ARTEMIS OPERATOR MANUAL V1.5 (provisional)

Digital Broadcast Production Console

CALREC

Putting Sound in the Picture

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IMPORTANT INFORMATION

After Sales Modifications
Please be aware that any modifications other than those made or approved by Calrec Audio Limited or their agents, may invalidate the console's warranty. This includes changes to cabling provided by Calrec and variations to the recommended installation as detailed in Calrec documentation.

Modifications to this equipment by any party other than Calrec Audio Limited may invalidate EMC and safety features designed into this equipment. Calrec Audio Limited can not be liable for any legal proceedings or problems that may arise relating to such modifications.

If in doubt, please contact Calrec Audio Limited for guidance prior to commencing any modification work.

ESD (Static) Handling Procedures
In its completed form, this equipment has been designed to have a high level of immunity to static discharges. However, when handling individual boards and modules, many highly static sensitive parts are exposed. In order to protect these devices from damage and to protect your warranty, please observe static handling procedures, for example, use an appropriately grounded anti-static wrist band. Calrec will supply an electrostatic cord and wrist strap with all of it's digital products.

All modules and cards should be returned to Calrec Audio Limited in anti-static wrapping. Calrec Audio Limited can supply these items upon request, should you require assistance.

This applies particularly to digital products due to the types of devices and very small geometries used in their fabrication, analog parts can however still be affected.

ROHS Legislation
In order to comply with European RoHS (Reduction of Hazardous Substances) legislation, Calrec PCB and cable assemblies are produced with lead-free (tin/copper/silver) solder instead of tin/lead solder. See Figure 1.

FIGURE 1 - LEAD FREE

In the unlikely event of a customer having to carry out any re-soldering on such assemblies, it is imperative that the correct type of solder is used; not doing so is likely to have an adverse effect on the long-term reliability of the product. Circuit boards assembled with lead-free solder can be identified (in accordance with IPC/JEDEC standards) by a small oval sticker placed on the top-side of the circuit board near the PCB reference number (8xx-xxx). See Figure 2.

FIGURE 2 - LEAD FREE STICKER

The same sticker is used on the connectors of soldered cable assemblies. The absence of a sticker indicates that tin/lead solder has been used.

If in doubt, please check with a Calrec customer support engineer before carrying out any form of re-soldering.

ISO 9001 and RAB Registered
Calrec Audio Ltd has been issued the ISO9001: 2000 standard by the Governing Board of ISOQAR.

The award, for both UKAS (Figure 3) and RAB (Figure 4) registration, is the most comprehensive of the ISO9000 international standards. Granted in recognition of excellence across design, development, manufacture and after-sales support, the certification follows a rigorous and thorough review of Calrec's internal and external communication and business procedures.

FIGURE 3 - UKAS REGISTRATION

FIGURE 4 - RAB REGISTRATION

HEALTH AND SAFETY

Please observe the following

- This equipment must be EARTHED
- Only suitably trained personnel should service this equipment
- Please read and take note of all warning and informative labels
- Before starting any servicing operation, equipment must be isolated from the AC supply (mains)
- Fuses should only be replaced with ones of the same type and rating as that indicated
- Operate only in a clean, dry and pollutant-free environment
- Do not operate in an explosive atmosphere
- Do not allow any liquid or solid objects to enter the equipment. Should this accidentally occur then immediately switch off the unit and contact your service agent
- Do not allow ventilation slots to be blocked
- Do not leave the equipment powered up with the dust cover fitted
- The rack mounting parts of this equipment must be fitted into an enclosure which complies with local regulations

Cleaning

For cleaning the front panels of the equipment we recommend anti-static screen cleaner sprayed onto a soft cloth to dampen it only.

Explanation of Warning Symbols

Triangular warning symbols contain a black symbol on a yellow background, surrounded by a black border.

The lightning flash with arrow head symbol within an equilateral triangle, as shown in Figure 1, is intended to alert the user to the presence of dangerous voltages and energy levels within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock or injury.

The exclamation mark within an equilateral triangle, as shown in Figure 2, is intended to prompt the user to refer to important operating or maintenance (servicing) instructions in the documentation supplied with the product.

Earthing

This is a Class I product. An Earth connection **MUST** be provided in each AC power cord.

The Earth Bolt connection at the rear of the console should be connected to Earth using Earth cable at least 6mm^2 in cross section (10 AWG).

FIGURE 1 - DANGEROUS VOLTAGES

FIGURE 2 - IMPORTANT INSTRUCTIONS

TECHNICAL SUPPORT

Should you require any technical assistance with your Calrec product then please contact your local distributor, if outside the U.K. and Ireland. For a list of Worldwide distributors please see the Calrec Web site at www.calrec.com or contact Calrec UK.

For technical assistance within the UK and Ireland, please contact the Customer Support Team. Contact details are shown in Figure 1.

FIGURE 1 - CONTACT DETAILS

Address	Customer Support Calrec Audio Ltd Nutclough Mill Hebden Bridge HX7 8EZ England UK
Telephone	+44 (0) 1422 842159
Fax	+44 (0) 1422 845244
Email	support@calrec.com
Website	www.calrec.com

We can deal with all technical after sales issues, such as :

- Arrange repairs
- Supply of replacement or loan units while repairs are being carried out
- Service / commissioning site visits
- Operational training courses
- Maintenance training courses
- Supply of replacement components
- Supply of documentation
- Technical advice by telephone

Customer Support Hours
Factory based customer support engineers can be contacted by telephone during normal office hours (Monday - Friday 9:00a.m - 5:30p.m). Outside these hours, a message can be left on the answering machine, all messages are dealt with promptly on the next working day. Alternatively a message can be sent to them by email.

Product Warranty
A full list of our conditions & warranties relating to Goods & Services is contained in the Company's standard Terms and Conditions. A copy of this is available on request.

Repairs
If you need to return goods to Calrec, for whatever reason, please contact the Company beforehand in order that you can receive advice on the best method of returning the goods, and that a repair order reference number can be issued.

Standard of Service
Ensuring high standards is a priority, if you have any comments on the level of service, product quality or documentation offered to you by Calrec, then the Customer Support team would be pleased to receive your comments through any of the normal contact numbers, email or on the User registration form located at the end of this manual. If you have any other issues regarding your Calrec purchase, then please contact us and we will do our best to help. Calrec welcomes all Customer feedback.

ARTEMIS
OVERVIEW

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INTRODUCTION

Artemis is a hugely flexible, large format digital console designed for the most critical broadcast production and on-air applications.

Artemis continues to meet the changing requirements demanded by the onset of surround sources in live production, providing sophisticated assignable monitoring solutions and encompasses flexible TFT metering.

The 'soft' nature of the Artemis surface encourages customization. The OLED and TFT displays show the information you want, where you want it. As processes and functions are not tied to specific hardware controls, the surface is inherently future proof and updates to functionality will integrate easily into existing hardware.

Bluefin2
The original Bluefin technology, released in 2006 to critical acclaim provided a huge amount of signal processing on just one card. The Bluefin2 High Density Signal Processing system developed for Apollo has extended this functionality to 1020 channels per card. Artemis employs a smaller version of the Bluefin2 processing capability to provide up to 640 channels per system.

Calrec's Bluefin systems have an unrivalled history of reliability. With just two Bluefin2 cards in the console rack, 100% processing redundancy is achieved. This is like having a second console as a hot spare ready to switch over instantly with no loss of audio.

The reality of HD programming is that it will continue to create more demand for multichannel audio content, particularly 5.1 surround. Bluefin2 technology is designed to scale to support future requirements.

Commitment
Calrec has a world-wide customer base which includes many of the world's most prestigious broadcasters. By consistently focusing upon purely broadcast products, Calrec offers consoles with the most comprehensive combination of performance and features available. The high level of reliability of all Calrec products, many of which are still in daily use after 20 years service, reflects a clear awareness of the critical nature of the operating environment.

This understanding of the real issues of broadcast operations is one of the many reasons why operators and management alike prefer Calrec. Artemis is designed to ensure this level of confidence will continue in the foreseeable future.

Artemis Shine and Artemis Beam
There are different versions of the Artemis system each with different processing capacities: Artemis Beam and Artemis Shine. When referring to the number of resources available this document will use the following notation:

S:XXX/B:YYY

Where S stands for Shine and B stands for Beam. XXX is the resource number for Artemis Shine, YYY is the resource number for Artemis Beam.

Where this notation is not used, it follows that the Artemis versions share the same number of resources.

PRINCIPAL FEATURES

Surface Operation

- Latest generation color OLEDs with TFT touch displays.
- Illuminated rotary, button and slider controls with function nominated color.
- User choice of assignable or channel based in-line operation.
- Control surface can be functionally split for multiple operators with independent monitoring and APFL systems.
- All faders are motorized and touch sensitive.
- Flexible and extremely configurable TFT screen-based meters.
- 12 layers of A and B paths gives great flexibility in organization.

Resilience

- Full redundancy of Artemis rack (control processor, router, PSU and DSP modules), control links and Hydra2 IO links.
- Console operates independently of configuration PC
- Independent DSP operation ensures audio continuity even during PC or control reset.
- Automatic change over to hot spares for all Artemis rack modules and connections.
- All cards and modules are designed to be hot plugged.
- All cards and modules are designed to initialize upon insertion.

Channel/Group Facilities (48kHz)

- Channels: S:680/B:340,
- Mains: 16*
- Groups: 48*
- Tracks: 64
- Auxiliaries: 32
- PFL/AFL Busses: 3
- All channels and groups have 6 bands of full range EQ (each with changeable response) and full dynamics processing (Compressor/Limiter and Expander/Gate).
- S:256/B:128 mono legs of input delay, each up to 2.73s.
- Up to S:4/B:2 individual track sends per channel.
- Up to 256 mono equivalent assignable inserts for outboard equipment.
- Up to 512 Direct Outputs.
- Channels and groups can have up to four direct outputs and up to one mix minus feed.
- Every channel can route to every buss at the same time, without restrictions.

*(From a shared Main/Group pool of 128 mono resources)

Power

- Distributed PSU system – no heavy duty power cables.
- Power Over Ethernet technologies for simple internal distribution.
- Low power consumption and heat generation.

Hydra2 Networking

- All IO is provided over Hydra2 networks.
- Large total system size of up to 8192 crosspoints per router.
- Allows for 48KHz and 96KHz sample rates to be used simultaneously across the network.
- Very low latency (<2.5 mS A-A, <0.5 mS D-D).
- All IO available on the console network allowing port to port routing.
- Simple cat5e or fiber interconnection of IO to consoles.

TERMINOLOGY

In order to be clear and consistent throughout Artemis documentation and eliminate confusion, certain common Calrec terms are described here.

ADC (Analog to Digital Conversion)
The process by which continuous analog signals are sampled and converted into discrete digital representations. The frequency of samples in the resultant digital signal is determined by the Sample Rate of the system (e.g. 48kHz). The dynamic range of the sampled signal is dependant on the wordlength (e.g. 24bit).

AFL
After-Fade Listen. Allows the user to hear only the selected channels after they have been affected by fader position, pan position and channel processing. Multiple AFL signals can be sent to the AFL buss. AFL does not affect the main outputs, so can be seen as being similar to 'safe solo'.

APFL
A buss that combines both AFL and PFL signals. This removes the need to have separate loudspeakers and meters for monitoring AFL and PFL signals.

Assign Mode
An operating mode of the surface in which it acts as an assignable console. A fader is assigned and all controls on an assign panel become relevant to the assigned path.

Assign Panel
When a wild assign panel is set to operate in Assign Mode, it can be referred to as an Assign Panel. The controls and information on this panel will reflect the data associated with the currently assigned path.

Assigned Path
When a path is assigned, certain functionality becomes available to it. For example the spill controls can affect components of a multichannel path, or any Assign Panels can update to display and control data relevant to the assigned path.

Aux (Aux)
An Aux is a buss to which signals can be sent and grouped. The send for the originating channel may be pre or post fade. Auxes can be patched to output ports and can be controlled by certain logic functions such as pre-send cut when originating channel is cut, pre-send cut when originating channel fader is closed and Bird Beater.

Auto Fade
Faders can be set to fade in and out in response to GPI signals. This might be set up so that a vision mixer can control relevant audio sources by simply fading up or down the video signal.

AWACS (Automatic Warning And Correction System)
This system provides information and logs of any developing or occurring faults in the system.

Bird Beater
With the function turned on for a given Aux, the pre-fade send from an originating channel can be cut when the originating fader is opened and not cut.

Bluefin 2
The next generation of Calrec's High Density Signal Processing (HDSP) system. Providing over 1000 channel paths from just a single card.

Broadcast Facilities Panel
A panel located in the surface upstand. This provides access to useful broadcast functions such as TX/REH modes, system reset indicators and buttons, a talkback microphone input and a USB port for the configuration PC.

Buss Path
A path in which multiple signals can be combined. A buss is the general term and can refer to a number of path types including Group, Aux, Track, Main, Mix Minus, AFL, PFL.

Channel Faders
Channel Faders are located on the Fader Panels. A generic term, as channels, groups, mains can all be attached to them allowing assignment and level control. They may also be used to control VCA groups.

Configuration PC
The configuration PC is a Windows based computer linked to a touch screen external to the surface, normally mounted on a flexible arm. This PC provides access to system settings.

Continuous Memory
A continually updated memory that stores the state of the system. In the event of a restart after power loss or reset, the system can reload the continuous memory and continue from almost the same state prior to power loss.

Control Cell
The collection of controls consisting of an OLED, two buttons and two rotary controls.

Control Processor Module
The control processor module acts as the main controller of the Artemis system, passing messages between all modules. The surface communicates with the rack via the control processor module.

DAC (Digital to Analog Conversion)
The reverse of ADC. The digital representation of a signal is converted back into a continuous analog signal.

Desk Output
A desk output is a main output, similar to a line output but which never receives tone or talkback.

Direct Output
Each channel can have a number of direct outputs. These are available at different points in the processing chain and can be sent to external destinations.

Downmix
The process of converting a signal of a given width into a signal of a smaller width allowing fixed or variable amounts of each of the contributing legs to be included. For example, a downmix must be applied to a 5.1 surround signal for it to be correctly translated into a stereo format. Without a downmix, surround, LFE or center information may be lost and levels may become unbalanced.

DSP
Digital Signal Processing. Discrete mathematical operations applied to a stream of digital audio signals.

DSP Module
A module fitted in the Artemis rack which performs all the DSP functions of the system.

Fader
Fader refers to one of the physical faders available on the surface (see Channel Faders, Main Faders and Spill Faders).

Fader Bargraph Meters
LED meters next to each fader on the surface provide input metering.

Foldback
An audio mix sent to a presenter or artist. Applications include enabling them to hear their own input or communications.

Gigabit Ethernet
A family of network technologies used for connecting equipment and efficiently passing large amounts information over copper or fiber links.

GPI/O (General Purpose Inputs/ Outputs)
These connections allow simple on/off signals to be sent and received by the system. Functions of the system can be controlled from external sources via opto-isolated inputs. The system can control external items of equipment based upon surface actions via relay outputs. GPI/O connections are optional fittings on Hydra 2 IO boxes

Group Buss
A buss to which many audio signals can be routed, summed and controlled simultaneously with a single fader. For example all audience microphones may be sent to the same group buss for easy access. Busses can be patched to physical outputs and have full EQ and dynamics processing. For a non summing group see VCA Groups.

Hydra2
An audio networking system which links IO boxes to one or many consoles over Gigabit Ethernet. Artemis is based around a Hydra 2 system.

Hydra2 Router Module
All Hydra2 IO boxes connect to the network via a router. The router module contains 16 SFP sockets that can accept either copper or a range of fiber connections by using the appropriate adaptor.

IO Expansion Module
The IO Expansion Module located in the rack provides 16 more SFP sockets to extend the connectivity of a Router Module.

Interrogation
Interrogating a buss reveals all contributing paths. For example an Aux buss could be interrogated in order to find all the paths which have been routed to it. Routing can also be performed in reverse where a number of paths can be selected and be routed to the currently interrogated buss. (See Reverse Routing).

Interruptible Foldback (IFB)
IFB is a foldback mix which can be interrupted by tone or talkback. This function is normally handled by the track busses.

Layers
Layers allow the faders on the surface to change the paths they are controlling. On each layer, a different path can be attached to and controlled by a given fader. There can be up to 24 layers on the Artemis surface. Given an example surface containing 64 faders and using 6 layers, the user may control up to 384 paths with the faders simply by changing layers.

Line Output
A main output which contains everything routed to the main, including talkback and tone overrides. See Desk Output.

Mix Buss
When multiple signals are routed to a buss they are mixed together. This allows the combined signal to be processed, routed or have it's level controlled from a single location.

MADI (Multichannel Audio Digital Interface)
A coaxial or optical transmission medium providing a 56 or 64 channel capacity. The MADI standard (AES10) allows simple high density connectivity between different manufacturer's equipment. MADI is interfaced with an Artemis system via a Hydra 2 MADI IO unit.

Main
A main is an output buss, a final point at which signals are mixed and affected before they leave the console. Each main path can be accessed for external patching via a Desk Output and a Line Output.

Main Application
The touch screen based configuration PC application that provides additional access to many controls and allows system settings to be configured.

Mic Input Headroom
The amount of headroom above the mic gain setting, used as a safety net in the case of sudden high signal level. The headroom is currently fixed at 36dB. A high headroom offers greater safety at the expense of slightly more noise.

Mix Minus Buss
A dedicated buss used for simple yet powerful creation of mix minus feeds. A unique mix is created for each recipient which consists of the whole mix minus buss, minus their own contribution. Each mix minus feed is sent from a channel or group's direct output.

Mode Buttons
The mode buttons allow the operating mode of each wild assign panel on the surface to be switched.

OLED Display (Organic Light Emitting Diode)
An OLED Display (or OLED for short) is a small interactive display. It may be used as a single large display, two horizontal displays, or four smaller square displays depending on its application.

On Air Mode
On Air mode allows certain operational functions to be activated or inhibited when the system is switched in to it.

Online Documentation
The touch screen based configuration PC application for displaying and providing interaction with Calrec documentation and training materials.

Port
A port refers to any physical audio input or output in a Hydra 2 IO box. Ports can be of any form of analog or digital IO. In the case of analog signals, a single port relates to a single signal in the system. Where digital signals are connected, multiple signals become available for each port. A single AES3 port provides two signals, SDI can provide up to 16 signals (or more with Dolby E decoding) and MADI can provide up to 64 signals.

Patch
A patch is a connection made between a source and a destination in the system. For example an input port may be patched to one or more channel inputs, or a main output may be patched to one or more output ports.

Path
A generic term that refers to a DSP process in the system. A signal present at an input port must be routed to a path in order for it to be processed and then sent back out of the system. Paths include channels, groups, auxes, tracks, mains, talkback and monitor paths. Paths can be routed to other paths, for example a channel path can be routed to a group path and a main path simultaneously.

PFL
Pre-Fade listen. A function to allow a signal to be heard before it has it's level altered by a fader. Multiple PFL signals can be sent to the PFL buss.

Power over Ethernet (POE)
A technology used to provide power to equipment through the same Ethernet connection that carries information.

Pre-Selectors
Part of the monitoring controls on the surface, Pre-Selectors allow a number of sources to be preset, ready to be sent to the main control room loudspeakers and meters.

PSU Module
The PSU module provides power to the rack and the other modules contained within it.

Rack
The single 8U enclosure containing all power, processing and networking modules for an Artemis system.

Redundancy
All main components of the system are redundant, meaning that there is always a secondary hot spare ready to step in and take over control if the primary component fails. The failed primary unit can be replaced with a working unit which then becomes the new hot spare, effectively re-introducing redundancy.

Reverse Routing
When a buss is interrogated, routes to that buss may be made in reverse by specifying which paths will be routed to it. Normal routing involves specifying which

busses a certain path is routed to. (See Interrogation and Routing)

Rotary
A knob which can be rotated, allowing variable control of a parameter. In some cases it can be pressed giving it extra functionality. Each control cell contains two rotary controls.

Route
A route is a connection made from one path to another within the system. For example a group path may be routed to a main path, or a channel path may be routed to an Aux path via an aux send. (See also Reverse Routing).

Row
A row is a horizontal arrangement of controls on a surface panel. For example the row of OLEDs at the top of a standard fader panel is called the 'Modes Row'.

SDI (Serial Digital Interface)
Although SDI is primarily a means for encoding and transporting video signals, audio signals can also be encoded and sent through in the ancillary data space. Certain Calrec SDI de-embedders can decode all groups and Dolby E encoded audio for a maximum of 128 mono signals per SDI stream.

SFP (Small Form-Factor Pluggable) connections
SFP sockets accept a range of adaptors which provide different interface connections for copper or fiber connectivity. This allows units fitted with SFP sockets to be customized to meet a range of requirements. All main network connections in a Artemis system make use of SFP sockets.

Spill Faders
Allow control of legs of a multichannel signal. For example the overall level of 5.1 surround channels is controlled by a single fader. By using the spill faders, components of the multichannel signal can be altered. If a spill fader is the currently assigned fader, then processing can also be applied to that component using the assign panels. For a 5.1 channel the legs are broken into the following components: L/R (stereo), C (mono), LFE (mono), LsRs (Stereo).

SRC (Sample Rate Conversion)
A sample rate converter is by default switched in on each AES3 input in the event that an incoming external signal is at a different sample rate or not synchronized to the same source as the system. It can be switched out if the incoming signal is known to be synchronous.

Standard Fader Panel
A physical surface panel containing eight faders, a row of cells and three rows of OLEDs. Along with the wild assign panel and TFT meter, the standard fader panel is the most common panel on a surface.

Strip (Channel Strip)
Strip refers a vertical arrangement of controls on the surface which can be a combination of fader and assign panels. There are eight strips on a wild assign panel and on a fader panel.

Surface
The surface is the physical control surface for a Artemis system containing the collection of faders, rotary controls, buttons and displays allowing hands on control of the audio signals. Sometimes referred to as the Console or Desk.

System
The term 'system' encompasses the rack, surface, and configuration PC. From the moment a signal enters a Hydra 2 input it is in the system and remains there until it is passed out of a Hydra 2 output.

TFT Meter
A TFT screen in the surface used to display customized high resolution metering.

Tracks
Multi function busses that can be patched to physical outputs. Used for such purposes as generating multiple interruptible clean feeds (IFB) or sending audio to a multitrack machine.

Upmix
The opposite of Downmix. Narrow width signals can be processed in order to be sent to a wider buss. This occurs when monitoring a mono signal through a stereo buss. Here the pan control can be considered an upmix parameter as it varies the resultant stereo upmix.

VCA Groups
The term VCA stands for Voltage Controlled Amplifier. A VCA group, unlike a group buss does not sum any audio. Instead it allows a single fader to control the relative levels of any contributing paths. The controlling fader is known as the master, the contributing paths are known as slaves. This maintains the relative levels of all paths in the group yet still allows individual control where required.

Wild Assign Panel
A panel containing a touch screen TFT and multiple Cells and OLEDs. The function of this panel can be altered during operation of the surface.

Wild Assign Touchscreen
The TFT touch screen display located in a wild assign panel. Provides flexible options for displaying and controlling information directly through touch.

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CONFIGURATION PC OVERVIEW

The configuration PC is mounted inside the surface. The only access available to the PC is through the keyboard, trackball, touch screen display and USB port on the console upstand.

Artemis does not rely on the PC for audio processing. The console will continue to operate and process audio uninterrupted even if the PC is reset or suffers a loss of power.

Main application

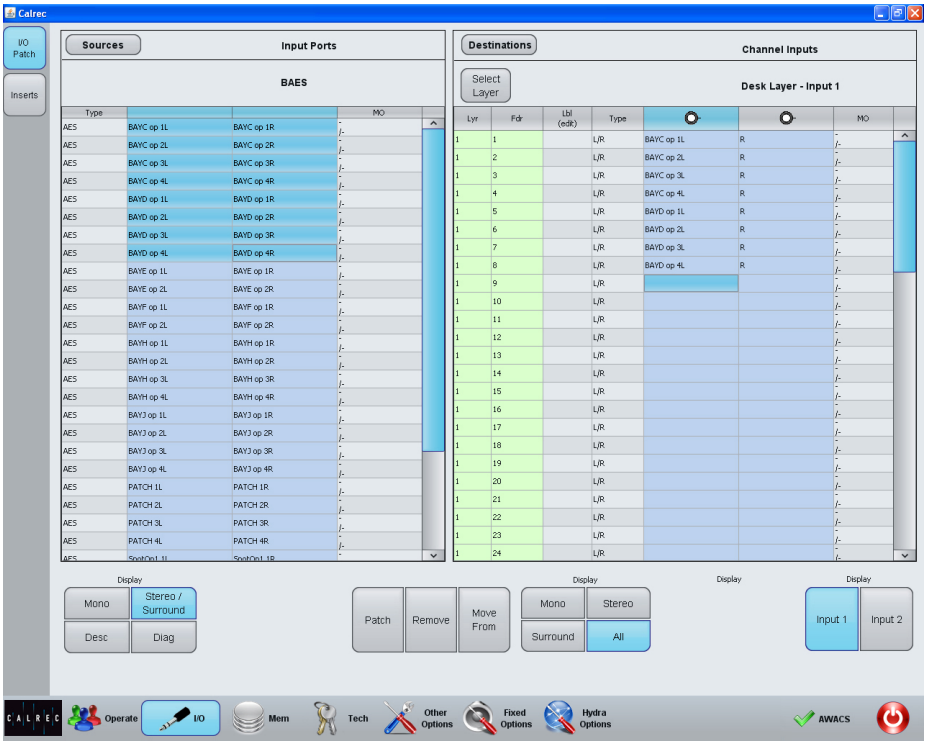
The main purpose of the configuration PC is to run the main application, which provides access to many important console options.

The main application is launched automatically when the configuration PC is booted. If the application has been closed, it can be re-loaded from the 'Main Application' icon on the desktop.

Figure 1 shows the layout of the main application. Along the bottom edge of the application is the main menu which contains buttons for each of the main sections of the application. When this document instructs the user to go to the MEM section for example, it is the equivalent of saying 'touch the MEM button on the main menu of the main application'.

Once a certain section has been selected, a list of available screens will appear vertically along the left hand edge of the application. Touching one of these buttons will update the main application to display the relevant screen. When this document instructs the user to go to a certain screen, it is referring to touching the relevant button on this list.

FIGURE 1 - MAIN APPLICATION



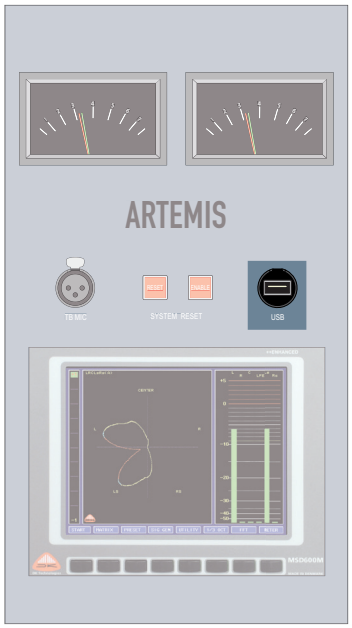
USB Port

A USB port linked to the configuration PC is available in the broadcast facilities panel located in the TFT meter upstand. This can be used for backing up and restoring memories or settings from the console. It is designed for portable flash based USB memory devices and as such may not provide power for larger USB hard drives.

Online Documentation

Electronic versions of all documentation may be accessed on the configuration PC by using the Online Documentation application. This can be loaded from the Online Documentation folder on the desktop.

FIGURE 2 - USB PORT



TOUCH OVERVIEW

Artemis makes great use of touch technologies to provide direct interaction with on screen controls.

The configuration PC display and wild assign TFTs are touch sensitive and should be used with a finger rather than any other pointing device (such as the top end of a pen) which may damage the surface of the displays. Certain aspects of the software have been designed to be accessed primarily through touch and so some terms should be defined to aid in reading this document.

Touch/Tap

The main interaction between operator and touch control is the touch (or tap). The operator should touch the desired control on the display then immediately release without changing position. See Figure 1.

Swipe

The swipe motion may be used to scroll through a list of items or page through a number of views. Touch the control and straight away swipe in the required direction. Remove the at the end of the swipe. This motion is shown in Figure 2.

FIGURE 1 - TOUCH/TAP

Touch the screen momentarily and then release in the same position

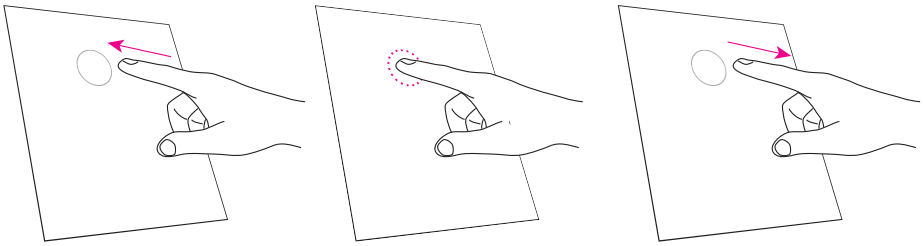
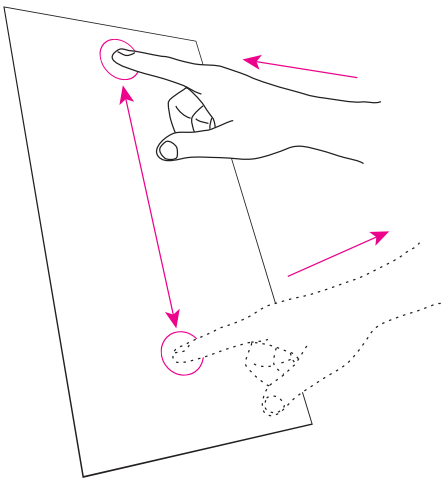


FIGURE 2 - SWIPE

Touch the display, swipe a finger to another position then release



SURFACE CONTROL OVERVIEW

Artemis works the way you want to. A variety of operating modes and different ways to display information ensure that every operator will feel at home behind the console.

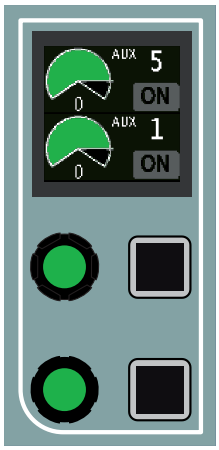
There are a range of different panels available that make up the Artemis surface. These are detailed in the 'Surface Panel Overview' section of this document. It is first important to understand the different control types which make up these panels.

The main control types on the surface are as follows:

OLEDs

The OLEDs (Organic Light-Emitting Diodes) on the surface can display one large section, two half sized horizontal sections, four quarter sized sections, or any combination of half and quarter sizes. Text is displayed along the center of some OLEDs to clearly label the functions or to indicate certain assignments. The OLEDs in the layers and modes rows are touch sensitive and can be touched to access the functions displayed.

FIGURE 1 - CONTROL CELL



Rotary controls

The rotary controls on the surface will change color to reflect the type of control they are currently assigned to. For example, when assigned to an Aux control they would be colored green.

Buttons

The small square and triangular buttons, like the rotary controls, change color when active to reflect the currently assigned control.

Where there are buttons that relate to the same control as displayed on an OLED, the buttons will be used for control. The OLEDs are not touch sensitive when a physical button is present.

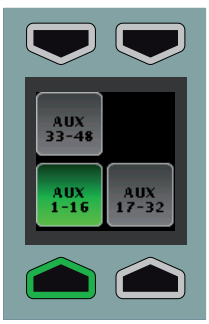
Control Cell

The three interface elements described above are combined on the surface to make up a number of control cells. One of these cells is shown in Figure 1.

The upper rotary control and button control the parameters shown in the upper half of the OLED. The lower rotary control and button control the parameter shown in the lower area of the OLED.

Controls that are not active (for example pan controls when assigned to a surround buss) will be hidden. The rotary controls, buttons and OLED sections will not be lit.

FIGURE 2 - BUTTON CELL



Button Cell

The arrangement of controls is shown in Figure 2 is known as a Button Cell. The buttons above and below the OLED map directly to the nearest OLED section. The switchable controls may be accessed by pressing the relevant button.

Strip

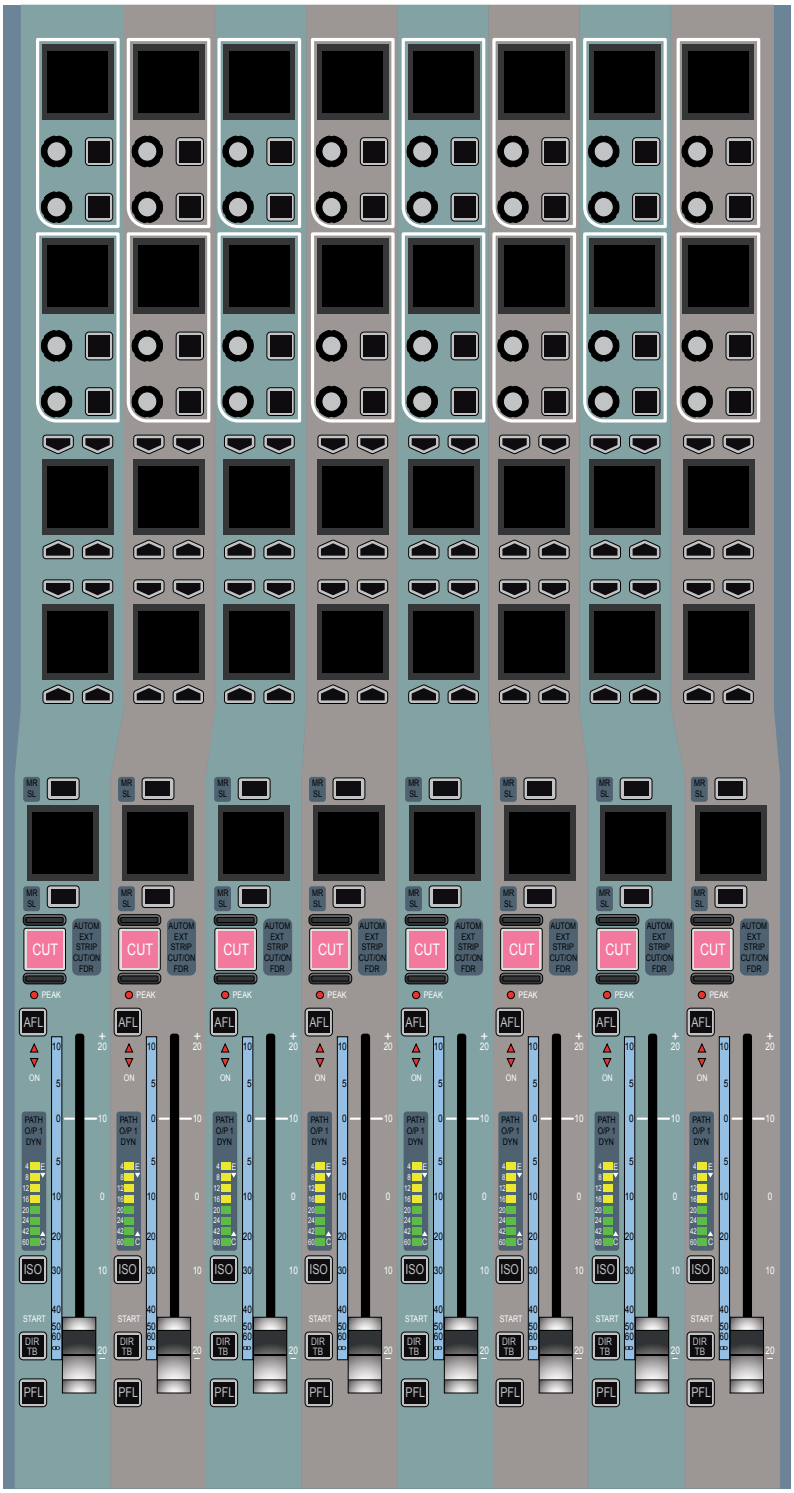
The controls on the surface can be arranged in vertical strips so that each fader has a set of controls that relate directly to it. Each of these is known as a strip.

SURFACE PANEL OVERVIEW

Fader Panel

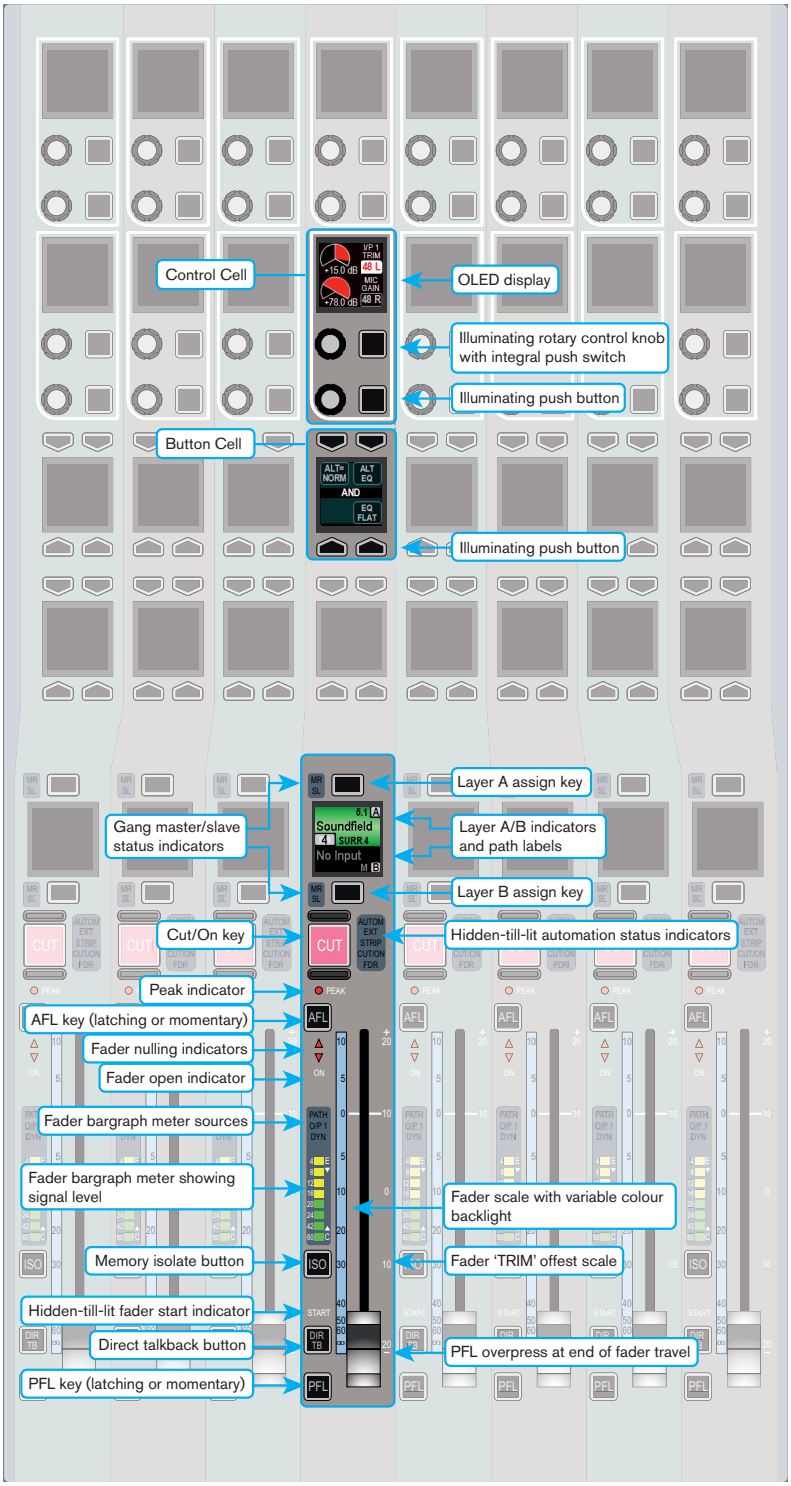
The fader panel is shown in Figure 1. It consists of eight fader strips, each containing the fader area, an A/B assign OLED, two button cells and two control cells.

FIGURE 1 - FADER PANEL



The main fader panel control types are highlighted in the Figure 2.

FIGURE 2 - FADER PANEL CONTROLS



TFT panel

The TFT panel is located in the console upstand, above each fader panel. The whole TFT surface is touch sensitive.

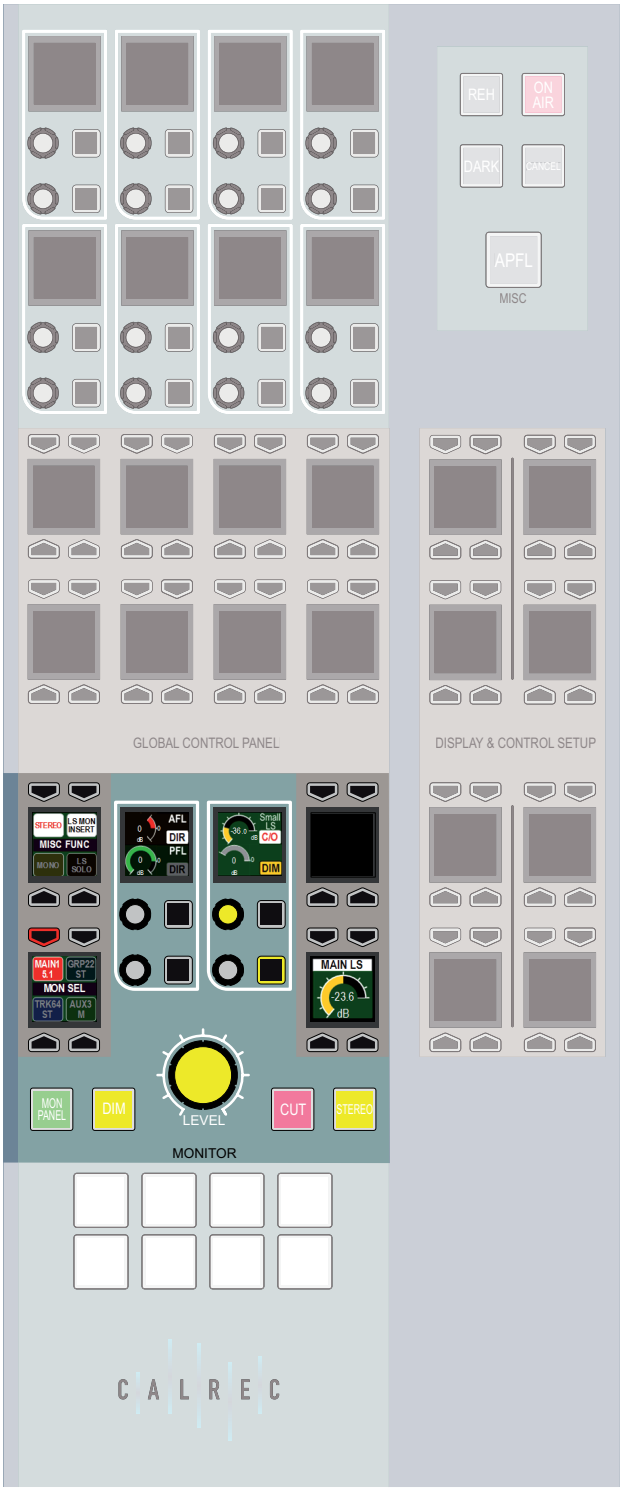
The top third of the TFT panel is used to display meter information. The information that is displayed is configurable.

The lower two thirds of the display are used by the current mode of the wild assign area (this is detailed in the next section of this document). The user interacts with these controls by touching the TFT display.

FIGURE 3 - TFT PANEL

Dedicated Monitor Controls
Shown in Figure 4, these controls are dedicated to the monitoring functions of the console including the large CR Monitor level knob, small LS trim and changeover, Dim level, AFL and PFL levels and the 4 preselected monitor Hear controls described elsewhere DIM, CUT and Stereo keys and a key which calls the full monitor panel to the Console surface.

FIGURE 4 - DEDICATED MONITOR CONTROLS



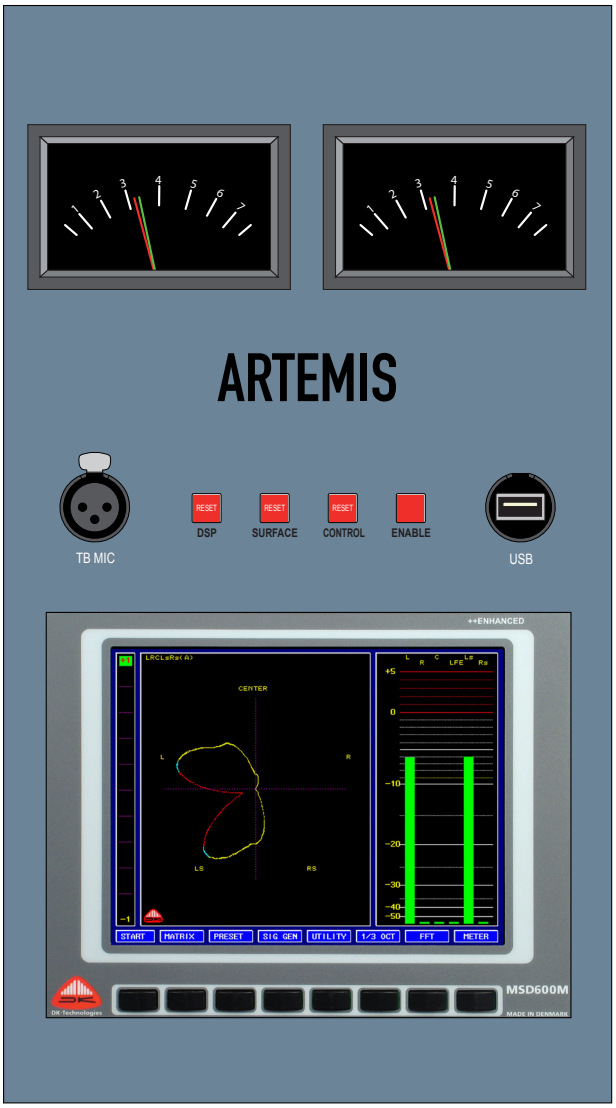
Meter Panel

The meter panel in Figure 5 provides the customer with an area to mount moving coil PPM/VU style and/or Vectorscope displays such as the DK MSD600M++ or the RTW 10800 range

A Talkback Mic XLR connector is provided on the panel as is a USB connector. This allows the user to plug in a USB memory stick which can be used to load and store console configurations from the configuration PC in the body of the console.

Also included on the panel are the reset switches which when pressed together with the Enable button allow the user to reset elements of the system.

FIGURE 5 - METER PANEL



CONTROL MODES

Areas on the surface can be set into a number of modes allowing the user to access different types and layouts of controls.

The four main modes are:

- Wilds mode
- Assign mode
- Output mode
- Monitor mode

Wild assign Area

The WIld/Assign area is composed of the top section of a fader panel and the lower section of the TFT panel above it, as shown in Figure 1.

To set a wild assign area into one of these options, touch the desired mode on the Modes row shown in Figure 2. The modes row on a given fader panel sets the mode of the wild assign area directly above it.

Modes Row

The modes row is detailed in Figure 3.

Apply all

A mode can be applied to all wild assign areas in the user section by holding the desired mode button, then tapping the APPLY ALL button.

Locking modes

A panel may be locked into a certain mode by pressing the LOCK PANEL button. The mode buttons on the modes row will be removed and the panel mode will not change when APPLY ALL is used to change the rest of the surface. Press the LOCK PANEL button again to unlock.

'Off' Mode

A fifth mode exists which removes all controls from the wild assign area allowing the user to create a very simple and clear surface. For example if there are many wild assign areas in a surface but the user wishes only to use four of them in a central assignable style, the remaining areas may be set to 'Off'. This can also allow a simplified operating style for novice users.

User Layouts

Layouts can be defined which store an arrangement of modes in the wild assign areas. These can be used to instantly return the surface into a known arrangement of controls, or to quickly switch the whole surface between different control layouts.

Some common layouts are shown in Figure 4.

FIGURE 2 - LOCATION OF MODES ROW

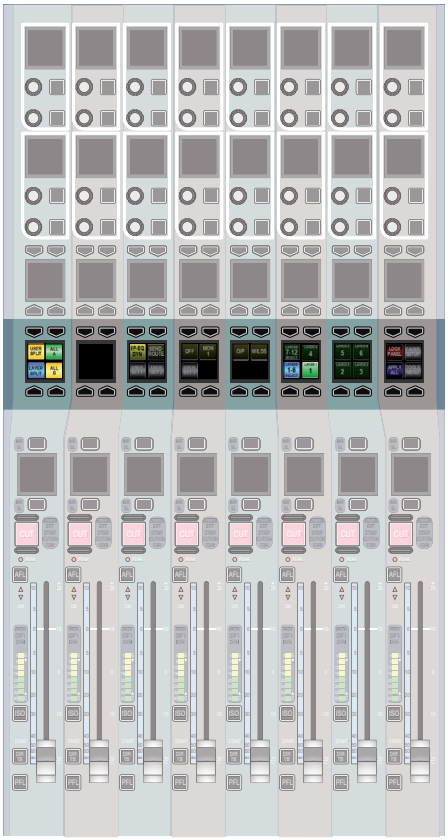


FIGURE 1 - WILD ASSIGN AREA

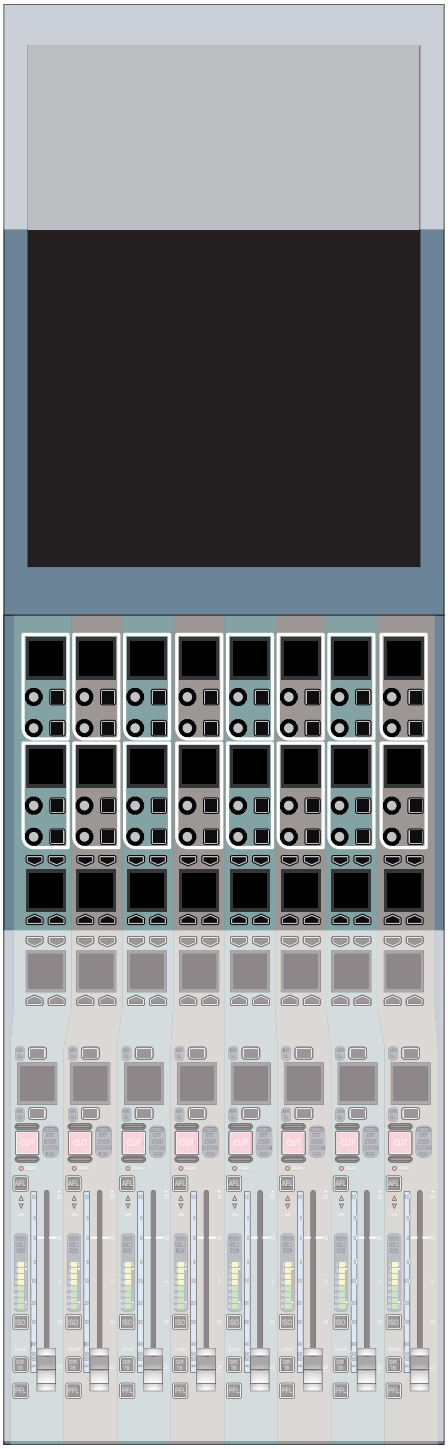


FIGURE 3 - LOCATION OF MODES ROW

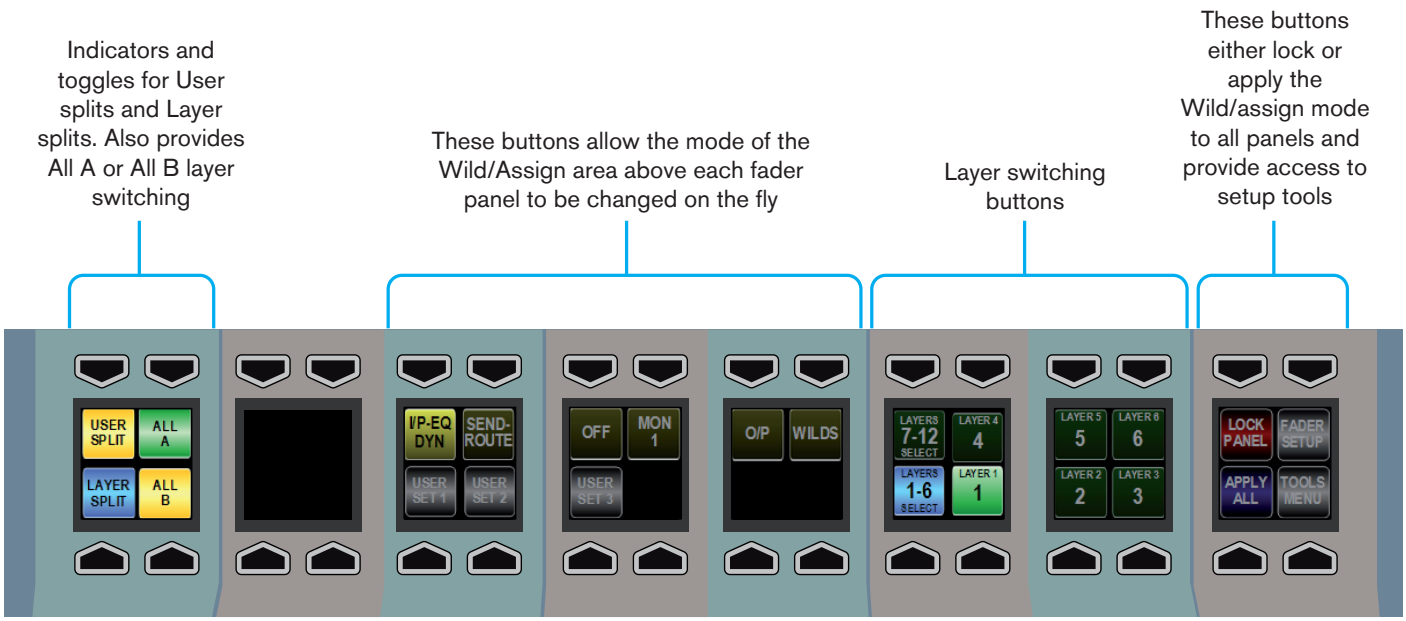
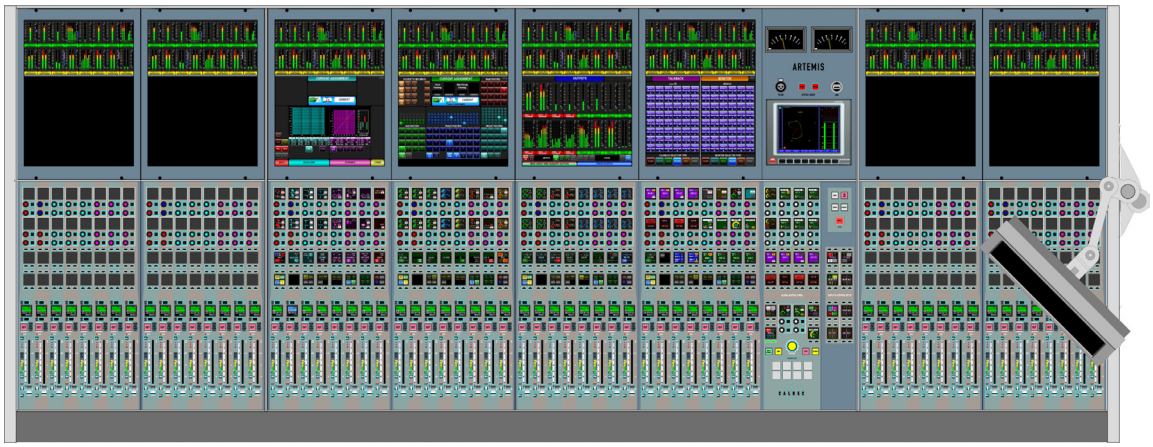
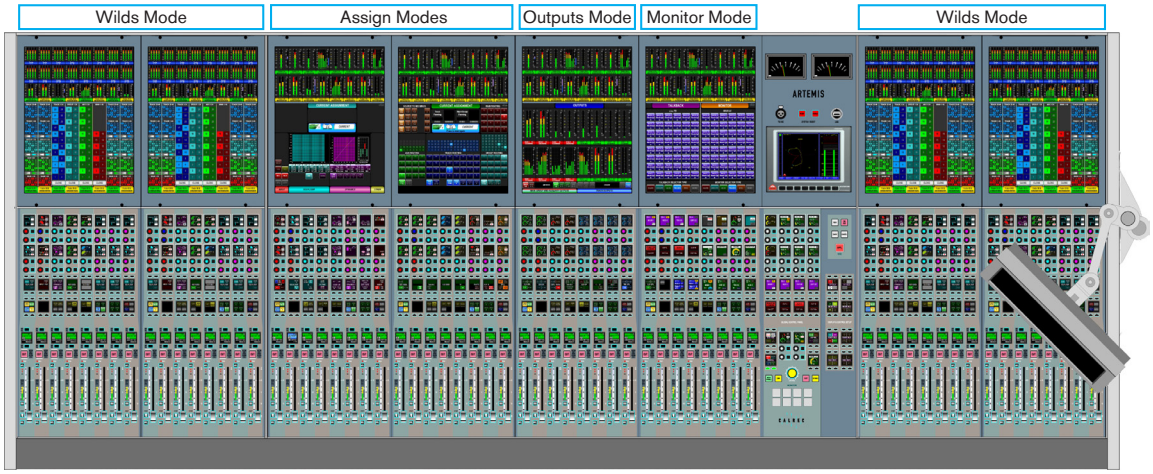


FIGURE 4 - EXAMPLE LAYOUTS

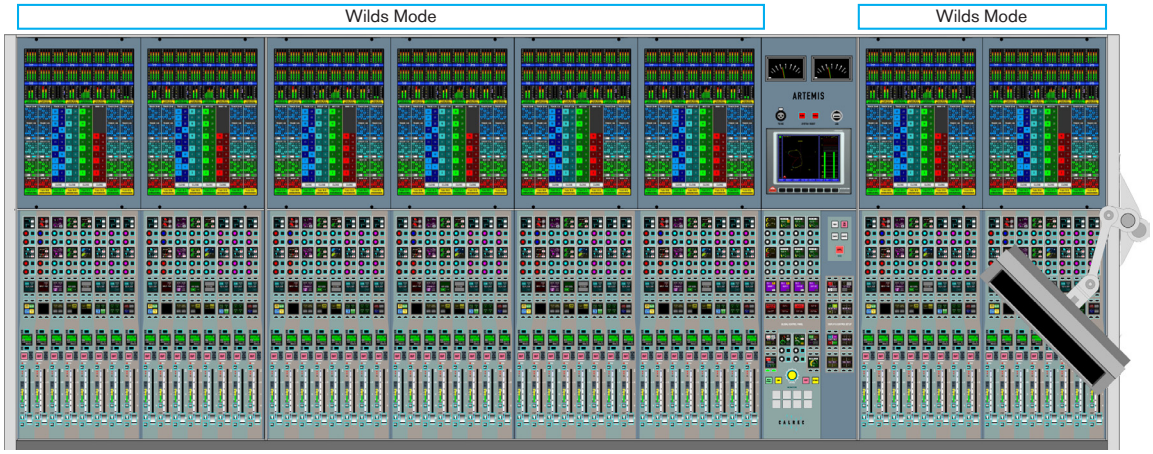
Simple central assign section with monitor and output controls. Control panels outside of this central area are turned off



As above but with Wilds Mode on unused Control panels



Wilds Mode on all Control panels



ASSIGN MODE

Assign mode provides a way for the wild assign areas in an Artemis surface to function as a familiar Calrec assignable surface.

The concept of Assign mode is to provide a standard layout of controls on the surface which display and allow control over the parameters of the currently assigned path.

Assign Mode is made up of two layouts:

- INP-EQ-DYN
- SEND-ROUTES

Both of these layouts appear as separate buttons on the Modes row.

INP-EQ-DYN layout

This layout contains controls relevant to Input, EQ, Dynamics processing for the currently assigned path. The layout of controls is shown in Figure 1.

Sends-Routes layout

The Sends-Routes layout is shown in Figure 2. It contains controls for routing or sending the currently assigned path to Auxiliaries, Tracks, Groups, Mains, direct outputs and Mix Minus busses. Pan controls are provided for placing the path in any of these destinations. It also allows interrogation and reverse routing of busses.

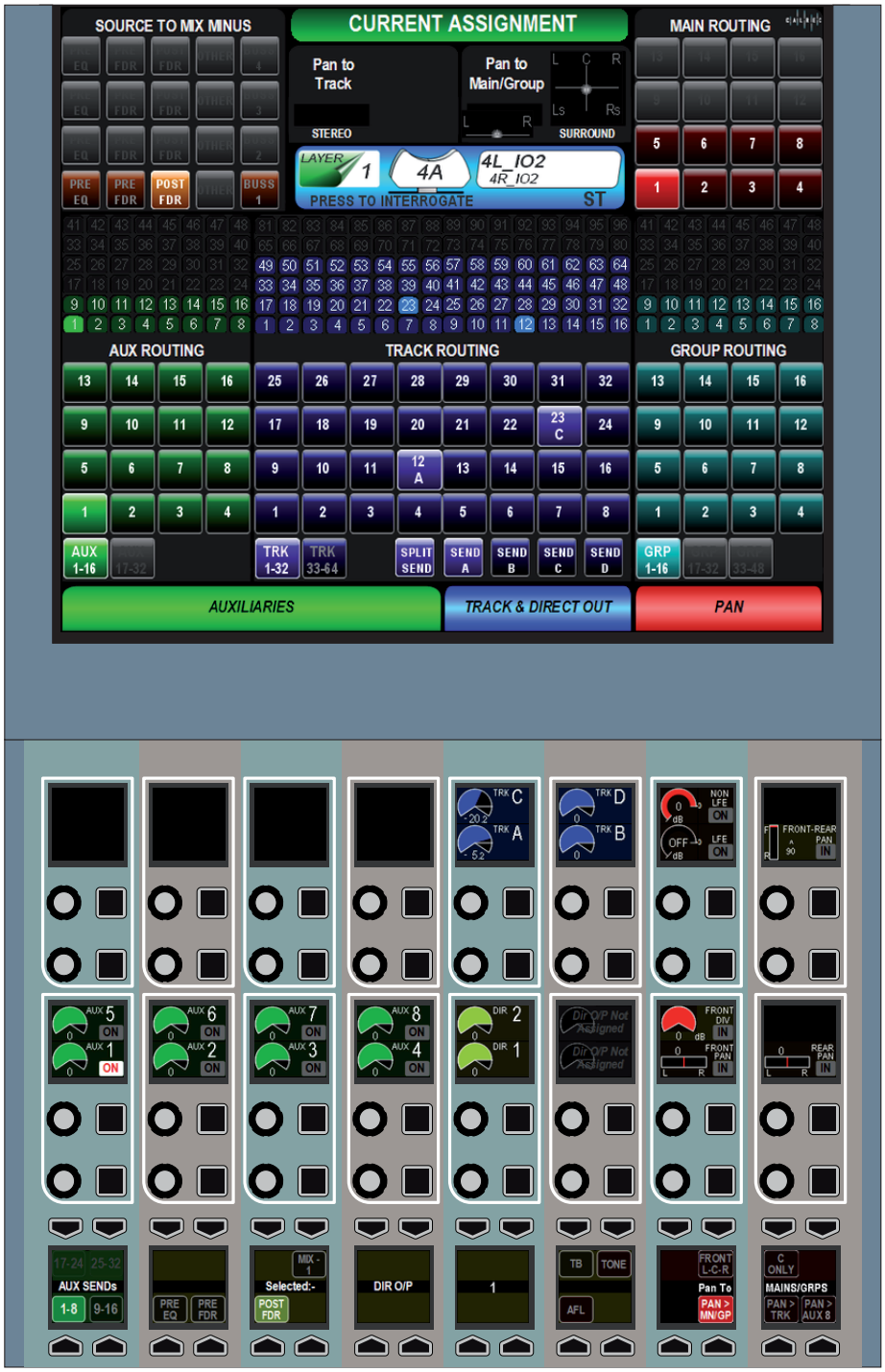
Responding to path assignment

The exact controls displayed and the paths which they will affect depend on the currently assigned path. For example, different pan controls are visible depending on whether the currently assigned path has a mono or stereo width.

For details on assigning a path, please refer to the Assigning Paths section of this document.

FIGURE 1 - THE INP-EQ-DYN ASSIGN LAYOUT

FIGURE 2 - THE SENDS-ROUTES ASSIGN LAYOUT



MONITOR MODE

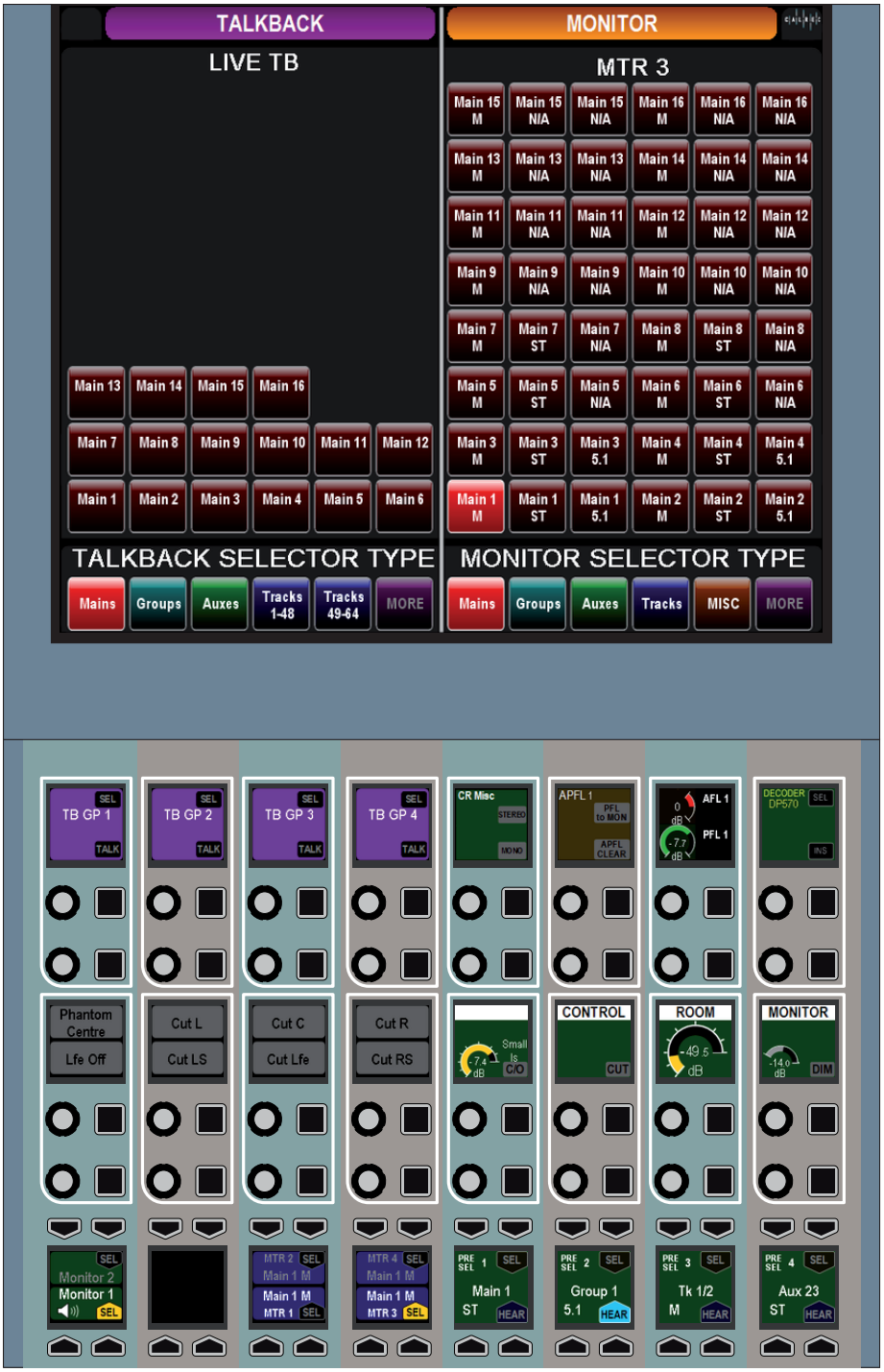
Monitor mode allows control over the monitoring, talkback and metering systems.

The arrangement of controls is shown in Figure 1.

Monitor mode allows the user to select sources to feed the monitoring systems, control the levels and functions of the monitoring systems (such as downmixes, speaker mutes and APFL behavior), talk to destinations, setup talkback groups and select sources for the assignable meters.

The monitor mode also allows multiple operators access to their own set of monitoring controls.

FIGURE 1 - MONITOR MODE CONTROL LAYOUT



OUTPUTS MODE

Outputs mode provides controls for manipulating output paths such as Main outputs, Track outputs, Aux outputs and Groups.

The TFT displays meters for Main and Aux outputs. The control cells provide level control and, where appropriate, cut functionality. A greater range of controls for the selected output such as tone, talkback, AFL and PFL can be accessed from the selected control area in the button cells at the bottom of the panel.

FIGURE 1 - OUTPUTS MODE CONTROL LAYOUT

WILDS MODE

Wilds mode arranges the wild assign area into vertical strips, providing quick access to up to four wild controls and a section of the TFT touchscreen for each fader.

A wild assign area set into Wilds mode is shown in Figure 1. Currently there are a range of pre-configured Wild strips available for use.

Accessing Wilds mode

To set a wild assign area into Wilds mode, touch the WILDS button on the Modes row of the Fader panel below. If the Wilds button is not visible on the Modes row, make sure that the panel is not locked by checking the status of the LOCK button also located on the Modes row.

Selecting Wilds mode will display the last used Wild strips on the panel and the Wilds setup buttons.

Changing Wild strips

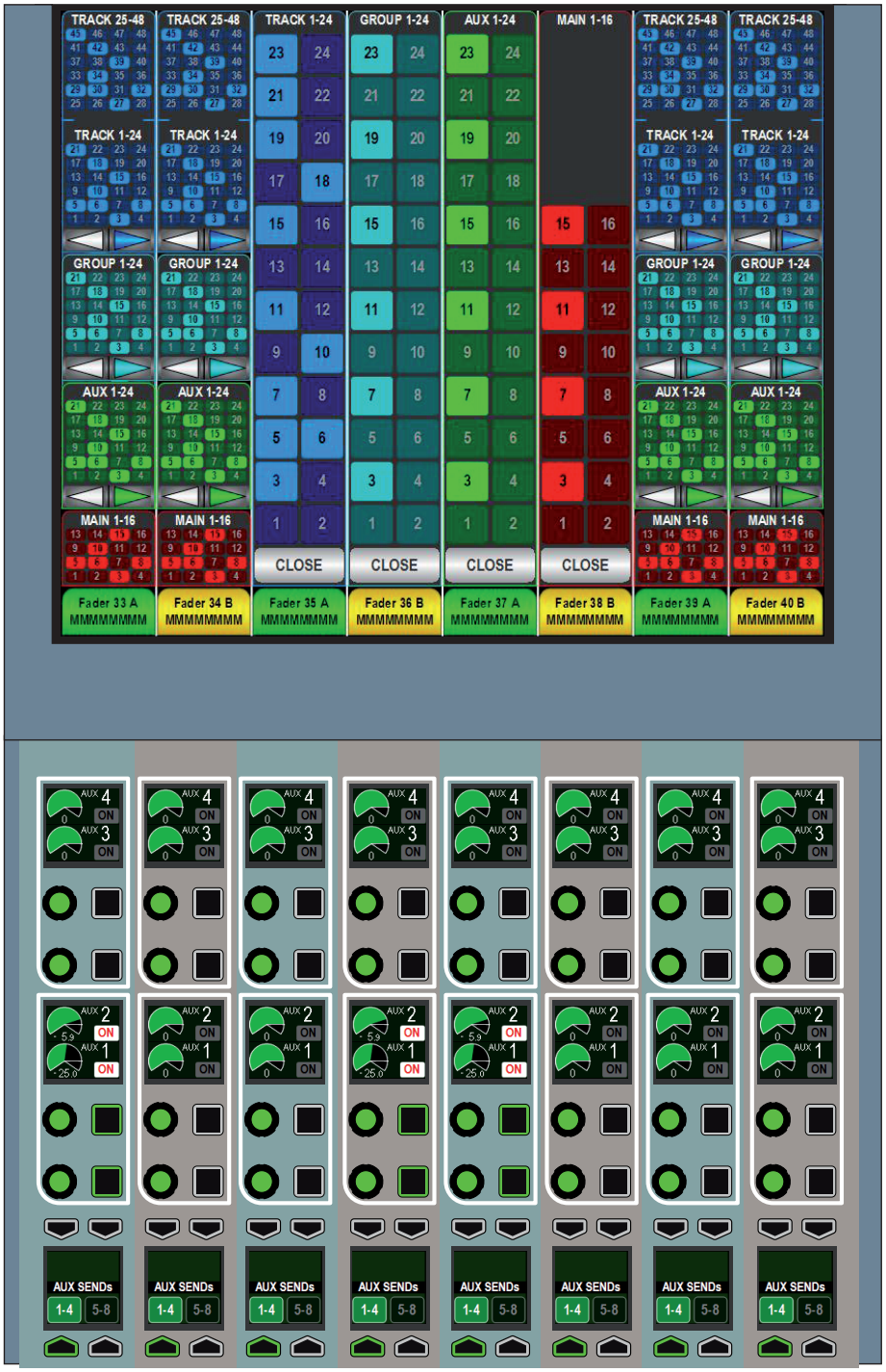
When Wilds mode is selected on the modes row, the available Wild control strips are shown on the Modes row. To select a different arrangement of Wild strips, touch the desired wild strip to assign it to the panel. Touch the EXIT button to return to the typical Modes row display.

If the available Wilds strips are not shown when in Wilds mode, touch the WILDS SETUP button.

Routing display

Each strip on the TFT contains a routing overview for the relevant fader. This overview also allows routes to be made and removed. The functionality of this feature is explained in the Routing section of this document.

FIGURE 1 - WILDS MODE LAYOUT



A/B path indicator
There is an indicator below each routing stirp on the TFT which shows the fader number and path label. This changes color to indicate whether the A (green) or B (yellow) path is selected on the fader. The currently assigned path is colored blue.

ASSIGNING PATHS

An important concept of Calrec consoles is that of assignability. This allows controls to be shared amongst all paths, reducing physical space requirements and providing quick and familiar access to all controls.

When a path is assigned, certain areas of the surface will display and allow control of parameters of that assigned path. For example, any wild assign panels in Assign mode and the surround spill panel will update to reflect values of the currently assigned path. Assigning a different path will alter these displayed values.

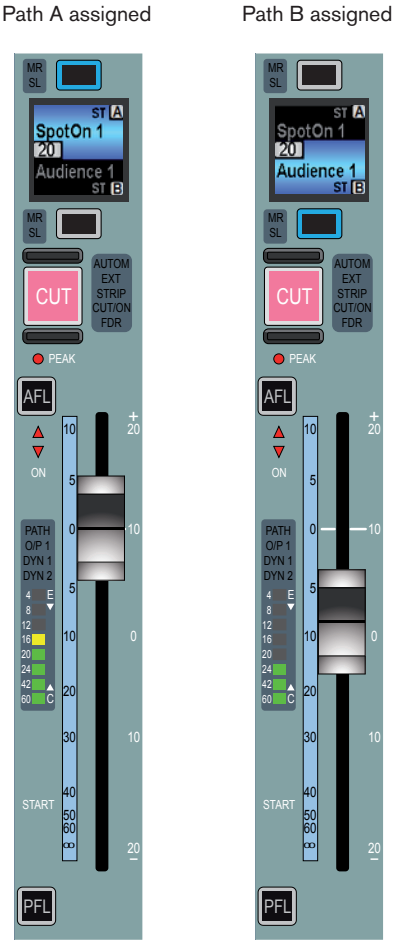
Assigning a path

Above each fader is an OLED and two buttons as shown in Figure 1. The OLED displays the name of the A and B paths of each fader. The upper section (green) shows the A path and the lower section (yellow) shows the B path. The path that is currently being controlled by the fader takes up a greater percentage of the OLED area and has the relevant button lit.

To assign either of these paths, press the relevant button above or below the OLED (above for path A, below for path B). The section of the OLED displaying the assigned path will turn blue to indicate the current assignment. The relevant button will also light up blue as confirmation. The fader will now control the assigned path as shown in Figure 2. Other areas of the surface that are set up to respond to Assignments will display and control parameters of this selected path.

FIGURE 1 - ASSIGN BUTTONS

FIGURE 2 - PATH ASSIGNMENTS



USER SECTIONS

The Artemis surface can be split into separate sections to allow multiple users to operate and organize the console simultaneously.

There are a maximum of three user sections available. The surface can be split along the left hand side of any panel.

When multiple individual surfaces are connected to the rack intended for use by separate operators, they can be thought of as one large surface, and the user splits should be made in the software to coincide with the physical splits in the surfaces.

Each user section provides independent path assignment meaning each user can freely assign different paths and apply processing simultaneously without affecting any other user.

Each user can also select which of the two monitor and APFL systems to use. These can be shared between all users or split for separate use.

Options files

User section layouts are saved into option files rather than being saved into the show directly. This makes it easy to apply common system settings across multiple shows.

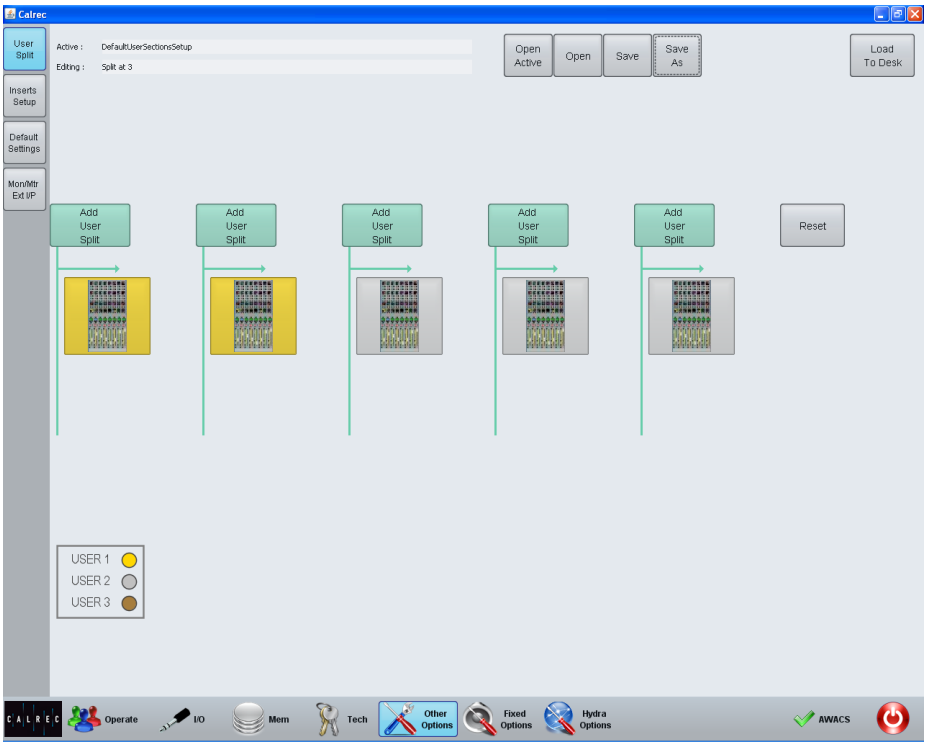
Be aware that multiple shows may use the same user split file, so changing a file may affect more than one show.

For more information on option files, refer to the Option Files section of this document.

User split screen

Navigate to the USER SPLIT screen of the OTHER OPTIONS section of the main application as shown in Figure 1. A representation of all surfaces connected to the rack will be shown.

FIGURE 1 - USER SPLIT SETUP



There are two text fields shown at the top of the screen. These are titled EDITING and ACTIVE. The active field displays the user split layout file that is currently active in the system. The EDITING field displays the file that is displayed on the screen for editing. These may be the same file.

Creating a user split

Press one of the ADD USER SPLIT buttons to insert a split at the desired position. A popup will appear providing a choice over which user section should appear to the right of the split. After making this decision, make any other necessary splits and then save the changes by pressing the SAVE button (overwrites the current file shown in the EDITING field at the top of the screen) or the SAVE AS button which allows a new file to be created.

Once the file has been saved correctly, press LOAD TO DESK to save the current layout to the file displayed in the EDITING field and apply the changes to the system.

Ensure that user split files used by other shows are not being unintentionally overwritten.

Resetting the user sections

On the USER SPLIT screen of the main application, press the RESET button. This removes all user splits from the surfaces. Be sure to save the layout to the correct file and press the LOAD TO DESK button afterwards to actually commit the changes into the system.

Open an existing user split
To open an existing user split file touch the OPEN button. On the popup dialog which appears, select the required file then choose either OPEN or LOAD. OPEN simply opens the file and displays the user split layout in the main application. It does not load any settings to the system. Selecting the LOAD option from the dialog displays the user split layout in the main application and loads the settings to the system immediately.

Opening the active file
To open the active file for editing touch the OPEN ACTIVE button.

LAYERS

Artemis provides an comprehensive layers feature to aid in organizing and accessing many paths extremely quickly.

Figure 1 shows the layout of controls on the Layers Row.

A/B Paths

Each fader provides instant access to two paths. These paths are known as the A and B paths and are described in the Assigning Paths section of this document.

To switch all faders to the A or B path use the ALL A or ALL B buttons on the Layers row.

Layers 1-12

There are also 12 layers available on the surface. Each layer contains it's own A and B paths.

Layers can be switched using the green buttons on the Layers row. The 12 layers are divided into two banks. The first bank contains layers 1-6 and the second contains layers 7-12.

The selected bank and selected layer are highlighted.

Using layers

Layers provide a flexible method of organizing paths on the surface. Layer 1, for example, may be configured to contain all main presenter microphones on path A and audience microphones on path B. Layer 2 may contain VT or server audio sources on path A. Switching between layers 1 and 2 provides fast access to both of these organized collections of sources. A path may appear on multiple layers simultaneously.

Layer Locking

A path can be locked to a fader and remain present on the surface regardless of the selected layer. To lock a path touch the LAYER TOOLS button on the Layers Row. On the updated Functions row above, touch and hold the LAYER LOCK button and then tap the assign buttons of any faders which contain paths that are to be locked to the surface. Holding LAYER LOCK and tapping an assign button toggles the lock on and off.

When a path is locked, a padlock icon will appear in the path label OLED to indicate the lock is active.

When a path is unlocked the A/B OLED will show text to indicate the original layer location of the path as it may not be the currently selected layer. The locked path will still remain in view until a different layer or All A/B selection is made.

Layer Split

The Layers row contains a button entitled LAYER SPLIT. Touching this button on any panel inserts a layer split along the left hand side of that panel. The button will light up as an indication of the split. Any layer changes made to the left of the split will not affect any faders to the right of the split. This applies to All A and All B selections too.

Multiple layer splits can be put in place across the surface, each obeying the same rules described above.

Turning off the B layer

The global B layer, which allows each fader to access a B path can be turned off. This is currently a factory set option and Calrec should be contacted for activation.

With this option set, the faders on the surface will only have access to one path per layer and can be accessed using the A layer path assignment buttons.

FIGURE 1 - LAYERS ROW

FIGURE 2 - LAYER TOOLS

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INPUT SOURCES

Input sources may take the form of physical audio input ports, outputs from the same Artemis console, or outputs from another console connected to the same Hydra2 network.

Filtering the Hydra2 network

Given the shared and hugely scalable nature of the Hydra2 system, your console may be able to access a large number of IO boxes. Many of these will not be relevant to the show or project that is currently being worked on and their inclusion in any source lists would only reduce clarity and result in clutter. Artemis provides a method to filter out unwanted IO boxes so that they do not appear in the patching lists, or anywhere else in the software. This feature is shown in Figure 1.

Open the EDIT NETWORK screen in the HYDRA OPTIONS section of the main application. There will be two lists shown. The left list shows all Hydra2 boxes connected to the network. Selecting a box in this list and pressing the ADD button will add that box to the list on the right. This means it will now be visible in the console patching screens.

Boxes can be removed in a similar way by selecting one in the right hand list and pressing the REMOVE button.

Input ports

A port is a physical input to, or output from the Artemis system. As all IO is contained in a Hydra2 network, each input socket on a Hydra2 box can be termed an input port.

Console outputs

Outputs from an Artemis console can be patched back into the console without leaving the rack. As the Hydra2 router module handles all patching within the system, flexible internal patching is possible.

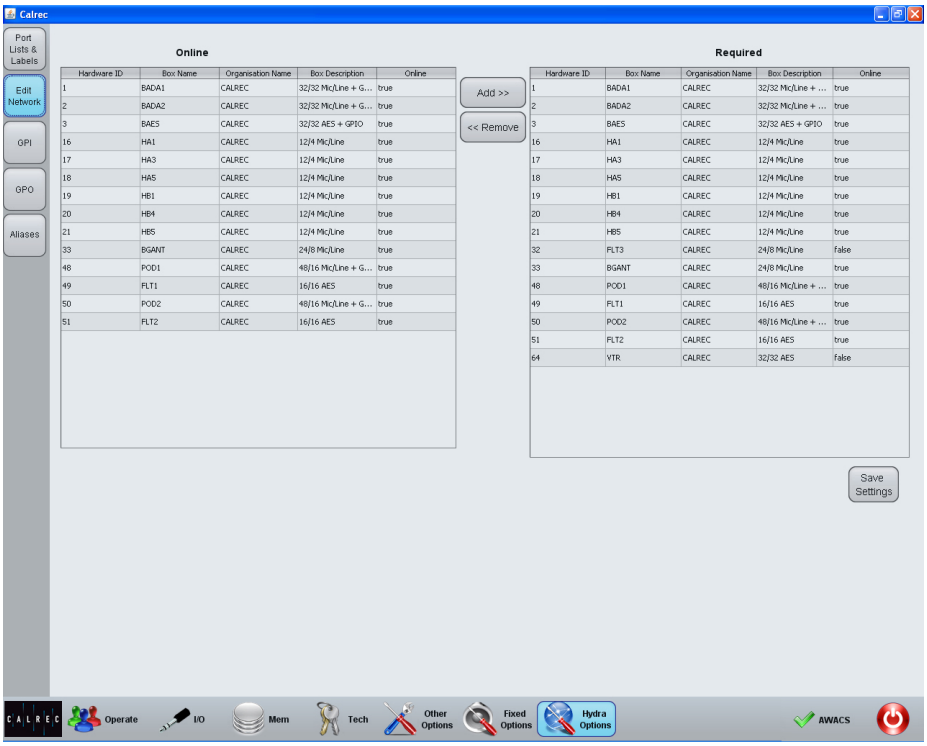
Outputs from any other Artemis console connected to the same network can also be patched back into the input of any console. This again is handled by the Hydra2 network. When two or more consoles are connected together via their routers, all of their outputs become available to the other consoles as input sources.

Port Labels

Ports may be labelled in the PORT LISTS & LABELS screen in the HYDRA OPTIONS section of the main application (Figure 2). In this screen, touch the INPUT ALLOC or OUTPUT ALLOC button to access the available input or output ports. Double click an port name to provide a new name, which must be 12 characters or less.

When viewing port lists in the patching screens, the ports are displayed alphabetically. This should be considered when labelling ports. Ports can be grouped together even if they are not in alphabetical order using sets which are described later in this section.

FIGURE 1 - EDIT NETWORK SCREEN



Port Lists

Ports can be assigned to lists. Lists provide a way of filtering the information shown when patching ports.

To access ports lists, go to the PORT LISTS & LABELS screen in the HYDRA OPTIONS section of the main application (Figure 2). Select the INPUT ALLOC or OUTPUT ALLOC button at the left of the screen to work with input or output ports respectively. The screen will show all available port lists just to the right of the INPUT ALLOC button. The DEFAULT LIST is created automatically and contains all available input or output ports.

Creating lists

To create a new list, select the required ports from the default list (or any other list that already exists) and touch the CREATE LIST button. A popup will appear prompting for the name of the new list, which can be six characters or less. Enter the name and touch OK. The new list will appear below the default list and will contain the selected ports. Touch the new list to confirm this. It is possible to make a new list which is empty, by ensuring that no ports are selected when touching the CREATE LIST button.

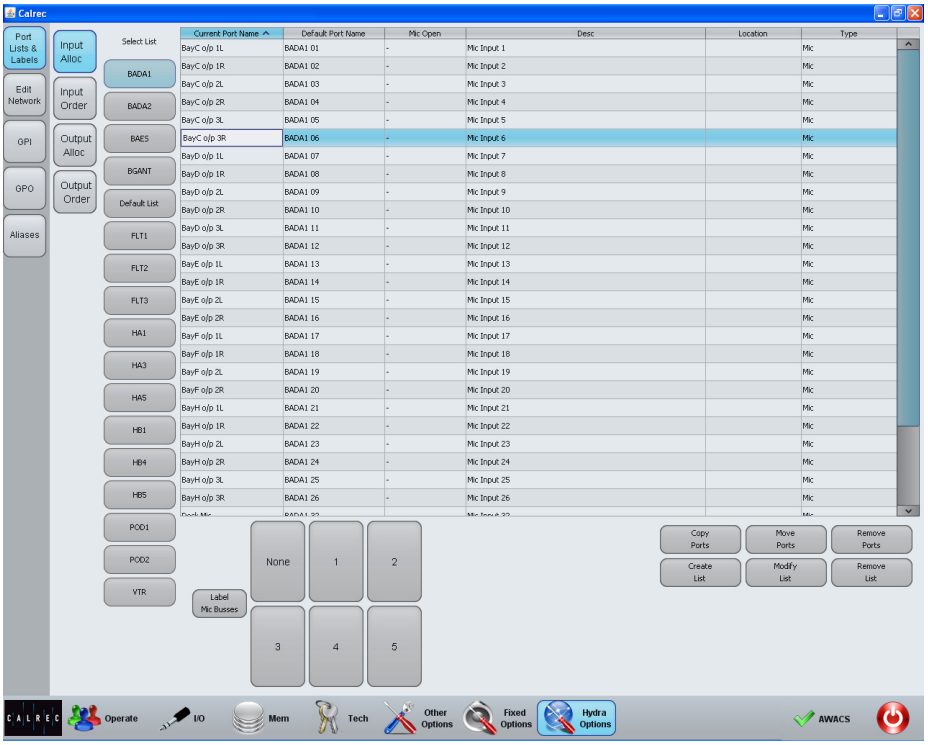
Copying and moving ports to lists

Ports can be copied or moved between lists by selecting the required ports in the source list and touching COPY LISTS or MOVE LISTS. A popup dialog will appear allowing selection of the destination list. Select the destination list and touch OK.

Removing ports from lists

To remove ports from a list, select the required ports and touch the REMOVE PORTS button.

FIGURE 2 - PORTS LIST SETUP SCREEN



Renaming lists

Touch the MODIFY LISTS button to bring up a popup dialog. This dialog allows you to select a list and rename it.

Removing lists

To remove a list, select the required list and touch the REMOVE LIST button. A popup dialog will appear asking for confirmation of the removal.

Mic Busses

While allocating ports to lists it is possible to assign certain ports to one of five mic open busses. This is done by selecting the required ports, then touching the relevant mic buss number button below. The function of the mic open busses will be detailed in the GPO section of this document.

Sets

Sets provide a way to group ports which together form part of a single source, for example a 5.1 surround source.

When viewing a port list, ports are sorted alphabetically according to their port name. If ports are labelled with the box name and port number this will present a logical order in the list. If however, the ports are labelled according to their function, for example the name of the source feeding the ports with a suffix of each individual leg as shown in the left column of Figure 3, the ports may not appear in a sensible order in the list.

If all ports associated with a certain source are added to a set and arranged in the correct order within it, they will be presented in the port list in that order. The set will be sorted in the port list by the name of the first port in the set.

Adding ports to sets

To add ports to a set, navigate to the PORT LISTS & LABELS screen in the HYDRA OPTIONS section of the main application and select either INPUT ORDER or OUTPUT ORDER from the buttons at the left of the screen (Figure 4).

On the left of this screen, the lists in the current view are displayed. Press the MORE LISTS button to scroll through any available views. Select a list to work on by touching it. The main area will now update to show the ports stored in the selected list. Select the ports that re to be stored in a set and touch the CREATE SET button. The number of the set will appear next to the ports. The order of the ports within the set can be changed by selecting a port and touching the up or down arrow buttons.

FIGURE 3 - SETS EXAMPLE

When ports are not assigned to sets, they appear in the port lists in alphabetical order. This may not list the ports in a sensible order, for example in the case of 5.1 surround sources.

- Playback 1 C
- Playback 1 L
- Playback 1 LFE
- Playback 1 LS
- Playback 1 R
- Playback 1 RS
- Playback 2 C
- Playback 2 L
- Playback 2 LFE
- Playback 2 LS
- Playback 2 R
- Playback 2 RS
- Playback 3 C
- Playback 3 L
- Playback 3 LFE
- Playback 3 LS
- Playback 3 R
- Playback 3 RS

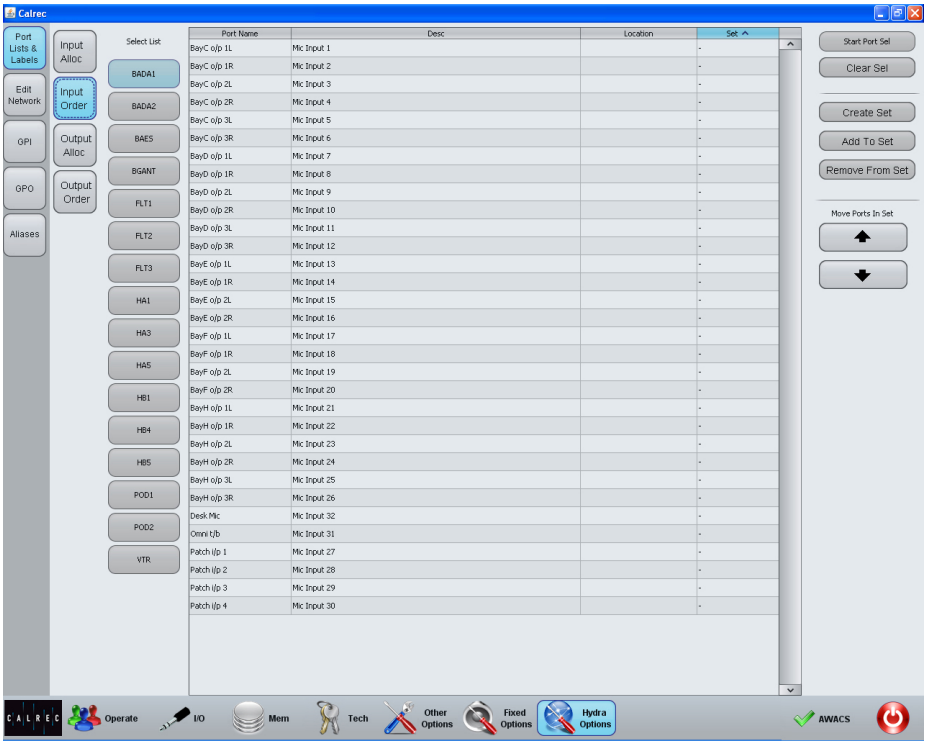
By using sets to group ports for realted inputs, the lists will display the ports in the correct order. The ports will be sorted by the name of the first port in each set.

- Playback 1 L
- Playback 1 R
- Playback 1 C
- Playback 1 LFE
- Playback 1 LS
- Playback 1 RS
- Playback 2 L
- Playback 2 R
- Playback 2 C
- Playback 2 LFE
- Playback 2 LS
- Playback 2 RS
- Playback 3 L
- Playback 3 R
- Playback 3 C
- Playback 3 LFE
- Playback 3 LS
- Playback 3 RS

Ports can be removed from a set by selecting them and touching the REMOVE FROM SET button.

Ports can be added to an existing set by selecting them and touching the ADD TO SET button. This will bring up a popup dialog which allows the user to select the destination set.

FIGURE 4 - SETS



PATHS AND FADERS

A path is a generic term that refers to a DSP process in the system. A signal present at an input port must be routed to a Channel path in order for it to be processed, routed, then sent back out of the system

Running at 48KHz, Artemis has S:640/B:340 mono channel paths available. The user is free to configure this pool of mono resources as required. Simply assigning any path type to a fader (mono, stereo or surround) automatically allocates the required number of DSP resources from the pool of 640. A mono channel path uses a single DSP resource, a stereo channel path uses two mono resources, and a 5.1 channel path uses six mono resources.

Attaching paths to faders

For a path to be directly controlled, processed and routed, it must be attached to a fader on the surface.

(An input signal also needs to be patched to a path in order for audio to pass through the system. This is detailed in the Getting Signal into Artemis section of this document)

The Layers Row is highlighted in Figure 1. On this row touch the TOOLS button. This will update the Layers Row to display a range of options as shown in Figure 2. Now touch the FADER ASSIGNMENT button. The Functions Row above will update to show the paths types that are available to be attached to faders.

The main path types, including channels and groups, are listed on the lower half of the Functions Row. Touching one of these path types will list the available paths that can be attached to faders in the upper half.

Press and hold the button above the desired path and then press the A or B assign button of the fader to which you wish it to be attached.

Inserting paths

It is possible to blank out the A or B path of a fader and shuffle the existing paths on the surface to the left or the right. Figure 3 illustrates this feature.

To achieve this, hold the INS << BLANK or INS >> BLANK button and then press

FIGURE 1 - ROW LOCATIONS

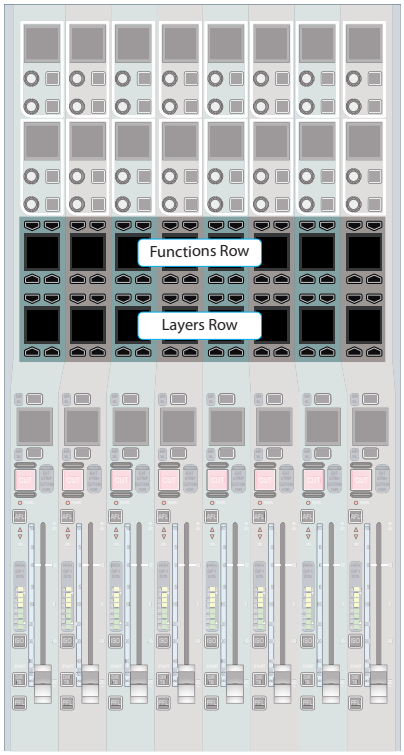


FIGURE 2 - ASSIGN FADERS VIEWS ON THE SETUP ROW

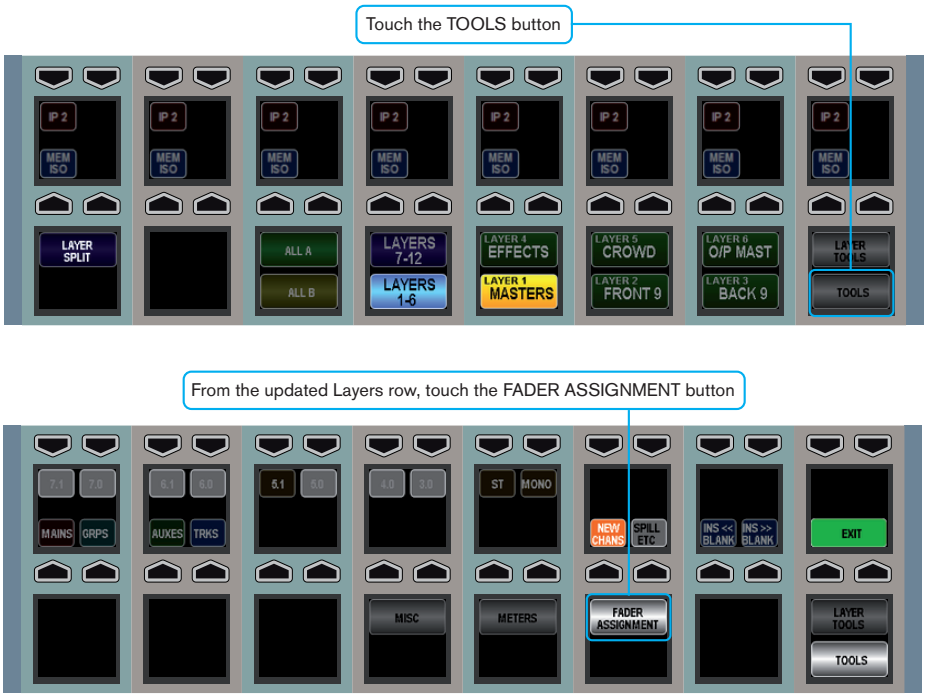


FIGURE 3 - INSERTING BLANKS

The arrangement of paths below serves as the starting point for the two following examples.

the A or B assign button on the fader where the blank is to be inserted.

Paths may only be inserted if there are enough empty faders to the left or right of where the path is inserted. If there are locked paths between the empty faders and the path to be inserted they will not allow the insertion to continue. Similarly, paths cannot be moved past the faders at the left and right edges of the surface.

Removing a path from a fader

To completely remove a path from a fader on the surface, touch the LAYER TOOLS button on the Layers Row. In the updated Function row touch and hold the REMOVE PATHS button, then touch the assign buttons of the faders that contain the paths to be deleted. The assign buttons of the selected paths will strobe to indicate the selection. Release the REMOVE PATHS button and touch either the EXEC or CNC buttons to execute or cancel the selection respectively.

Locking Paths

A path can be locked to a fader and remain present on the surface regardless of the selected layer. To lock a path touch the LAYER TOOLS button on the Layers Row. On the updated Functions row touch and hold the Lock Paths button and then tap the assign buttons of any faders which contain paths that are to be locked to the surface. Tapping the assign button again toggles the lock on and off.

When a path is locked, a padlock icon will appear in the path label OLED to indicate the lock is active.

When a path is unlocked the A/B OLED will show text to indicate the original layer location of the path as it may not be the currently selected layer. The locked path will still remain in view until a different layer or All A/B selection is made.

Cloning Paths

An existing path may be cloned to an empty fader. This action does not duplicate the path, rather it allows multiple faders to control the same DSP path. Any changes made to the path on one fader will be reflected when the path is accessed by another fader.

The source path should be assigned by pressing the A or B assignment button. Now touch the LAYER TOOLS button on the Layers row to update the Functions row above. Touch and hold the CLONE PATHS button on the Functions row and then press the assignment button of the destination fader to which the path will be cloned. This must be an empty fader. The destination fader's A or B assign button will strobe to indicate the selection. The CLONE PATHS button can now be released and either EXEC or CNC can be pressed to confirm or cancel the cloning respectively.

Swapping Paths

Two paths attached to faders on the surface can have their locations swapped. All settings on the paths remain intact, this function simply swaps the faders that control two paths.

In a similar way to cloning a path, one path should be assigned by pressing the relevant assign button. Touch the LAYER TOOLS button on the Layers row to update the Functions row above. Touch

and hold the SWAP PATHS button on the functions row then press the assign button of the other path which is to be swapped. The assign buttons of the two paths should now be strobing to indicate the selection. Release the SWAP PATHS button and press the EXEC button to confirm the process. Press the CNC button to cancel the process and leave the path positions unchanged.

Copying path settings

Settings for a given path may be copied over to another path. The user has a choice of whether to copy all settings, or just a certain subset of the settings.

The elements which can be copied are:

- EQ 1-4 (EQ bands 1-4)
- EQ 5-6 (EQ bands 5-6)
- TO M/G (Routing to mains and groups)
- TO TRK (Routing to tracks)
- TO AUX (Routing to Auxiliaries)
- ALL (All of the above elements)

To access the copy function, touch the LAYER TOOLS button on the Layers row. The updated Functions row above will display the controls shown in Figure 4.

Controls at the left of the upper row allow selection of the path elements to be copied. Elements are toggled on or off using the buttons above.

Press the assign button of the path from which the settings should be copied. Now press and hold the COPY PATH button then press the assign button of the path or paths which are to receive the settings. Release all buttons and then press the EXEC or CNC buttons to confirm or cancel the copy respectively.

FIGURE 4 - COPY PATH SETTINGS

PATCHING SOURCES TO DESTINATIONS

An input port must be linked to a path in order for a signal to pass into the console.

Once a path has been assigned to a fader, one or more input ports can be assigned to that fader (dependant on the path width chosen). This can be done on the configuration PC.

The flexible Artemis patching matrix allows the user to easily patch any source to any destination. For example, Hydra2 input ports can be patched to paths on the surface, console outputs can be patched back into console inputs, even outputs of other consoles on the same network can be patched to the inputs of another console. A source can be patched to multiple destinations, but a given destination can have only one source.

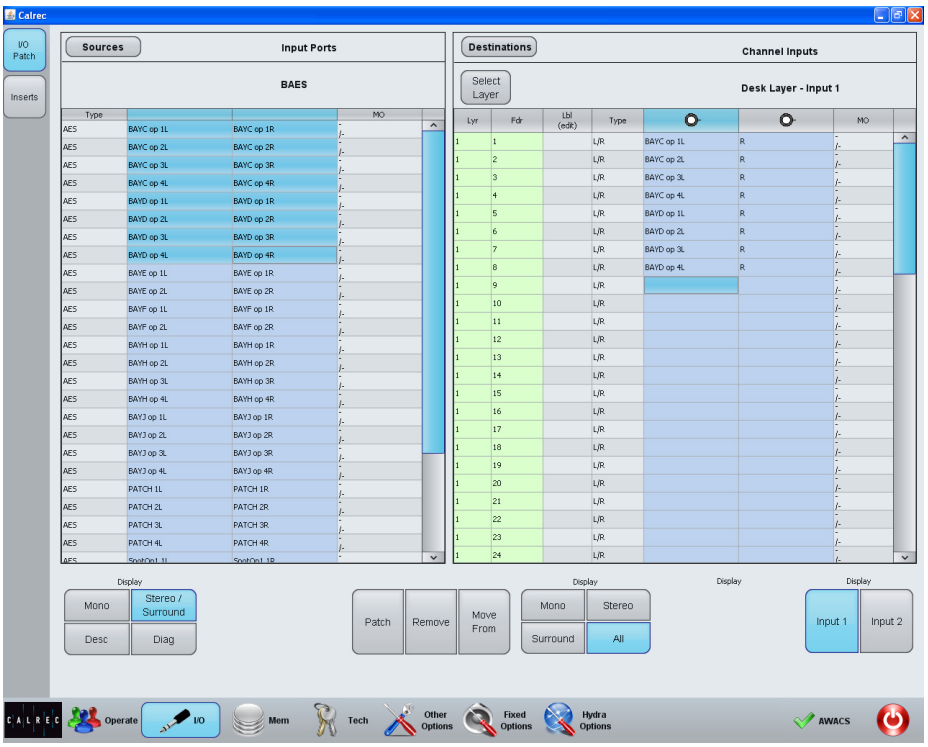
Patching

On the configuration PC switch to the IO screen. This screen is divided into two main sections, the left showing available source ports and the right showing destination ports (Figure 1).

Pressing the SOURCES button in the sources section on the left opens a popup window that allows the user to select from the available source lists These groups are configurable but could include Hydra2 inputs, possibly grouped into different studios, or local console aux, main or track outputs. Selecting a list closes the popup window and populates the source section of the IO screen with the available source ports from the chosen list.

In the same way, the destination section can be populated by selecting a list from the destination popup window. This is accessed by pressing the DESTINATIONS button.

FIGURE 1 - IO SCREEN ON THE CONFIGURATION PC



When the two sections are showing the desired source and destination lists, connections can be made between the two. To make a connection select a source by clicking on a blue cell, then select a destination also by clicking on a blue cell. Pressing the PATCH button will execute the connection. The name of the source should now appear in the destination cell to indicate a connection has been made.

If a connection already exists between a source and a destination and a new connection is made between that same destination and a different source, the existing connection is removed and replaced with the new one.

Removing connections

To remove a connection, select the required destination port and press the remove button. This breaks the connection and frees up the destination.

Moving connections

A connection between source and destination can be moved to allow the source to connect to a different destination. To perform a move, select the destination cells that contain the sources that are to be moved and press the Move From button. The Move From button will change to display Move To to indicate that a move is in progress. To finish the move select the destination cells that the sources should be moved to and then press the Move To button.

Channel input layers

If the Channel Inputs destination list is selected, a button labelled LAYERS becomes available which allows the user to select which possible destinations are

shown in the list. Filtering options available include which of the twelve numbered layers should be shown and within that layer which channel widths (mono, stereo, surround or all) and which of the A or B layers (or both) are displayed. A layer option called 'Desk Layer' is available which will list all available paths currently on the surface regardless of the layer.

There is an option to select the Scratch Layer rather than one of the numbered layers. Selecting this layer will display all visible paths currently on the surface regardless of their layer assignment. This is very useful in the situation where a layer split has been made and subsequently there is more than one layer visible on the surface.

Port inputs 1 and 2
Each path has access to two input ports. These could for example be used to provide redundancy to presenter microphones. A primary microphone could be patched to input 1 of a certain path and a secondary backup microphone could be patched to input 2.

ALIAS FILES

Alias files enable easier setup of input and output configurations when productions move to different studios.

In systems with several studios and control rooms, moving a production causes a change to some of the resources used, but retaining a similar IO patching scheme. For example changing a show from Studio 1 to Studio 2 is likely to require a similar set of inputs patched to the console channels but coming from a different studio wall box. An alias file provides easy re-patching. Similar alias files also exist for output routing.

Editing alias files

To create or modify an input alias file, go to HYDRA OPTIONS and ALIASES and choose INPUT FILES. With either a new or existing file open for editing, all the available input ports are shown in the right hand window and can be placed as part of the alias by touching the ADD PORTS button. Once added, the ports can be given a function related name as shown in figure 1. The commonly used CTRL X, CTRL C and CTRL V for cut, paste and copy can be used to speed the entry of text names. Names must all be unique and any temporary duplicate is shown with a red warning.

Once the alias file for use with one set of ports has been saved, another can be created using an alternative set of ports, assigning matching names for the audio signal to those used in the first alias file. It will often be convenient also to organise the output ports into suitably named Output Alias files.

Alias groups

The display order is alphabetical so to ensure related are adjacent in source lists, ALIAS GROUPS can be created. These can be thought of as performing

FIGURE 1 - INPUT ALIAS FILE EDITING

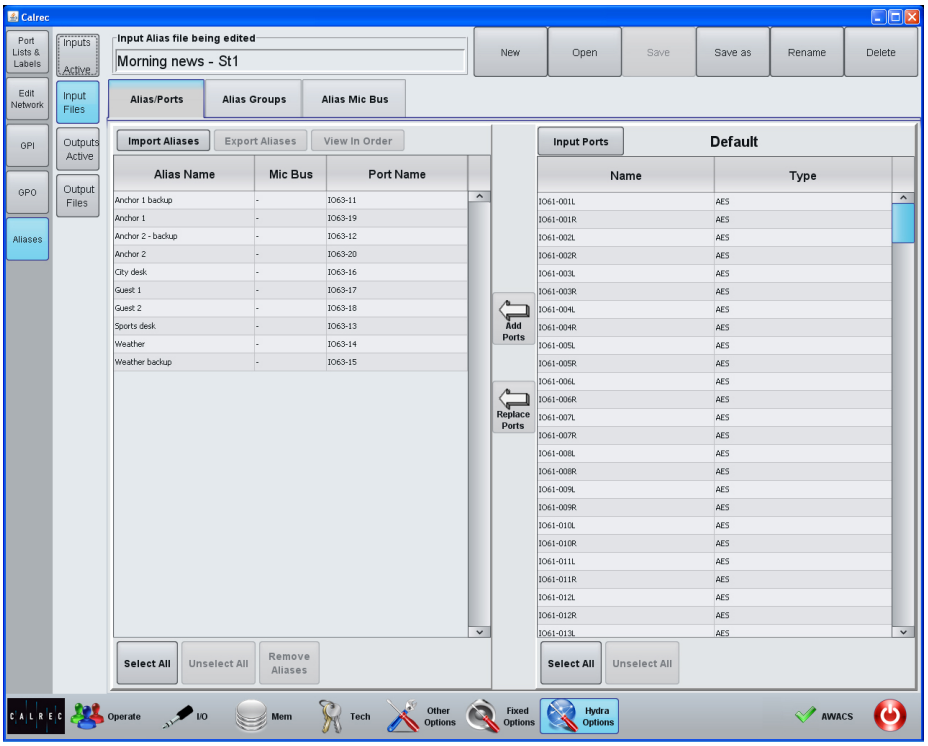
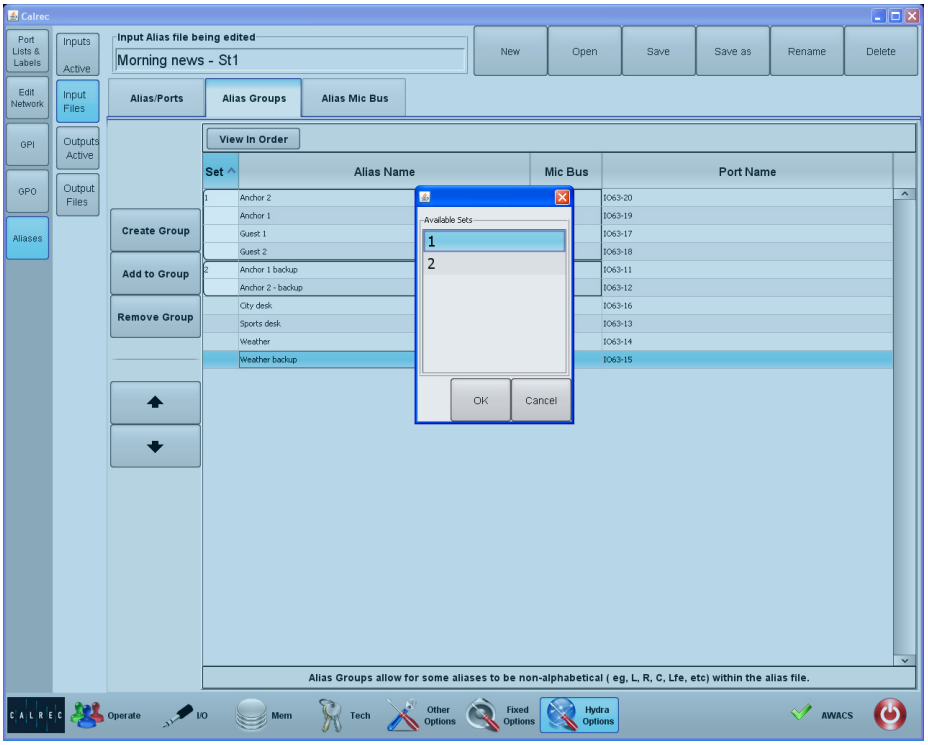


FIGURE 2 - ALIAS GROUPS



a function similar to input sets and within the group, the term SET is again used.

First select the alias file for which groups are going to be assigned and then select the first port that is to belong to that group. Touch CREATE GROUP and 1 appears in the SET column. Other ports can then be chosen as in figure 2, either to be added to an existing group, or for a newly created group. This grouping is only of the ports within the alias file and should not be confused with any other form of grouping that may be in use on a console.

Alias mic bus

ALIAS MIC BUS allows the ports to be assigned to one or more of the console's five mic open busses so that studio speaker muting is correctly assigned when the production changes studios.

Enabling an alias file

To make an input alias file active and ready for use, go to INPUTS ACTIVE and using the arrows, placed the required file(s) into the left window of active alias files as in figure 3. Only files that contain valid input patching can be made active.

When output alias files have been created, they should also be enabled to make them available for use.

Alias patching

To use the routes defined in the input alias file, go to the IO patching screen. When filtering the Sources, as shown in Figure 4, all the currently active Input Alias files will be shown, as well as available inputs ports and desk outputs. Output aliases are used in a similar way.

FIGURE 3 - ALIAS ENABLING

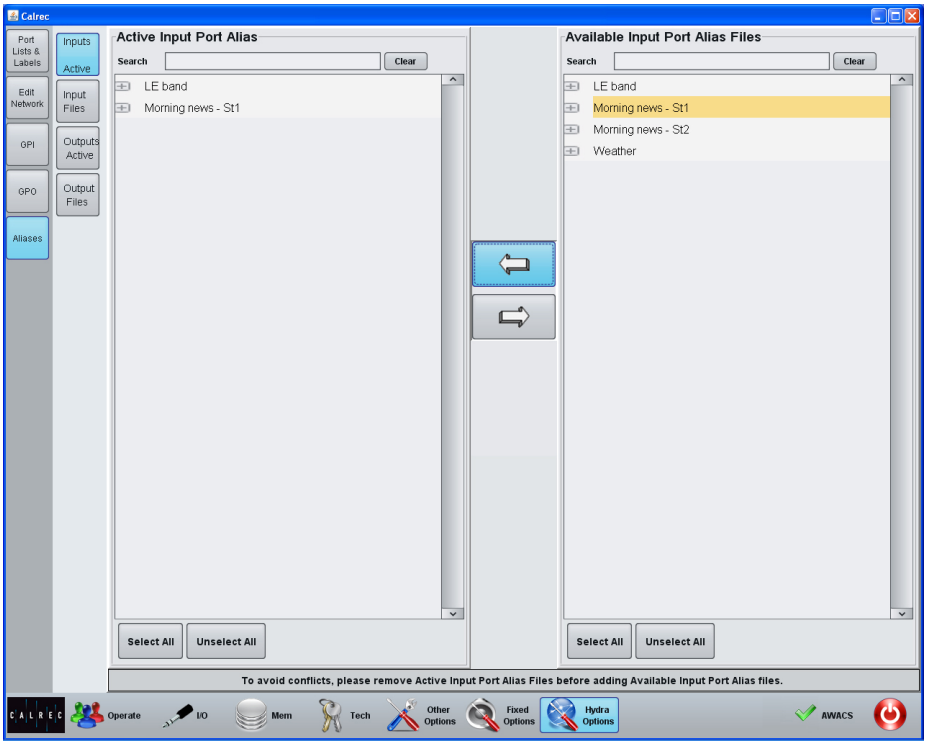
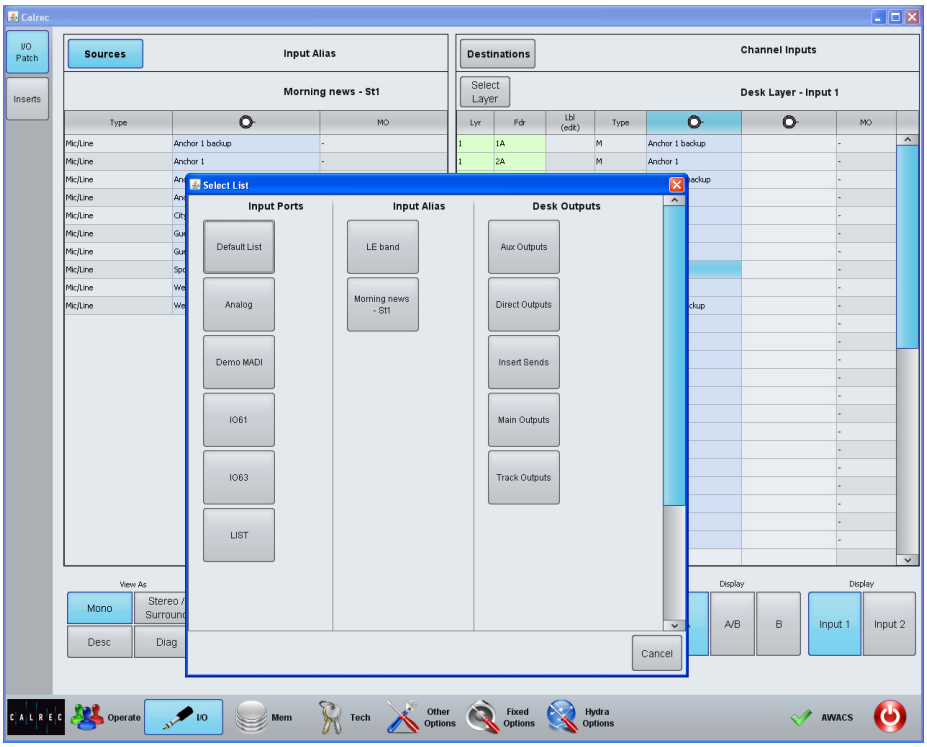


FIGURE 4 - USING AN INPUT ALIAS



INPUT CONTROLS

Once a path has been assigned to a fader, certain options are available to control the input signal.

Depending on the operating mode, the controls may be accessible in various locations on the surface. As the controls available in Wilds mode are very flexible and may have been customized by the user, this section will detail the controls available on a panel in Assign Mode using the INP-EQ-DYN layout.

Figure 1 shows the layout of input controls in the INP-EQ-DYN Assign mode layout.

Inputs 1 and 2

There are two inputs available to each path on the console. The first input may be used alone, or the second input could be used to connect a backup signal. This could be a presenter's backup microphone ready to be used in the case of failure of the primary microphone. Switching between the two inputs feeds the selected input to the path. This can be achieved with a single button press.

Mic/Line gain

The gain of any connected mic/line input can be adjusted with this control. The gain range varies from +78 to -18 dB. This gain control alters the gain at the input port in a Hydra2 IO unit and will only be available to the owner of that port. Port ownership was discussed in the Input Sources section of this document.

±6dB coarse gain

This control allows coarse gain adjustments to be made to the mic/line input gain. Pressing the + or - buttons will boost or attenuate the gain by 6dB respectively.

Input trim

Input trim boosts or attenuates an input signal by ±24dB inside the channel path.

FIGURE 1 - INPUT CONTROLS

This is the only input gain control available for digital input signals and the only input gain control available for a port owned by another user. As the gain is applied inside the channel path it has no effect on any other operators using the same port.

Tone

A button on the TFT touchscreen inserts tone into the input of the channel path. Currently a fixed 1kHz sine signal. When tone is applied to a channel an indicator will appear on the input controls, the fader and any meters relevant to the fader as a visual aid to the user.

Input delay

There are S:256/B:128 legs of input delay in the system, each providing up to 2.73s of delay.

Delay can be set on a channel in the INP-EQ-DYN layout of ASSIGN mode. With the required channel assigned, use the control in the upper left control cell as shown in Figure 1.

Touch the ASSIGN DELAY button on the touchscreen to assign an input delay resource to the channel. The required amount of delay can be set using the rotary control and then inserted into the path using the IN button.

The following controls allow manipulation of mono or stereo input signals only. Should a fader have a surround path assigned to it, each mono or stereo leg of this surround signal may be manipulated by assigning the relevant leg on the spill panel.

48v

48v (phantom power) can be sent to each leg of the input signal using the 48V button (mono) or the 48L and 48R buttons (stereo). These are located on the TFT touchscreen.

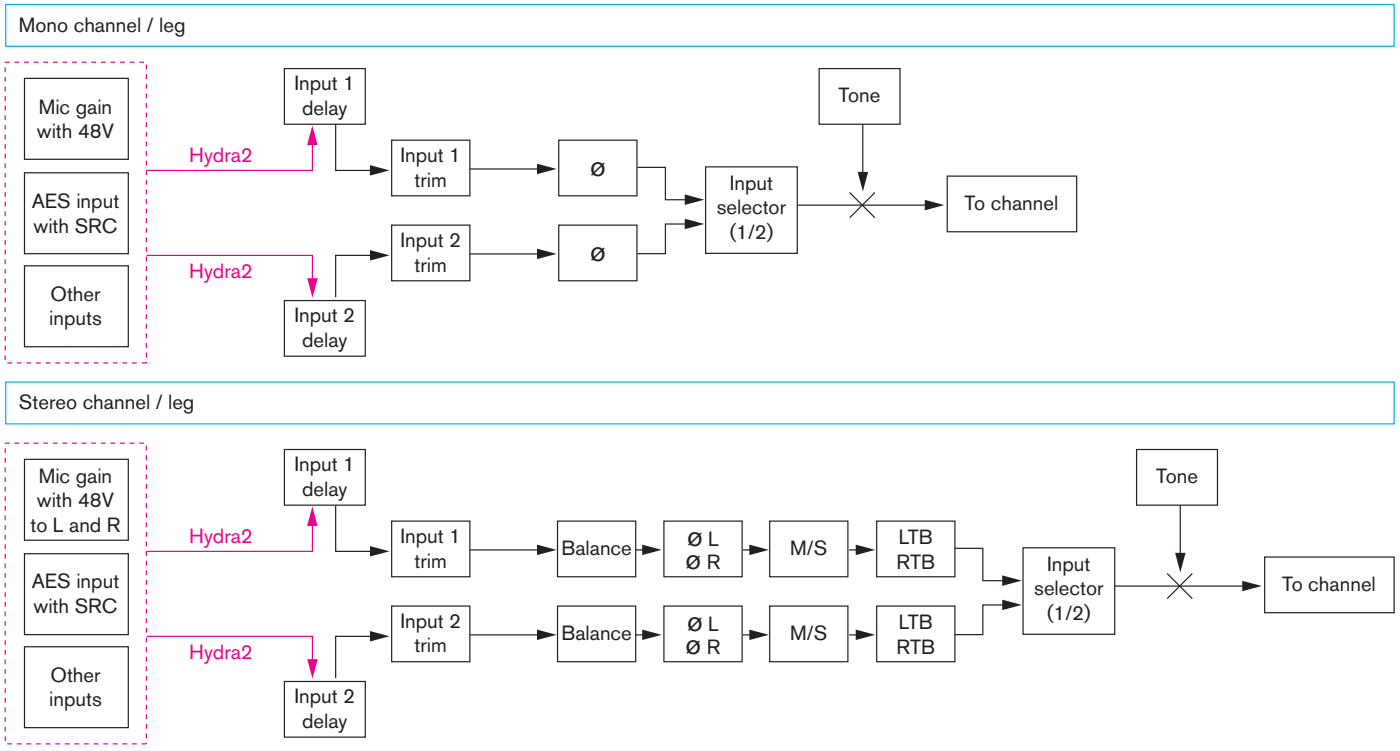
Polarity inversion

The polarity of the each leg of the signal may be inverted individually using controls on the touchscreen.

Input balance

The balance of a stereo input pair can be varied from full left, through center stereo to full right. If the balance control is switched out, then the balance is set to center stereo.

FIGURE 2 - INPUT SIGNAL FLOW



M-S
If the input signal on a stereo input is presented as an M-S pair it may be presented incorrectly unless the M-S decoder is switched in. A button on the touchscreen toggles the decoder in or out.

SRC
Sample rate conversion may be turned on if an AES input is selected.

Signal flow
Figure 2 shows the signal flow of Artemis' input section for a stereo input with input 1/2 selection.

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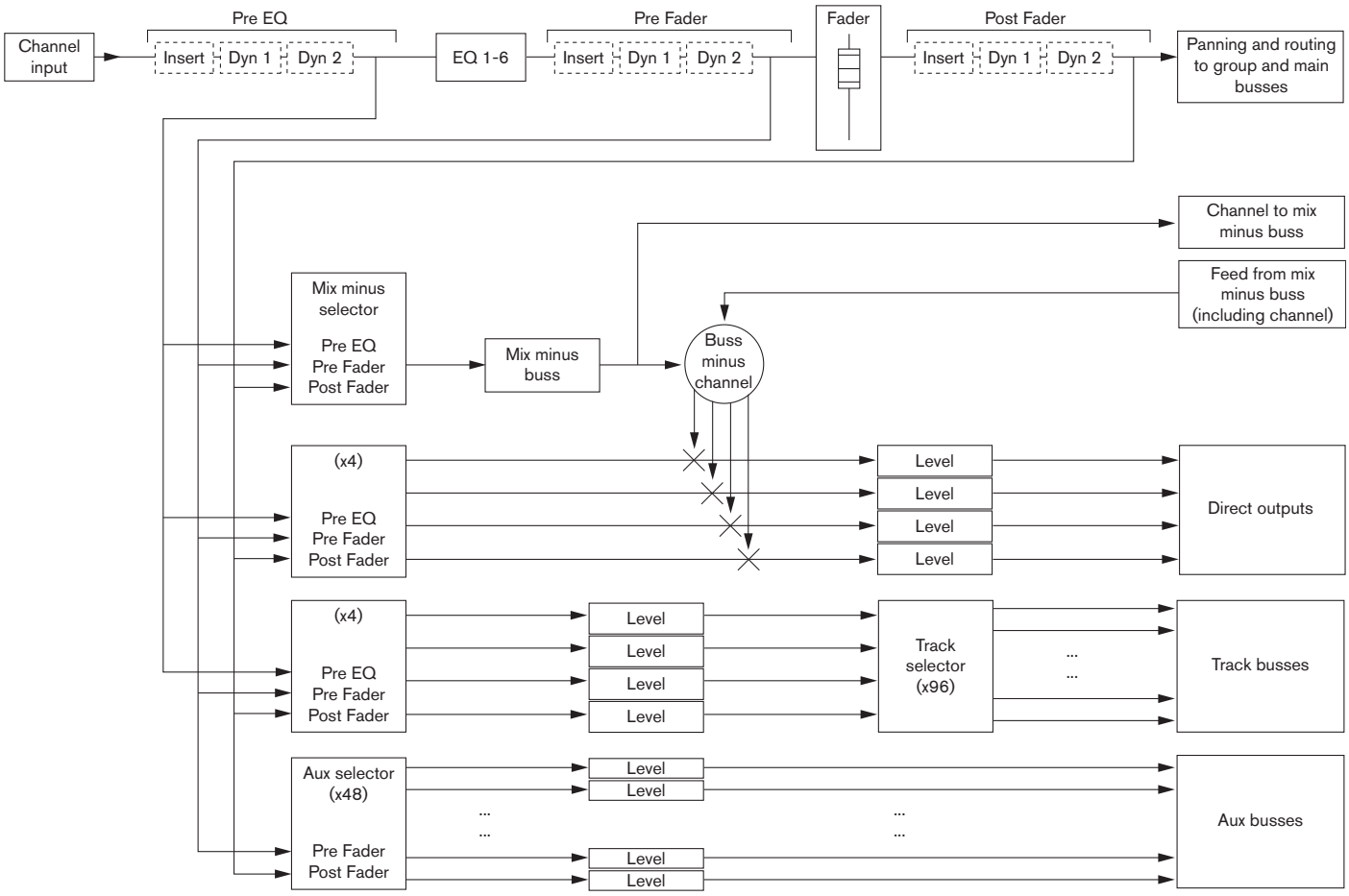
CHANNEL SIGNAL FLOW

Figure 1 illustrates the signal flow in an Artemis channel path. It shows the positions at which inserts, EQ and, two dynamics units and the relevant send and output points can be positioned.

FIGURE 1 - CHANNEL SIGNAL FLOW



EQ AND FILTERS

EQ is available on all paths without restriction. Each path has access to six full range, fully parametric, switchable response EQ bands.

Each EQ band has a frequency range from 20Hz to 20kHz and can have either a highpass filter, low shelf, notch, bell, high shelf or lowpass filter response.

Given the flexible and configurable nature of the surface, the EQ control layouts used here are available on the INP-EQ-DYN Assign mode layout. This layout is shown in Figure 1. These controls would only affect the currently assigned path.

On/Off

Buttons in the left Button cell switch all bands 1-4 on or off together and bands 5 and 6 on or off together.

Gain

The left column of Control cells contains gain controls (where relevant) for all six bands. The gain for shelf and bell responses is -18dB to +18dB.

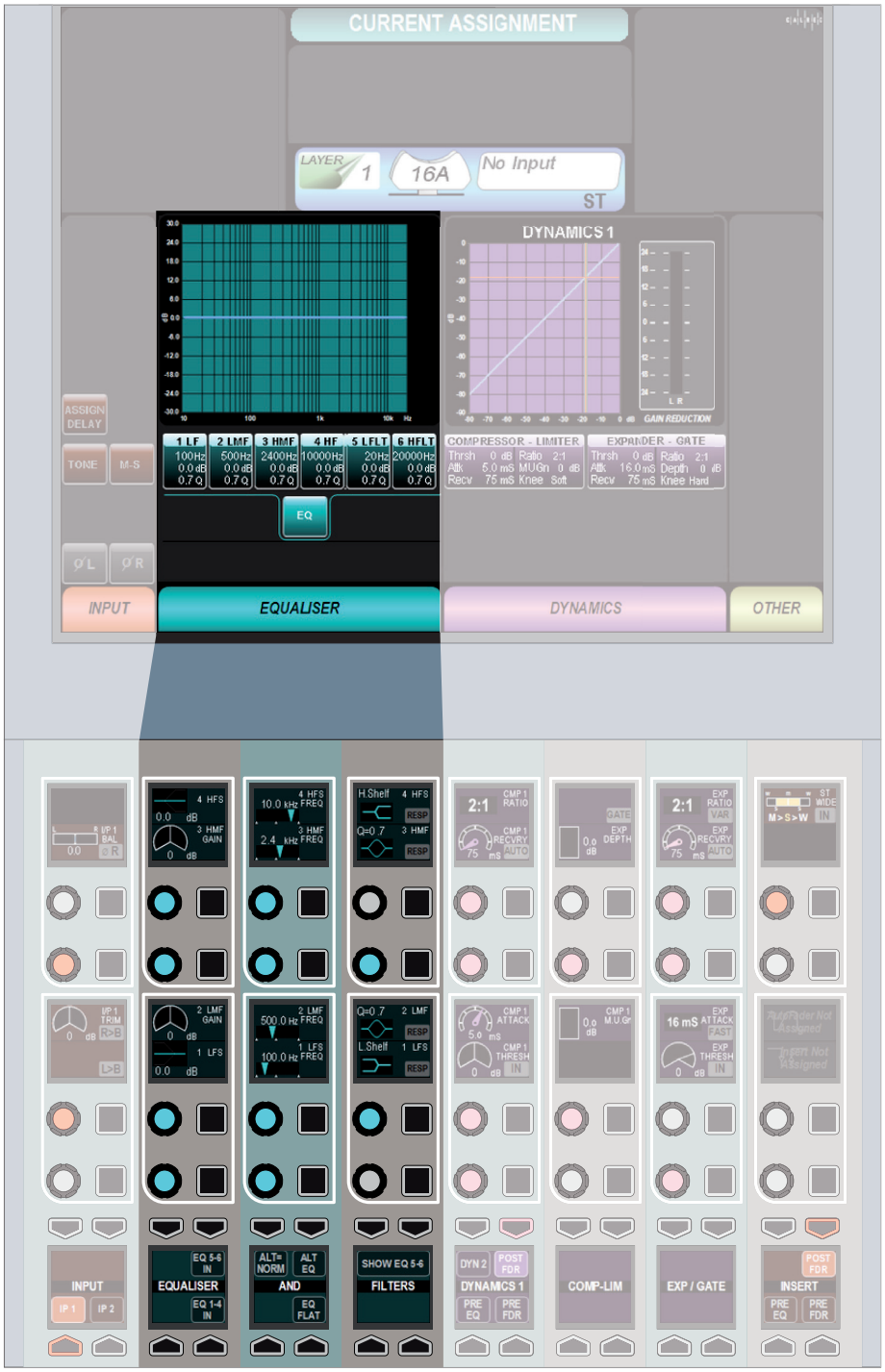
Response

Pressing the RESP button for any band in the right column of Control cells allows the rotary control to scroll through the available response types. The button will be lit during this process. Once the response has been chosen it can be selected by pressing the button a second time. When the RESP button is not pressed, the rotary doubles as the Q control.

Frequency

Each band has a full frequency range from 20Hz to 20kHz. This is controlled by the middle rotary control on each row.

FIGURE 1 - EQ CONTROLS ON THE INP-EQ-DYN ASSIGN MODE LAYOUT



Q
The bell response has a variable Q from 0.3 to 10. The notch response has a fixed Q of 30.

EQ flat
Holding the EQ FLAT button for a second will reset the gain, frequency and response (and Q where applicable) for all EQ bands.

Alternate EQ
Two EQ curves can be created per channel using the ALT EQU button. Touching this button flips between the two EQ curves for quick EQ changes or comparisons. The ALT = NORM button copies the main EQ settings over to the alternate EQ.

EQ curve display
The touchscreen shows a graphical representation of the current EQ curve for the assigned channel. It also shows an overview of the settings of each EQ band below it.

DYNAMICS

Each path has access to two dynamics units. The first contains a compressor/limiter and an expander/ gate and the second contains another compressor/limiter. These processors are dedicated resources and are available on all Channel, Group and Main paths at any time without restriction.

Dynamics controls

Figure 1 shows the layout of the dynamics controls in the INP-EQ-DYN layout of assign mode when controlling the first dynamics unit. When controlling the second dynamics unit, the layout is similar, except there are no expander/gate controls shown. To switch between the dynamics units, use the DYN 1 and DYN 2 buttons in the button cells at the bottom of the panel.

Figures 2 show the parameter values for the compressor/limiter and expander/ gate.

The compressor can be used as a limiter by selecting the highest ratio (50:1). The expander can be switched to a gate by pressing the GATE button on the surface controls. It can be switched back to an expander by pressing the same button again.

The touchscreen shows a gain reduction meter, an input-output curve and the current numerical settings for the dynamics processing.

Processing order

The dynamics processing can be placed at various points in the signal chain. Buttons in the left button cell of the dynamics area allow a choice over:

- Post Fader
- Pre Fader
- Pre EQ

FIGURE 1 - DYNAMICS CONTROL LAYOUT

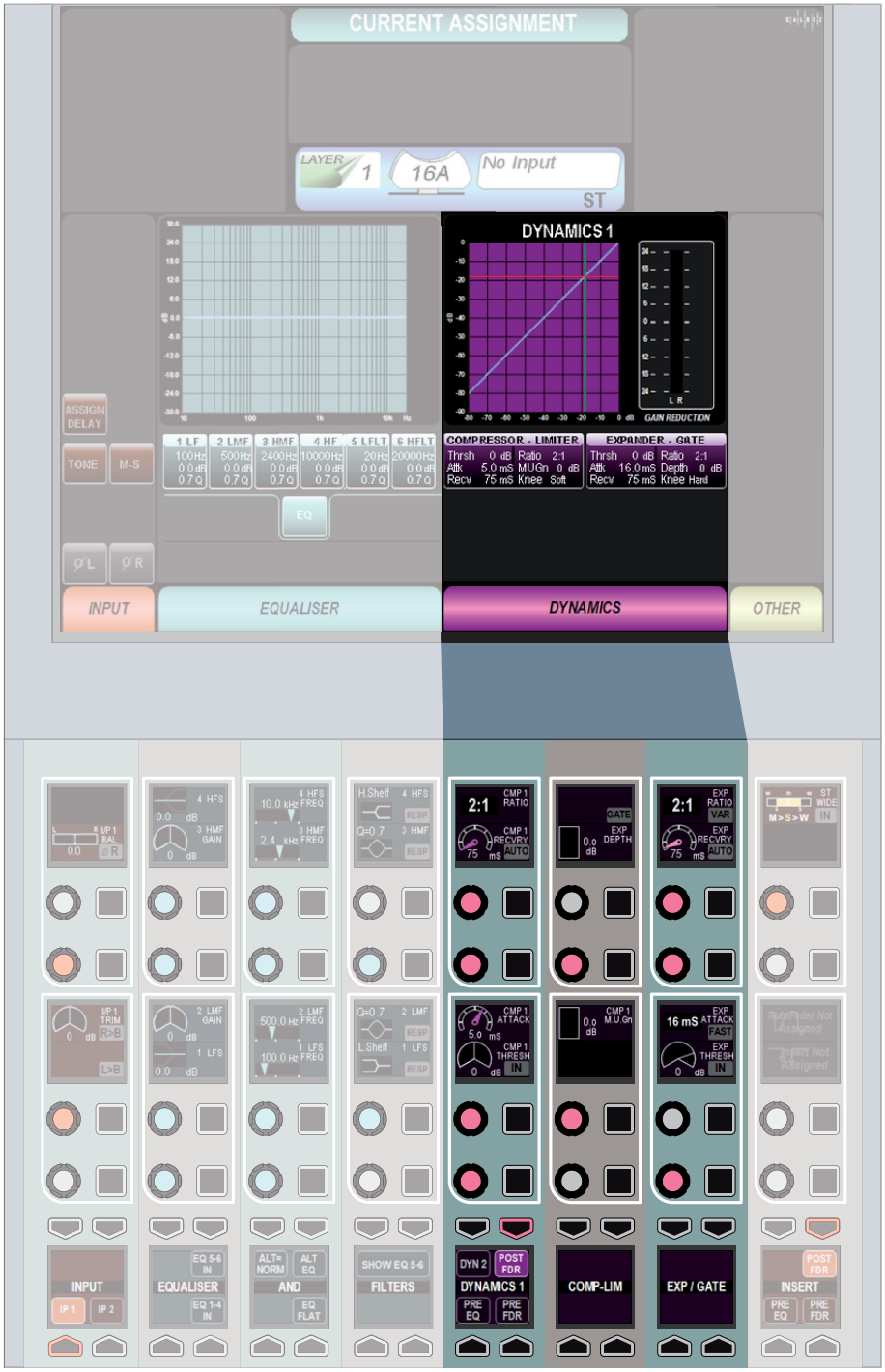


FIGURE 2 - DYNAMICS PARAMETERS

Compressor/Limiter

Parameter	Range
Attack	50µs - 30ms
Release	75ms - 4s or Auto
Threshold	±20dB
Ratio	1:1 - 50:1
Knee	Hard or Soft (on channel paths only)
Makeup Gain	0-20dB or Auto

Expander/Gate

Parameter	Range
Depth	0-40dB
Attack	Fast (300µs) or normal (16ms)
Release	75ms - 4s or Auto
Threshold	-40dB - +10dB
Delay	0-1000ms
Hysteresis	6dB switched in or out
Expander Ratio	2:1 or VAR (Variable according to level)

Dynamics metering

The dynamics meter to the right of the dynamics graph shows gain reduction for both compression/limiting and expansion/gating. The red compression and limiting indicators start in the center of the meter at the zero mark and extend upwards. The green expansion and gating indicators also start in the center of the meter but extend downwards.

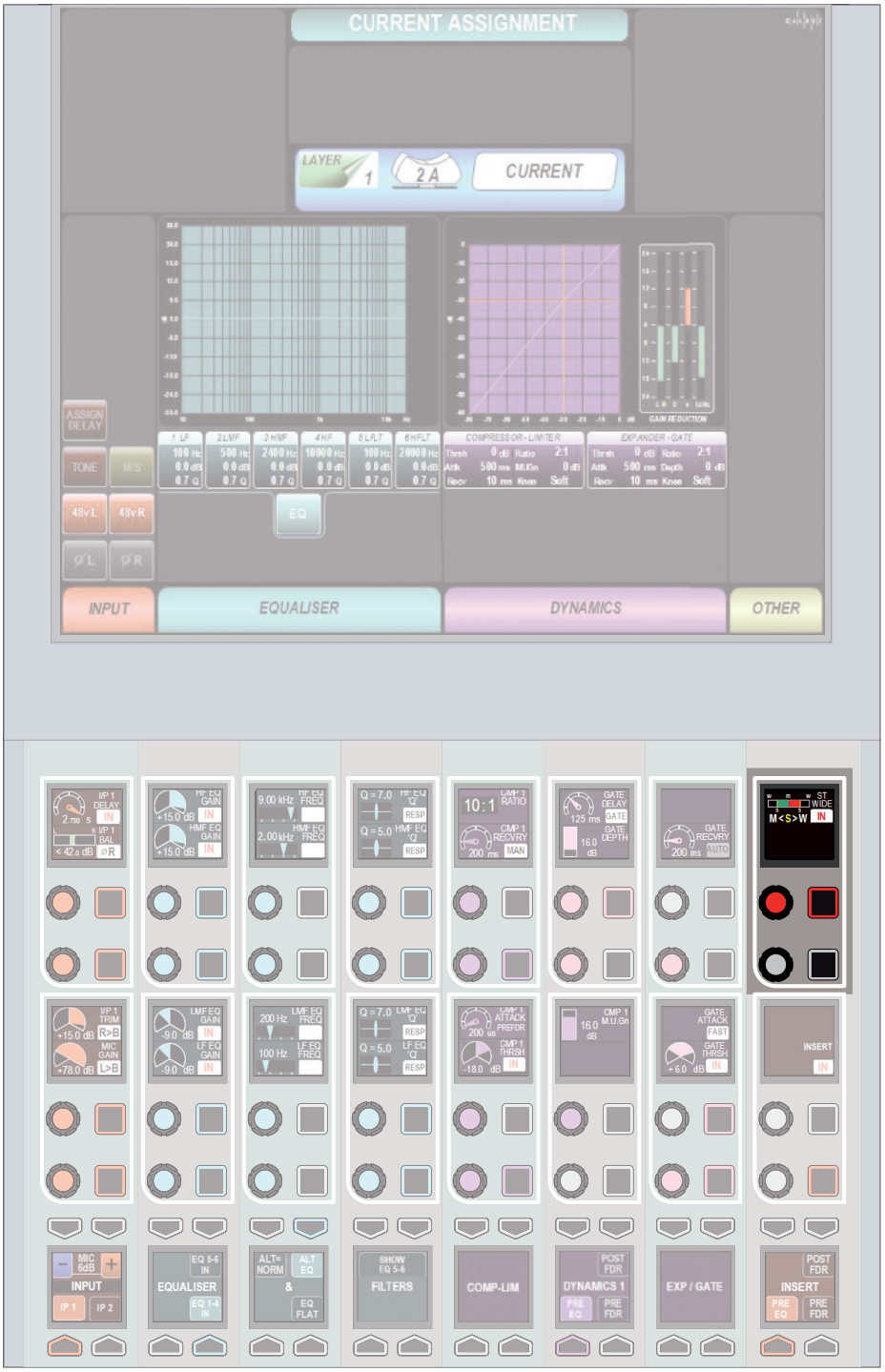
STEREO WIDTH

Stereo paths and stereo legs of surround paths have access to the stereo width control.

This control varies the width of the paths stereo image from mono through stereo, through to wide. Wide creates an apparent extension of the image past the usual left and right limits.

Stereo width appears pre fader, post EQ and dynamics in the processing chain and must be switched in using the IN button.

FIGURE 1 - STEREO WIDTH CONTROL



INSERTS

Artemis has a pool of 256 mono insert resources available. These may be used to create inserts for any width of path in the system.

Configuring inserts is a two step process. First any insert send and return resources should be patched to output ports and input ports respectively. The insert resources should then be connected to the required paths on the surface. This process is shown in Figure 1.

Patching insert resources to ports
Insert sends and returns can be patched to ports in the IO PATCH screen of the IO section of the main application. This screen is shown in Figure 2.

In this screen select INSERT SENDS from the sources list and OUTPUT PORTS in the destinations list. Select the required insert sends and outputs ports then touch the PATCH button.

Now select INPUT PORTS from the sources list and INSERT RETURNS from the destinations list and patch the required ports to insert returns.

FIGURE 1 - INSERT ABSTRACTION

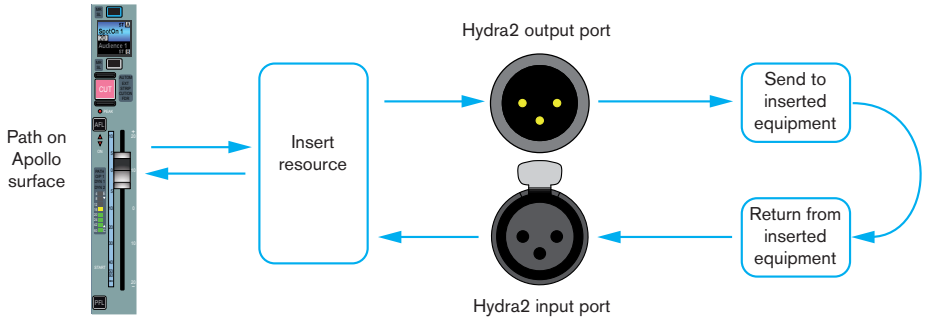
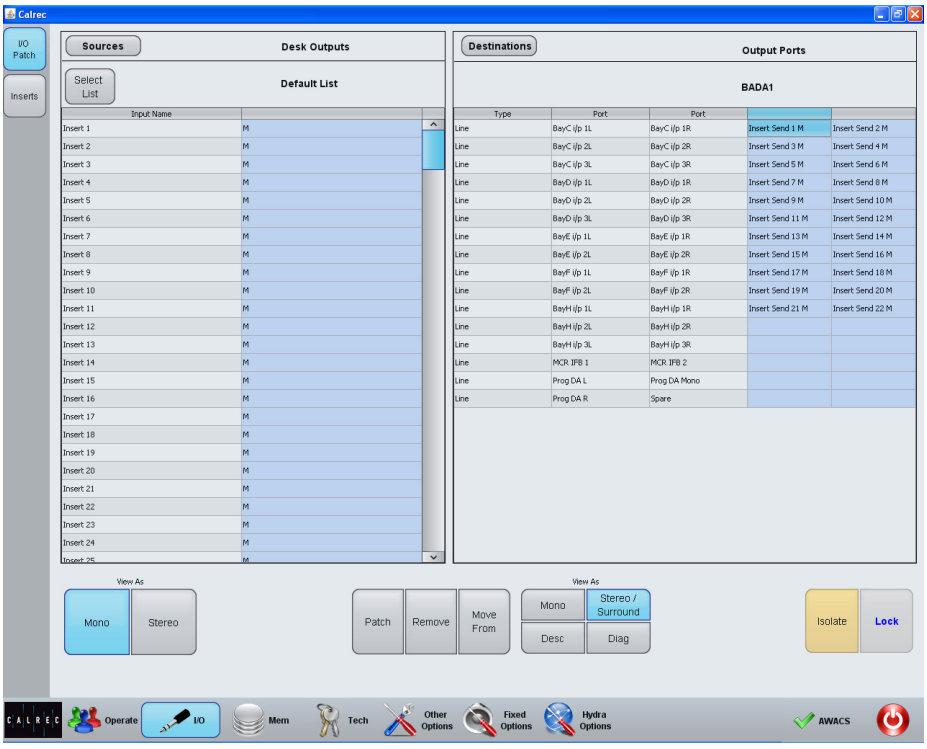


FIGURE 2 - PATCHING INSERTS



Connecting insert resources to paths

Navigate to the INSERTS screen in the IO section as shown in Figure 3. The available insert resources are shown in the list on the left. Paths on the surface are shown in the list on the right. Select the required insert resources, then the paths to which the insert should be connected and touch the PATCH button.

Naming insert resources

Insert resources may be labelled in the INSERTS SETUP screen in the OTHER OPTIONS section of the main application, as shown in Figure 4. In this screen, touch the INSERT ALLOC button. Double click an insert resource name to provide a new name, which must be 12 characters or less.

Insert resource lists

Insert resources can be assigned to lists. Lists provide a way of filtering the insert resources and can be selected when patching insert resource sends and returns to ports, or connecting insert resources to paths.

To access insert resources lists, go to the INSERTS SETUP screen in the OTHER OPTIONS section of the main application. Select the INSERT ALLOC button at the left of the screen. The screen will show all available insert resource lists just to the right of the INSERT ALLOC button. The DEFAULT LIST is created automatically and contains all available resources.

Creating lists

To create a new list, select the required insert resources from the default list (or any other list that already exists) and touch the CREATE LIST button. A popup will appear prompting for the name of the new list, which can be six characters or less. Enter the name and touch OK. The new list will appear below the default

FIGURE 3 - CONNECTING INSERTS TO FADERS

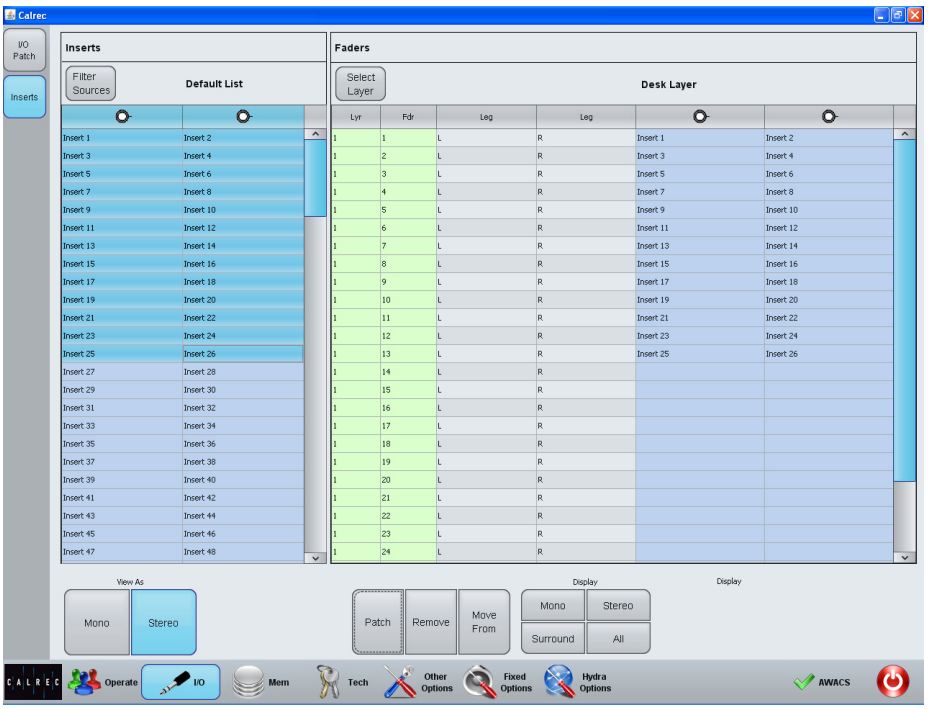
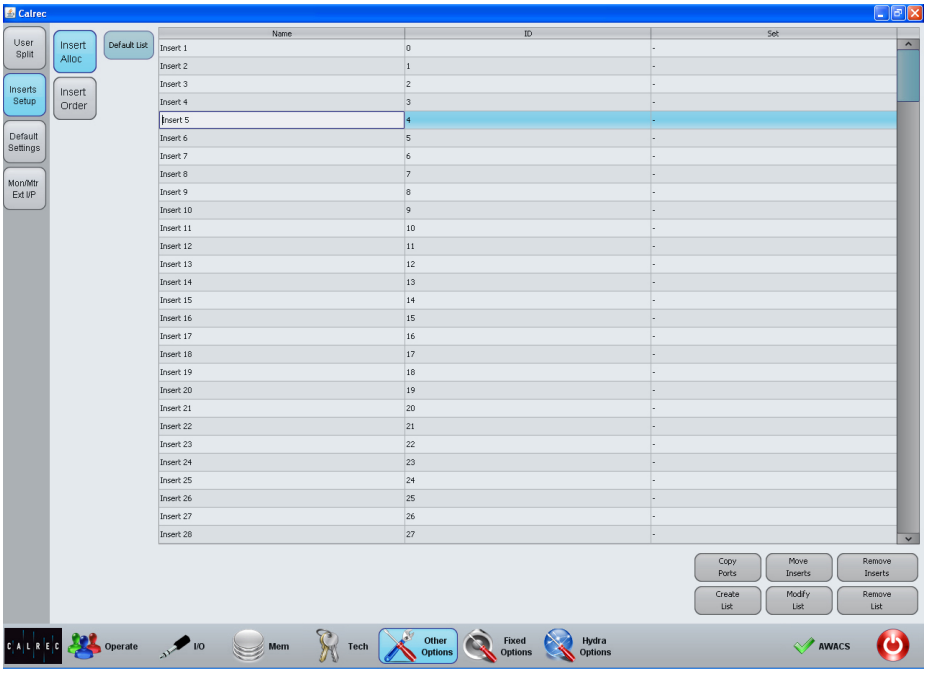


FIGURE 4 - INSERTS SETUP SCREEN



list and will contain the selected insert resources. Touch the new list to confirm this. It is possible to make a new list which is empty, by ensuring that no resources are selected when touching the CREATE LIST button.

Copying and moving insert resources to lists

Resources can be copied or moved between lists by selecting the required resources in the source list and touching COPY LISTS or MOVE LISTS. A popup dialog will appear allowing selection of the destination list. Select the destination list and touch OK.

Removing insert resources from lists

To remove resources from a list, select the required resources and touch the REMOVE INSERTS button.

Renaming lists

Touch the MODIFY LISTS button to bring up a popup dialog. This dialog allows you to select a list and rename it.

Removing lists

To remove a list, select the required list and touch the REMOVE LIST button. A popup dialog will appear asking for confirmation of the removal.

Insert Order and Sets

Insert resources can be ordered into sets. For a description of sets and the order of items within a set, please refer to the Input Sources section of this document.

VCA STYLE GROUPS

Artemis' moving fader VCA style groups provide control over fader level, cut status and APFL status.

Creating and dissolving VCA style groups

A group is created by holding the assign button of the fader which is to be the master, then pressing the assign buttons of any other faders to add or remove them as slaves of the master. Slaves may only have one master.

Group hierarchy

Artemis provides up to three levels of group hierarchy. A master can have slaves but can also be made a slave of another master. Figure 1 illustrates the hierarchy. When the full hierarchy is in place, the slave master is known as the secondary master, and its master is known as the primary master.

When the level of a primary master is adjusted it will change the audio level of its own slaves and the level of its secondary master's slaves by the same amount. Changing the CUT, AFL and PFL settings of a primary master applies the settings to the slaves, secondary masters and their slaves.

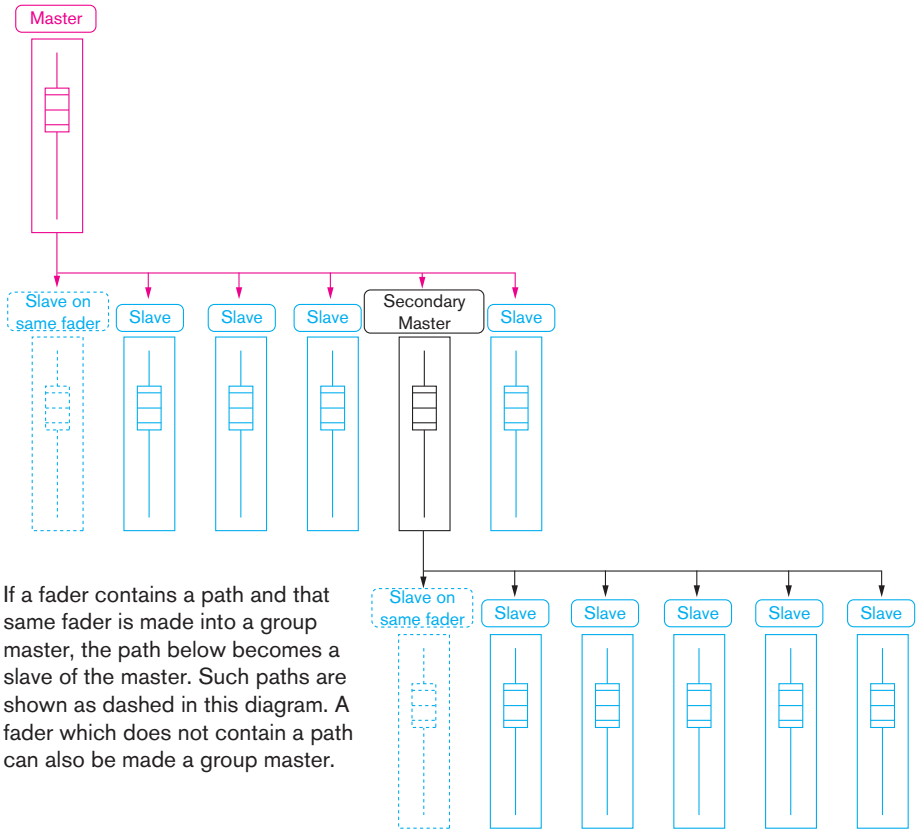
When the level of a secondary master is adjusted, the audio level of all its slaves changes by the same amount. Its adjustment will not affect the level of the primary master or its slaves. Changing the CUT, AFL or PFL of a secondary master applies the settings to the secondary master's slaves only.

Fader status indicators

Each fader contains two indicators next to each assign button as shown in Figure 2.

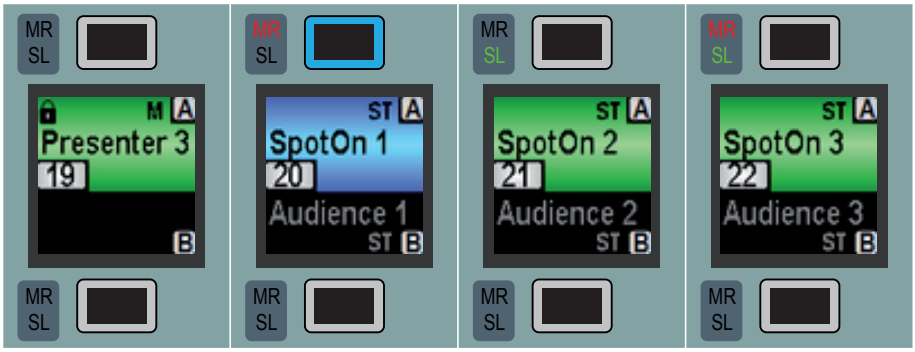
- Neither indicator will be illuminated if the fader is not part of any VCA style group.

FIGURE 1 - GROUP HIERARCHY



If a fader contains a path and that same fader is made into a group master, the path below becomes a slave of the master. Such paths are shown as dashed in this diagram. A fader which does not contain a path can also be made a group master.

FIGURE 2 - FADER STATUS



Fader is neither a primary or secondary master or slave

Fader is a master. As it has a path attached to it, the path 'SpotOn 1' is a slave of the master

Fader is a slave of a primary or secondary master

Fader is a secondary master. As it has a path attached, the path 'SpotOn 3' is a slave of the secondary master

- The MR indicator illuminates red if the fader is a master
- The SL indicator illuminates green if the fader is a slave
- Both MR and SL indicators illuminate if the fader is a secondary master.

Creating VCA style groups

To set up a VCA style group, first designate a fader as a master and then assign a number of other faders for it to control. To do this push and hold the master fader's assign button, then press the assign buttons of any paths which are to become slaves. The relevant fader status indicators will illuminate.

VCA group interrogation

Interrogation works in a similar way to the routing interrogation feature. It provides a clear way of indicating group assignment using the path assign buttons. As with creating a group, interrogation is performed by holding the assign button of the path to be interrogated. A number of different situations exist:

- The interrogation of a master will illuminate all the assign buttons of its slaves. If any intermediates exist which are controlled by the selected master, their assign buttons will strobe slowly. The slaves of the intermediate will not be lit.
- The interrogation of an intermediate will illuminate all the assign buttons of its slaves. The assign button of its master will strobe quickly.
- Interrogating a slave of a master will cause the master's assign button to strobe quickly.
- The interrogation of a slave of an intermediate will strobe the intermediate's assign button slowly and the intermediate's master's assign button quickly.

While holding an assign button, only the assign buttons relevant to the VCA group will illuminate or strobe. The rest will be unlit for clarity.

Masters and slaves on the same fader

Masters can be created on a fader which does not contain a path. They can also be created on faders which already have a path attached to them. In this case, the path on the fader becomes a slave of the master. The master and the new slave beneath it can be accessed and controlled in different ways.

Normally any changes to the fader level, cut or APFL status will apply to the master and subsequently all slaves in the group. If the fader assign button is held down, then the changes will apply to the slave beneath the master.

If the fader is assigned but the button is not held down, any alterations to EQ, dynamics and routing for example will apply to the slave only as normal. Processing outside of fader level, cut and APFL status does not apply to VCA style groups.

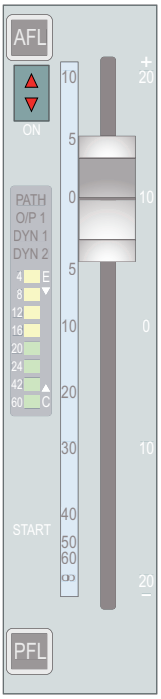
Fader level indicator

Touching a fader will display its level in the OLED above. This indicator will disappear after a short period of time.

Nulling indicators

If the combined level of a master and slave is greater than +10dB or less than -100dB, the slave fader will remain at the appropriate end of its travel and the relevant up or down nulling indicator will be illuminated. The nulling indicators are shown in Figure 3.

FIGURE 3 - NULLING INDICATORS



Preserving the balance of slaves at low levels

When a master is set to a level below -50dB, its slaves cannot be altered. Altering the levels of slaves when the master is turned down to this degree would most likely produce inaudible results. To preserve the balance of the group and to prevent any signals being turned up excessively when the master is raised, this restriction has been put in place. In this case, both nulling LEDs on the slaves will illuminate.

5.1 Surround channels

If a surround master is part of a VCA group then the VCA primary and secondary master levels, cut settings and APFL settings affect all of its spill legs. It is not possible for the spill faders themselves to be masters or slaves of a VCA group.

AUTOFADERS

Autofaders allow Artemis' faders to be opened and closed under the control of another system through the use of GPIs.

There are 256 autofaders in the Artemis system. GPIs are assigned to control one or more of these autofaders when they receive the required trigger signal. The autofaders can then be assigned to control one or more faders on the surface.

Assigning GPIs to autofaders

GPIs are assigned to autofaders in the GPI screen in the HYDRA OPTIONS section of the main application as shown in Figure 1.

The FILTER INPUTS button will bring up a popup which lists all available Hydra2 IO boxes that have the GPIO module fitted. Selecting one will populate the left hand side of the screen with the opto-inputs available in that box.

The FILTER FUNCTIONS button brings up a popup with groups of available functions that can be controlled by the GPIs. Select AUTOFADERS to populate the right hand side of the screen with the available autofaders.

A single GPI may control any number of autofaders, so assignments can be made one to one or one to many. Select the required GPI from the list on the left and any number of autofaders from the right. Now touch the PATCH button.

To remove a connection, select the connected autofader from the GPI list on the left and touch remove.

Assigning autofaders to faders

Once the relevant GPIs have been assigned to autofaders, the autofaders can be assigned to control faders on the surface. This is done on the AUTO FADE

FIGURE 1 - PATCHING GPIS TO AUTOFADERS

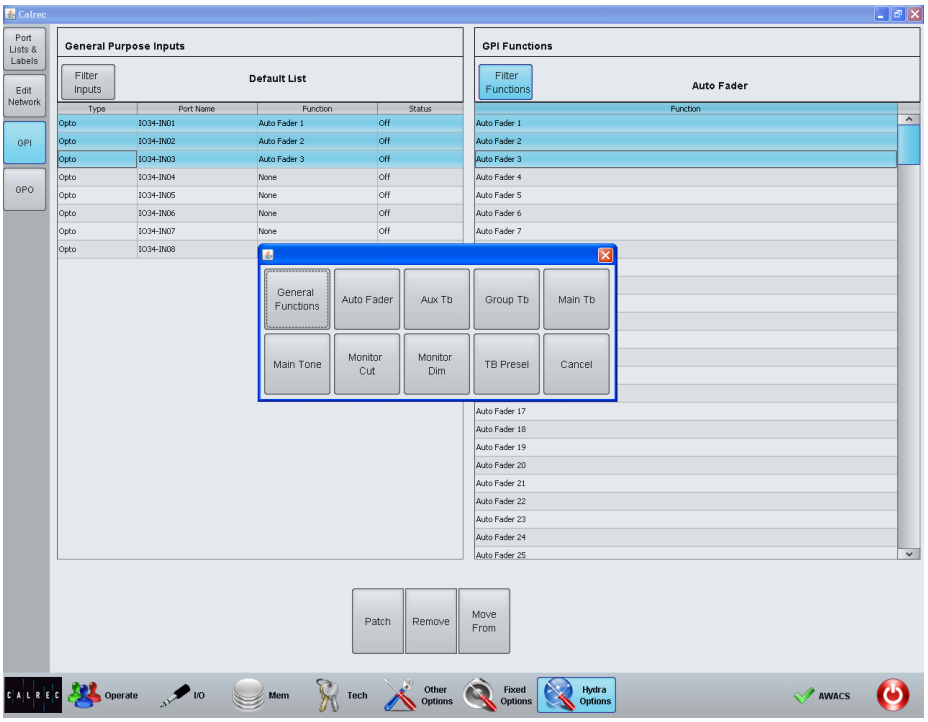
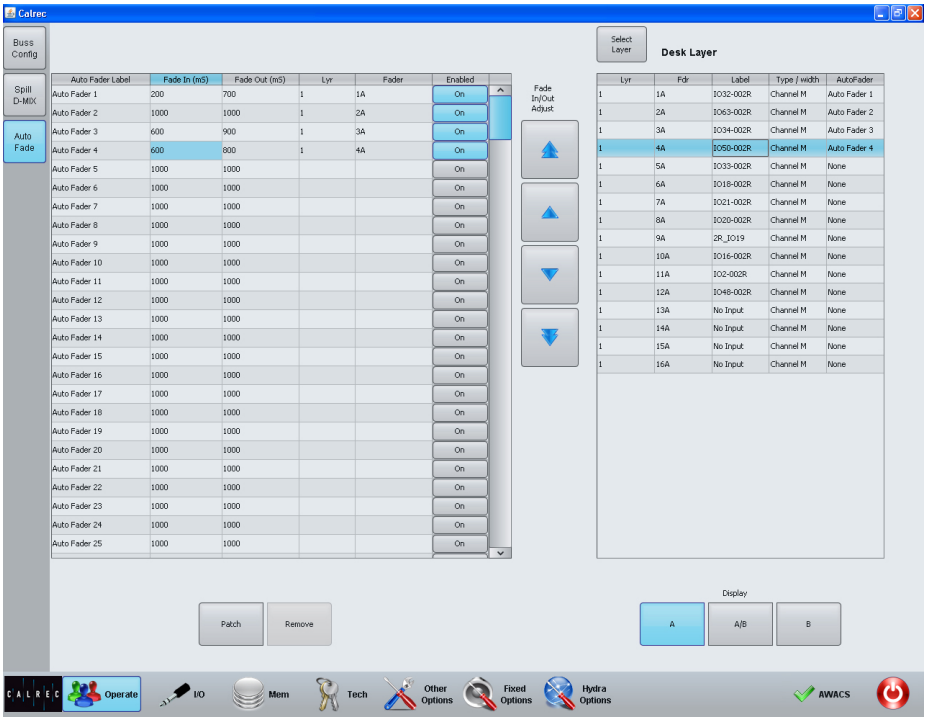


FIGURE 2 - ASSIGNING AUTOFADERS TO FADERS



screen in the OPERATE section of the main application, as shown in Figure 2.

The autofaders are listed at the left side of the screen, and the surface faders are listed at the right. To change the layer of faders shown, touch the SELECT LAYER button and select the required layer from the popup. The A, B and A/B buttons below the list allow only the A faders only, B faders only or A and B faders to be shown.

To connect an autofader to one or more faders, select the required autofader in the left list, and the target faders in the right list and touch the PATCH button. To remove a connection, select the relevant autofader and touch the REMOVE button.

Autofader levels
When an autofader is attached to a fader and is enabled, providing the trigger signal is not present, the fader will jump to -infinity dB. When the trigger signal is present, the fader will fade up to the level set before the autofader was made active. When the fader has been faded up, any changes to level will be remembered and the fader will return to this value on any subsequent fade ins.

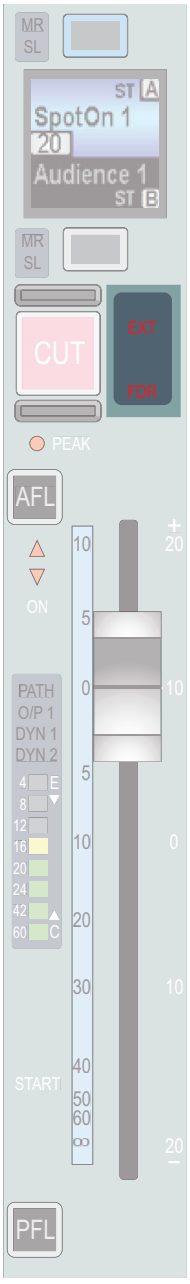
Autofader settings
The AUTO FADE screen allows the settings of the autofaders to be configured. The available settings are:

- FADE IN (ms). This setting varies the fade in time between 10ms and 5s. This is how long the fader will take to reach it's maximum level after the trigger signal begins.
- FADE OUT (ms). This varies the fade out time between 10ms and 5s. This is the time the fader takes to fade out when the trigger signal ceases.

Each autofader can be enabled and disabled individually using the ENABLED button to the right of the autofader on the AUTO FADE screen.

Autofader indicators
When an autofader is assigned to a fader, the fader will show the EXT and FDR indicators as shown in Figure 3. FDR indicates that the fader is automated and EXT indicates that the control is an external source.

FIGURE 3 - AUTOFADER INDICATORS



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BUSSES OVERVIEW

There are a pool of mono DSP resources available for each buss type. The user may configure the number and width of the busses they require from these pools of resources.

The number of resources available to each buss type and the maximum number of each buss type supported by the Artemis system are detailed in Figure 1. From a pool of mono resources, the user can define the number and widths of the busses they require.

For example, there are 32 mono DSP resources available for Aux busses. The maximum number of Aux busses that can be configured in the system is 32 and these would all be mono. The maximum number of stereo Aux busses that can be created is 16. It takes two mono DSP resources to create a stereo buss and so the maximum number of Auxiliaries that can be created is reduced.

Busses which can be configured up to 5.1 width (mains and groups for example) each use 6 mono DSP resources. The busses do not all have to be the same width, and any combination of mono, stereo and surround formats can be created from the pool of mono resources.

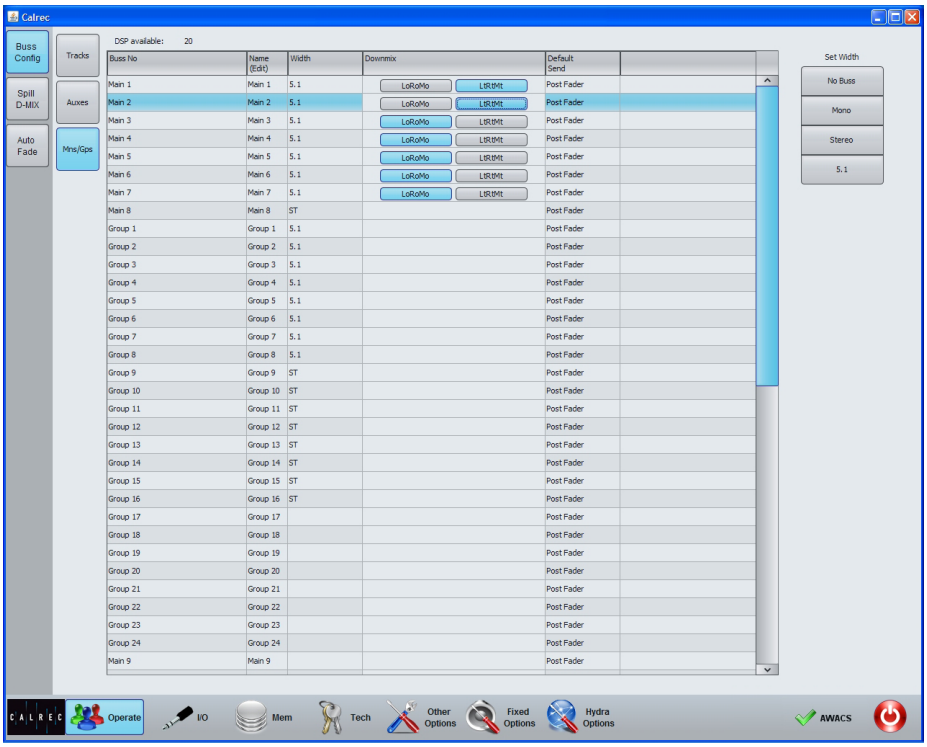
Setting buss widths

The number and width of busses chosen for use are defined in the BUSS SETUP screen in the OPERATE section of the main application (Figure 2). Select a buss type using the buttons on the left of the screen. The total number of busses will now be listed, which in the case of Auxiliaries is 1-32. For each of these the width can be defined by selecting the relevant row or rows and choosing the desired width from the buttons on the right of the screen.

FIGURE 1 - BUSS RESOURCES

Buss Type	Mono Resources Available	Max Number Configurable Busses
Mains & Groups	128	16 Mains, 48 Groups
Auxes	32	32
Track	64	64

FIGURE 2 - BUSS SETUP SCREEN



At the top of the screen a number shows the remaining mono DSP resources for that buss type. When this number reads zero, no more busses may be created unless more resource is made available. This can be achieved by setting previously configured busses to NO BUSS in the WIDTH column.

LtRt / LoRo downmixes

For each 5.1 main buss, the stereo down mix can be chosen to be LoRo or LtRt.

LoRo maximizes mono compatibility at the expense of losing the front rear separation that a Dolby ProLogic decoder could recover when using an LtRt downmix.

Buss routing

Artemis has a very flexible buss structure allowing many routing possibilities:

- Channels can route to Groups, Auxes, Tracks and Mains.
- Groups can route to other Groups, Tracks, Auxes and Mains.
- Mains can route to other Mains.
- Tracks cannot route to any other buss.
- Auxes cannot route to any other buss.

MAKING A ROUTE

Using Assign Mode

Routes can be made using the SENDS-ROUTES assign panel as shown in Figure 1. When a path is assigned, the wild assign touchscreen displays and allows the user to change which busses the assigned path is routed or sent to. Touching a buss on the touchscreen will toggle the route on or off.

The control cells allow the levels of individual Aux sends to be set and their routing to be toggled on or off. They also allow the track send levels to be altered.

Accessing detailed send controls

Pushing the rotary control of any Aux or Track send will bring that send to focus in the central five button cells at the bottom of the panel. This section provides access to positional controls such as pre/post fader and on/off switching. It also provides talkback and tone controls in the case of Track sends.

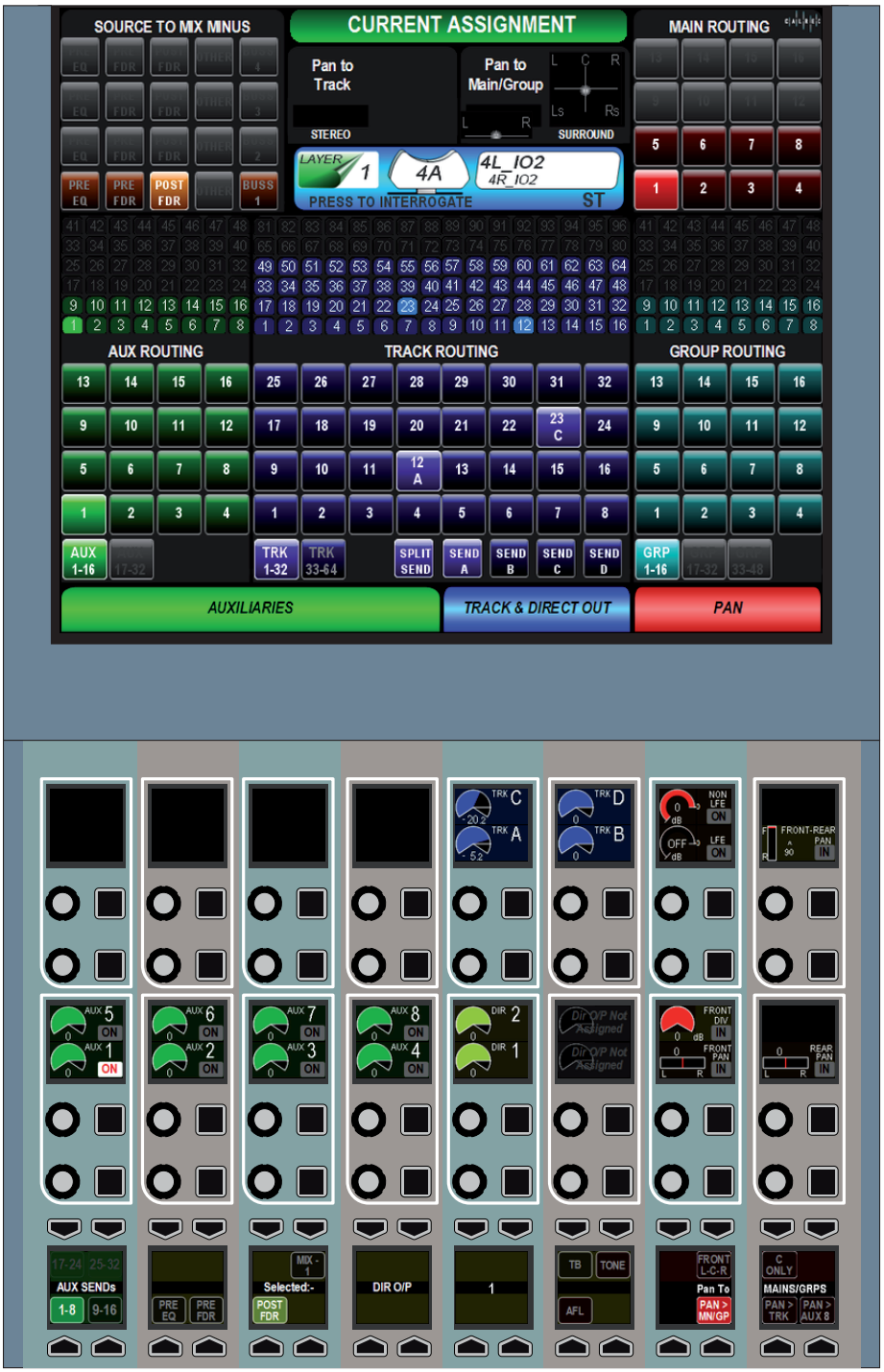
Paging through busses

Given the finite size of the touchscreen and number of available control cells, it may not be possible to view all required busses at once. In this case, paging buttons will be made available at the bottom of each buss section on the touchscreen and also on the left and right button cells at the bottom of the panel.

Routing overview

An overview of each bus type is located on the touchscreen above the routing buttons and provides a complete overview of where the assigned path is routed without having to page through the different screens.

FIGURE 1 - ROUTING IN THE SENDS-ROUTES LAYOUT OF ASSIGN MODE



Using Strips Mode

Routes to busses can also be made when using Wilds mode. Each vertical strip on the touchscreen displays an overview of the routing of the relevant path. A strip of the touchscreen is shown in Figure 2. There may not be room to show every destination of each buss type and so paging buttons are provided.

Routes can be made or broken by touching the required destination buss type on the touch screen strip. The strip will be populated with larger routing buttons of the selected type, which can be touched to create or remove routes. As with the overview, it may not be possible to fit all possible routing destinations on a single page. The destinations can be paged through either by using paging buttons similar to the overview screen, or by swiping the screen up or down.

To exit the routing screen for the selected buss type and return back to the routing overview, touch the EXIT button.

FIGURE 2 - WILDS MODE ROUTING STRIP ON TOUCHSCREEN

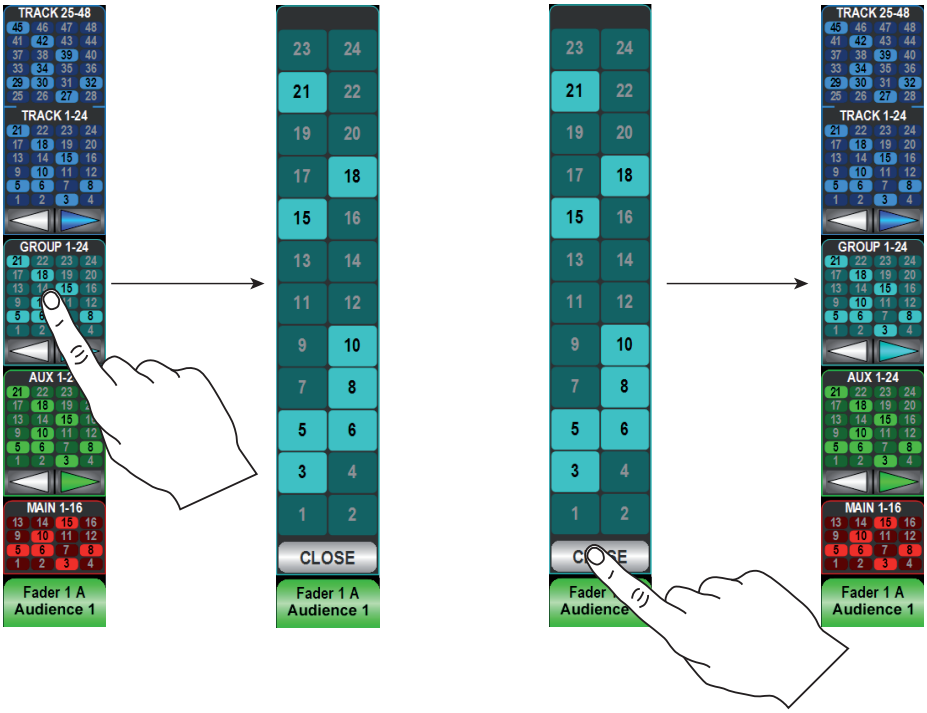
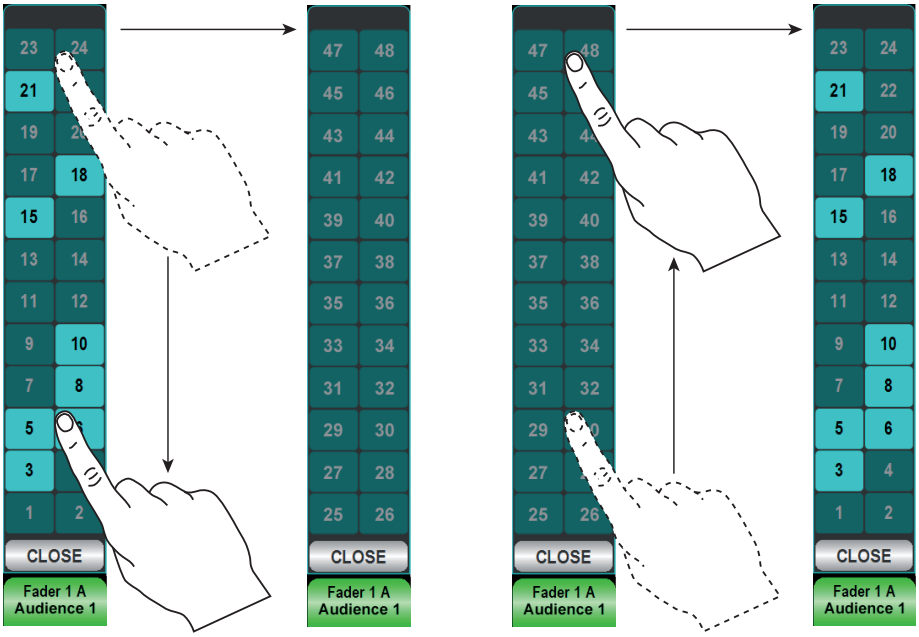


FIGURE 3 - SWIPING THROUGH BUSSES



PANNING

Artemis provides flexible and adaptive panning controls which change to reflect the width of both the source and destination paths.

It is important to note that the pan controls for a given path do not actually alter the panning of the path itself. They do in fact alter the pan position of that paths contribution to it's destination buss. It is therefore possible to have different pan positions set when sending to multiple busses, for example to an Aux, Track and Main simultaneously.

There is a shared pan position for the channel when it is routed to Main and group busses. There is another pan position for the channel when it is routed to Tracks. Finally, the channel has an individual pan position for each Aux buss it is sent to.

Which pan position is currently being controlled?
When in the SENDS-ROUTES layout of Assign mode, the right hand button cells contain three buttons labelled:

- PAN > MN/GRP
- PAN > TRK
- PAN > AUX

These buttons determine which pan position the pan controls are affecting for the assigned path.

As there is one pan position that applies to all mains and groups, and another position applying to all tracks, these can be controlled by selecting either PAN > MN/GP or PAN > TRK respectively.

Pushing the PAN > AUX button allows control over the pan position for each individual Aux send. The send currently being controlled is indicated by a number in the graphic above the button.

To change the pan controls to alter a different Aux send, push down on the required Aux rotary control. The number in the graphic should now update to show the affected Aux send.

Controls
Depending on the width of the current path, and the width of the destination buss, different pan controls will be made available on the surface. For example when sending a mono path to a mono buss, there will be no controls available. When sending a mono path to a surround buss, a great deal more controls will be presented that allow control over mono placement in a surround field.

The complete range of controls is described here:

Front Pan
Front pan allows positioning of the signal in the L and R speakers. The button next to the Front Pan rotary control switches the pan position in or out.

C only
C ONLY sets the signal to appear only in the center speaker. It effectively overrides all left and right pan positions.

Front L-C-R
Pushing the FRONT L-C-R button switches the FRONT PAN control between L-R panning and L-C-R panning.

Front Divergence
With FRONT L-C-R switched in, the spread of the signal can range from fully converged in the C speaker, through equal level in L, C and R, right the way to full divergence with no level in the C speaker and full level in the L and R speakers. The button next to the divergence rotary control switches the divergence position in or out.

Front-Rear pan
FRONT-REAR PAN varies the position of the signal between the front and rear speakers. The L and R position in the front and rear speakers is independent and can be controller separately with the FRONT PAN and REAR PAN controls. The signal is moved from the front pan position through to the rear pan position.

Rear Pan
Rear pan allows the left to right position of the signal to be set in the rear speakers. This is independent from the front pan position and can be switched in or out using the button next to the rotary control.

LFE
LFE varies the level sent to the LFE speaker. When this control is switched out, no signal is sent to the LFE.

Non LFE
The level sent to all channels other than the LFE channel can be varied with the NON LFE control. When this control is switched out and the signal is panned to one or more channels other than the LFE, the signal is sent at full level.

INTERROGATION AND REVERSE ROUTING

Interrogation allows the user to see all contributing paths that have been routed to the selected buss.

Set a wild assign panel on the surface to the 'SENDS-ROUTES' Assign mode layout. The wild assign touchscreen will be showing controls for routing the assigned path to the many destinations available as shown in Figure 1. Notice in the central title area at the top of the screen the text 'Press to interrogate'. Touching this area will switch the screen into interrogation mode as shown in Figure 2.

When the screen is switched to interrogation mode, select the destination you wish to interrogate. If a path on the current layer is routed to the selected buss, it's path assignment button (above or below the fader label OLEDs) will strobe. The path assignment buttons of any paths that are not routed to the selected buss will be unlit.

Layers may be switched while interrogating a buss to reveal contributing paths on other layers.

Reverse routing

While in interrogation mode, routes from multiple paths to the selected buss may be made or removed by pressing the relevant path assignment buttons. The path assignment buttons will strobe if the route is made.

Again, layers may be switched while performing reverse routing.

Leaving interrogation mode

When interrogation or reverse routing is complete, touch the 'Press to Route' area to return the surface to the normal operational state.

FIGURE 1 - ROUTING SCREEN

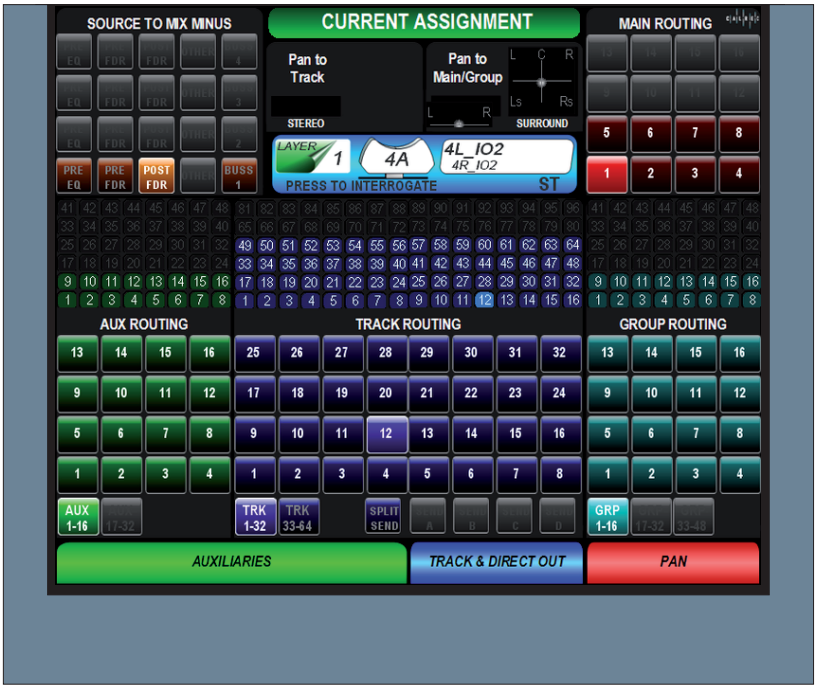
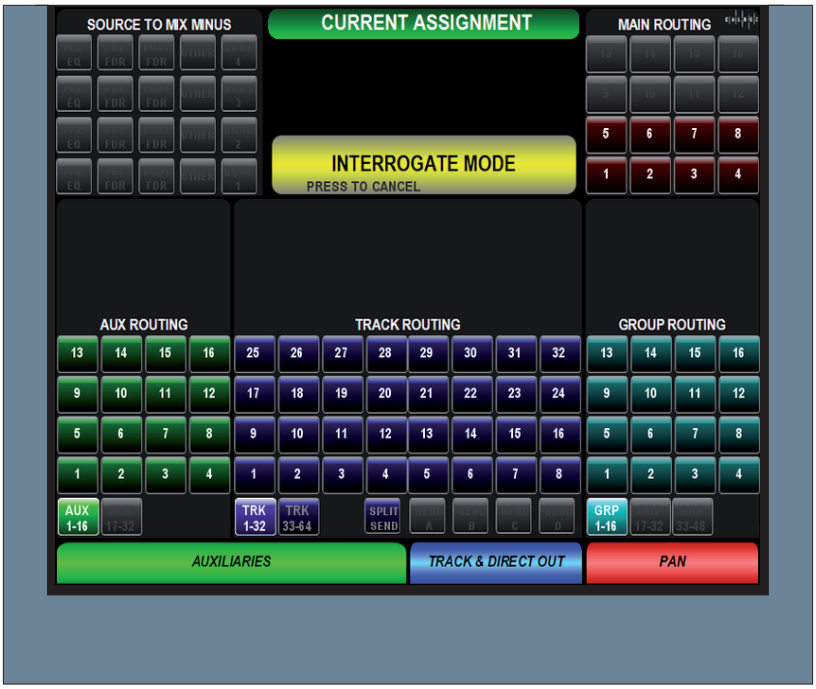


FIGURE 2 - INTERROGATION SCREEN



SPLITTING TRACK SENDS

Each channel has up to four track sends although by default only one is enabled.

The enable the four sends, touch the SPLIT SEND button below the track routing buttons. This will enable four more buttons for selecting the required send (A, B, C or D) as shown in Figure 1. Select one of these sends and then create or remove routing to tracks as required. A letter will appear below the track number when a route is made to indicate which send it is associated with.

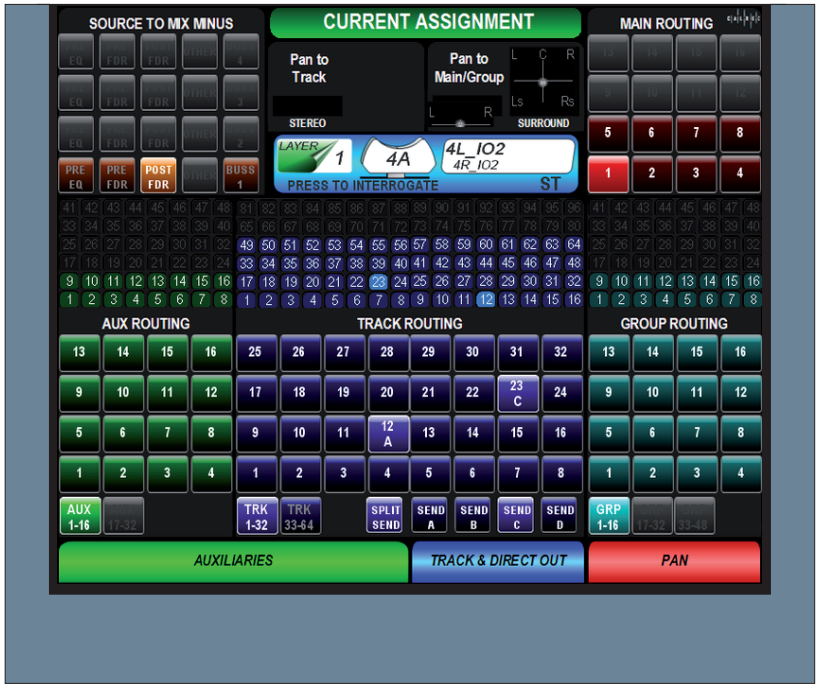
Each of the four sends has an individual level control and can be selected by pushing the relevant rotary control to appear in the 'Selected' button cells at the bottom of the panel. This enables access to a wider range of controls for that specific send such as pre or post fade.

Removing sends

If a channel has been routed to a track using send C then send C must be selected when removing the route. Only routes made with the currently selected send may be removed.

In order for the track routing to be collapsed back to just one send, all routes from sends B, C and D must be removed. The SPLIT SEND button can now be touched again to remove the three unused send controls.

FIGURE 1 - ROUTING SCREEN



DOWNMIXES

Artemis has comprehensive downmix facilities to make downmixing as simple as possible.

Downmixes are applied to the metering and monitoring systems, including APFL, and all relevant paths in the system.

When a surround path, metering or monitoring signal is routed to a stereo or mono destination, a downmix must be applied to take care of the increase in level that will occur due to the summing of surround components, and also to shape the sound in the desired way.

Apollo allows a number of default downmix configurations to be set up. One of these downmix configurations can be selected for use in a show. All downmixes performed within that show will follow the default settings selected.

Setting downmix defaults

Users with technician access can set up five different downmix defaults (with an additional default set up by Calrec). One of these defaults can be selected by operators to act as the default for their show. To enable Technician mode, please refer to the Technician Mode section of this document.

Navigate to the DOWNMIX screen in the FIXED OPTIONS area of the main application. This screen is shown in Figure 2. The six downmix defaults are presented in a table. The first set of downmix settings is set by Calrec and cannot be changed. User sets 1-5 may be altered freely by the technician.

Default values can be provided for most parameters including L, C, R, Surround L&R, and LFE contributions to LoRo downmixes, with separate adjustments available for the levels sent to any LtRt downmixes that are being created.

FIGURE 1 - DOWNMIX DEFAULTS

Levels may be set by selecting the relevant cell, then using the buttons at the right to increase of decrease the value. Buttons are provided to quickly set a given cell to 0dB or to turn the level off entirely.

Once the levels have been set, resultant levels are shown in the cells below. These resultant levels include:

- Resulting L/R level
- Resulting C level
- Resulting LFE level
- Resulting Ls/Rs level

These resulting levels are the levels which will actually be applied to the downmix and to the metering, monitoring and APFL downmixes due to the overall Lo/Ro offsets.

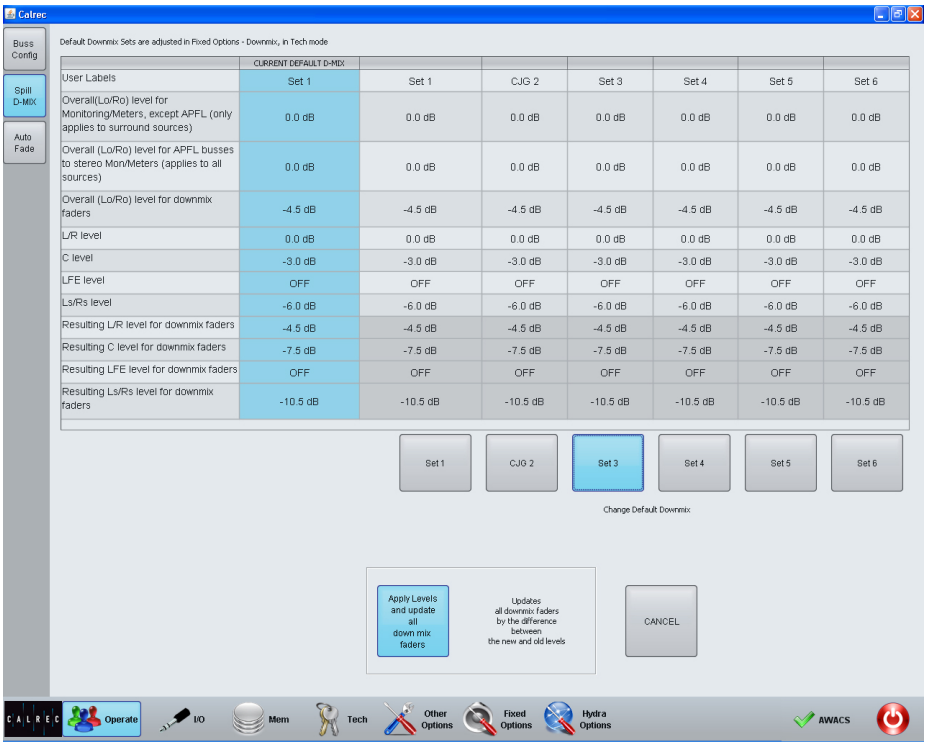
Selecting the required downmix default for a show

When any relevant downmix defaults have been set up, users can select the required configuration for use in their show by navigating to the SPILL D-MIX screen in the OPERATE section of the main application as shown in Figure 3.

The downmix configuration currently in use is indicated in the CURRENT D-MIX column of the table. To select another configuration, touch the button below the relevant column. This will make the following buttons at the bottom of the screen active:

- APPLY LEVELS AND UPDATE ALL DOWNMIX FADERS. This applies the downmix to the system (monitoring, metering and paths)
- CANCEL. This cancels the selection.

FIGURE 2 - SELECTING A DOWNMIX DEFAULT FOR USE IN A SHOW



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OUTPUT TYPES AND PATCHING

Busses available to be patched as outputs are as follows:

- Mains
- Tracks
- Auxes
- Direct Outputs

These outputs can be patched to physical outputs ports on Hydra2 IO units, or back into the inputs of your console to provide internal loopback routing.

Patching
Output patching is performed in exactly the same way as input patching using the IO screens on the configuration computer.

Navigate to the IO PATCH screen in the IO section of the main application on the configuration computer. Using the filter button in the sources area, select the desired system output

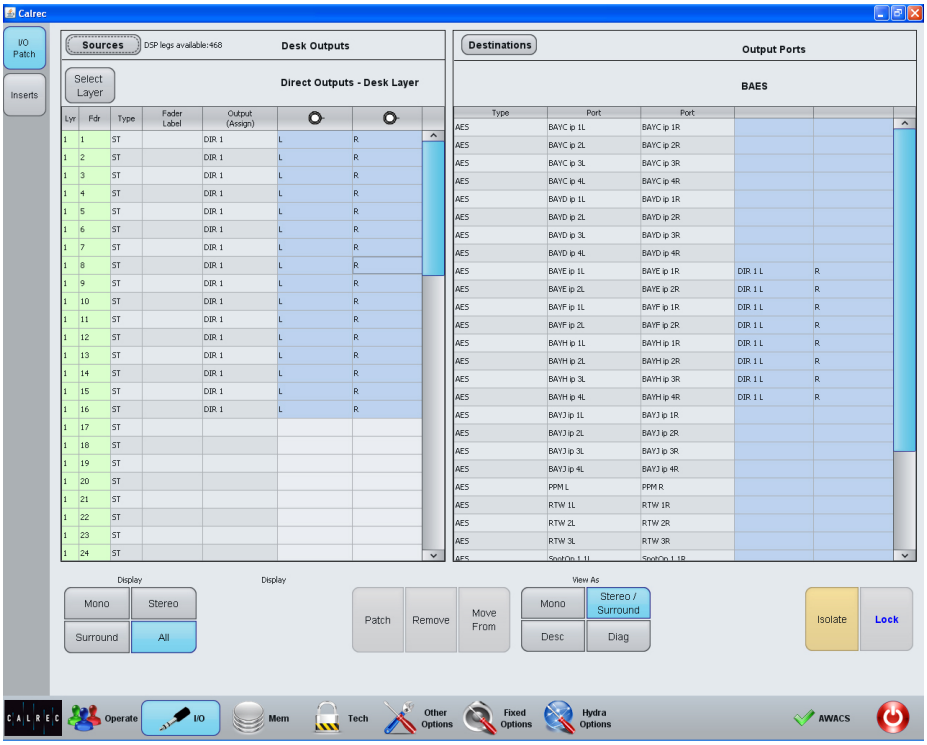
For a detailed description of the patching system please refer to the 'Patching Sources to Destinations' section of this document.

Locking output port patching
Output ports may be locked to protect their patching from unintended changes. to do this, select one or more output ports in the DESTINATIONS list and then touch the LOCK button below. Repeat the process to unlock the ports again.

Locked ports are indicated by bold blue text.

If a port is locked by a technician using Technician Mode, the ports can only be unlocked by another technician. This may be used to lock down any essential patching and prevent user error.

FIGURE 1 - OUTPUT PATCHING



For more information on Technician Mode, please refer to the Technician Mode section of this document.

OUTPUT CONTROL

Outputs mode provides control over output busses and displays relevant output meters.

The layout of controls on a panel set into Outputs mode is shown in Figure 1.

The rotary controls provide level control for Main, Group, Aux and Track outputs. The buttons cut or uncut the output (there is no cut functionality on a Main output).

Depending on the configuration of the system, there may be more outputs than can be viewed at one time on the control cells. In this case, the outputs can be paged through using the buttons in the button cells at the left and right of the panel.

Selecting an output for access to further controls

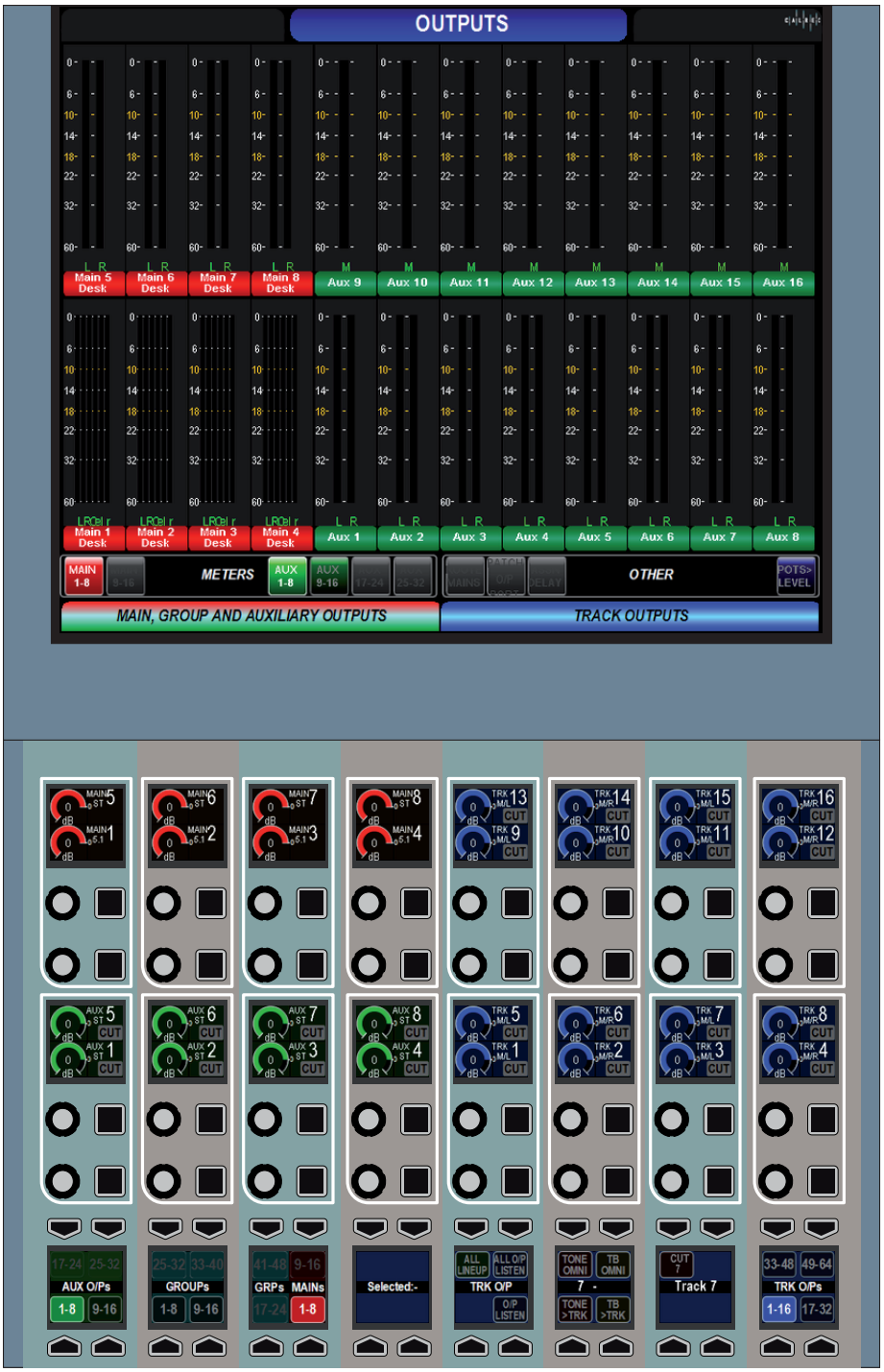
Four of the button cells at the bottom of the panel are used for more detailed control over the currently selected output. To select an output, push down on the relevant rotary control. The current selection is indicated by the color of the four OLEDs and also by a text label which spans across the center of them. Controls that can be accessed in this way include direct talkback to the output, tone to the output and PFL.

Outputs on Faders

Main paths can be patched to faders in the same way as other paths in the system. Please refer to the Paths and Faders section of this document for more information on this process.

These faders can be assigned and have processing and routing applied to the output paths which they control.

FIGURE 1 - OUTPUTS MODE CONTROL LAYOUT



DIRECT OUTPUTS

Artemis provides 512 mono direct output resources for use with channel and group paths.

Each path may have up to four direct output resources associated with it, each with its own level control and independent signal.

To assign direct output resources to paths, navigate to the IO section and the IO PATCH screen of the main application. Touch the SOURCES button and select DIRECT OUTPUTS from the popup dialog. The sources list will now display the faders on the selected layer (which can be changed using the FILTER SOURCES button) and the type of paths attached to each fader. Touching the OUTPUT cell of any fader will bring up a popup dialog which allows the width of each direct output to be set. The remaining direct output resources are indicated by a number at the top of the dialog.

Once direct outputs have been assigned to the required faders they can be patched to output ports. Touch the DESTINATIONS button and select OUTPUT PORTS, then if necessary select a port list using the SELECT LIST button. Now highlight the direct outputs and ports that are to be patched and touch the PATCH button.

The direct outputs will now become available for use on the surface in SENDS-ROUTES mode. Direct output controls which are not yet available will show the text DIR O/P NOT ASSSIGNED and will not be illuminated.

Pressing down the rotary control of a direct output will update the button cells at the bottom of the mode area to provide greater control over the selected direct output.

FIGURE 1 -DIRECT OUTPUT ASSIGNMENT AND PATCHING

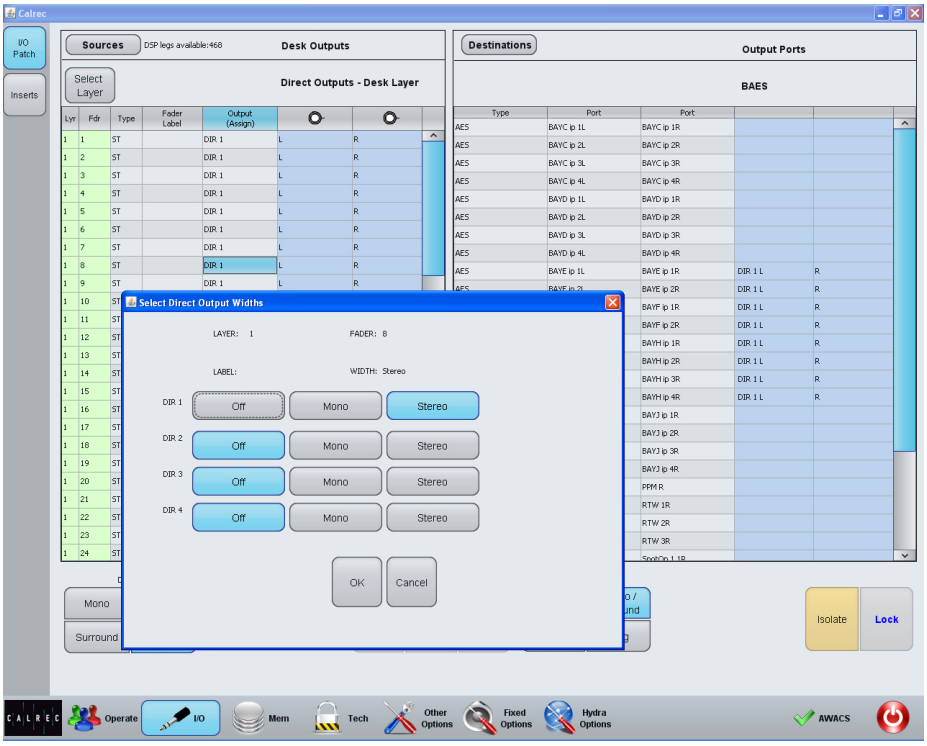


FIGURE 2 -DIRECT OUTPUT SELECTED IN BUTTON CELLS

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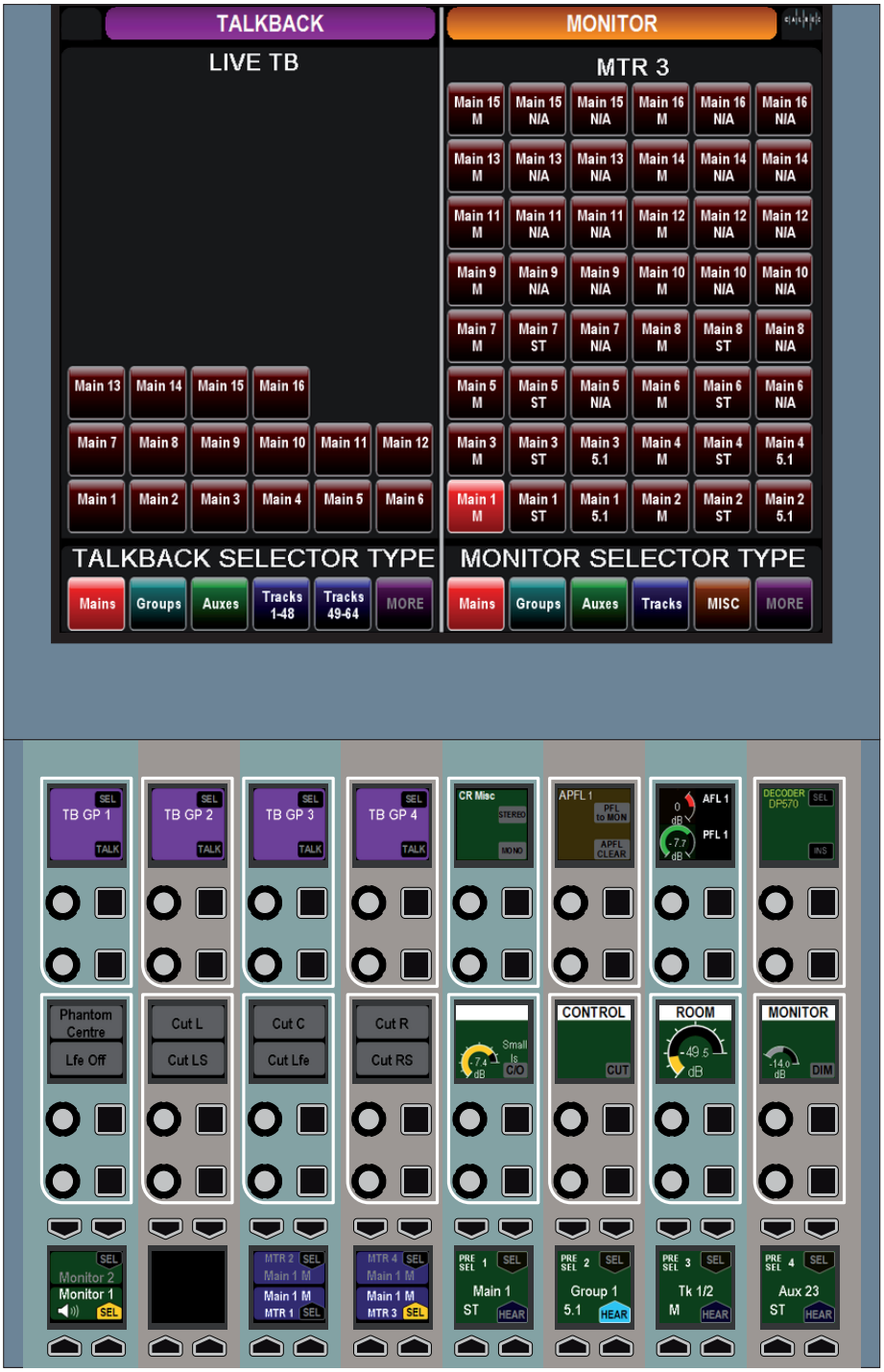
MONITOR MODE

A wild assign panel can be set into Monitor mode providing controls for monitoring, metering and talkback features.

Figure 1 shows the layout of controls in Monitor mode. To set a wild assign panel into Monitor mode, touch the MONITOR button on the Modes row.

FIGURE 1 - CONTROL LAYOUT IN MONITOR MODE



CONTROL ROOM MONITORING

Artemis features powerful pre-selectors for fast and clear access to multiple control room monitor sources.

Pre-selectors

The idea behind pre-selectors is to enable multiple sources to be set up, each ready to be fed to the main loudspeakers instantly at the touch of a button.

Control Room speaker pre-selectors

There are four pre-selectors available for choosing which source is fed to the control room speakers for monitoring. These are shown in Figure 1. The labels on each OLED show which path has been set to that pre-selector. Pressing the button below the triangular HEAR indicator in the lower right hand corner of each pre-selector, makes that the chosen source to be fed to the control room speakers.

Changing pre-selector source

The right hand side of the wild assign touch screen displays the available sources which the user can set to a pre-selector. This is also shown in Figure 1. Tabs at the bottom of the screen allow different types of paths to be shown in the main area above.

To change the source set to a given pre-selector, press the SEL button above it. The OLED will be highlighted to indicate the selection. Now touch the required path on the wild assign touch screen area described previously. The pre-selector OLED will update to display this newly set path. Pressing the HEAR button will select that path to be sent to the control room loudspeakers.

Control room monitor controls

The control room monitor level can be altered using the rotary control labelled MAIN LS LEVEL. A CUT button is

FIGURE 1 - CONTROL ROOM MONITORING

located to the left to this control to cut the main loudspeakers.

A dim level control is provided to set the level of attenuation applied by the dim control. The dim on/off button is located to the right of the MAIN LS LEVEL control.

To the left of the CUT button is a button labelled SMALL LS C/O which switches the monitoring from the main loudspeakers to a secondary monitoring setup. The rotary control next to this button provides control over the level of the secondary loudspeakers.

Buttons are provided above the to monitor the stereo or mono downmix of the monitor source where appropriate.

Loudspeaker cut buttons
Cut buttons are provided at the left of the panel. These cut buttons control the output of the currently selected monitor output which could be the main control room output or any of the miscellaneous monitor outputs. The required output is selected using the SEL button for each miscellaneous output or any of the SEL buttons in the main LS pre-selectors.

Multiple monitoring systems for multiple users
When working with multiple user sections on the surface, each user may have their own monitoring system. Each system contains its own busses and outputs for:

- Main LS
- Misc LS
- PFL
- AFL

Each user may choose which monitoring system a monitor panel is controlling by using the controls in the lower left button cell, as shown in Figure 1.

DEDICATED MONITOR CONTROLS

A subset of monitoring controls can be accessed on the global control panel.

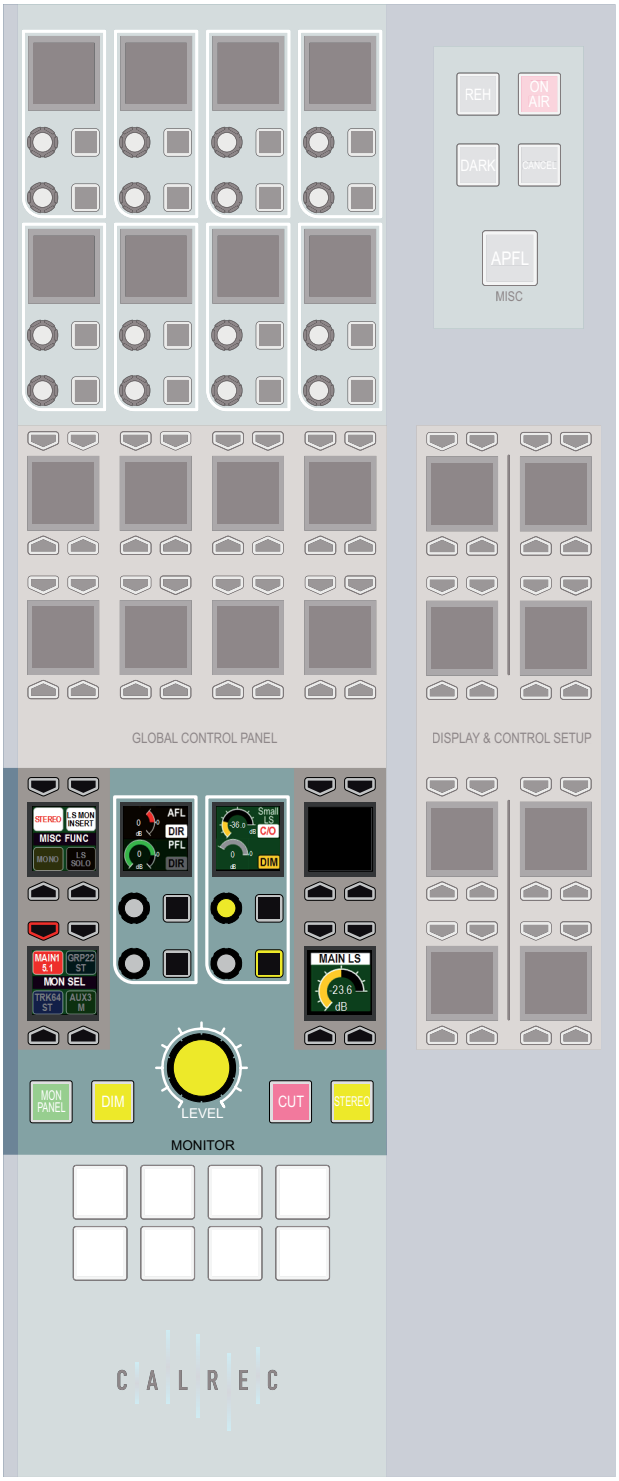
The panel features hard controls for main loudspeaker level, cut, dim and stereo. The OLED in the lower right button cell shows the control room monitor level.

The MON SEL button cell allows the user to listen to any of the four control room monitor pre-selectors. The pre-selectors cannot be defined on the dedicated monitor panel, this must be done in Monitor mode.

In the two control cells are master AFL and PFL level controls, small loudspeaker level control and changeover switch, and a control to vary the amount of attenuation applied by the dim function.

Eight GPIO buttons and indicators are located on the monitor panel.
The configuration and operation of these is described in the section External Interfacing.

FIGURE 1 - MONITOR CONTROLS



AFL AND PFL

Artemis has a comprehensive AFL/ PFL system for each user of the system.

Accessing from faders

When a path is attached to a fader, AFL and PFL can be accessed using the AFL and PFL buttons. Both of these are either latching, if tapped briefly, or momentary if held.

PFL can also be activated by using the overpress feature of the fader. Move the fader down to its lowest position, then press it past the normal backstop position. Release the fader to cancel the PFL for that channel.

Accessing buss AFL and PFL

When in Outputs mode, any buss can be called to attention in the strip of button cells highlighted in Figure 2, by pushing down on the relevant rotary control. Here there will be PFL and AFL (or output listen) buttons where appropriate.

Cancelling AFL and PFL

When any AFL or PFL is active, the APFL indicator on the Broadcast Facilities panel will illuminate as shown in Figure 3. Press this button to cancel all AFL and PFL that is currently active. There is also an APFL cancel button in Monitor mode.

FIGURE 1 - ACCESSING AFL AND PFL

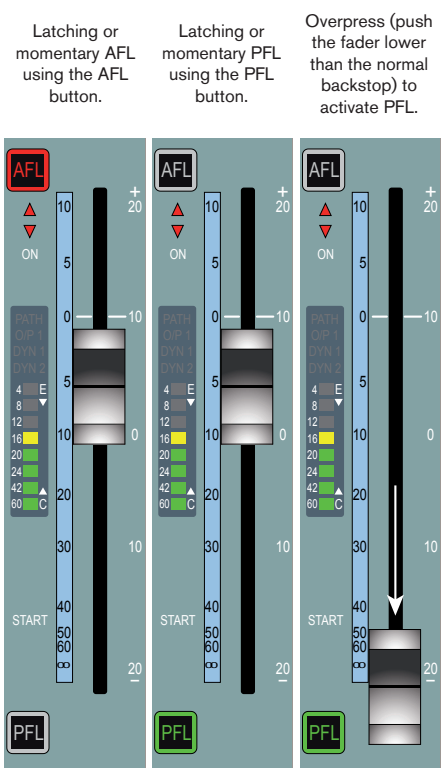


FIGURE 3 - APFL ACTIVE INDICATOR AND CANCEL BUTTON

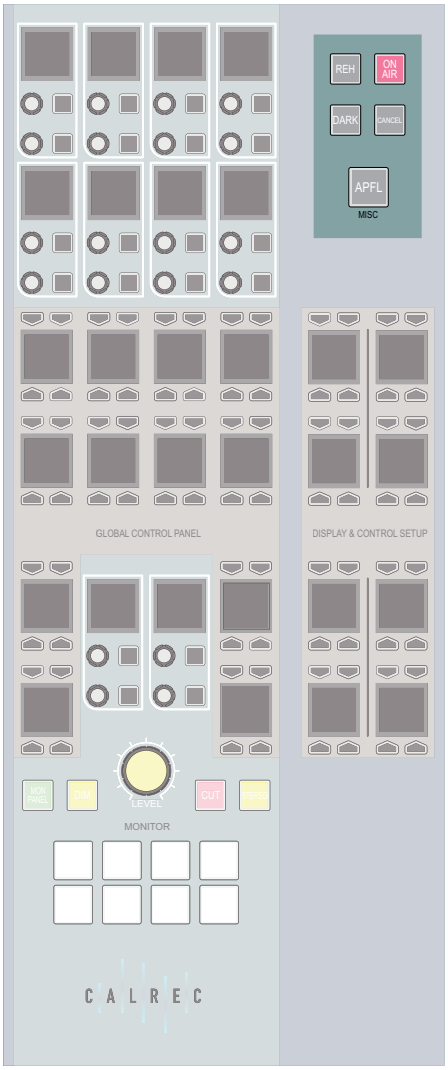
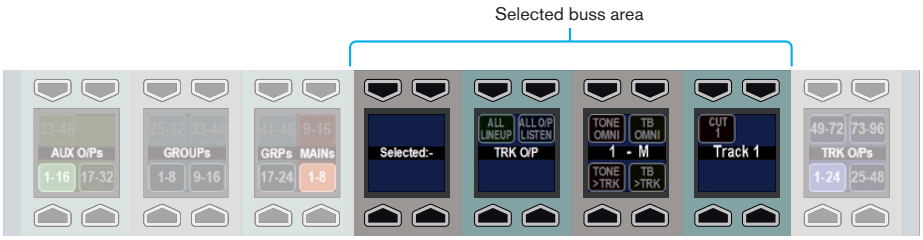


FIGURE 2 - ACCESSING AFL AND PFL FOR OUTPUT BUSSES



Patching the AFL and PFL signals to external monitors

Navigate to the MON TB MTR PATCH screen in the FIXED OPTIONS section of the main application as shown in Figure 4. Touch the sources button and select MONITOR OUTPUTS from the popup that appears. The source list will now make all monitor outputs of the system available for patching, including the three independent AFL and PFL systems for each user section. Simply select the required source and destination ports and touch the PATCH button.

Sending PFL to the main monitors

To send the PFL signal to the main monitors rather than to a separate monitor setup, press the PFL TO MON button found in Monitor mode as shown in Figure 5.

Sending PFL to the small LS

The system can be configured to route PFL signals to the small loudspeaker, overriding any other signal presently going to it. This is a factory defined configuration and should be specified with the console order.

FIGURE 4 - PATCHING AFL AND PFL SIGNALS

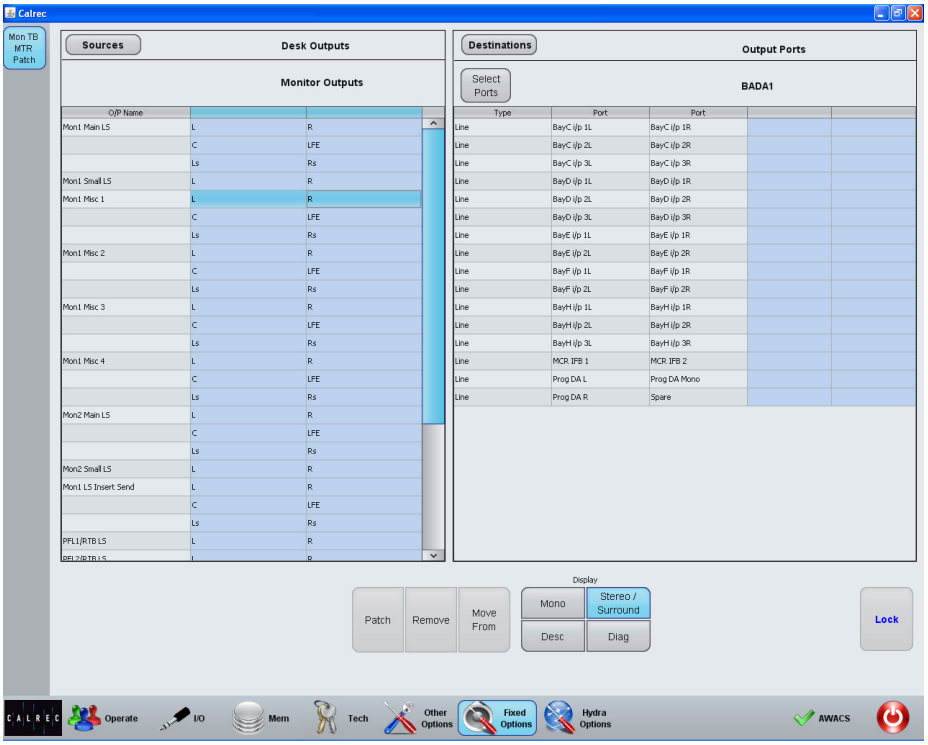
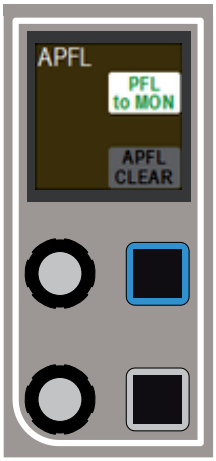


FIGURE 5 -PFL TO MON



Using the AFL and PFL systems with multiple users

When working with multiple user splits in the surface, each user has an individual APFL buss. The choice over which buss to use is made on the functions row. Touching the TOOLS button on the layers row, the press the newly revealed MISC button also on the Layers row. On the updated Functions row above the available options for APFL buss selection will be shown. Press one of these buttons in each user area to set the active APFL buss for that area as shown in Figure 6.

The APFL indicator on the broadcast facilities panel can be instructed to respond to any of the active APFL busses in the system. In Monitor mode, with any Main LS pre-selector selected, touch the MISC button on the touchscreen above. The available APFL busses will be shown in the upper portion of the display. Select the buss to work on by touching the relevant button (APFL 1 or APFL 2 in Figure 7).

The FLASH APFL option for each APFL buss instructs the APFL indicator in the broadcast facilities panel to flash or to illuminate steadily when any AFL or PFL is active in the relevant user section. If the option is selected, the indicator will flash. If it is deselected, the indicator will illuminate steadily. This allows two APFL busses on the same surface to have separate indicators.

The CLEAR AFL and CLEAR PFL buttons clear AFL and PFL respectively for each APFL buss.

FIGURE 6 - APFL FOR MULTIPLE USERS

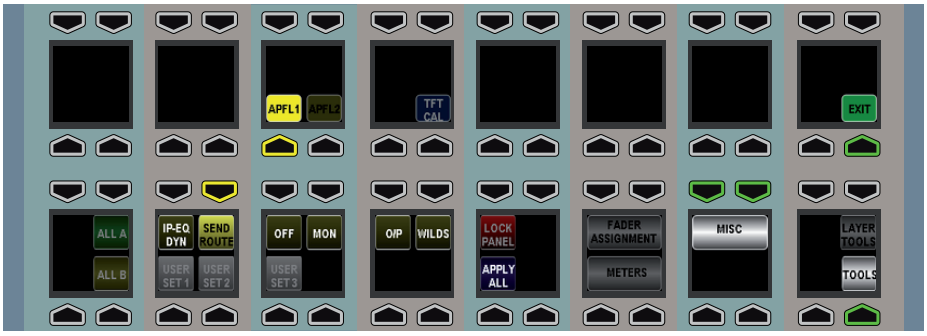


FIGURE 7 - APFL INDICATOR OPTIONS

HEADPHONES

Headphones may be connected to the headphone jacks located in either of the underside of the surface. These locations are highlighted in red in Figure 1.

Patching the headphone output
Navigate to the FIXED OPTIONS section then the MON TB MTR PATCH screen of the Main Application, as shown in Figure 2.

In the sources list on the left, press the filter button and select MONITOR OUTPUTS. From the list select any monitor output you wish to drive the headphones.

In the right hand list select the output port to which the headphone connection has been made. Now press PATCH. If you are unsure which port has been connected to feed the headphones, please contact your installation technician.

FIGURE 1 - HEADPHONE JACK

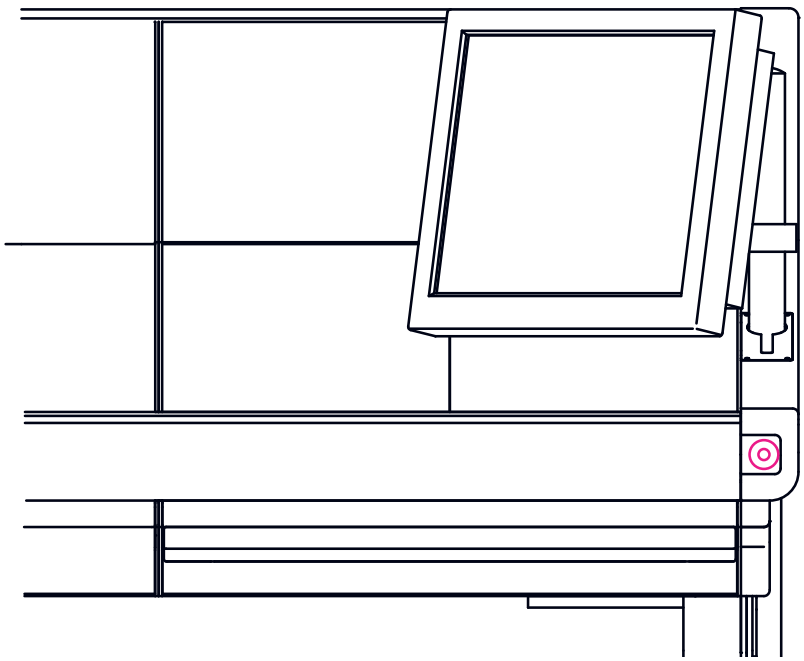
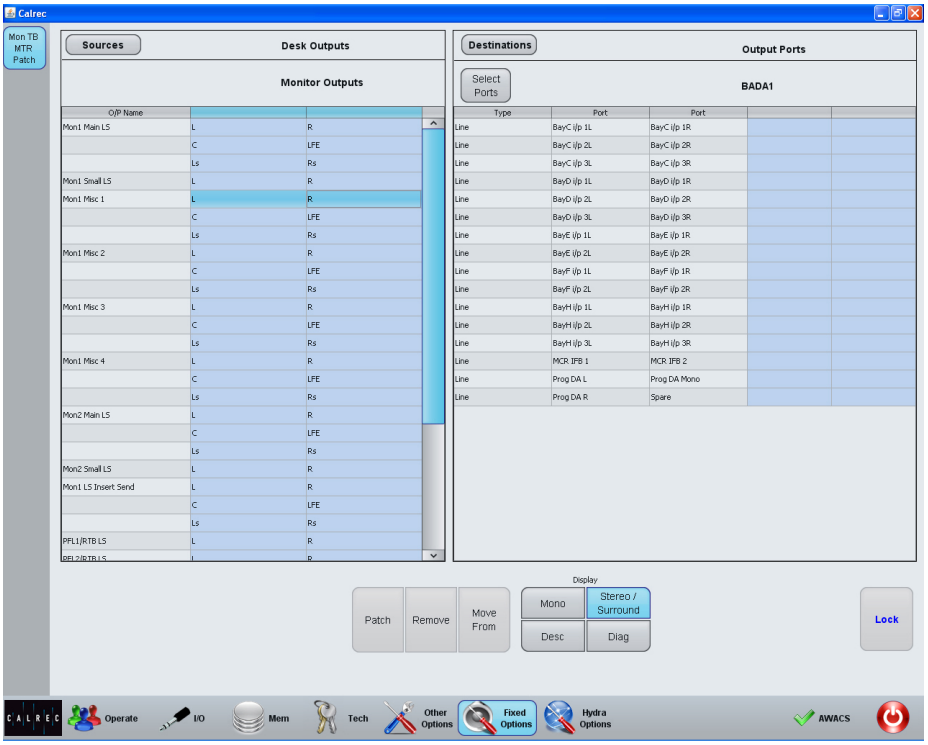


FIGURE 2 - PATCHING HEADPHONE CONNECTIONS



MONITOR FUNCTIONS

The touchscreen in Monitor mode provides a range of controls to access various functions for each monitor output.

Select a Main LS pre-selector using the relevant SEL button. On the right hand side of the touchscreen, touch the MISC button to reveal the controls. Different control arrangements appear for surround and stereo outputs as shown in Figures 1 and 2.

Monitoring controls

The lower area of the touchscreen contains controls over individual legs and downmixes of the signals sent to the monitoring outputs.

The L+R > L button toggles the sending of both left and right signals to the left speaker.

L > L+R and R > L+R send the left and right signals to either the left speaker or right speaker respectively.

PH REV R reverses the phase of the right speaker.

PHANTOM CENTER mutes the center speaker and sends the center information to the left and right speakers to create a phantom center image.

LFE OFF mutes the LFE signal to the speakers.

FULL sends the full surround signal out to the speakers. It removes any speakers cuts that may be in place.

3 STEREO downmixes the monitored signal to LCR stereo.

STEREO performs a stereo downmix when monitoring a surround path, or outputs the full signal and removes any speaker cuts when monitoring a stereo signal.

MONO performs a mono downmix on the monitored signal.

FIGURE 1 - MAIN LS SURROUND OPTIONS

FIGURE 2 - MAIN LS STEREO OPTIONS

APFL controls

The upper section of the Main LS screen containing APFL controls is explained in the AFL and PFL section of this document.

SURROUND MONITORING

The Artemis has both audio signal path and remote control facilities for use with encoded surround signals such as those handled by the Dolby DP570 (Dolby Digital and E encoder/ decoder), DP564 (Dolby Digital and Pro Logic decoder) and SDU4 (Pro Logic decoder).

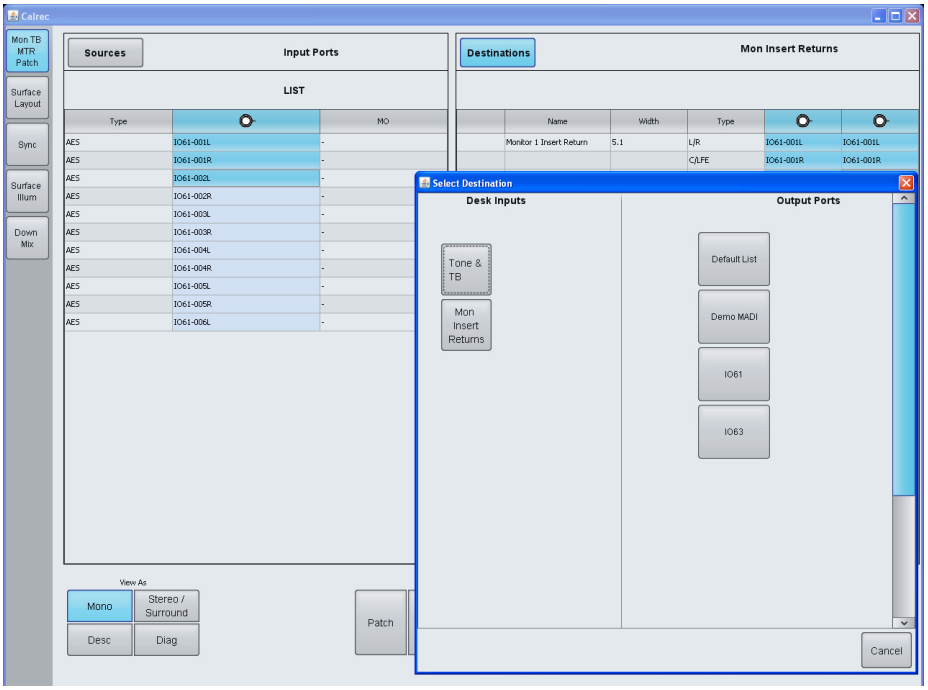
The console monitor system has insert points to allow the console selectors to route audio to the external unit and to bring it back into the signal path. The console can also provide GPO control outputs via relays and display the status of the external unit via GPI tallies and indicators on a wild assign panel.

To enable a monitor insert use the configuration PC and go to FIXED OPTIONS and choose MON TB MTR PATCH, touch the SOURCES button then choose Monitor Outputs (in the Desk Outputs column).

Then touch the DESTINATIONS button and filter that to confirm the port to be used as the insert send, typically an AES port on a BNC connector, if making a simple direct connection to a Dolby unit input. Touch PATCH to confirm the route.

Then go back to the Sources list and choose the port to be used as the insert return and filter the Destinations list to show MON INSERT RETURNS, and patch the required port (Figure 1).

FIGURE 1 - MONITOR RETURN PATCHING

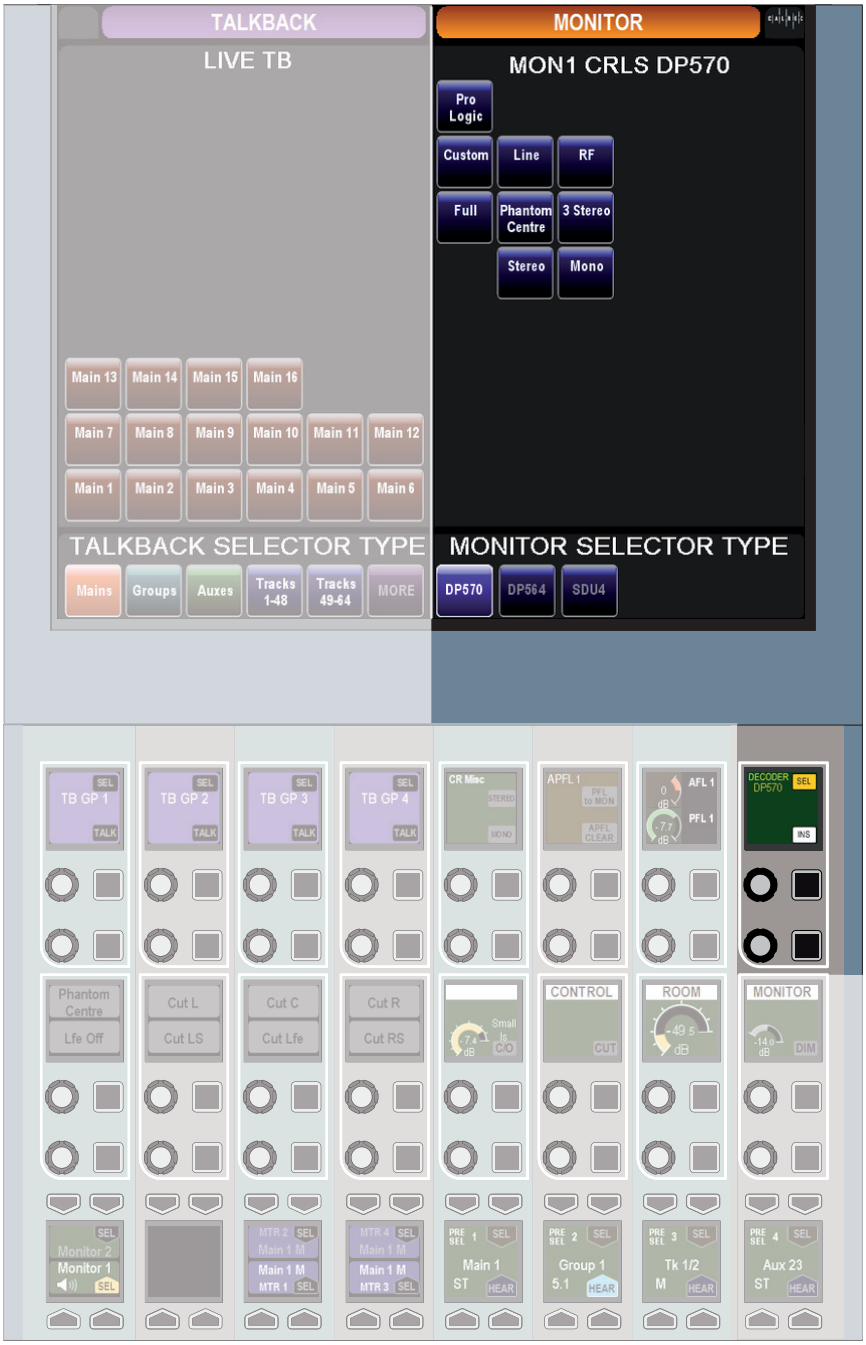


The monitor insert can be placed in the signal path, or bypassed using controls on a wild assign panel in monitor mode (Figure 2). To manage the mode of the surround encoder/decoder use the SEL button to bring up a remote encoder screen in the right half of the TFT touchscreen. The software has specific touch screen controls and indicators for three different models of Dolby unit and the required one is chosen at the bottom of the panel. The upper part of the screen provides mode selection for the chosen unit. The modes can be chosen by touching on the buttons which illuminate to show the current status. It should be noted that whilst the SDU4 uses latched outputs from the console, the DP570 and DP564 only show status information as returned by signals from the encoder/decoder units.

The control outputs and tally inputs are via the console's GPIO system so can also be used to control other models and brands.

The detailed hardware connections for remote controlling Dolby units is described in the Installation Manual. To assign the GPIO ports use the HYDRA OPTION page, filtering the GPO functions to the chosen relay in a convenient IO box and the opto return input to the relevant GPI function.

FIGURE 2 - MONITOR INSERT



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TALKBACK

Talkback facilities can be set up and activated through the monitor panel, shown in Figure 1.

Live talkback routing

To toggle talkback, touch a destination in the left hand side of the touchscreen, below the words 'Live Talkback'. The talkback latches, allowing multiple destinations to be selected simultaneously.

Talkback groups

There are four talkback groups available which can be set up to allow multiple talkback destinations to be fed simultaneously with a single button press. These group controls are located in the middle row of control cells at the left hand side of the panel.

To set a talkback group's destinations, touch and hold the upper SEL button in the relevant control cell, then tap the required destinations on the touchscreen. The text at the top of the touchscreen will

To toggle talkback to a group, press the lower TALK button in the relevant control cell.

Talkback microphone level

The level of the talkback microphone may be adjusted using the TB control.

Reverse Talkback

There are three reverse talkback inputs into the system. The level of these feeds may be adjusted using the RTB 1, 2 or 3 controls.

Patching talkback and reverse talkback inputs

Navigate to the MON TB MTR PATCH screen in the FIXED OPTIONS section of the main application as shown in Figure 2. Locate the physical input ports which will feed the talkback (this will be the

FIGURE 1 - TALKBACK CONTROLS IN MONITOR MODE

port to which the talkback microphone is patched) and the reverse talkback inputs (these could be microphones in other areas of the facility).

With an input port selected, also select the desired input from the list on the right then touch the PATCH button.

The method for physically connecting the surface talkback microphone is covered in the Installation manual. The studio technician should be consulted if it is not clear where talkback sources are patched.

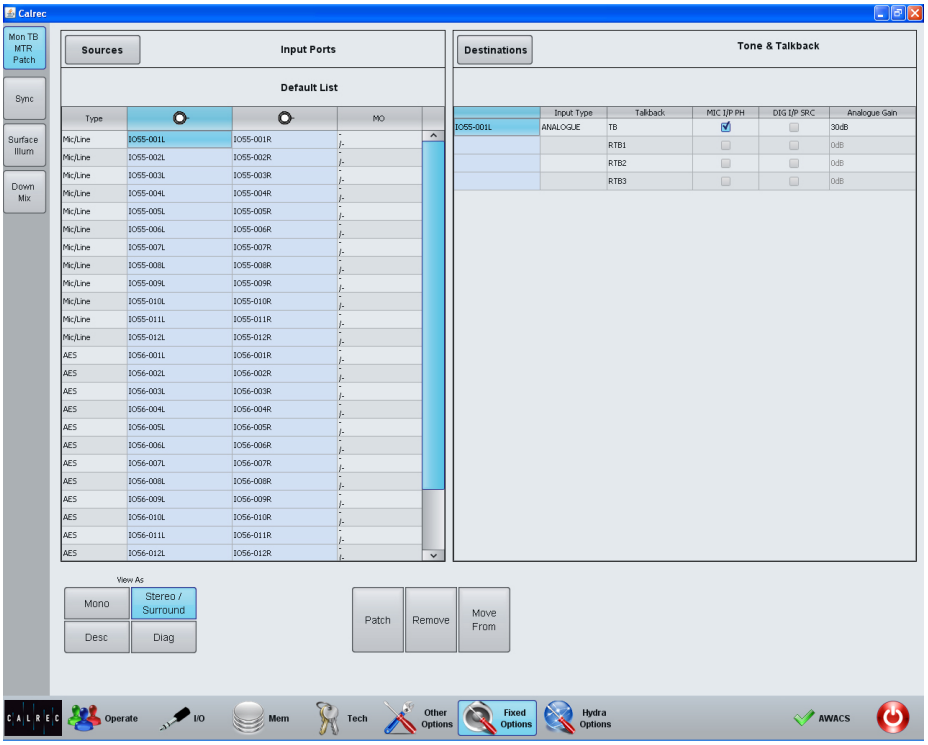
Microphone settings

When a microphone is patched to a talkback input, the mic may be provided with phantom power (analog inputs) or SRC applied (AES3 inputs) by checking the relevant box as shown in Figure 2. To adjust the gain of a microphone, the relevant 'Analog Gain' cell should be touched to bring up a dialog allowing selection of the desired gain.

Monitoring reverse talkback signals

In order to monitor reverse talkback inputs, the RTB buss must be patched to an output port where relevant loudspeakers are connected.

FIGURE 2 - TALKBACK INPUT PATCHING



MIX MINUS

Mix Minus is a system that allows a comprehensive mix to be sent to multiple listeners each receiving the complete mix, minus their own input.

Figure 1 shows an abstraction example of a mix minus system. Assume that the sources surrounded by a blue box represent people, either presenters or field reporters. The other sources may represent VT or server audio feeds.

These sources are fed to the input of eight channels on a console. Each channel has the option for it's signal to be sent to the console wide mix minus bus.

This mix minus bus can be routed back out to any sources that may require foldback, for example the presenters or field reporters. Each source would be fed the entire mix-minus bus signal, with their own contribution to that mix removed, creating an unique feed.

In Figure 1 the mix sent back to source 1 would consist of sources 2-8, source 2 would receive a mix of sources 1 and 3-8 and so on...

Why remove a sources own input from it's foldback mix?

Two reasons are presented here. The first relates to field reporters, or presenters in studios communicating via long distance systems such as satellite links.

The reporter would need to hear a mix of the show's audio in order to hear cues and communicate with the presenters. The inherent delay in these systems means that it may be a number of seconds before the audio reaches the reporter.

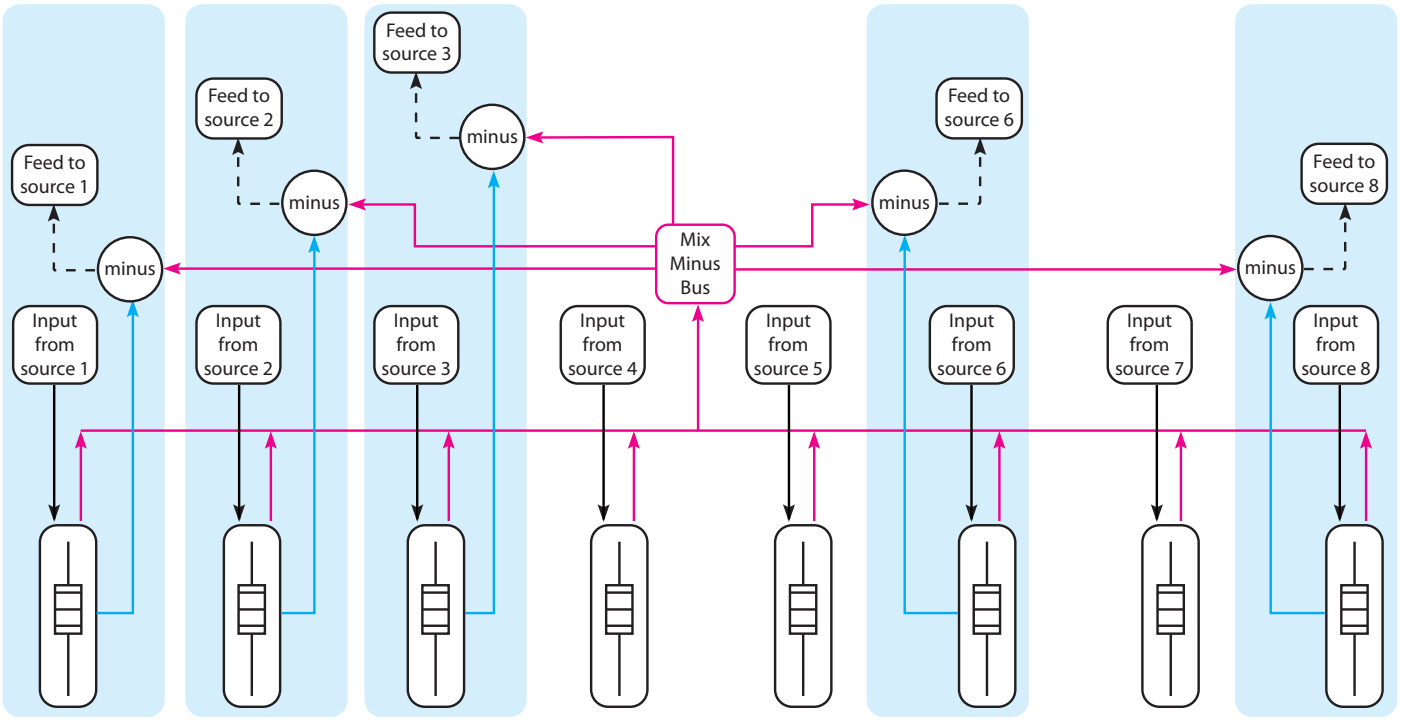
It can be very difficult to speak while hearing your own voice returned to you with even a slight delay. By using a mix minus feed to the reporter, their own contribution to the audio is removed before it is fed back to them eliminating this problem.

The second reason is to eliminate feedback. If a presenter's foldback was monitored on loudspeakers without subtracting their own contribution, some of their original signal may be picked up by the microphone again, thus creating a feedback loop. By using a mix minus system to remove the presenter's own contribution, this feedback loop is broken.

Sending signals to the mix minus buss

There is one mono mix minus buss, which is a global buss that any path can

FIGURE 1 - MIX MINUS ABSTRACTION



contribute to. To send a signal to this bus, first assign the chosen path and press the BUSS 1 button in SENDS-ROUTES mode as highlighted in Figure 2. Signals can be sent pre/post fade using the buttons to the left.

Assigning a direct output

Each path on the surface has a number of direct outputs associated with it. These direct outputs can be assigned to any output port which can then be used to feed the foldback back to that path's source.

To assign a direct output, use the IO PATCH page in the IO section of the main application. Touch the SOURCES button and select DIRECT OUTPUTS from the popup that appears. Select the fader where the source that is to be fed the mix minus signal appears. Press the DESTINATION button and select from the lists of output ports. Select an output port and then press PATCH.

For more details, including how to allocate direct out resources, please see the Direct Outputs section of this document.

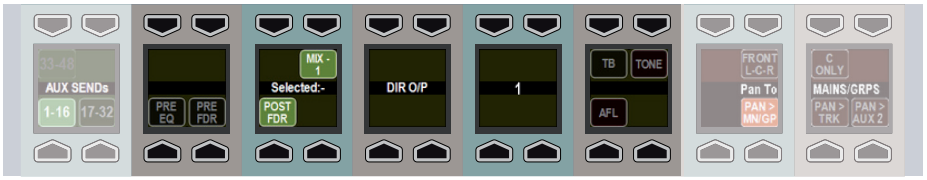
Monitoring a mix minus signal

Assign a path on the surface that is being fed by the source you wish to send a mix minus signal to. Select a Direct Output buss in SENDS-ROUTES mode by pressing the relevant rotary control. The buss selection area in the button cells will update to show the selected buss as shown in Figure 3. Press the MIX - button to route the mix minus signal to the selected Direct Output.

The mix minus signal sent to the required source will be the contents of the mix minus buss, with the source's contribution (if any) removed.

FIGURE 2 - SENDING SIGNALS TO THE MIX MINUS BUSS

FIGURE 3 - MONITORING A MIX MINUS SIGNAL



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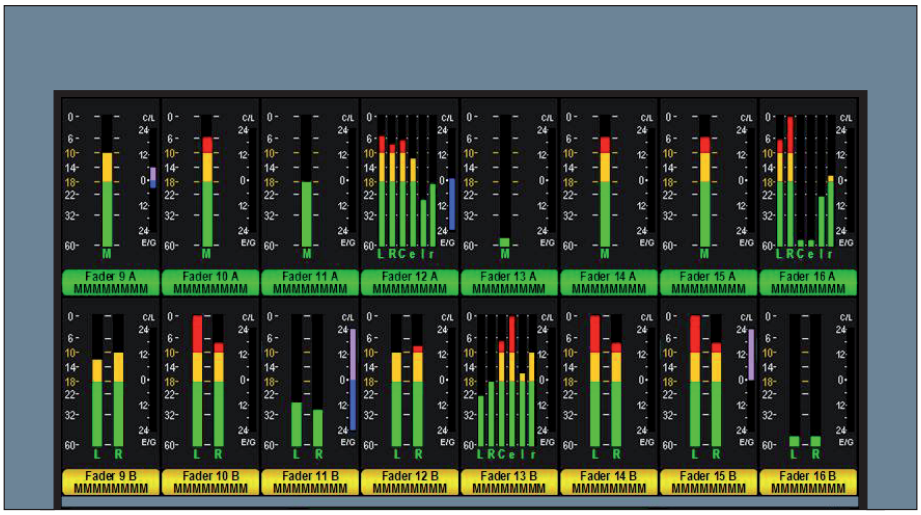
TFT METERS

The Artemis TFT meter layouts are user customizable in several ways.

Figure 1 shows an example layout of a configured TFT meter. The TFT is divided up into a number of 'cells'. Each can be one of a number of sizes, and can display mono, stereo or surround meters with or without dynamics information.

FIGURE 1 - EXAMPLE TFT METER LAYOUT



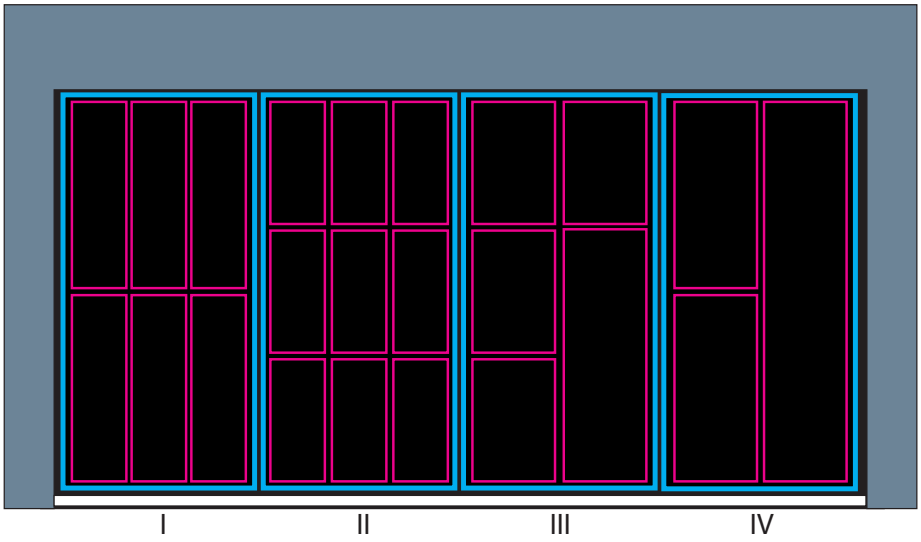
Meter cells

Each TFT meter is divided up into four vertical sections, marked in Figure 2 as I, II, III and IV. Each of these sections can display from one to three meters in the horizontal space, and one, two or three meters in the vertical space. This provides a maximum of three rows of twelve meters on each TFT, 36 meter cells.

Vertically arranged cells can be combined to create taller meters of half, two thirds or the full height of the screen.

A vast range of meter cell designs can be created, but some arrangements have specific advantages. For example, using 2 meter cells across the width of each vertical section will give 8 meters across the TFT screen. This allows meters to line up with the faders on the fader panel below.

FIGURE 2 - EXAMPLE LAYOUT GRID



Meter layout

Meter configurations can be saved to in files with meter panels laid out and meters assigned by going to OTHER OPTIONS and choosing METER SETUP.

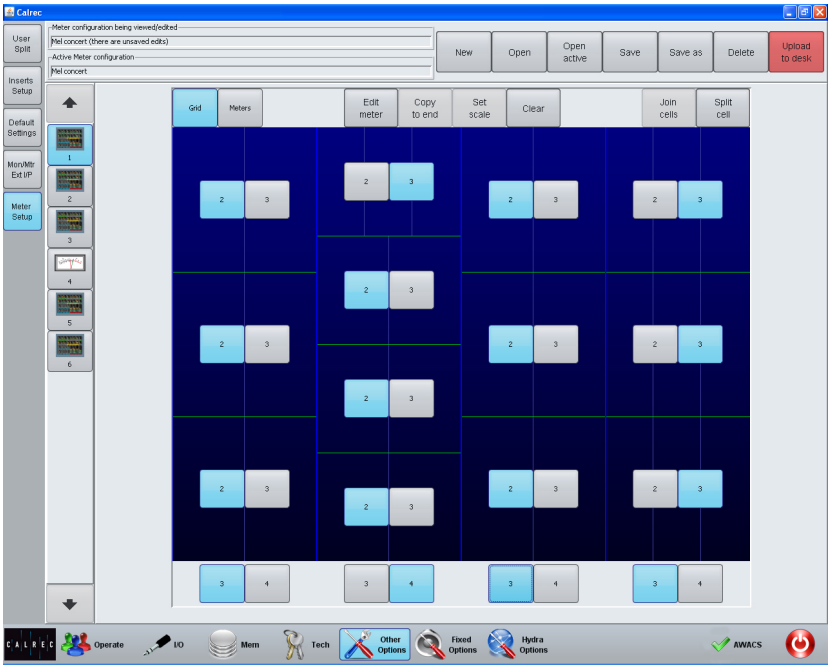
In many instances, there may be an existing meter configuration active on the console. To ensure this file is preserved, go to SAVE AS or NEW and enter a file name for the meter arrangement about to be created.

The PC screen shows one TFT panel at a time and the panel to be configured is selected from the vertical column of numbered panels. Selecting GRID allows the screen to be subdivided to create the required layout. The 3 and 4 buttons at the base of each vertical section set the vertical division accordingly.

Larger vertical heights are created later by joining cells. To ensure meters are always of a suitable height, the meter display can be a maximum of three meters high. The four high option is used during the layout process to create quarter height cells which can then be combined to make half height units. Quarter height cells not combined in pairs are not displayed on the console meter panel.

Cells are selected to have 2 or 3 meters side by side using the number buttons within each area. As soon as changes get entered, the file name carries a warning that there are unsaved edits and the SAVE button become active. New meter files can still be created by going to SAVE AS.

FIGURE 3 - GRID CONFIGURATION



To create meters higher than a third or quarter of the screen, select the METERS tab. Adjacent vertical areas of the same width are joined by touching the upper of the two cells to be linked, then touching JOIN CELLS. To create a meter which is the full height of the screen, first join the lowest two cells, then select the one above and join that. If in 4 high mode select the top cell and finally add that. Combining ⅓ and ¼ height meters with 2 and 3 wide cells allows a vast range of alternative grids. Joined cells can be divided by touching SPLIT CELL.

Meter assignment

Once the grid has been defined, meter functions can be assigned to place in the grid. Touch the METERS tab then the meter cell to used as shown in Figure 4. Touch EDIT METER to display a list of the meter sources which are divided into AUXES, EXTERNALS etc. Some such as FADER PATHS have sub options and once the meter function has been selected, touching APPLY TO SELECTION will assign the function to that meter.

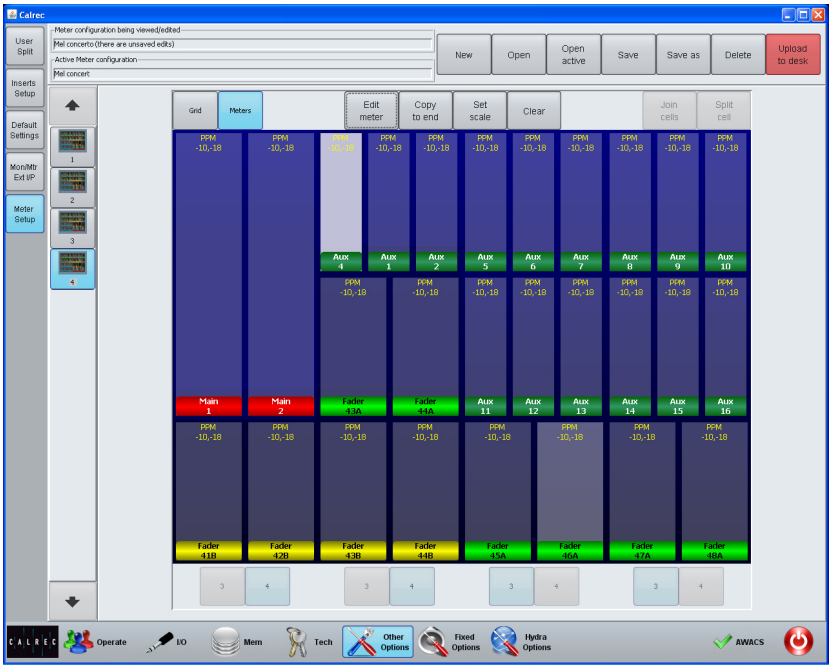
Where there are similarly sized but unassigned meter cells to the right of the selected one and the meter function is part of a sequence of similar sources, APPLY TO SELECTION sets the first cell to the assigned function. Each one to the right will increment by one. For example if the first meter was assigned to Track 1, the next would be Track 2 etc.

Each meter can be set to one of two alternative scales by touching SET SCALE. This can be copied to adjacent similarly sized meter cells by choosing APPLY TO END.

To change an already assigned meter, select it then make changes as necessary. Once the first screen is configured, the grid and meter assignment can be repeated for each of the other meter panels.

All changes to TFT meter configurations are initially held in a buffer memory and are applied to the console only when the now red UPLOAD TO DESK is touched. This first saves the file and once it is uploaded, the screen button reverts to gray.

FIGURE 4 - METER ASSIGNMENT



Dynamics meters

Any meter for a path that has dynamics processing can have a dynamics meter shown at the right hand side of the meter cell. The function of this meter is described in the Dynamics section of this document.

A/B path meters

A/B path meters are linked to a certain fader and can be set up to meter either the A or B path. As shown in Figure 1, two rows of A/B path meters can be set up to meter both A and B paths of any fader, regardless of which is currently selected for control by the fader.

The A/B path meters can also bet set to switch between the currently active path of any given fader. For example, when the user switches between the A and B paths on a fader, the A/B meter will follow this selection and the label will be colored accordingly.

Meter label colors

The color bar beneath each meter relates to the coloring of paths used throughout the surface. Red corresponds to main paths, dark blue to tracks, green to auxes, light blue to groups and so on. A and B path colors correspond to the A and B path selector buttons above the faders which are green and yellow respectively.

Meter labels

The label shown under each meter will be taken from the fader label, the port description or port name (in order of priority depending on which have been set).

Assignable meters

There are up to four assignable meters in the Artemis system. These are labelled MTR1-4 and any of the TFT cells can be chosen to display these meters.

The sources feeding these meters is set in a very similar way to the monitor pre-selectors:

In Monitor mode, locate the four assignable meter buttons, as shown in Figure 5. Press the button associated with the required meter to select it. Now choose a signal to feed the meter from the right hand side of the touchscreen at the top of the panel. The meter cell displaying the relevant assignable meter will update to reflect the changes.

FIGURE 5 - ASSIGNABLE METERS

TFT METER SETTINGS

Certain features of the TFT meters can be changed on the surface at any time.

Dynamics meters

The dynamics meters located to the right of channel, group and main meters, as shown in Figure 1, can be configured to show the first or second dynamics units.

To do this, touch the TOOLS button on the layers row. The Layers row will update to display various meter setup options (Figure 2). Pressing the buttons above UPSTAND DYNAMICS 1 or UPSTAND DYNAMICS 2 will change all relevant TFT meters to display the selected information.

FIGURE 1 - DYNAMICS METERS

FIGURE 2 -DYNAMICS METERS SETUP

EXTERNAL METER OUTPUTS

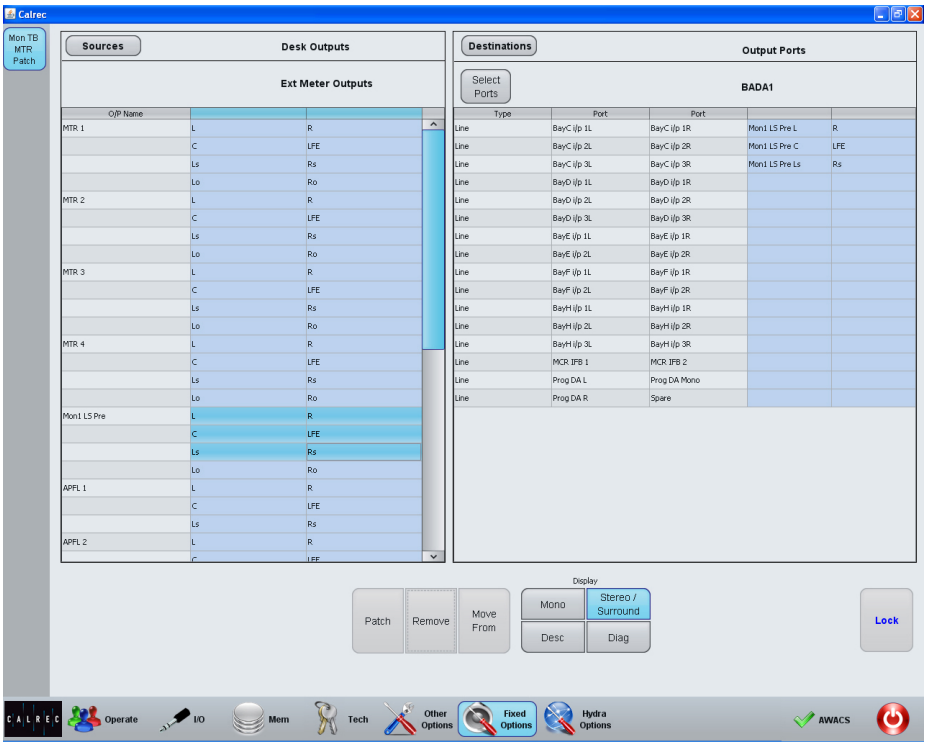
External meters can be fed by the Artemis metering system in a similar way to loudspeakers.

Navigate to the MON TB MTR PATCH screen in the FIXED OPTIONS section of the main application as shown in Figure 1. Touch the sources button at the top of the screen and choose EXT METER OUTPUTS from the popup window that appears.

Find the port to which the external meters are connected in the list of ports on the left of the screen. If you are unsure where any meter are physically connected, contact your installation technician.

With the destination port selected, choose a source to feed the meter and then touch the PATCH button.

FIGURE 1 - EXTERNAL METER PATCHING



ARTEMIS
SHOWS AND MEMORIES

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OVERVIEW

The powerful memory system on Artemis is based around the concept of shows.

A show can be set up for each programme or broadcast which consolidates all relevant memories. A show also stores references to relevant console option files. Memories, which include more specific operational settings, are stored inside shows. These can be thought of as snapshots, or scene memories.

Figure 1 shows a basic abstraction of the Artemis memory system. Details of one show and one memory are provided, however the same level of information is stored in every show or memory in the system. The only limit to the number of shows and memories that can be saved is the amount of storage space available in the control processor.

The number of possible memories depends on the resources used by the show but is typically of the order of 150. If a show contains fewer paths and features, the number of memories that can be stored will increase.

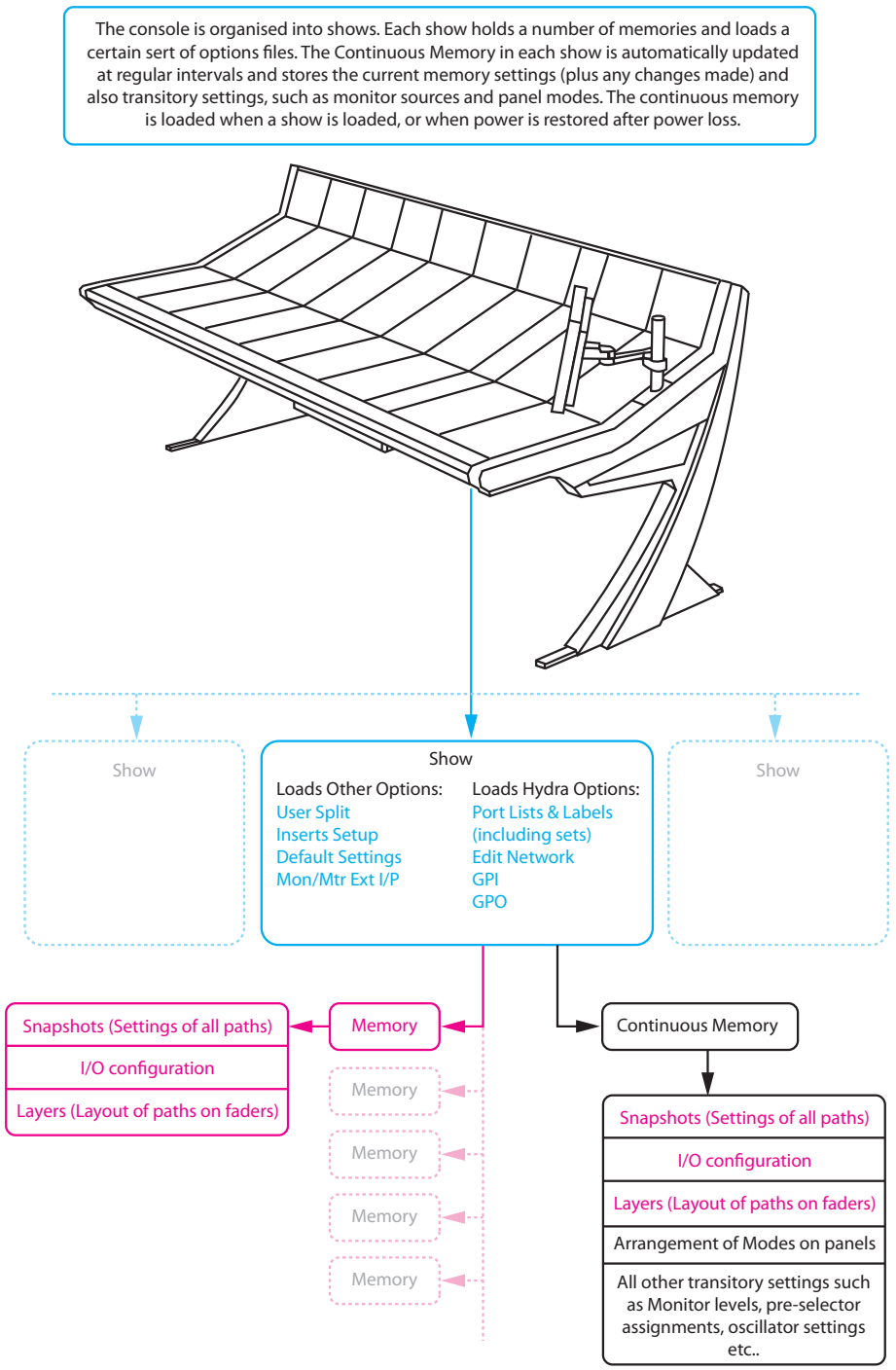
Shows and memories can be backed up to the configuration PC, facility LAN or to external USB devices in order to create space or provide storage redundancy.

Continuous memory

In addition to the standard memory system, Artemis continually stores the state of the system. This continuous memory stores the state of the console settings periodically, so that in the event of a reset or power cycle the console is able to return exactly to its previous state.

This is an extremely useful feature, but be sure to explicitly save memories if specific settings need to be recalled at a later date.

FIGURE 1 - ARTEMIS MEMORY SYSTEM



SHOWS

Shows form the basis of the memory system. They contain all relevant memories and load specific console option files.

Console Settings

Certain option files that allow various configurations to be saved to a file, for example a network configuration or a user split layout, can be loaded by a show. There may be any number of option files saved within the console and different shows may make use of different option files.

For example, the location of any user splits is stored in an option file and loaded by a show rather than a memory. This allows the user to load different memories and alter the patching and routing etc. without the user split locations changing. The same thought process applies for other settings which should remain constant throughout a show.

Please refer to the section on Option Files for more information on the settings stored within them.

Continuous Memory

Each show also operates its own continuous memory which stores:

- All information contained within a memory, such as IO patching, path arrangement on layers and all snapshot information such as routing, processing settings, panning and mute status etc. (these settings are not committed to a standard memory unless a memory is created or overwritten explicitly)
- The arrangement of modes on wild assign panels.
- Transitory settings, such as the which pre-selector is currently being listened to, the state and settings of the oscillator and the state of any AFL or PFL switching.

FIGURE 1 - MEMORY SCREEN

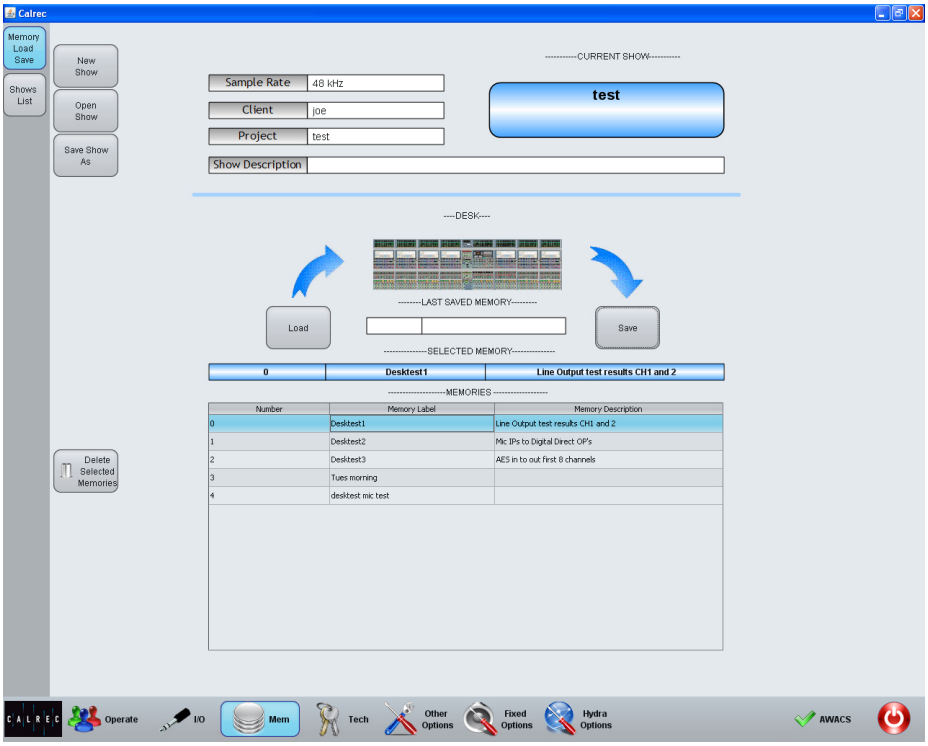
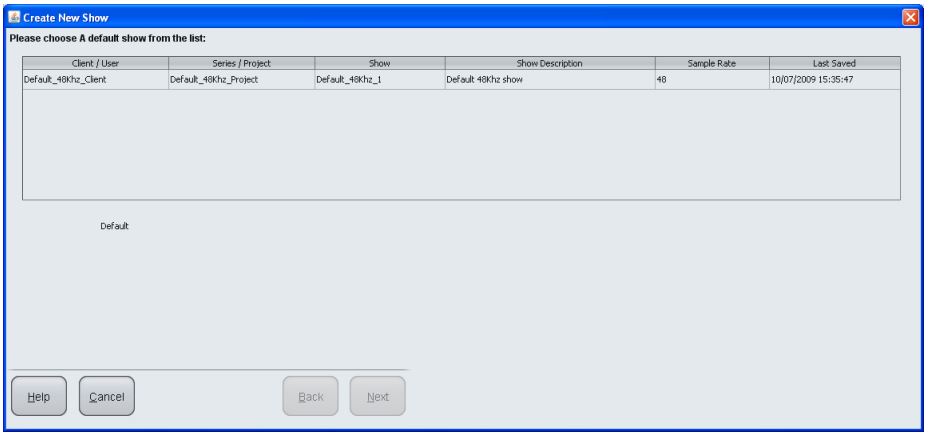


FIGURE 2 - NEW SHOW



This means that when a show is loaded, all of the above information is also loaded. This effectively allows the operator to load a show and have the system appear exactly how it was when the show was last used.

New and Default Shows

The console is supplied with a set of default shows that can be used as a basis for creating and organizing further shows.

To create a new show go to the MEM section and the MEMORY LOAD SAVE screen as shown in Figure 1. Touch the NEW SHOW button and a dialog box will appear. This popup contains a number of pages and will step through the process of creating a new show. See Figure 2.

The first page allows the user to choose a default show on which to base the new show. Select from the list of default shows and touch the NEXT button. Be sure to choose a show with the correct sample rate.

The next three pages allow the name of the Client, Series and Show to be named. After entering the desired names in each page, continue by touching the NEXT BUTTON. The new show will now be ready for use.

Opening shows

To open an existing show, from the MEMORY LOAD SAVE screen touch the OPEN SHOW button. A dialog will appear that lists the shows available on the console as shown in Figure 3. Select the show to load and touch the LOAD button. Touch the CANCEL button to leave the dialog without loading a different show.

Loading a new show unloads the previous show from the console and changes console settings. The previous show is not lost and can be re-loaded at any time.

It is not possible to load a show that is already in use. Attempting to do so will result in a dialog appearing informing the user that the show is already loaded.

Save show as...

The current show can be saved as a different show with a different name and different user and series assignments. From the MEMORY LOAD SAVE screen, touch the SAVE SHOW AS button. A dialog will appear as shown in Figure 4, that allows the user to choose from existing user and series data, or to enter new data.

Backing up shows

Shows saved in the console can be backed up to an external USB device. This is performed in the MEM section on the SHOWS LIST screen. The shows stored in the console are listed at the top of the screen. See Figure 5.

Connect an external storage device to the USB port on the surface and touch the SHOWS button to bring up a standard Windows explorer dialog. Browse to a location on the storage device where the shows should be backed up to. Once this location has been selected the list at the bottom of the screen will display any shows the have previously been backed up to this location.

Select the show(s) to be backed up from the top list and then touch the BACKUP button. When the backup process is complete the bottom list should reflect the additions.

Restoring shows

Restoring shows is performed in a very similar way to backing up shows. First find the backed up shows on an external storage device by pressing the SHOWS button and browsing to the correct location. Select the show or shows to be restored in the bottom list and then touch

FIGURE 3 - OPEN SHOW DIALOG

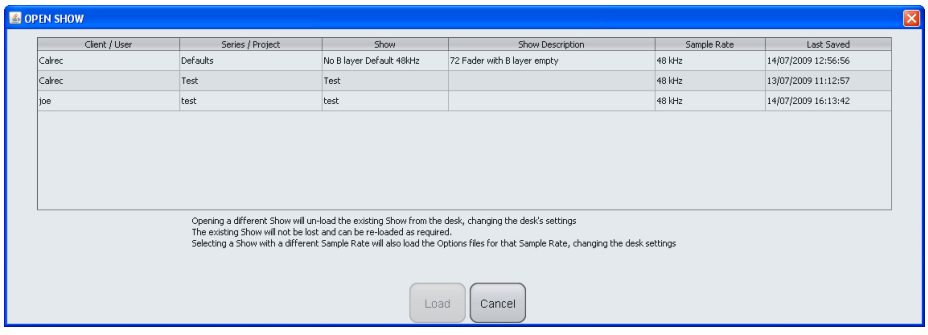
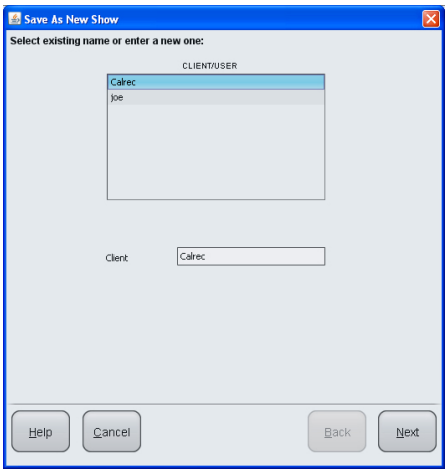


FIGURE 4 - SAVE SHOW AS DIALOG

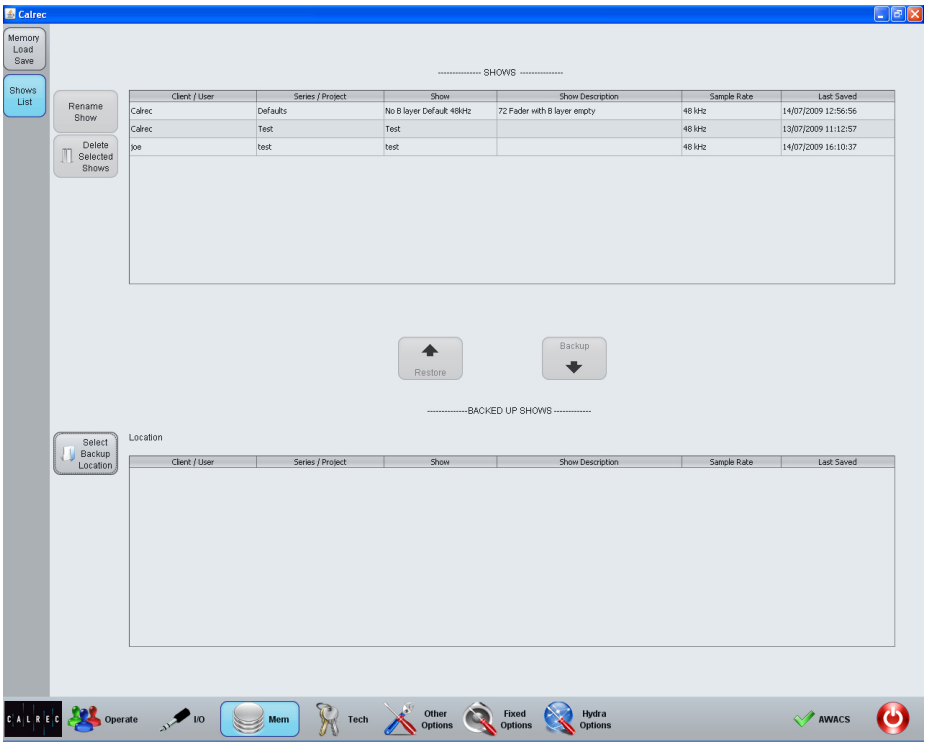


the RESTORE button. Once the shows have been restored they should appear in the top list.

Renaming shows

If for any reason the name of a show needs to be changed, go to the MEM section and the SHOWS LIST screen. In the list of shows available on the console (at the top of the screen) select the show that is to be renamed and touch the RENAME SHOW button. A dialog box will appear that details the selected show and provides input areas to alter the name and description. Once the correct details have been entered touch the SAVE button to commit the changes, or touch the CANCEL button to leave the dialog and reject any changes.

FIGURE 5 - SHOWS LIST SCREEN



MEMORIES

Unlike shows, which consolidate relevant memories and point to certain files containing console settings, memories store operational details such as IO patching, the layout of paths on the surface (including layers) and path settings such as dynamics, EQ and routing parameters.

Memory screen

The MEMORY LOAD SAVE screen in the MEM section of the configuration PC (Figure 1) shows the available memories in a list at the bottom of the screen. Selecting a memory in this list updates the SELECTED MEMORY area to clarify which memory is about to be loaded or saved.

When a new show is created, a new default memory is also created and set as the current memory. The LAST MEMORY LOADED area shows the current memory in use.

Loading a memory

To load the selected memory touch the LOAD button. This will load all the settings stored in the memory into the console. The LAST MEMORY LOADED area will now update to show the current memory. Loading a different memory will alter the console settings and update the LAST MEMORY LOADED area to reflect the changes.

Saving a memory

To save the current state of the console to a memory, select a memory from the list at the bottom of the MEMORY LOAD SAVE screen then touch the SAVE button. A dialog will appear as shown in Figure 2 that provides two options.

The currently selected memory can be overwritten by touching the OVERWRITE button. Alternatively a new memory can be created by touching the SAVE AS NEW button, filling in the name and description of the new memory and then touching the SAVE button.

FIGURE 1 - MEMORY LOAD SAVE SCREEN

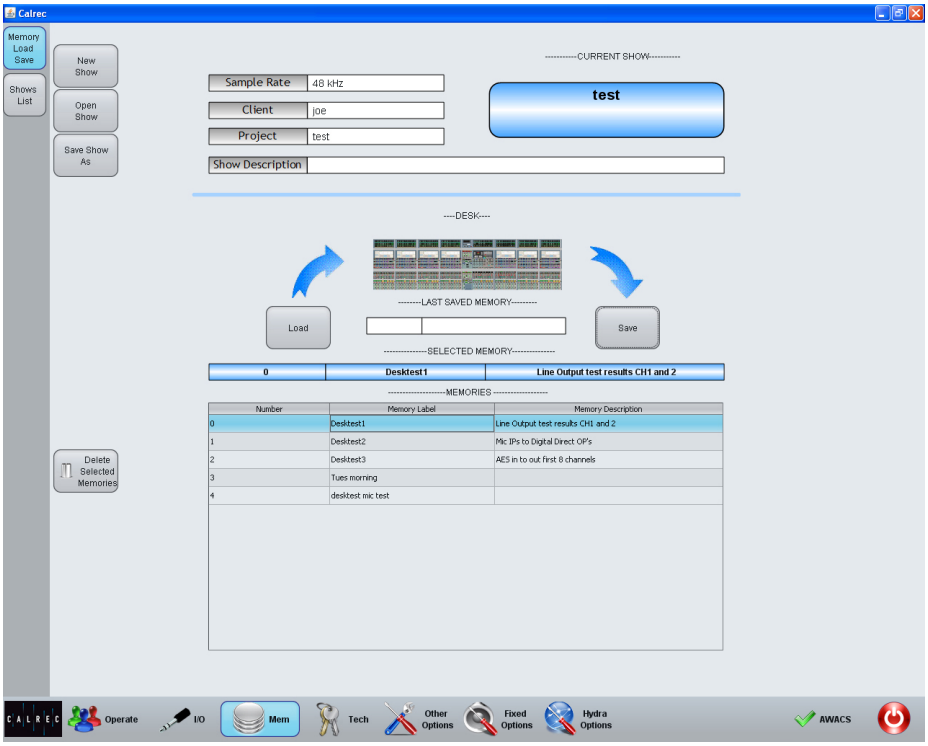
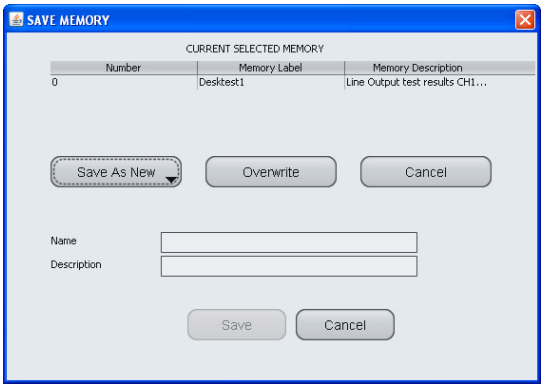


FIGURE 2 - SAVING A MEMORY



OPTION FILES

Option files contain settings which are not saved in memories. They may relate to certain show settings, studio settings or surface settings that the user does not want to change each time they load a memory.

System options appear in three areas of the main application accessible from the menu bar at the bottom of the screen. These are:

- Other
- General
- Network

Other

The Other section contains a number option of files relevant to shows, for example user splits and TFT setups. Different settings for each of these options can be saved into files. Shows can then load different files depending on the configuration required.

Network

The Network section contains option files with settings relevant to the Hydra2 network. Port lists and labels, GPIO settings and the availability of IO boxes are all stored in these files. Again as with Other options, there can be multiple files for each set of options allowing different shows to load different configurations.

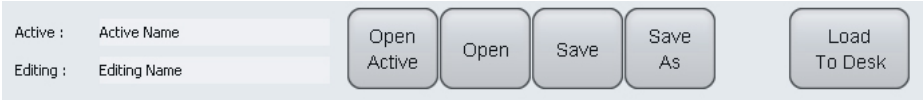
General

The General options section contains the remaining options that do not relate directly to shows or the network. Generally once they are set they shouldn't need to be altered often. There is only one set of these options in the system. Multiple option files cannot be saved.

Saving and loading option files

Where multiple option files can be saved or loaded, the screen in the main application will display the controls shown in Figure 1.

FIGURE 1 - SAVE/LOAD BUTTONS



The ACTIVE text field displays the name of the option file currently loaded into the system. The EDITING text field displays the name of the file currently being edited on the screen.

There are two options for opening files. The OPEN ACTIVE button opens the file currently in use by the system for editing The OPEN button brings up a dialog in which the user may open any previously saved options file for editing. Once a file has been selected in the dialog, there are two options; OPEN and LOAD. Touching OPEN opens the file for editing, whereas touching LOAD loads the file into the system.

Once any editing is complete, the file can be saved. The SAVE button overwrites the file which was opened for editing. The SAVE AS button brings up a dialog allowing a new file name to be specified for writing to a new file.

The LOAD TO DESK button saves the currently open file and then loads the settings into the system.

MEMORY ISOLATION

Memory isolation allows certain paths and ports to have all or some of their settings protected from any memory load operations.

Isolate settings are stored in the continuous memory of each show, therefore each show may have different isolate settings.

Basic path isolation

Paths may be isolated using the MEM ISO button next to each fader as shown in Figure 1. With this function selected on a fader, the paths on that fader will keep their current settings when a new memory is loaded.

FIGURE 1 - MEM ISO BUTTONS

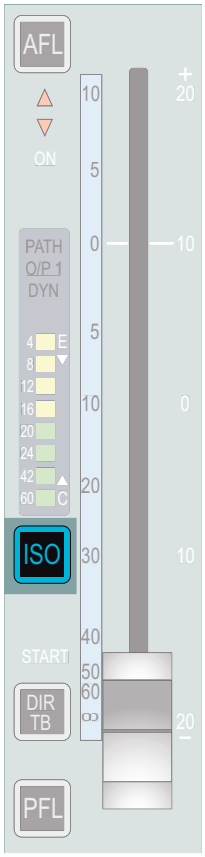


FIGURE 2 - MEM ISO APPLIED TO FADERS

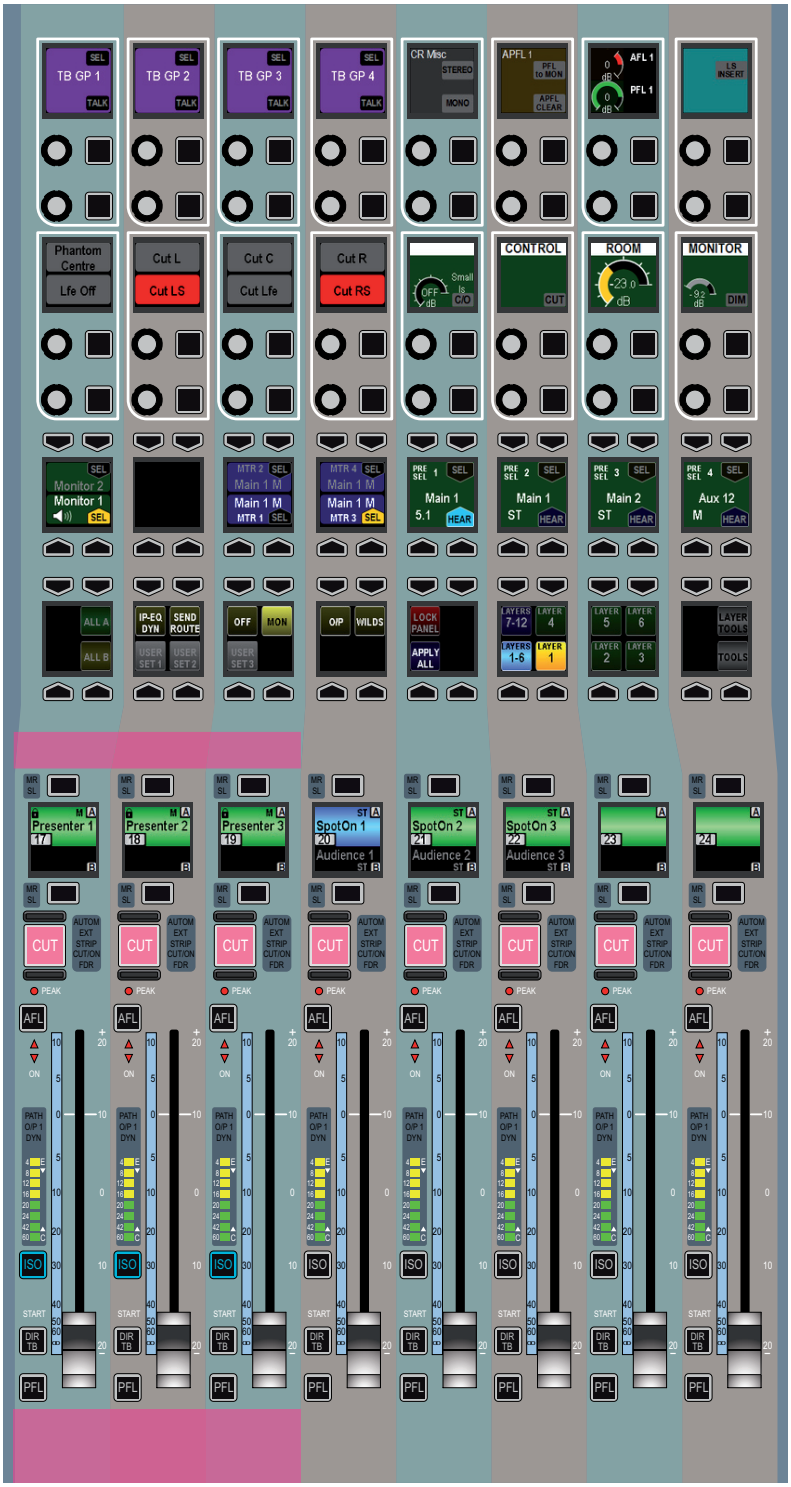


Figure 2 illustrates this function. The MEM ISO function on the first three faders have been activated. These faders have been highlighted to indicate that they will not be altered by any memory load operations.

Setting the scope of path memory isolation

Isolating a path does not necessarily mean that all settings associated with the path are isolated. It is possible to only isolate the EQ settings on a certain path, just the EQ and input settings, or maybe all or some of its routing.

To set the scope, touch the LAYER TOOLS button on the modes row. This will update the row above as shown in Figure 3. Now press the button above the SET MEM ISO graphic on the modes row. This will set the wild assign area above it into Memory Isolate mode as shown in Figure 4 (apart form the mode title, the TFT screen appears blank in this mode).

The lower two rows of control cells on the wild assign area will now display the elements of the path which can isolated. They relate to the currently assigned path. These elements may vary depending on the type of path assigned, for example input and input port settings are not applicable to groups.

Press the relevant button to toggle the elements which should be isolated when the assigned path is isolated. The selected elements will illuminate. The SET ALL ISOLATES and CLEAR ALL ISOLATES buttons in the button cells below switch all elements on or off respectively.

The PART ISO button in the button cells toggles partial memory isolation on or off for the assigned path. When a path has been partially isolated, the ISO button next to the fader will illuminate green instead of the fully isolated blue color.

FIGURE 3 - ACCESSING THE SCOPE OF THE MEMORY ISOLATE FUNCTION

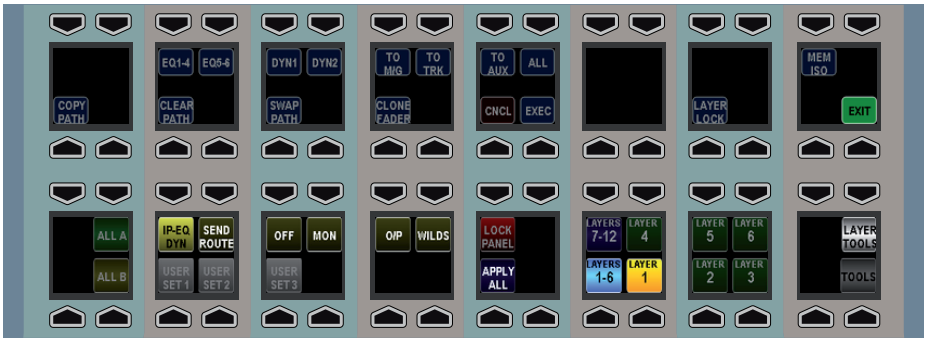


FIGURE 4 - MEMORY ISOLATE MODE

Once the required isolate elements have been set, press the EXIT button on the wild assign area to return the area to the previously used mode.

Applying isolation scope to multiple paths

Instead of applying the isolate settings to just the assigned path, it is possible to quickly apply the settings to a number of paths at the same time.

To do this, press the SET FILTER button on the bottom row of the wild assign area. This will change the appearance of the row to that shown in Figure 5. The elements to be isolated can now be selected as usual. Hold down the APPLY SEL button and press the assign buttons of the paths to which the settings should be applied.

While holding the APPLY SEL button, the path assign buttons may be in one of three states:

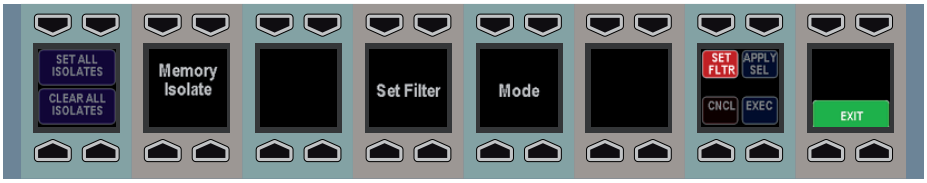
- Button not illuminated. The path has no isolate elements applied to it.
- Button illuminated continuously. The path already has some isolate elements applied to it. Not necessarily the current configuration of elements.
- Button illuminated but strobing. The user has pressed the assign key to assign the current configuration of isolate elements to the path. If the same assign button is pressed again, it will return to one of the above states depending on the path's previous state.

Once the necessary changes have been made the APPLY SEL button can be released. To apply the settings press the EXEC button, or to cancel them press the CNCL button.

Elements available for isolation

- Input 1 Settings

FIGURE 5 - WILD ASSIGN ROW IN SET FILTER MODE



- Input 1 Ports
- Input 2 Settings
- Input 2 Ports
- Direct Output Levels
- Direct Output Ports
- Track Send Levels + Pan
- Track Routing
- Aux Send Levels and Routing
- Fader Level and Settings
- Pan to Mains and Groups
- Routing to Mains and Groups
- Insert
- EQ Bands 1-4
- EQ Bands 5-6
- Dynamics Unit 1 (comp/lim, exp/gate)
- Dynamics Unit 2 (comp/lim)
- VCA Master Fader
- VCA Slave
- Stereo Width
- Downmix
- Mix Minus Routing

Most of these settings are self explanatory. The two which may require further explanation are VCA Master Fader and VCA Slave.

Isolating the VCA Master Fader element isolates the fact that a fader is a VCA master. If the fader is a master then any memories loaded will not change the fact that it is a master or alter any of its master settings (level, cut). Conversely, if the fader is not a master and this element is isolated, any memories loaded will not change it to become a master. This element does not isolate any slaves of the master in any way. If all slaves of this master are removed by a memory load, then the master has to be removed by default. It cannot exist without slaves. Also, if there is a slave path on the same fader (see the VCA Style Groups section for more details), and all other slave faders are removed, the master's settings are coalesced onto the same fader slave to preserve the mix detail.

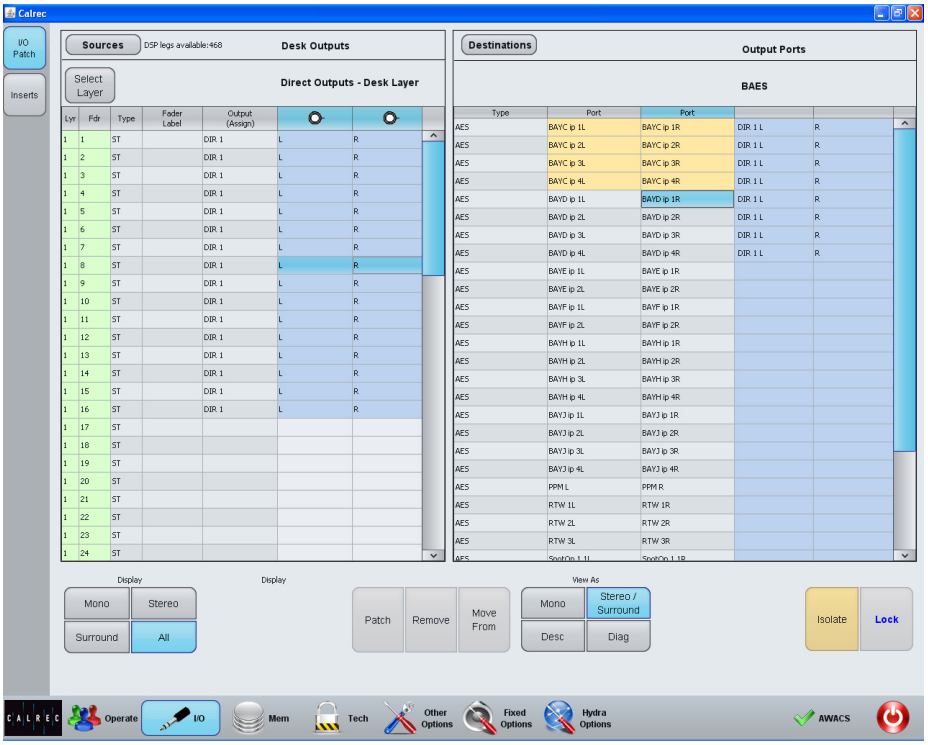
VCA Slave isolates the fact that the fader is a slave. It maintains its link to a certain master if that master still exists after a memory load (the master must be isolated individually). Similarly to the VCA Master Fader element, it also prevents the fader from becoming a slave due to a memory load operation if it is not one already.

Output port isolation

In addition to isolating paths (and possibly their associated ports) from memory load operations, output ports can have their patching isolated. To do this, select an output port and touch the ISO button as shown in Figure 6. It will be highlighted in a yellow color as an indication that it is now isolated.

Repeat the process to remove the isolation.

FIGURE 6 - ISOLATING OUTPUT PORTS



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ON AIR AND REHEARSE MODES

In addition to the normal mode of operation, the console can be switched into one of two modes which impose restrictions on certain console operations.

The broadcast facilities panel contains two buttons labelled REH (Rehearse) and ON AIR. Pressing either of these buttons sets the console to run in the relevant mode.

External interfaces can also trigger the console into switching these modes on or off with a signal sent via the console's general purpose inputs. For GPIO configuration please refer to the GPIO section.

On Air

On Air mode prevents the operator from performing certain actions that could be disastrous to the continued output of intended programme material. It currently imposes the following restrictions:

- Talkback to main outputs is disabled
- All other talkback dims control room loudspeakers
- All tone is disabled

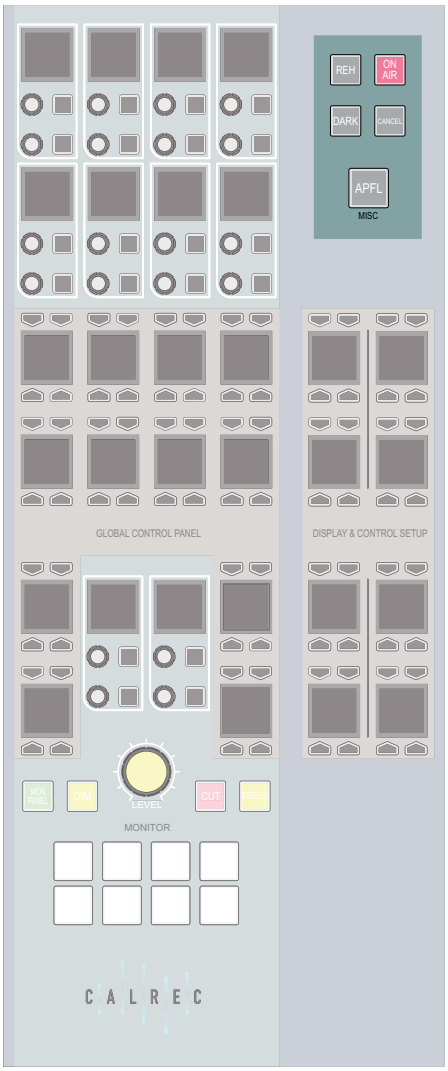
It can also be used to control an external interface (such as an On Air light in the studio) via the console's general purpose outputs. In this case, when the console was switched into On Air mode, the restrictions would be put in place and the On Air light would be lit.

Rehearse

The Rehearse mode provides similar functionality to the On Air mode but imposes a different and usually less severe set of restrictions on the console.

Currently Rehearse mode sets all talkback to dim the control room loudspeakers.

FIGURE 1 - ON AIR AND REHEARSE BUTTONS



It also allows control over a separate external interface via GPOs than the On Air mode, such as a Rehearse light.

Neither mode selected

Restrictions can also be put in place when neither mode is selected. Currently the restrictions are the same as for rehearse mode.

SYSTEM RESET

In the unlikely event that a failure should occur at any point in the Artemis system, the fail component may be reset individually from the other system components.

Fail warning indicator
AWACS (Automatic Warning and Correction System) will detect any errors in the system and issue a warning to the operator. One warning indicator, the FAIL WARNING button, is located on the Global Control panel as shown in Figure 1. This will flash when an error is detected. It can be pressed to acknowledge the error and will stop flashing, but will remain lit until the error has been corrected.

Reset buttons
Buttons on the Central Meter panel allow the DSP, surface and control systems to be individually reset. To do this hold the appropriate button for the failed component and then press the ENABLE button.

Similar buttons are also available on the rack, with the addition of the Hydra2 reset button.

Be extremely cautious when resetting the Hydra2 Router/Expander system. If any other consoles on the same network are accessing ports on your system, they will experience signal loss during the reset period.

FIGURE 1 - FAIL WARNING INDICATOR

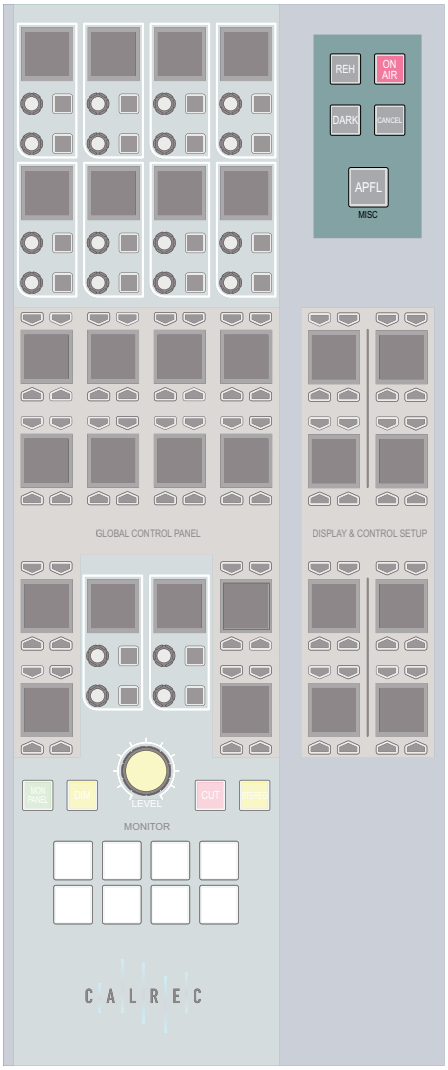
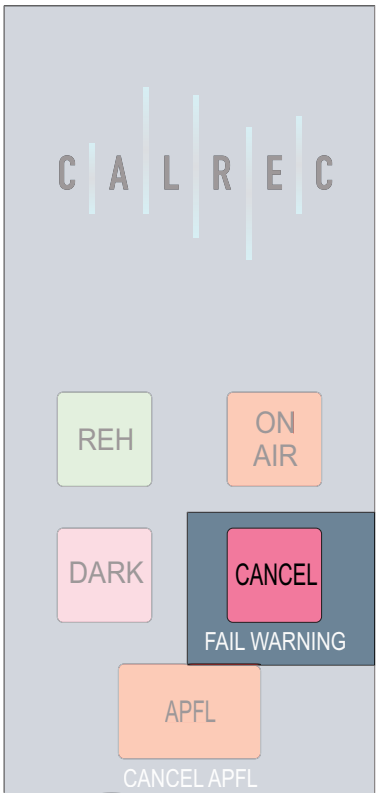


FIGURE 2 - RESET BUTTONS



TECHNICIAN MODE

Technician Mode provides access to extra areas of the main application and allows certain restrictions to be placed upon operators.

For example, technicians may lock certain output ports to ensure the patches are never overridden by an operator.

Supervisors, Technicians and Users

There is a hierarchy of three user types in the system. Users are the lowest in the hierarchy and have normal access rights to operational and system settings. Technicians are given access to more critical system settings and operational features and can change their passwords once logged in. Supervisors have the same access as technicians, but also have the ability to create and delete other supervisors and technicians.

Accessing Technician Mode as a supervisor or technician

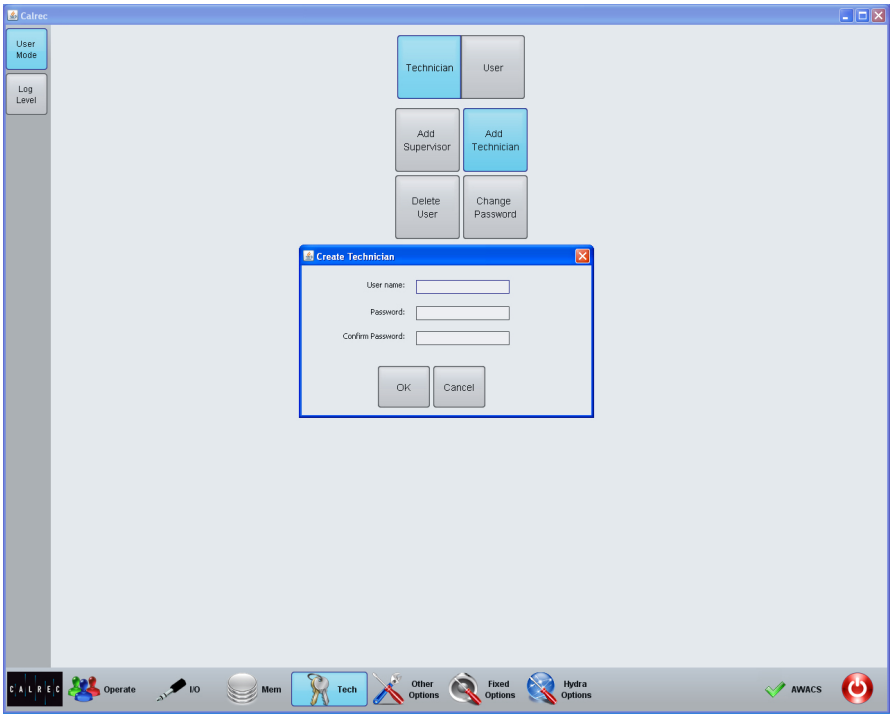
To access Technician Mode, navigate to the TECH section of the main application as shown in Figure 1. When in normal user mode, the USER button should be highlighted.

To log into Technician mode, touch the Technician button to bring up a dialog box requesting a username and password. Enter these details for any existing supervisor or technician account and touch the OK button.

If this is the first time that Technician mode has been accessed, or no supervisors have been configured yet, you will be prompted to create a supervisor account by entering a new username and password.

Once this has been done, you should now be logged in to Technician Mode. As an indication of this, the TECHNICIAN button should now be highlighted and the TECH button on the main menu should be flashing.

FIGURE 1 - TECHNICIAN MODE



Managing technician and supervisor accounts

There are three buttons on the USER MODE screen which are available to supervisors:

- ADD SUPERVISOR - Supervisors may create other supervisors. Touching this button will bring up a dialog prompting the new supervisor's details to be entered.
- ADD TECHNICIAN - Supervisors may create new technician accounts. Touching this button will bring up a dialog prompting the new technician's details to be entered.
- DELETE USER - Touching this button will bring up a dialog allowing the supervisor to select a user to delete.

Both supervisors and technicians have access to the CHANGE PASSWORD button which brings up a dialog in which a new password can be entered.

Exiting Technician Mode

To exit technician mode, touch the USER button. Attempts to enter Technician Mode again will require entering a username and password.

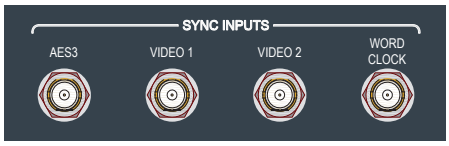
SYNCHRONIZATION SOURCES

Each Artemis console has a sync input and can use any of the commonly adopted reference sources.

In systems with only one router, just one feed of the reference signal is needed. In larger systems with distributed routers, each one requires a synchronized feed of that reference. It is necessary only for these feeds to be frequency locked as phase issues are compensated by the routers.

To change the console synchronization source it is necessary to enter TECHNICIAN mode by going to TECH screen and entering a technician user name and password. The TAB key is a quick way to step from one field to another. Go to FIXED OPTIONS, and if the system has not been placed in tech mode the keys warning symbol is displayed.

FIGURE 1 - SYNC INPUTS

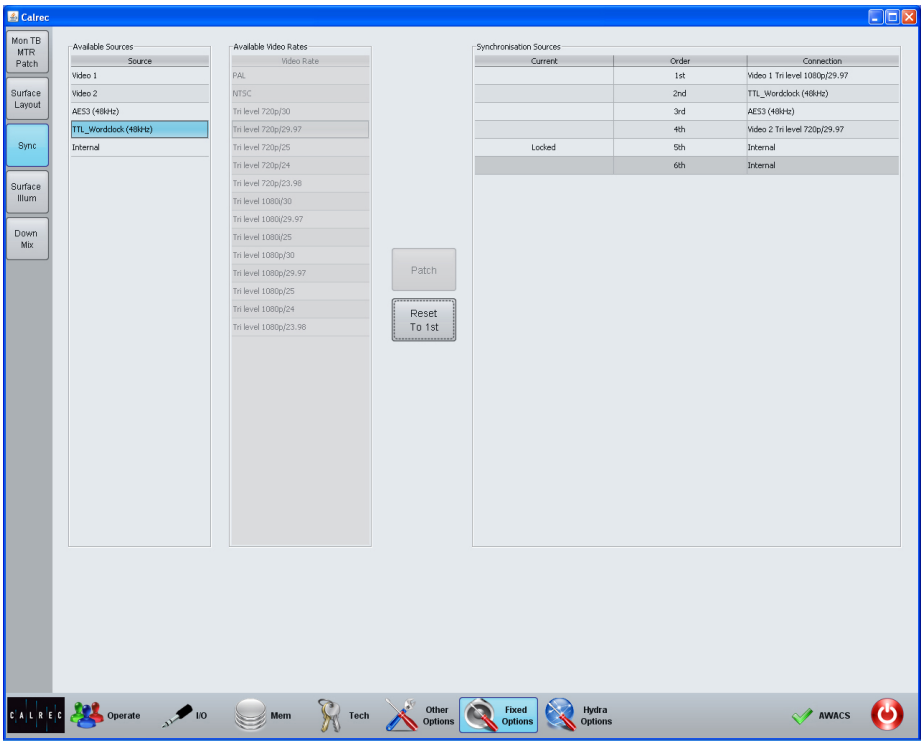


There are four sync input ports on the router frame and these, together with an internal reference, provide the five options for synchronization with the priority defined by the HYDRA OPTIONS then SYNC buttons.

Choosing a video source enables a variety of sub-options for analog and various digital frame rates. The two video input ports can be used interchangeably with their functions set on-screen, though some racks have Video 1 marked “Analog Video” and Video 2 as “Tri-Level”.

At the right of the screen, the SYNCHRONISATION SOURCES list

FIGURE 2 - TECHNICIAN MODE

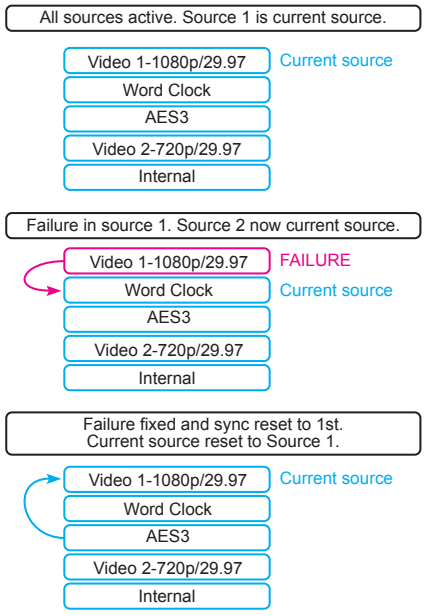


show six alternatives and the preferred sync source can be patched at the top of the list with the others in decreasing order of preference. The sixth is fixed to internal sync so there will always be a reference for the console, in the absence of all external options.

Upon start up the console will attempt to lock to the first source but if that is not present it will check the others in turn until a suitable reference is found. If the preferred reference fails, the console locks to the next one in the list and will continue to use that, to avoid any additional sync disturbances, even if the preferred reference once more becomes available.

Touching RESET TO 1ST will cause the console to once again scan the list and adopt the preferred reference.

FIGURE 3 - SYNC PRIORITY



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Opto isolated General Purpose Inputs can be configured to allow the console to respond to external control signals. Conversely, the console can output control signals via relays to control external equipment.

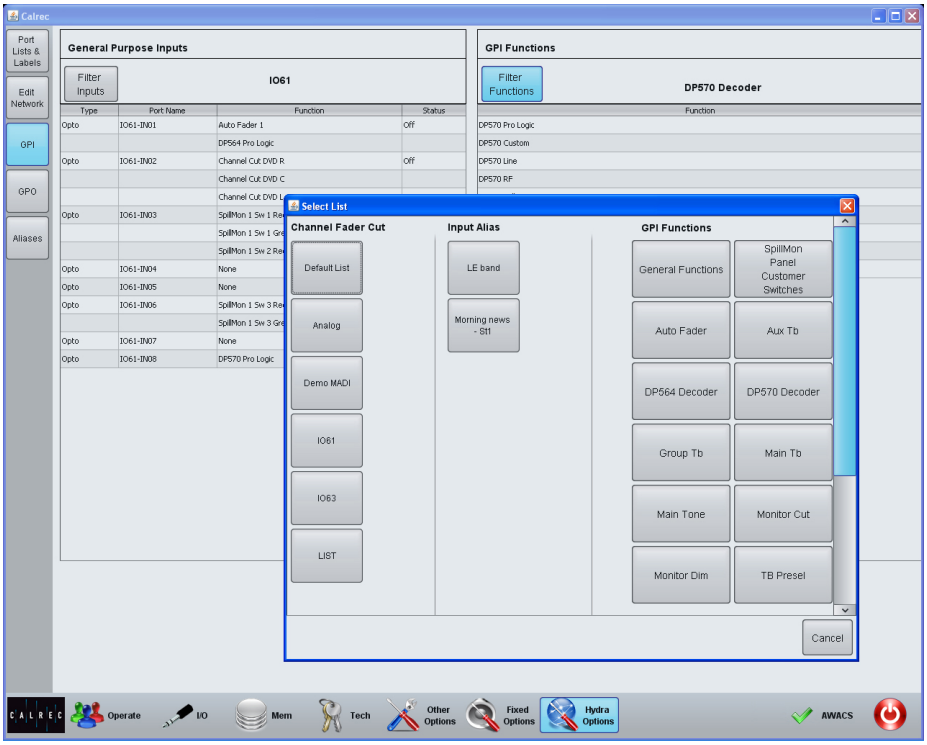
Assigning GPIs

In the main application on the configuration PC, the HYDRA OPTIONS section contains a screen labelled GPI. The available GPI Opto inputs are listed on the left hand side of this screen as shown in Figure 1. Console functions which can be controlled by the Optos are shown on the right hand side of the screen. Select an Opto input and a console function and touch the patch button to make a connection between the two.

The list of ports can be filtered using the FILTER PORTS button above the ports list. This will bring up a popup window showing the available port lists. Selecting a list will re-populate the post list using the selected filter.

The list of console functions can be filtered using the FILTER FUNCTIONS button above.

FIGURE 1 - ASSIGNING GPI OPTOS TO CONSOLE FUNCTIONS



Assigning GPOs

The GPO screen in the HYDRA OPTIONS section provides a similar method of assigning console functions to a GPO relay. The list of console functions is shown on the left of the screen and is again organized into various sections. These sections may be accessed by using the FILTER FUNCTIONS button.

The CHANNEL FDR OPEN button beneath the functions list allows selection of any fader on the surface to use its fader open function as a GPO trigger.

GPO signal type

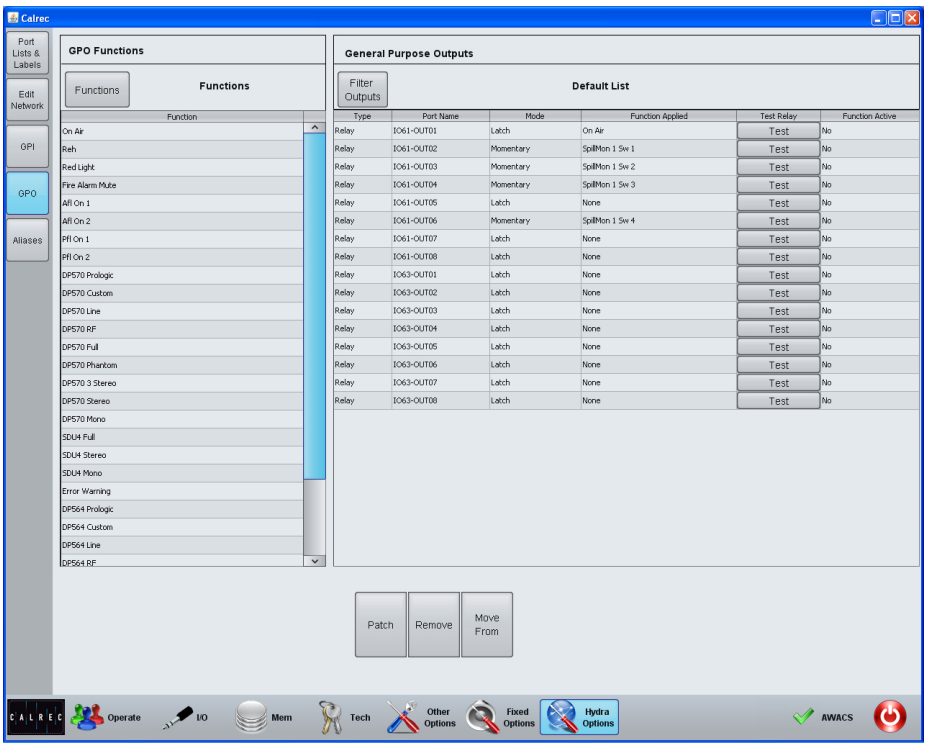
When patched from most control outputs, GPO signals are set to Latch mode. Latch mode causes the relay to remain activated indefinitely. For example, a relay controlled by a fader open function will remain activated the entire time that fader is open.

Assigning GPOs to the GPIO switches on the monitor panel changes their mode from Latching to Momentary so the relay is activated only for a fraction of a second each time the button is pressed. Continuing to hold the button down has no effect on the relay operation.

Test GPO

A test button is present on every GPO output to manually trigger the GPO signal.

FIGURE 2 - ASSIGNING CONSOLE FUNCTIONS TO GPO RELAYS



EXTERNAL INPUTS

Artemis provides 176 mono external input resources for use in the monitoring and metering systems.

As with other resources in the system, this pool of mono resources can be used to make up any path width from mono to surround. A 5.1 input would use up six of the available mono resources.

Configuring external inputs

To set the width for an external input, navigate to the MON MTR EXT I/P screen in the OTHER OPTIONS section of the main application. Select one or more external inputs from the list and then select the required width from the buttons below, as shown in Figure 1.

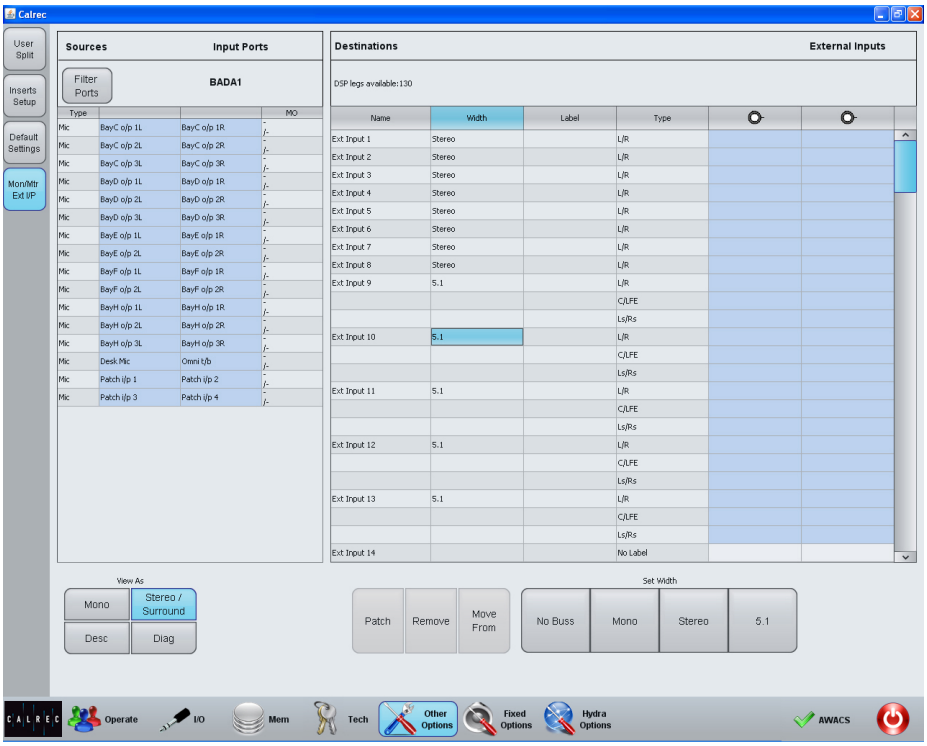
Patching external inputs

Once the external input resources have been configured, patching is preformed in the same was as all other patching in the system. Use the FILTER PORTS button in the SOURCES list to select the required input ports, then select the required external input and touch the PATCH button.

Monitoring external inputs

External inputs appear in the monitor selection area of the wild assign panel touchscreen in Monitor mode. The signals may be monitored in the same way as any other signal in the system. Please refer to the Monitoring section of this document for more information.

FIGURE 1 - EXTERNAL INPUTS



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AWACS

Artemis features an Advanced Warning And Correction System which reports warnings, faults and information to the user.

The AWACS system monitors all system components and connections

AWACS notifications

Under normal operating circumstances, the AWACS icon in the menu bar at the bottom of the main application will show a green tick or check indicator.

In the event that a message needs to be displayed to the user, a red cross or warning indicator will appear. Touching this icon will bring up the AWACS screen as shown in Figure 1.

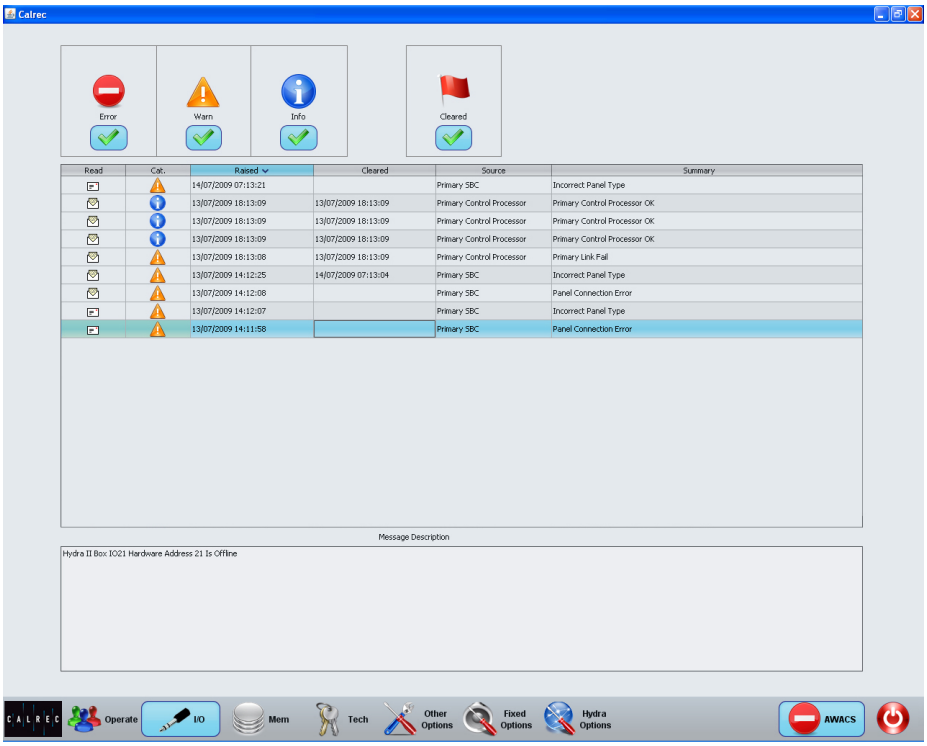
Message types

Three types of message are reported by AWACS:

- Information Messages - Inform the user when certain actions take place. They do not report errors, and no action needs to be taken to respond to them
- Warning Messages - Indicate where the system has located a fault or failure, but will still operate without intervention from the user. The message should be checked as the system may be running on its secondary components.
- Error Messages - Report a serious error that could cause, or has caused the system to fail. Normally requires user intervention to correct the problem before operation can continue.

The messages are reported in a list, as shown in Figure 1. Each message in the list has an associated icon shown in the left column. This identifies the type of message to the user. Message types can be filtered using the buttons above the list.

FIGURE 1 - AWACS SCREEN



Selecting a message in the list will update the MESSAGE DESCRIPTION area below to show the message in greater detail.

Clearing messages

Information messages can be cleared by selecting them and then leaving the AWACS screen.

Warning and Fatal Error messages can only be cleared by correcting the error and restoring the system to its normal operational state.

Surface indication

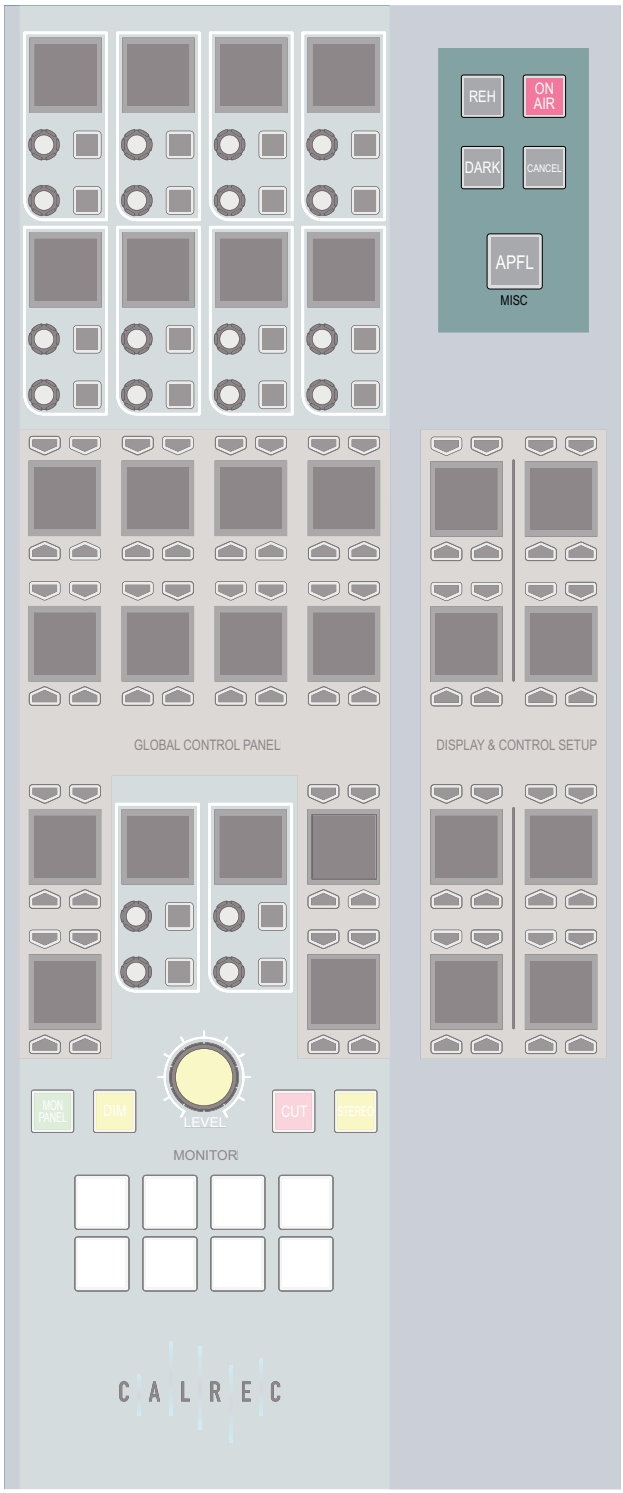
In addition to the main application displaying an AWACS indicator when a message is created, the FAIL WARNING button on the global control panel will also flash. This is shown in Figure 2. Pressing this button when it is flashing will cause it to stop flashing and remain illuminated. This will let the system know that the user has acknowledged the error but has not necessarily cleared it.

External indication

It is also possible to set an external indicator to flash when an error message is reported. The FAIL WARNING GPO function should be patched to the relevant GPO port to which the required indicator is connected.

For a more detailed explanation of the GPIO functions of the system, refer to the GPIO section of this document.

FIGURE 2 - SURFACE FAIL WARNING INDICATOR



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SOFTWARE RELEASE FEATURES

Please note that some version numbers are not generally released for all products, and are therefore not documented here.

V1.3

- Second compressor/limiter in all path dynamics processing units.
- Downmix defaults
- Partial memory isolates
- VCA style groups
- Surround channel input delay
- Autofaders

V1.4CTA

- External tone input enabled
- Monitor panel buttons for GPIO
- Channel cut from GPI
- Alias file support added
- User defined TFT meter layout
- Dolby unit control using GPIO
- Monitor insert
- Port labels and device names exchanged via Ember. EMBER client may read and edit IO box and port labels.
- Multi-router software with redundancy.
- Backup of 3rd party routes.
- Basic SWP-08 port patching and tally (TCP/IP). Patching of input ports to output ports.
- New sync screen and Tri Level sync inputs to allow sync priority to be defined.
- PFL to small LS.

V1.5

- Selectable LoRo or LtRt downmixes on main outputs.

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