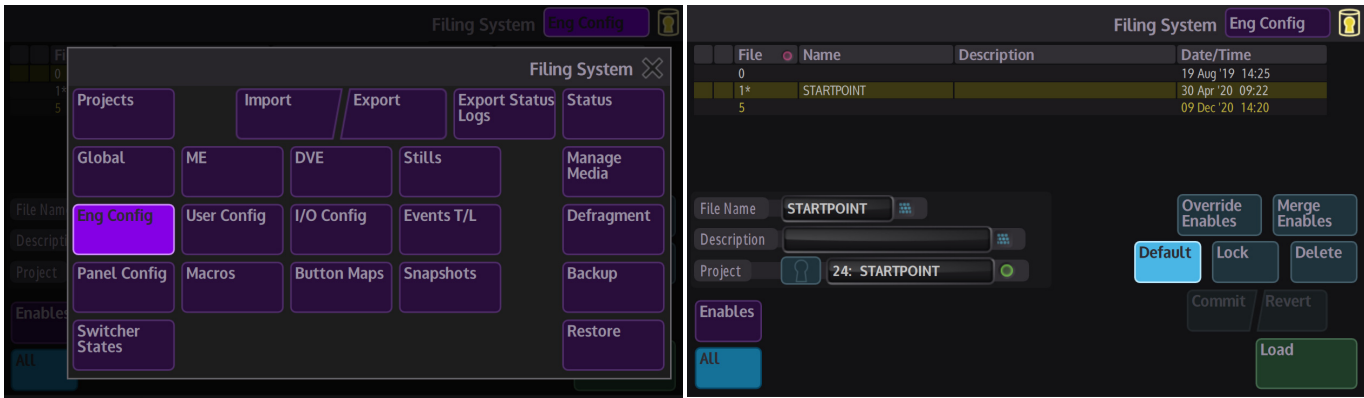
Finally, touch the **{Start}** button and the import process will begin.

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.

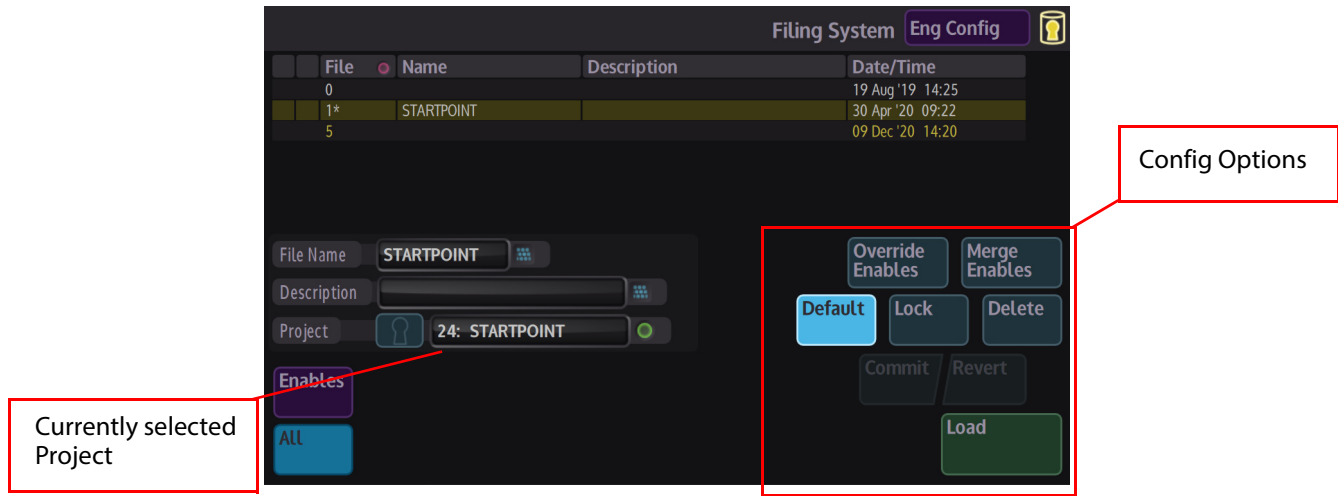
Note: The Eng, User, I/O and Panel Configs are saved within their own menus, the Filing System menu is used to Export, Delete, Load, set Enables and make Default.

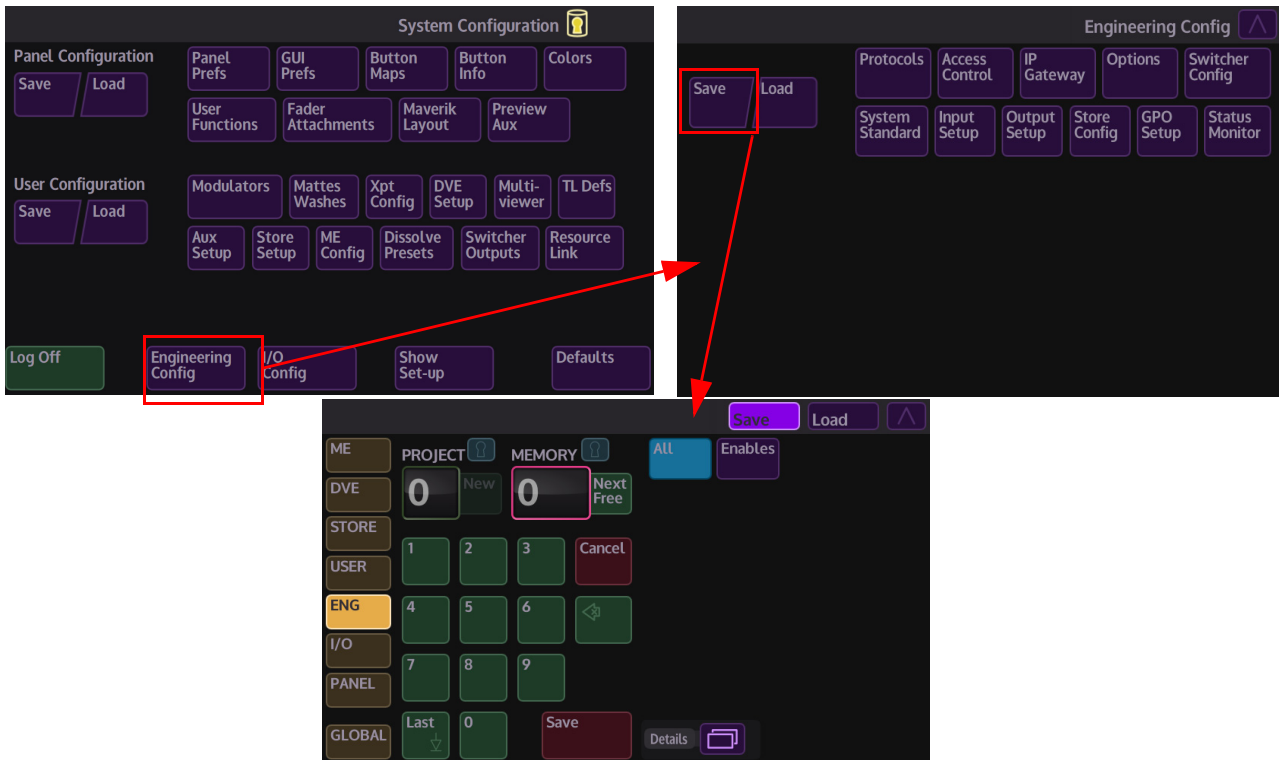


Overview

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.

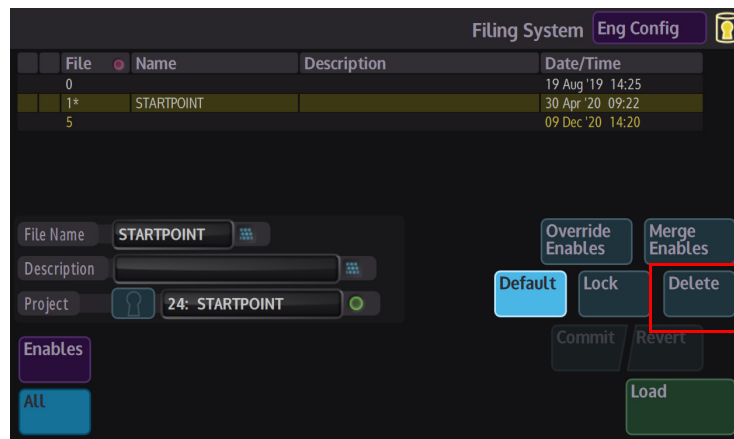
Press the **{Save}** button, select a Project from the **“Project”** parameter, this is where the Eng Config setup is recalled from, use the **“File”** parameter to create a new Eng Config file position, give the file a name and description and finally press the **{Save}** button. (see the Engineering Config section of this manual).





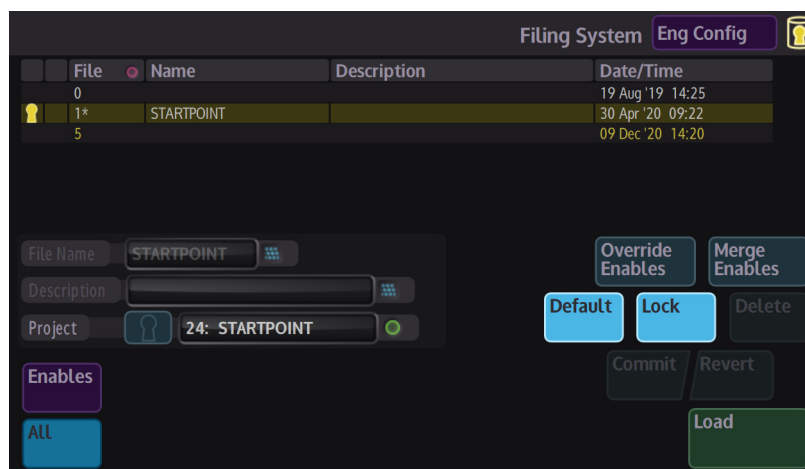
Delete an Engineering Config File

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

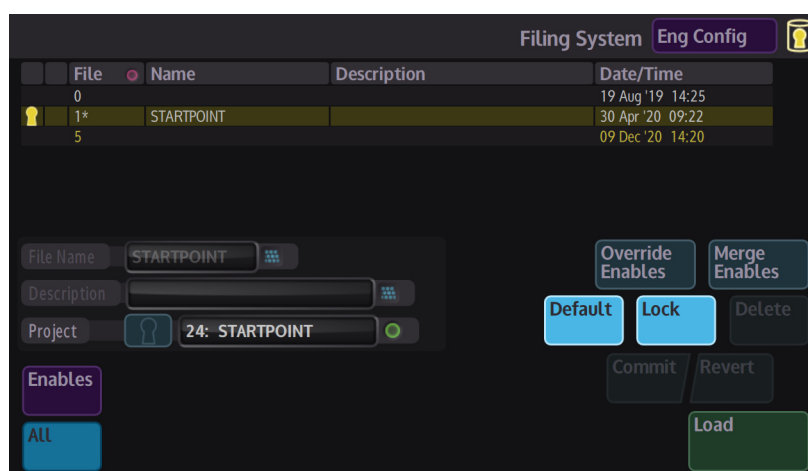
Each engineering config file can be locked to prevent files from being over-written or deleted. This is indicated by the Pad Lock symbol next to the file.



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

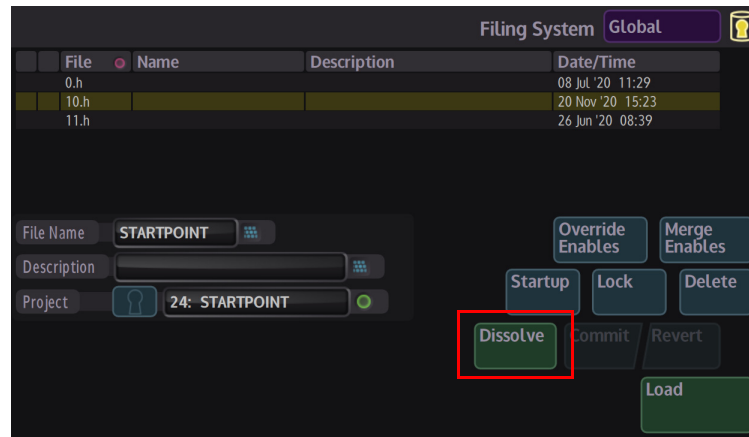
The **{Load}** button is used to load the currently selected Engineering Config File.

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)



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

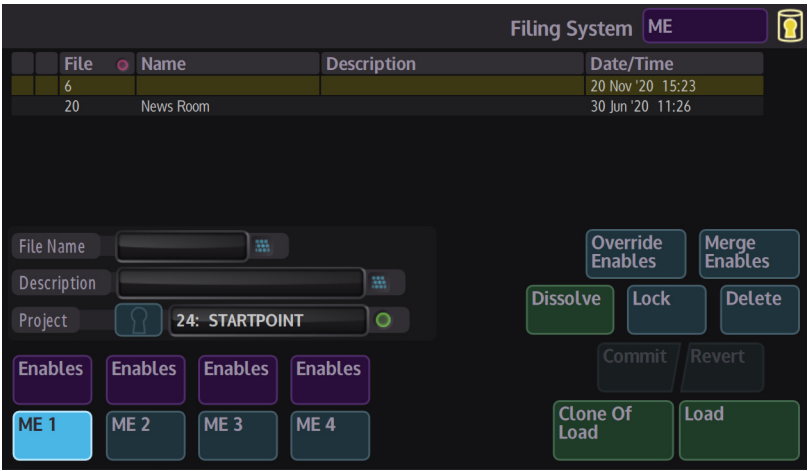
Load

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.



Functions like Delete, Lock, Load, file Name and Description, all work in the same way as in the Global menu functions.

Hold Inputs

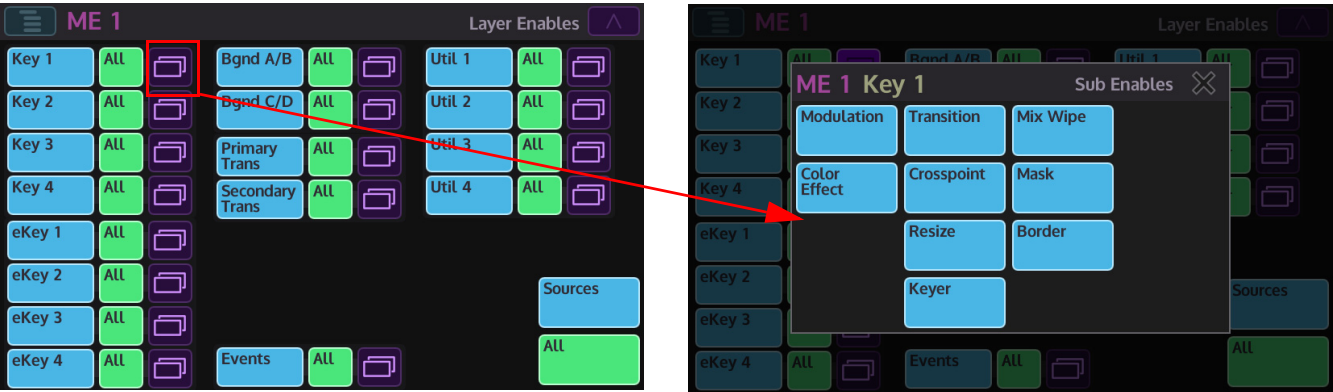
When on, prevents a ME memory file (DMEM) load from altering any of the current crosspoint selections, when enabled the button will light up green.

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

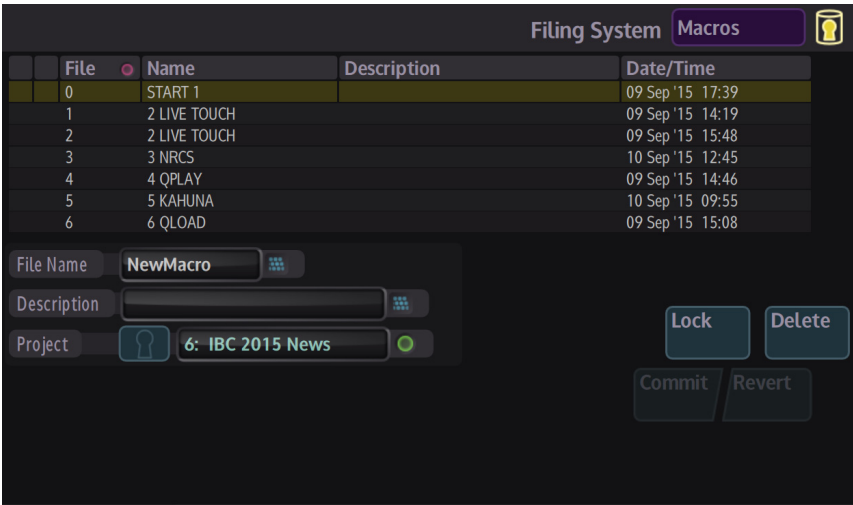
This function merges the enables currently set in the switcher with the enables saved in the file is being loaded (a 'logical OR' of the enables).
The {M/E 1} to {M/E 4} selection buttons and the {Enables} buttons allow the user to select or de-select enables function when used in conjunction with the “Override Enables” function.



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.

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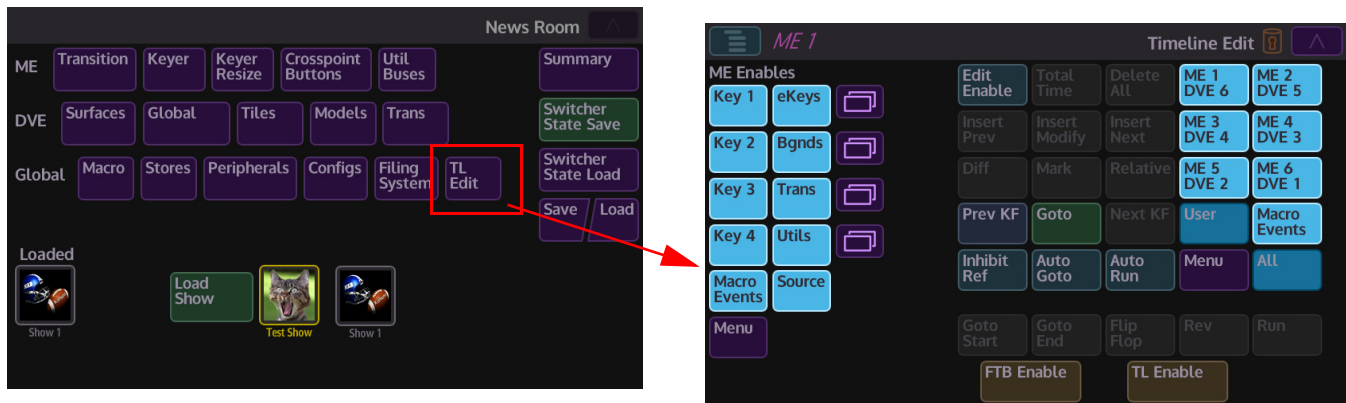
Global - TL Edit

Timeline Edit

Timeline Edit Buttons

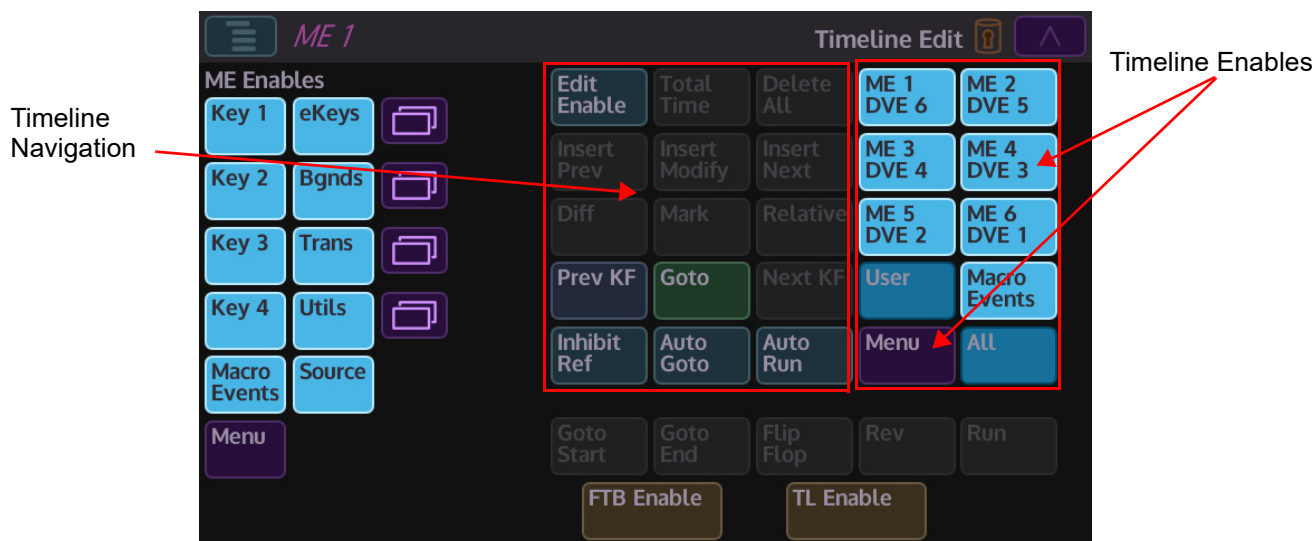
Note: The MAV-GUI TL Edit menu functions must be used in conjunction with the "Timelines" section of the Kahuna 9600/6400 User Manual (manual 2 of 2), that came with this Kahuna system. It will explain in detail how to create and edit Timelines.

Touch the **{TL Edit}** button to display the Timeline Edit menu.



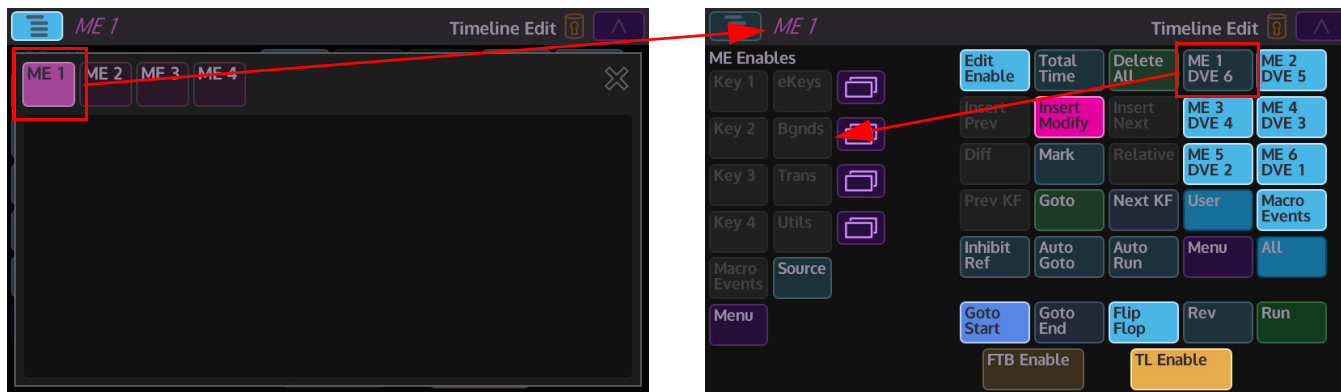
The **Timeline Edit** buttons in the MAV-GUI splits into two sections. The 3 columns of buttons to the left relate to timeline editing and navigation. The 2 columns to the right relate to enables.

Timeline Edit Buttons

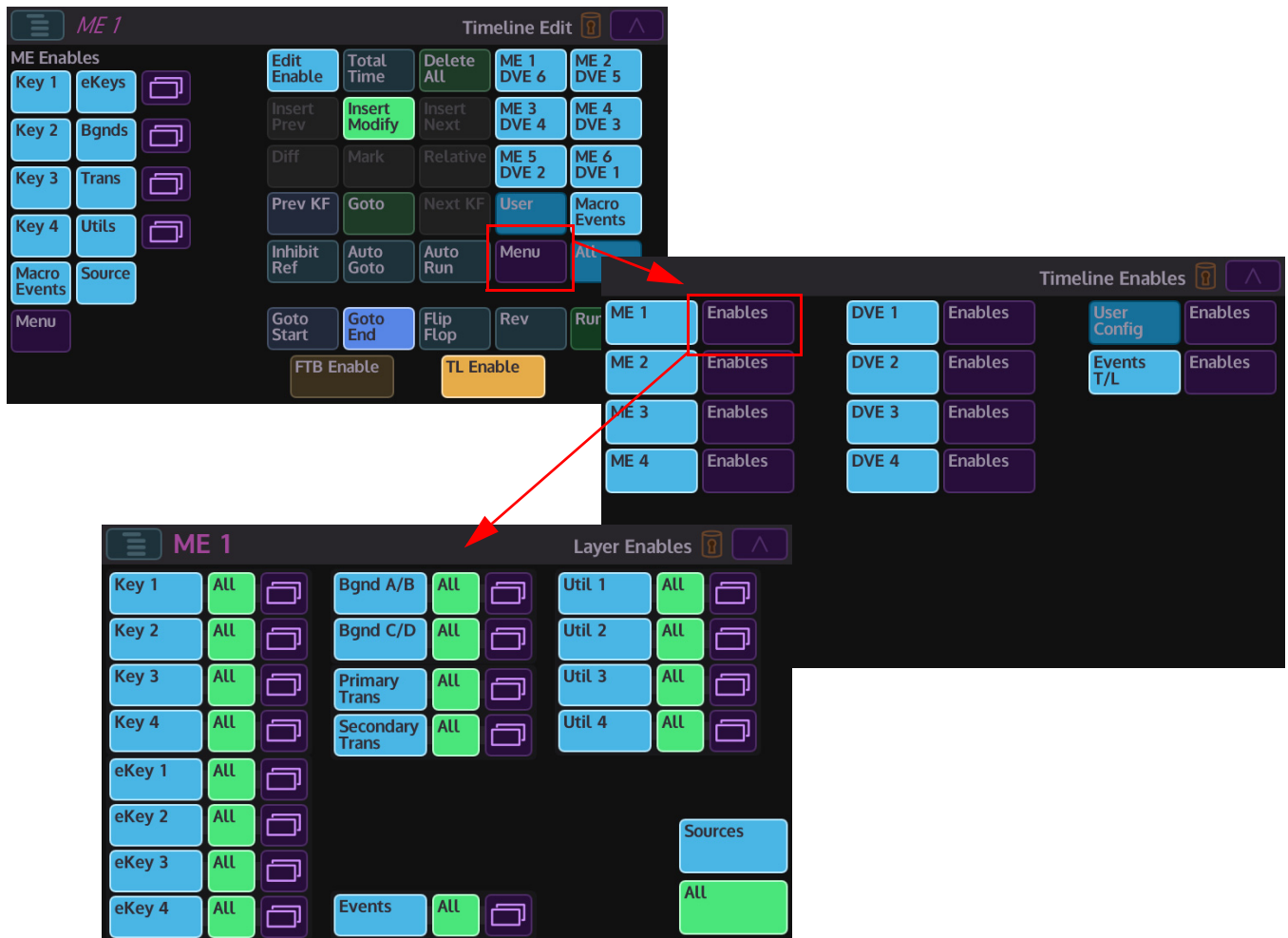


The Edit Enable button at the top left, controls the timeline edit facilities. Most of the edit buttons are only effective when the **{Edit Enable}** button is active (lit green). Only 4 of the buttons will work when edit enable is off - these are navigation buttons: **{Goto}**, **{Prev KF}**, **{Next KF}** and **{Mark}**.

Use the **{Delegate}** button to select which M/E the Timeline will be created on. If the user de-selects 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.



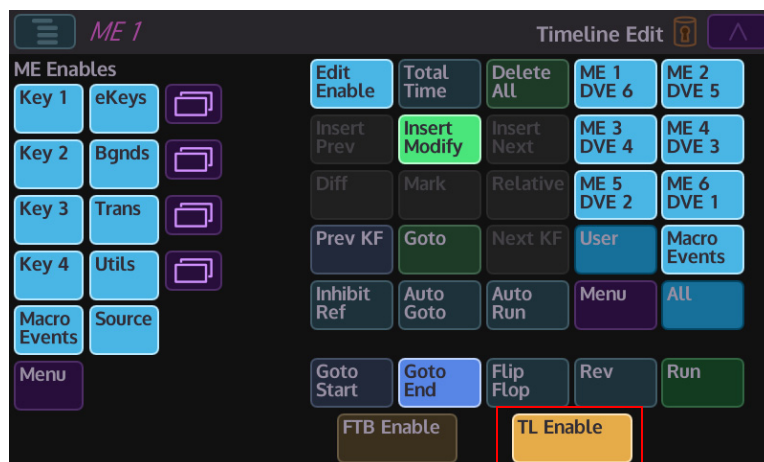
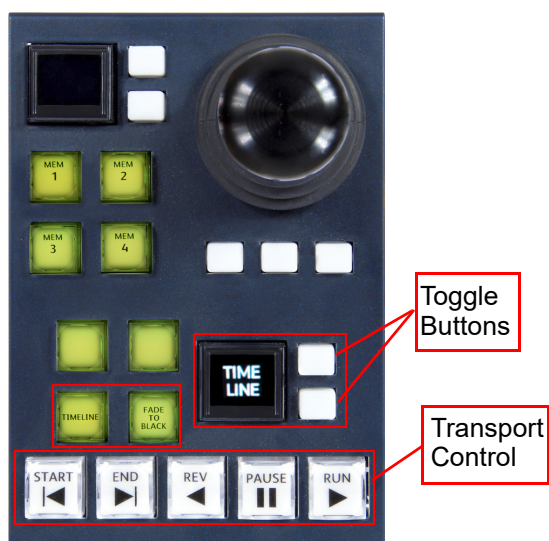
The Enables buttons in the **Timeline Edit** area are Enables buttons for the switcher and its functions such as M/E's, Keys, eKeys, Bgnds etc.



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.

Timeline Run Controls



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).



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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