ARGO OPERATOR MANUAL V1.0

Digital Broadcast IP Production Console

calrec.com

CALREC

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Calrec Audio Ltd reserve the right to change specifications without notice. E & O.E.

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Despite considerable effort to produce up to date information, no literature published by the company nor any other material that may be provided should be regarded as an infallible guide to the specifications available nor does it constitute an offer for sale of any particular product.

Argo S, Argo Q, Apollo, Apollo+, Artemis, Artemis+, Summa, Brio, RP1, Type R, VP2, Hydra Audio Networking , Bluefin High Density Signal Processing (HDSP) and ImPulse are trade marks of Calrec Audio Ltd.

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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.

Installation
In many installations the AC power connectors will not be readily accessible, effectively making the equipment permanently connected. The installation should be carried out in accordance with all applicable installation rules and regulations.

Service Personnel
The AC power disconnect devices are the 2 x IEC (IEC60320-1 C13/C14) couplers located at the rear of each unit. WARNING: The apparatus has a dual power system. It is essential that BOTH AC power IEC couplers are disconnected to prevent exposure to hazardous voltage within the unit.

Third Party Equipment
Integrating third party equipment into a Calrec system may compromise the product's ability to comply with the radiated emission limits set in the latest EMC (Electro Magnetic Compatibility) standard.

Calrec Audio Limited can not be responsible for any non-conformities due to use of third party equipment. If in doubt, please contact Calrec Audio Limited for guidance prior to integrating any third party equipment.

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 its 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, analogue parts can however still be affected.

FIG 1 - LEAD FREE

Pb Pb-Free Lead Free

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 Fig 1.

In the unlikely event of a customer having to carry out any re-soldering on any Hardware manufactured by Calrec, it is imperative that lead-free solder is used; contaminating lead-free solder with leaded solder is likely to have an adverse effect on the long-term reliability of the product.

FIG 2 - LEAD FREE STICKER

e1

Circuit boards assembled with lead-free solder can be identified (in accordance with IPC/JEDEC standards) by a small oval logo (see Fig 2) on the top-side of the circuit board near the PCB reference number (8xx-xxx). The same logo is used on the connector hoods of soldered cable assemblies.

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: 2008 standard by the Governing Board of ISOQAR.

The award, for both UKAS (Fig 3) and RAB (Fig 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.

FIG 3 - UKAS REGISTRATION

ISOQAR QUALITY ASSURED ISO 9001 — UKAS QUALITY MANAGEMENT 026
Certificate number 3205/02

FIG 4 - RAB REGISTRATION

ISOQAR QUALITY ASSURED ISO 9001 — ANAB ACCREDITED
Certificate number 3205/02

HEALTH AND SAFETY

Important Safety Instructions:

- Read these instructions.
- Keep these instructions.
- Heed all warnings.
- Follow all instructions.
- Do not use this apparatus near water.
- Do not block any ventilation openings.
- Install in accordance with the manufacturer's instructions.
- Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- Protect the power cord from being walked on or pinched particularly at the plugs, convenience receptacles, and the point where they exit from the apparatus.
- Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/ apparatus combination to avoid injury from tip-over.
- Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
- Warning: To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.
- Not intended for outdoor use.
- This equipment must be EARTHED.
- Caution - Shock Hazard.
- Disconnect all power sources before starting any servicing operation, equipment must be isolated from the AC power supply. The disconnect devices are the 2 x IEC connectors (IEC 60320-1 C13/C14 couplers).
- An appropriate disconnect device shall be provided as part of the installation. If the plug is to be used as the disconnection device, then the socket outlet shall be easily accessible.
- Do not allow ventilation slots to be blocked.
- Do not leave the equipment powered up with the dust cover fitted.

Cleaning

For cleaning the front panels of the equipment we recommend using a soft anti-static cloth, lightly dampened with water if required.

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 on this page, 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.
See Fig 5.

The exclamation mark within an equilateral triangle, as shown on this page, is intended to prompt the user to refer to important operating or maintenance instructions in the documentation supplied with the product.
See Fig 6

The altitude warning symbol indicates that the equipment is to be used at an altitude not exceeding 2000m.
See Fig 7.

The multiple power sources symbol indicates that more than 1 power source is connected and that all power sources should be disconnected before servicing.
See Fig 8.

Earthing

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

Lithium Battery Replacement

Caution: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type. Batteries must not be exposed to excessive heat such as sunshine, fire or the like.

FIG 1 -DANGEROUS VOLTAGES

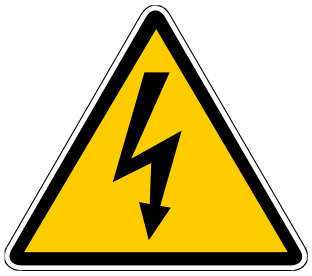

FIG 2 - IMPORTANT INSTRUCTIONS

FIG 3 - ALTITUDE WARNING

FIG 4 - MULTIPLE POWER SOURCES

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

TECHNICAL SUPPORT

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Should you require any technical assistance with your Calrec product then please contact your regional Calrec distributor. Customers within the UK or Ireland should contact Calrec directly.

For a complete list of worldwide distributors by region, go to www.calrec.com or contact us for more information.

For pre-delivery technical enquiries, UK and Ireland customers should contact the Calrec project manager assigned to their order. Post delivery, the Calrec Customer Support team will take care of your technical enquiries.

Our UK customer support team work closely with our global distributor network to provide the highest level of after sales support. Your distributor should be your first point of contact and will often be able to provide an instant solution, be it technical advice, spares or a site visit by an engineer.

Calrec UK customer support and our global technical team provide free of charge technical support and advice by phone or email to all customers.

Once your console is installed we can provide an engineer on site to carry out system commissioning.

Commissioning ensures the equipment is correctly installed and fully functioning before it goes into use.

During commissioning, our engineers can also help and advise with configuration and setup.

Calrec after sales support includes:

- Free of charge comprehensive technical advice and support by phone and email.
- Software and hardware upgrades.
- Repairs.
- Quick supply of replacement or loan hardware in the event of a failure.
- Providing export documentation for the return of faulty parts.
- On site commissioning visits.
- On site service and health check visits.
- Emergency engineer visits.
- On site on-air support, for complete peace of mind - providing operational guidance, and technical engineering support for new installations or high profile events.
- Operational training.
- Maintenance / technical training.
- Supply of replacement components.
- Supply of documentation.

Service contracts

We offer a range service contracts to our UK and Ireland customers, offering 24/7 telephone support, regular health checks and extended warranty amongst other benefits. Please contact our customer support team for more information on service contracts.

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 your regional distributor or Calrec customer support beforehand for guidance, as well as to log the details of the problem and receive a reference number. For customers outside the UK and Ireland, shipping via the distributor saves customers from dealing with exportation paperwork. If there is a need to send direct to Calrec, contact us beforehand to log the incoming repair and for assistance with exportation documents.

Standard of Service

Ensuring the highest standards is a priority, if you have any comments on the level of service, product quality or documentation offered to you by Calrec, please contact the Calrec Customer Support team in the UK who will endeavour to address the issues. Calrec welcomes all customer feedback.

For feedback specific to this document, please contact enquiries@calrec.com.

ARGO
INTRODUCTION

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INTRODUCTION

Argo is a hugely flexible and scalable large format digital audio console designed to withstand the most critical broadcast production and live environments.

Built upon many years of experience, the all new software and hardware surface architectures in combination with the Impulse processing core, Argo Q and its sibling, Argo S offers a new range of IP based consoles which provides a very powerful control, DSP and audio routing package with comprehensive redundancy, providing the feature set required for modern broadcasting in an IP world.

The Argo Q and Argo S control surfaces are primarily made up of a number of identical panels, the mode of which can be changed on the fly, allowing for all controls to be quick and close to hand irrespective of the operator's position, as well as allowing different operators their own preferences of layout. User splits and independent monitoring allow for multiple operators without affecting each other.

Impulse-Bluefin3

At the heart of the design is the powerful Impulse digital signal processing engine. Calrec's award winning Bluefin DSP was first launched in 2006 allowing the design of consoles with very high channel counts contained on a single card, providing very efficient, reliable and powerful systems that can meet the ever increasing demands of modern broadcasting.

This third generation of Bluefin is even more powerful and future proof. As well as high channel counts, amongst other benefits it provides comprehensive EQ, filters and dynamics on all paths, ample delay processing, multiple simultaneous track/IFB sends per path, immersive paths up to 7.1.4 wide and comprehensive immersive monitoring and metering.

The Impulse core can have it's DSP module expanded with additional mezzanine cards to support up to 4 simultaneously operating large scale console surfaces.

There are a number of different DSP pack sizes from budget for small productions through medium sized production requirements up to large scale productions. The next page shows a comparison of these DSP pack sizes.

AoIP/AES67 Audio Streams

Argo S and Argo Q utilise I/O options from the comprehensive AoIP range. Fixed format units and Modular I/O card-frames are offered in a wide selection of formats to suit all needs. In addition the Type R AoIP devices can be used with the Impulse engine. The AoIP system can pass audio data along with control data and error detection on each copper or fibre connection to the router within the Impulse processing rack. The physical location of I/O units can be selected to minimise external cable runs and setup time. Multiple consoles can be networked together, providing all consoles with the ability to share all of the I/O connected.

Commitment

Calrec has a world-wide customer base which includes many of the world's most prestigious broadcasters and covers the highest profile events. By consistently focusing upon purely broadcast products, Calrec offers consoles with the most comprehensive combination of performance and features. The high level of reliability of all Calrec products, many of which are still in daily use after 20 year's 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. Argo is designed to ensure this level of confidence will continue into the future.

Control Surface

- Up to 240 faders using a combination of standard and short throw physical motorised path faders.
- 12 dual layers of faders for flexibility in organizing path layout.
- Flexible control layout to suit each user's preference.
- Very comprehensive and configurable monitoring and metering.
- User splits allowing for multiple operators to work independently.

Signal Processing

- 6 full bands of parametric EQ/filters on each channel, group and main path.
- 2 x compress/limiters, 1 x expander/gate/ducker with sidechain source selection per Channel, Group and Main Note: (No ducker on Main)
- 2-band sidechain EQ per Channel.
- 1-band sidechain EQ per Group & Main
- 2 x compress/limiters per Aux & Track.
- 4 independent simultaneous post fader, pre fader or pre EQ track / IFB sends per Channel / Group path.
- Up to 4 direct output / mix-minus sends per Channel / Group path.
- Up to 5.4 seconds of Path delay per path with an additional 5.4 seconds of Input delay and 5.4 seconds of Output de;ay as appropriate for the path type.

I/O

- Multiple Router ports using up to 4 Impulse router modules each of which can have 4 A and 4 B ethernet connections running at 1Gb/s providing up to 1024 channels of audio in each direction with full AoIP packet merging redundancy based on ST2022-7.
- Router modules can be also be run at 10Gb/s with 1 A and 1 B connection.
- Extensive range of AoIP audio I/O and GPIO available.
- Copper or fibre connectivity.

For further information on setting up the Impulse Cores, Argo Surfaces and AoIP/ST2110 audio networks, please refer to **Impulse Installation Manual (926-288)**, **Argo Installation Manual (926-312)** and **Impulse - Argo Start Up Guide (926-321)** the last of which is designed to get the user up and running.

Resilience

- Independent DSP, routing and control processing.
- Comprehensive hardware and data path redundancy.
- Self initializing components.
- Independent of system PC interface.

Power

- Distributed PSU system – no heavy duty external power cables.
- Low power consumption and heat generation.

Please note there is full list of reference documentation at the back of this manual.

DSP PACKS & MULTIPLE MIXERS

In addition to the 8 basic single console DSP Pack arrangements which are described in detail on the next 2 pages, the digital signal processing element of the Impulse core allows a combination of different 'Console Packs' across multiple mixing consoles. Up to 4 DSP mezzanine cards can be fitted to the DSP module which has been designed to be flexible & provide sufficient processing for up to 4 different consoles connected to an Impulse core arranged to run on the 2 pairs of Mezzanine modules. The DSP Pairing Options table is shown below.

DSP MIXER PAIRING OPTIONS

DSP Pack Licence Name	Argo S/Argo Q Mixer A	Argo S/Argo Q Mixer B	Argo S/Argo Q Mixer C	Argo S/Argo Q Mixer D
Base Pack 1	Pack 1 Pack 1	None Pack 1	Pack 1 Pack 1	None Pack 1
Base Pack 2	Pack 2 Pack 2 Pack 2	None Pack 1 Pack 2	Pack 2 Pack 2 Pack 2	None Pack 2 Pack 2
Base Pack 3	Pack 3 Pack 3 Pack 3 Pack 3	None Pack 1 Pack 2 Pack 3	Pack 3 Pack 3 Pack 3 Pack 3	None Pack 1 Pack 2 Pack 3
Base Pack 4	Pack 4 Pack 4 Pack 4 Pack 4 Pack 4	None Pack 1 Pack 2 Pack 3 Pack 4	Pack 4 Pack 4 Pack 4 Pack 4 Pack 4	None Pack 1 Pack 2 Pack 3 Pack 4
Base Pack 5	Pack 5 Pack 5 Pack 5B Pack 5B Pack 5B Pack 5C	None Pack 1 Pack 2 Pack 3 Pack 4 Pack 5C	Pack 5 Pack 5 Pack 5B Pack 5B Pack 5B Pack 5C	None Pack 1 Pack 2 Pack 3 Pack 4 Pack 5C
Base Pack 6	Pack 6 Pack 6 Pack 6B Pack 6B	None Pack 1 Pack 2 Pack 3	Pack 6 Pack 6 Pack 6B Pack 6B	None Pack 1 Pack 2 Pack 3
Base Pack 7	Pack 7 Pack 7B	None Pack 1	Pack 7 Pack 7B	None Pack 1
Base Pack 8	Pack 8	None	Pack 8	None

Notes: Mixers A & B reside on the first pair of Mezzanine cards slots 0 & 2 and Mixers C & D reside on the second pair of Mezzanine cards slots 1 & 3 on the DSP carrier module, and the mapping of the Mixer packs to the actual surfaces can be swapped around as required.

DSP PACK COMPARISON

The digital signal processing element of the Impulse core allows a combination of different 'Console Pack' sizes.

DSP Pack Sizes for Argo S & Argo Q

The Impulse Core has a number of DSP Packs available for Argo S & Argo Q which can be installed in the DSP Module. The table below shows each pack size which can be used in conjunction with any Argo S or Argo Q console. The console will have been provided with the DSP Pack under licence ordered at the time of purchase and other DSP pack licences may be purchased to provide more processing facilities as required.

SIGNAL PROCESSING AND PACK SIZES AT 48KHZ

DSP Pack Licence Name	Argo S/Argo Q Pack 8	Argo S/Argo Q Pack 7 & Pack 7B	Argo S/Argo Q Pack 6 & Pack 6B	Argo S/Argo Q Pack 5 & Pack 5B/5C
Input Channels	2048	1792	1536	1122 OR 1024 Pack 5C
Main Output Buses	Up to 16 buses from 192 mono legs Mains & Groups pool	Up to 16 buses from 192 mono legs Mains & Groups pool	Up to 16 buses from 192 mono legs Mains & Groups pool	Up to 16 buses from 192 mono legs Mains & Groups pool
Audio Group Buses	Up to 48 buses from 192 mono legs Mains & Groups pool	Up to 48 buses from 192 mono legs Mains & Groups pool	Up to 48 buses from 192 mono legs Mains & Groups pool	Up to 48 buses from 192 mono legs Mains & Groups pool
Track/IFB Output Buses	Up to 96 buses from 96 mono legs pool	Up to 96 buses from 96 mono legs pool	Up to 96 buses from 96 mono legs pool	Up to 96 buses from 96 mono legs pool
Track/IFB Sends in Path	4	4	4	4
Aux Output Buses	Up to 48 buses from 48 mono legs pool	Up to 48 buses from 48 mono legs pool	Up to 48 buses from 48 mono legs pool	Up to 48 buses from 48 mono legs pool
Direct/Mix-Outputs per Channel-Group	Up to 4 outputs from 1024 mono legs pool	Up to 4 outputs from 1024 mono legs pool OR 768 mono legs pool on Pack 7B	Up to 4 outputs from 768 mono legs pool OR 512 mono legs pool on Pack 6B	Up to 4 outputs from 768 mono legs pool OR 512 mono legs pool on Pack 5B & Pack 5C
Insert Send & Returns	2 x Inserts/path from 1024 mono legs pool	2 x Inserts/path from 1024 mono legs pool OR 896 mono legs pool on Pack 7B	2 x Inserts/path from 384 mono legs pool	2 x Inserts/path from 384 mono legs pool
EQ on Channels Groups, Mains, Auxes & Tracks	6 band parametric EQ 6/12 dB/Oct shelves and 6/12/18 dB/Oct filters on Bands 1 & 6	6 band parametric EQ 6/12 dB/Oct shelves and 6/12/18 dB/Oct filters on Bands 1 & 6	6 band parametric EQ 6/12 dB/Oct shelves and 6/12/18 dB/Oct filters on Bands 1 & 6	6 band parametric EQ 6/12 dB/Oct shelves and 6/12/18 dB/Oct filters on Bands 1 & 6
Dynamics	2 x compressor/limiters 1 x expander/gate/ducker with sidechain source selection per Channel, Group & Main (no ducker) 2-band sidechain EQ per Channel 1-band sidechain EQ per Group & Main. 2 x compressor/limiters per Aux & Track	2 x compressor/limiters 1 x expander/gate/ducker with sidechain source selection per Channel, Group & Main (no ducker) 2-band sidechain EQ per Channel 1-band sidechain EQ per Group & Main. 2 x compressor/limiters per Aux & Track	2 x compressor/limiters 1 x expander/gate/ducker with sidechain source selection per Channel, Group & Main (no ducker) 2-band sidechain EQ per Channel 1-band sidechain EQ per Group & Main. 2 x compressor/limiters per Aux & Track	2 x compressor/limiters 1 x expander/gate/ducker with sidechain source selection per Channel, Group & Main (no ducker) 2-band sidechain EQ per Channel 1-band sidechain EQ per Group & Main. 2 x compressor/limiters per Aux & Track
Input Delay	Up to 5.4s/input from 256 mono legs pool	Up to 5.4s/input from 256 mono legs pool	Up to 5.4s/input from 256 mono legs pool	Up to 5.4s/input from 256 mono legs pool
Path Delay	Up to 5.4s/path	Up to 5.4s/path	Up to 5.4s/path	Up to 5.4s/path
Output Delay	Up to 5.4s/output from 256 mono legs pool	Up to 5.4s/output from 256 mono legs pool	Up to 5.4s/output from 256 mono legs pool	Up to 5.4s/output from 256 mono legs pool

Multiple Consoles & DSP Packs

The DSP carrier module can be loaded with up to 4 Mezzanine modules which allows up to 4 Argo consoles to operate simultaneously. These are arranged in pairs (first pair provides mixers A & B, second pair provides mixers C & D)

These Impulse DSP Pairing options for multiple console use are shown on page 13.

Note: in some console pairing combinations, the number of Direct Outputs are reduced, these DSP packs are known as **PACK 5B, 6B & 7B** also note that in one case there is also a reduction in the number of channels in **PACK 5C** from 1122 to 1024.

DSP Pack Licence Name	Argo S/Argo Q Pack 4	Argo S/Argo Q Pack 3	Argo S/Argo Q Pack 2	Argo S/Argo Q Pack 1
Input Channels	768	512	384	256
Main Output Buses	Up to 16 buses from 192 mono legs Mains & Groups pool	Up to 16 buses from 192 mono legs Mains & Groups pool	Up to 16 buses from 192 mono legs Mains & Groups pool	Up to 16 buses from 96 mono legs Mains & Groups pool
Audio Group Buses	Up to 48 buses from 192 mono legs Mains & Groups pool	Up to 48 buses from 192 mono legs Mains & Groups pool	Up to 48 buses from 192 mono legs Mains & Groups pool	Up to 48 buses from 96 mono legs Mains & Groups pool
Track/IFB Output Buses	Up to 64 buses from 64 mono legs pool	Up to 64 buses from 64 mono legs pool	Up to 64 buses from 64 mono legs pool	Up to 48 buses from 48 mono legs pool
Track/IFB Sends in Path	4	4	4	4
Aux Output Buses	Up to 32 buses from 32 mono legs pool	Up to 32 buses from 32 mono legs pool	Up to 32 buses from 32 mono legs pool	Up to 32 buses from 32 mono legs pool
Direct/Mix-Outputs per Channel-Group	Up to 4 outputs from 512 mono legs pool	Up to 4 outputs from 512 mono legs pool	Up to 4 outputs from 512 mono legs pool	Up to 4 outputs from 256 mono legs pool
Insert Send & Returns	2 x Inserts/path from 256 mono legs pool	2 x Inserts/path from 256 mono legs pool	2 x Inserts/path from 256 mono legs pool	2 x Inserts/path from 128 mono legs pool
EQ on Channels Groups, Mains, Auxes & Tracks	6 band parametric EQ 6/12 dB/Oct shelves and 6/12/18 dB/Oct filters on Bands 1 & 6	6 band parametric EQ 6/12 dB/Oct shelves and 6/12/18 dB/Oct filters on Bands 1 & 6	6 band parametric EQ 6/12 dB/Oct shelves and 6/12/18 dB/Oct filters on Bands 1 & 6	6 band parametric EQ 6/12 dB/Oct shelves and 6/12/18 dB/Oct filters on Bands 1 & 6
Dynamics	2 x compressor/limiters 1 x expander/gate/ducker with sidechain source selection per Channel, Group & Main (no ducker) 2-band sidechain EQ per Channel 1-band sidechain EQ per Group & Main. 2 x compressor/limiters per Aux & Track	2 x compressor/limiters 1 x expander/gate/ducker with sidechain source selection per Channel, Group & Main (no ducker) 2-band sidechain EQ per Channel 1-band sidechain EQ per Group & Main. 2 x compressor/limiters per Aux & Track	2 x compressor/limiters 1 x expander/gate/ducker with sidechain source selection per Channel, Group & Main (no ducker) 2-band sidechain EQ per Channel 1-band sidechain EQ per Group & Main. 2 x compressor/limiters per Aux & Track	2 x compressor/limiters 1 x expander/gate/ducker with sidechain source selection per Channel, Group & Main (no ducker) 2-band sidechain EQ per Channel 1-band sidechain EQ per Group & Main. 2 x compressor/limiters per Aux & Track
Input Delay	Up to 5.4s/input from 256 mono legs pool	Up to 5.4s/input from 128 mono legs pool	Up to 5.4s/input from 128 mono legs pool	Up to 5.4s/input from 128 mono legs pool
Path Delay	Up to 5.4s/path	Up to 5.4s/path	Up to 5.4s/path	Up to 5.4s/path
Output Delay	Up to 5.4s/output from 256 mono legs pool	Up to 5.4s/output from 128 mono legs pool	Up to 5.4s/output from 128 mono legs pool	Up to 5.4s/output from 128 mono legs pool

ARGO
CONTROL OVERVIEW

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SURFACE CONTROL OVERVIEW

Argo 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 Argo 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:

Rotary controls

The rotary controls on the surface will change colour around their base to reflect the type of control they are currently assigned to. For example, when assigned to an Aux control they would be coloured green.

Buttons

The small square buttons, like the rotary controls, change colour when active to reflect the currently assigned control. Where there are buttons that relate to the same control as displayed on a control cell display, the buttons will be used for control. The control cell and button cell displays are not touch sensitive as a physical control is provided.

FIG 1 - CONTROL CELL - 3 BUTTONS

Control cells

The rotary control and button interface elements described above are combined with a display to make up control cells. These cell types are shown in Figs 1 & 3.

The rotary control and button control alters the parameter defined by the control cell selection The associated 160px X 80px mini TFT display shows the variable parameters and button setting.

Controls that are not active (e.g pan controls when assigned to a surround bus) are hidden; the rotary control, button and control cell display sections will not be lit.

Button cells

In a button cell, as shown in Fig 2, the buttons map directly to the nearest control cell display. Each graphic display is split into one, two, three or four functions. Buttons above and below are used with the functions on the adjacent display area that they control. Some functions are shown the full width of the display. In these cases, pressing either of the two buttons above or below will activate the function.

A strip across the centre of a button cell is sometimes used as a label. Labels sometimes span across more than one display and sometimes a cell may have a label but no associated button functions.

FIG 2 - CONTROL CELL - 4 BUTTONS

Strips

A Strip is a collection of vertical controls that are specific to each fader on the surface. For example, each fader button cell on the bottom row on the standard fader panel, contains controls that affect the fader directly below it. The control cells on the wild assign panel may also be arranged in this way dependent on the wild assign panel mode.

Rows

Certain horizontal sets of controls are used together to group similar controls. These are known as **rows**, see Fig 4 for Argo Q and Fig 5 for Argo S.

The Layers and Modes row contain controls that do not relate directly to a specific fader. Whilst the row below that is used to provide specific customised fader button functions that are path related. These rows are identified on the next page.

TFT touch screens

Various control parameters in the different panel modes are changed using the 1920px X 1080px TFT touchscreen above the Wild, Monitor or Short Fader panels.

TFT upstand screens

This TFT upstand display is primarily used to show audio data on meters and uses the same 1920px X 1080px TFT display but without touch. It is mounted above the TFT touch screen on top of the console.

FIG 3 - CONTROL CELL - 1 BUTTON

FIG 4 - ROWS AND AREAS ON ARGO Q

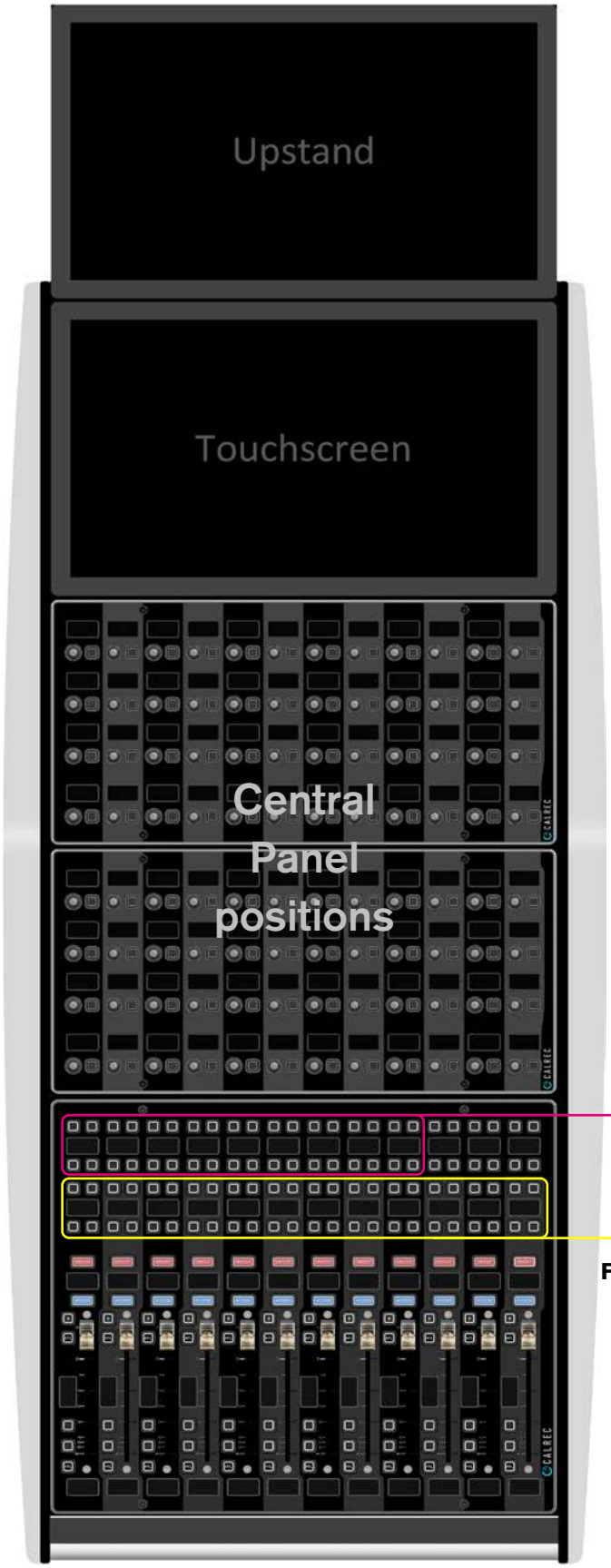
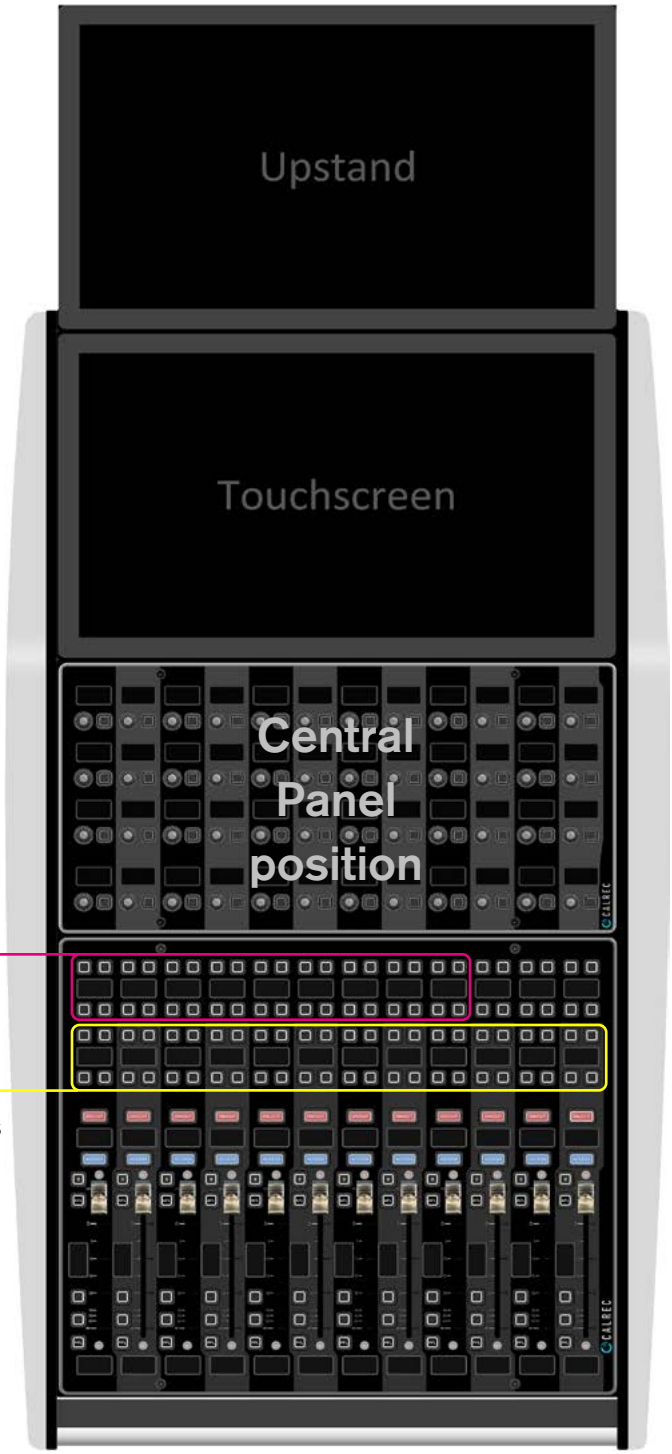


FIG 5 - ROWS AND AREAS ON ARGO S



Layers & Modes Row

Custom Path Button Functions Row

TOUCH OVERVIEW

Argo makes great use of touch technologies to provide direct interaction with on screen controls.
The Touchscreen surface displays are all 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 then immediately release without changing position, see Fig 1.

Multiple touches (Hold and Touch)

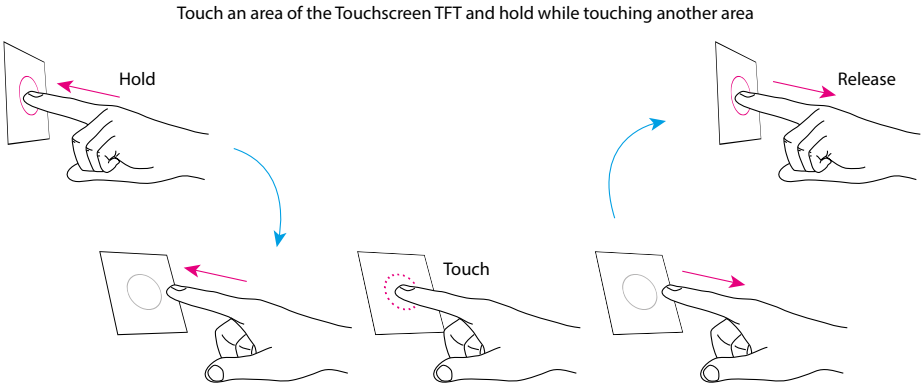
In some cases it is necessary to combine touch controls to achieve the desired result. One control will normally be held whilst touching other controls. Fig 2 demonstrates this process.

Swipe or Drag

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 at the end of the swipe. The drag motion may be used to change a slider on the surface of the Touchscreen. Touch the control and drag your finger slowly in the required direction. Remove at the end of the drag. The Swipe or Drag motion is shown in Fig 3.

FIG 1 - TOUCH/TAP

FIG 2 - HOLD AND TOUCH



Other Multi-touch actions

Scrolling:- Touch the control with two fingers and drag in the required direction. Remove at the end of the drag. This action is the same as per Fig 3 only using two fingers instead of one.

The drag motion may be used to scroll through lists and tables to find the required entry.

Multi-touch for reset to default on sliders:- Tapping on a slider with 2 fingers brings up a context menu with a “Reset to default” button tap on this to Reset the control to its default value. See Fig 4.

Note: If a touchscreen is not available the same dialogue can be made to appear by right-clicking on the. This is available on both Assist and in the Surface UI.

FIG 3 - SWIPE OR DRAG

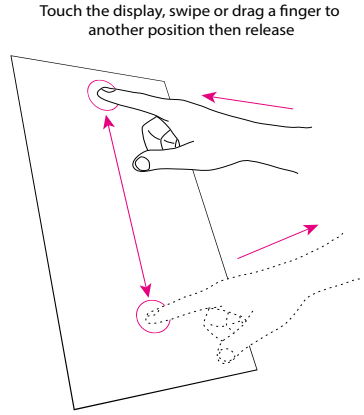


FIG 4 - MULTI-TOUCH RESET DIALOGUE BOX

SURFACE PANEL OVERVIEW

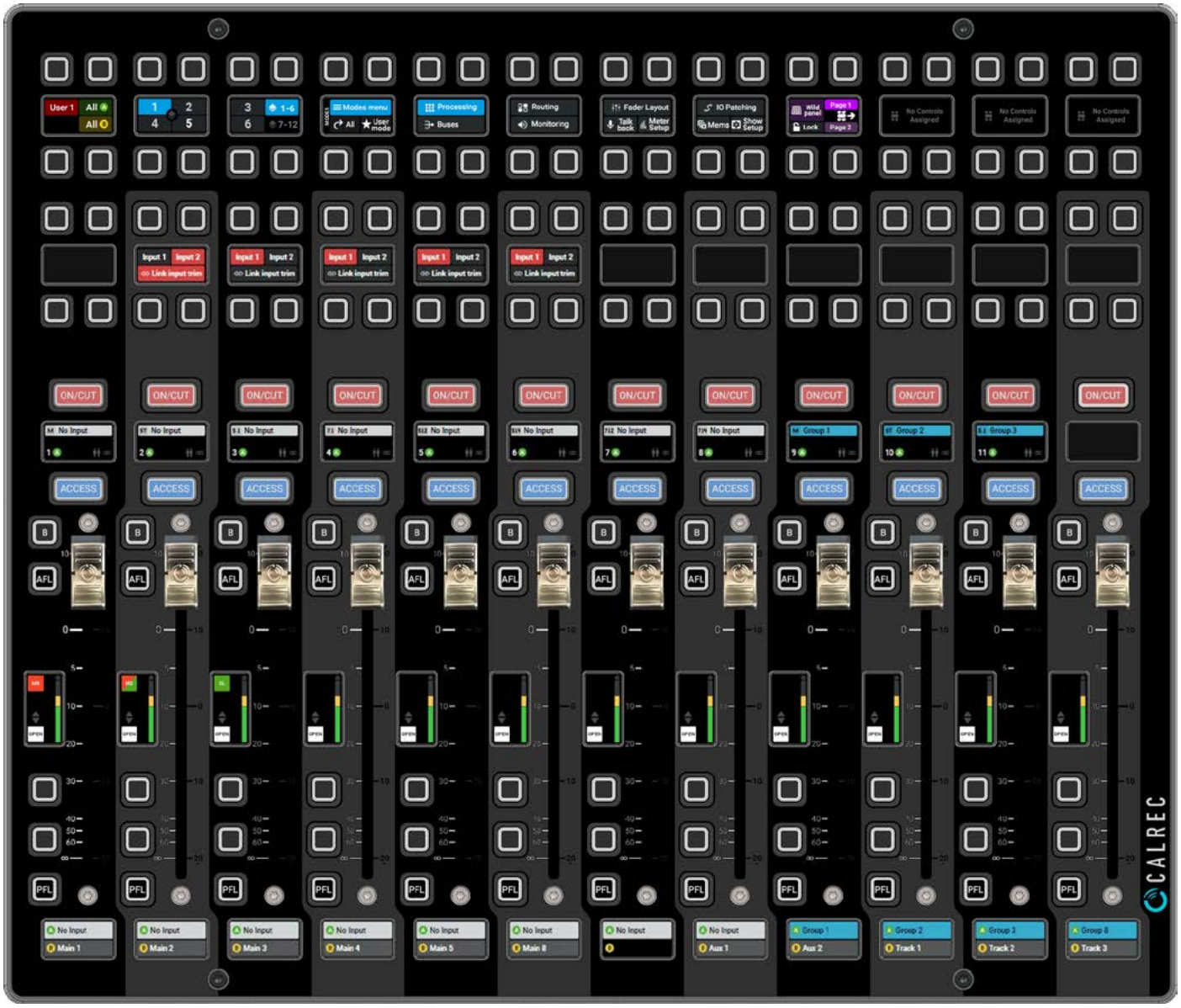
The IU6576 Standard Fader panels make up the Argo S/Argo Q fader bed, multiple panels are fitted to make up the required fader quantity.

The IU6576 is a 378.5mm wide X 322mm high fader panel consisting of 12 x 100mm throw touch sensitive faders on a 30mm pitch.

Each of the 12 fader strips has the following controls/displays from bottom to top in the lower area:-
160px X 80px Mini TFT layer display, PFL button, 2 user definable buttons, 80px X 160px Mini TFT vertical fader/meter display, AFL button, B-Layer button (also user definable), Access button, 160px X 80px Mini TFT path display and an ON/CUT button which can be software configured to light when the fader path is active (ON) or when the fader path is muted (CUT).

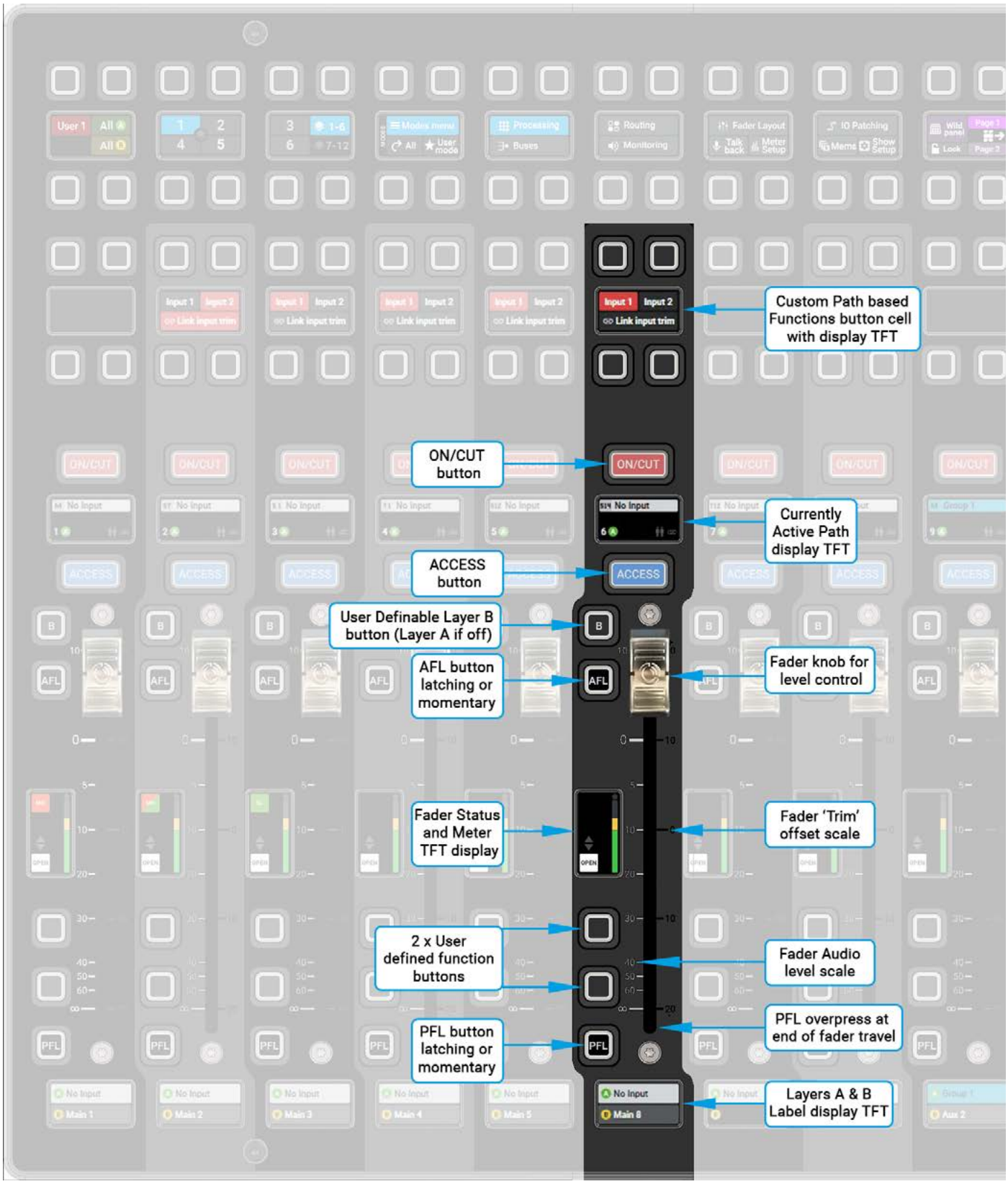
In the upper area of the panel, there are 2 sets of 4 button cells with a 160px X 80px Mini TFT Display per fader which can be configured to display various switch functions as required. The lower row is used for Custom path button functions per fader, whilst the upper row is known as the 'Layers & Modes row' which when used in Conjunction with the Access and B-Layer buttons (where defined) are used to navigate to the required paths & select the various modes of operation to be applied.

FIG 1 - ARGO S & ARGO Q - STANDARD 12 FADER PANEL



The main control features are highlighted in Fig 2. All these controls are normally relevant to the highlighted fader and are repeated twelve times across the panel.

FIG 2 - FADER PANEL CONTROLS FOR A STRIP

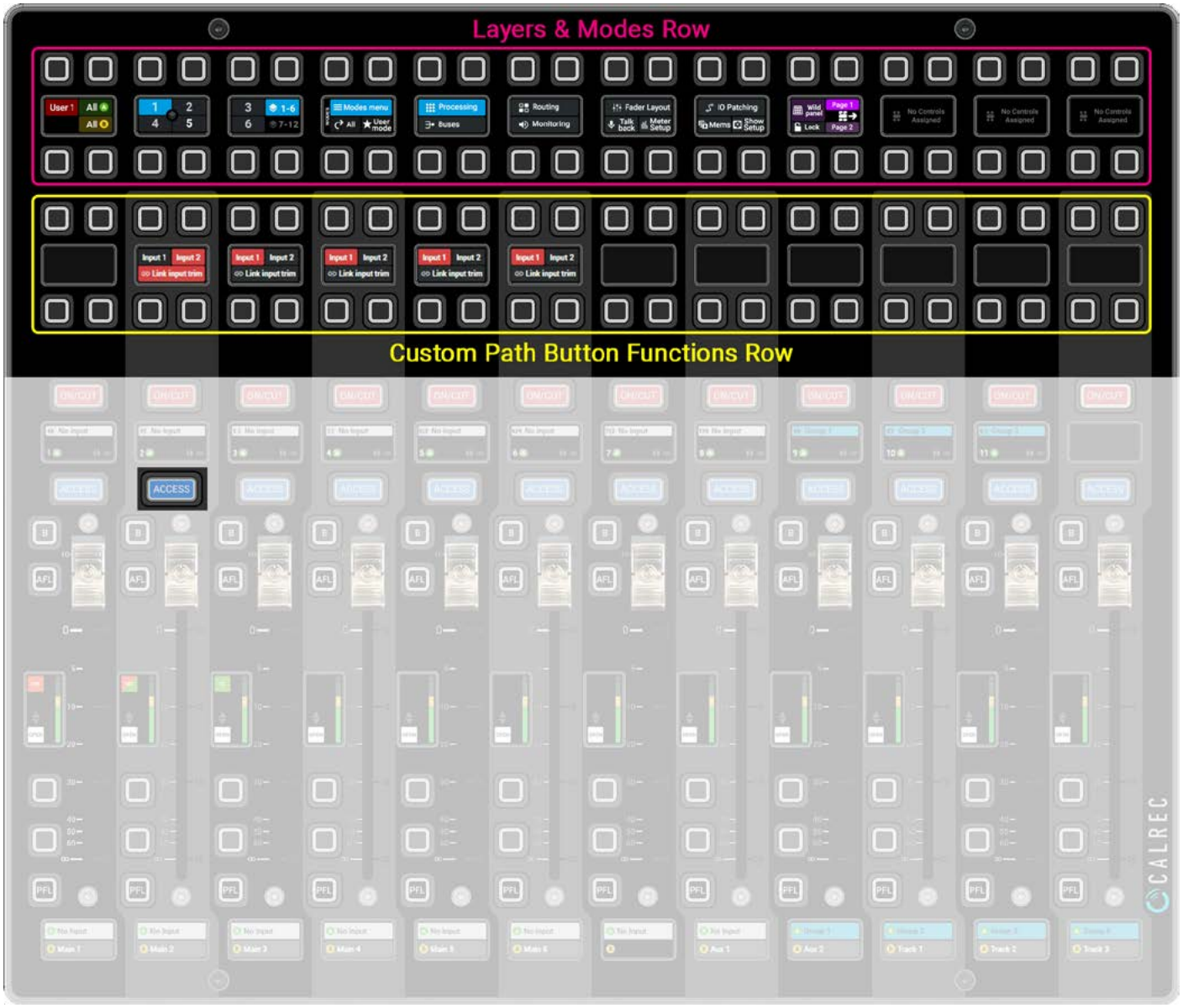


There are two, 12 wide button control cell rows that span the width of the panel which are highlighted in Fig 3.

The upper row is the **Layers & Modes row**: The first 3 button cells allow the user to select one of the 12 A/B Layers available and the All A/All B buttons allow the user to change over all the faders under their control between sublayer A & sublayer B. The Modes row is used to control the mode of the wild assign panel above it. To access a particular path such as fader L1F2A, the user selects Layer 1 and then the second fader's ACCESS button as shown in the image below. The Modes row in button cells 5 thru 8 allows the user to navigate between the various Menu entries for Processing, Routing, Buses, Monitoring and other setup & operational panel functions which appear on the Touchscreen TFT.

The **Custom Path Button Functions row** below this displays customised button control sets relevant to each fader as shown.

FIG 3 - FADER PANEL CONTROL ROWS



The CA6575 Wild Assign panels can be fitted in the Argo S/Argo Q central panel positions, for the Argo S one row of this panel type can be fitted and for the larger Argo Q two rows of this panel type can be fitted to make up the required console layout. **See "Fig 4 - Rows and areas on Argo Q" on page 19** and **"Fig 5 - Rows and areas on Argo S" on page 19.**

The CA6575 is 378.5mm wide x 190mm high and is fitted with the following controls/displays:- 48 rotary control cells arranged as 4 rows of 12 sets of rotary control cells with the bottom row separated from the other 3 rows as shown in Fig 4. This row is generally used for **Input Trim/Gain Controls per fader strip** displays, Each control cell contains a rotary shaft encoder control with integral switch. This is activated by pressing the top of the encoder down and is typically used to reset the parameter which the rotary control is controlling. It also contains a separate illuminating button and a Mini TFT display per cell.

Each rotary control cell can be configured to display and control the various continuous and switch parameters as required. The image shown below is that of the currently accessed path - L1F2A, this is a Stereo channel and the user has accessed the Input mode, so the upper 3 rows (up to 36 cells) are showing all the relevant input parameters. The layout of those controls closely mimic the layout of the same touch controls on the Touchscreen TFT that is placed above it.

FIG 4 - ARGO S & ARGO Q - WILD ASSIGN PANEL

The MY6574 Monitor panel provides the Argo S/Argo Q full control of the various monitoring outputs of the console. Generally one of these panels is fitted per console although more than one can be fitted for multi-user/monitor operation.

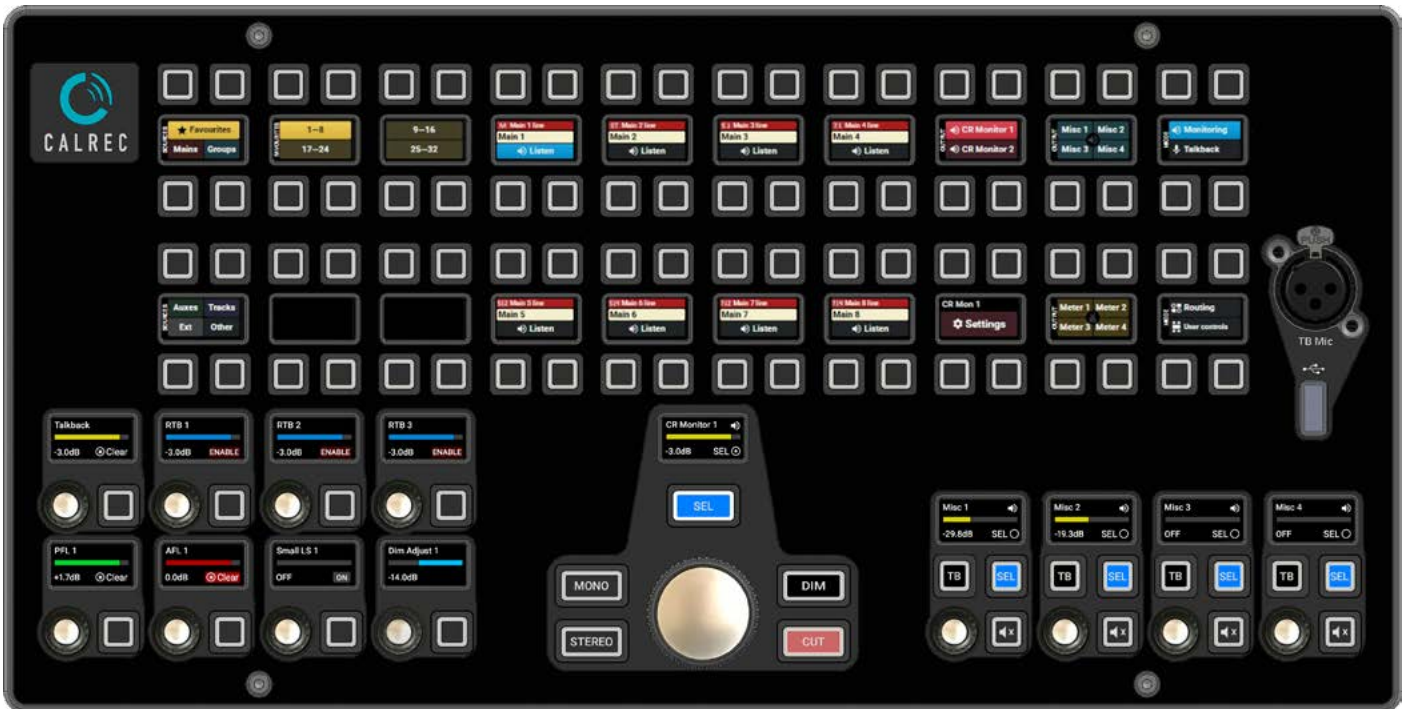
The MY6574 is 378.5mm wide x 190mm high and is fitted with the following controls/displays as shown in Fig 5:-
A large rotary control in the centre of the panel is used to provide control for the Main control room monitors, various buttons to CUT/DIM the monitor speakers and the MONO/STEREO buttons change the width of the monitored signal. The associated Mini TFT display is used to show the current monitor source and level and the **SEL**ector button below opens the monitor source selection shown on the 20 sets of 4 button cells which can be used to provide a variety of control options

Placed to the right of the main monitor control, there are 4 misc monitor control sets each of which has a Talkback button, source **SEL**ector button which operates in the same way as the main monitor **SEL** button described earlier and a Mute button.

Note: the Mute button on Misc monitors may be configured to act as either a Cut or Dim control.

To the left of the main monitor control is placed 8 rotary control cells arranged as 2 rows of 4 sets of rotary control cells, each of which contains a rotary shaft encoder control with integral switch. This is activated by pressing the top of the encoder down this is typically used to reset the parameter which the rotary control is controlling. It also contains a separate illuminating button and a Mini TFT Display per cell. Each rotary control cell can be configured to display and control the various continuous and switch parameters as required. On the far right of the panel is a USB connector for the user to import and export files and an XLR connector which can have a Talkback microphone fitted.

FIG 5 - ARGO S & ARGO Q - MONITOR PANEL

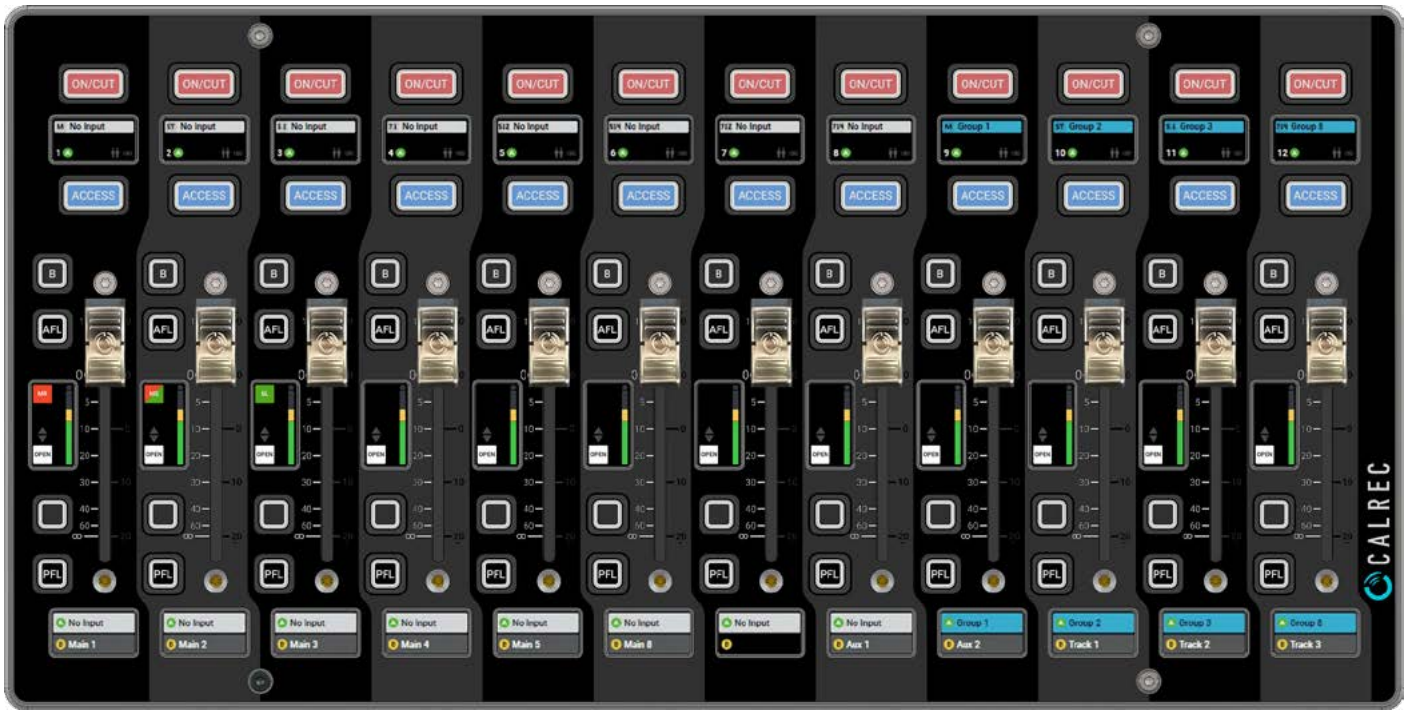


The IU6577 Short Fader panels can be fitted in the Argo S/Argo Q central control area, for the Argo S, one row of this panel type can be fitted and for the larger Argo Q, two rows of this panel type can be fitted to make up the required console layout.

The IU6577 is 378.5mm wide x 190mm high and is fitted with 12 x 65mm throw touch sensitive faders.
Each short fader strip also has the following controls/displays from bottom to top as shown in Fig 6:-
Mini TFT layer display, PFL button, 1 user definable button, Mini TFT meter display, AFL button, B-Layer button (also user definable), Access button, Mini TFT fader display, ON/CUT button which can be software configured to light when the fader path is active (ON) or when the fader path is muted (CUT). The fader panel controls for a strip on the short fader panel are the same as on the standard panel with the exception of Custom path based functions button cell and 1 instead of 2 user defined buttons.

As well as providing more faders to the console without increasing the console width, this panel is also useful as a Spill panel which allows the user to control the individual legs of a surround or immersive path.

FIG 6 - ARGO S & ARGO Q - SHORT 12 FADER PANEL



The MU6572 TFT Touchscreen panel provides the Argo S/Argo Q with a graphical user interface to provide a 1920px X 1080px TFT video display and touch control and display of the various control parameters of the console. These panels are generally fitted across the required surface size.

The MU6572 is 378.5mm wide x 228mm high and uses a HD TFT screen to display rendered graphics and composited video data generated on the section processor via the DP Display port 1.4 interface. It is fitted with a multi-touch digitiser circuit also connected from the Section Processor via USB that allows the user to select operations from a menu based GUI and to use touch control to adjust the console parameters.

It can also optionally display Input video via the Video SFP inputs on the section processor.

The image below in Fig 7, shows an example of an interactive Equaliser page with the sliders and buttons controllable via touch.

FIG 7 - ARGO S & ARGO Q - TFT TOUCHSCREEN PANEL

The MD6573 TFT Meter panel provides the Argo S/Argo Q with a graphical user interface to provide a 1920px X 1080px TFT video display of the various audio input and output levels of the console. Typically the Meter panel shows audio metering displays. These panels are generally fitted across the required surface size.

The MD6573 is 378.5mm wide x 228mm high and uses the same HD TFT screen as the MU6572. It is primarily used to display Audio meters and optionally display input video via the Video SFP inputs on the section processor.

The image below in Fig 8, shows an example combination of Audio Metering and a 1/4 screen input video image.

The TFT Meter display does not use the touch control circuitry as it is a display only module.

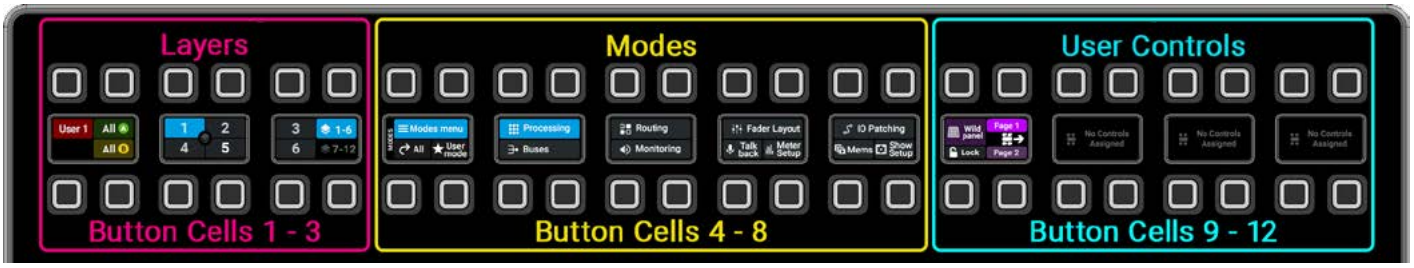
FIG 8 - MD6573 - ARGO S & ARGO Q TFT METER PANEL

PANEL OPERATION

The Argo S and Argo Q sections which includes the Wild Assign and Touchscreen can operate in different modes, four of which are commonly required for mixing. Users often set each section's panels across the console into these 'mixing' modes to make the most commonly used controls all visible at the same time, in the layout of their preference.

The 'Mixing' modes available are: PROCESSING, ROUTING, BUSES & MONITORING
These are selected from the Layers & Modes Row of the Standard fader panel, or from the Navigation controls in the Touchscreen UI.

FIG 1 - LAYERS & MODES ROW ON STANDARD FADER PANEL



The Layers and Modes row is located on the top row of the IU6576 Standard fader panel and consists of 12 x 4 button cells with their associated displays as shown in Fig 1 and described below as Button Cell 1 through to Button Cell 12 from left to right on the panel.

Layer Controls
Button Cell 1:- This cell contains the Layer Split/User Split button (top left) which when pressed it separates any panel to its left for instance if this panel is controlling faders 13-24 and the Layer button is pressed it allows this panel and any other panel to its right to select a different layer to those on faders 1-12 up to the next active Layer or User split boundary. The ALL A and All B buttons to the right of this button cell allow the user to change all the paths in that area to control all the A sub-layer paths or all the B sub-layer paths.
Button Cells 2 & 3:- These 2 cells allow the user to select any one of 12 A/B layers by selecting a numbered layer from 1-6 or 7-12 if the bank buttons on the right of button cell 4 are selected accordingly.

Mode Controls
Button Cell 4:- This cell has 4 distinct functions as described below :-
a. Modes Menu Button - When pressed this allows access to all the modes including the 4 'Mixing' modes controlled from button cells 5 & 6. The other modes in Cells 7 & 8 are 'Setup' modes that are described later on in this manual.
b. All button - When used in conjunction with the Mode buttons, applies that 'Mode to All Panels' in it's user split area, this is applied by holding the desired mode button, then pushing the ALL button or vice-versa.
c. User mode button - A User layout is a stored arrangement of modes on the surface panels. This button allows switching to the user stored layout. This feature is very useful if the surface arrangement layout has been altered and the user needs to quickly get back to a known and familiar state. To save a user mode, you navigate to the mode you want then press and hold the User Mode button for 1 second. The indicator will say "Mode saved". To recall that mode to that section, tap the button. You can use the User Mode button in conjunction with the "All" button to both save and recall user modes to ALL the sections with the user area.
Button Cells 5, 6, 7 & 8:- Once accessed these cells allow the user to select any one of the functions within a mode to be controlled, see **"Control Panel Modes" on page 35,** for instance in Processing mode on page 36, button cell 5 shows the Input sub-mode has been selected, which places all the relevant Input controls for the selected path on the Wild Assign and Touchscreen panels.

User Controls
Button Cells 9-12:- These cells are used to select up to 24 user defined functions on each fader panel, arranged as 2 pages of 12, and can be assigned to button control cells 10, 11 & 12. These standard fader panel user controls are configured in the **Show setup>Customise panels** page and the Page 1 & 2 buttons in button cell 9 selects the required page.

The **Wild Panel** button in button cell 9 top left changes the function of the Wild assign panel above it (if present) from following the mode selected to a customised user control set, where 2 wild panels are fitted one of them will be in Wild Panel mode at all times.
The **Lock** button in button cell 9 bottom left, locks the panel to its current mode and can be used in conjunction with the **All** button to Lock/Unlock every section in a user split area.

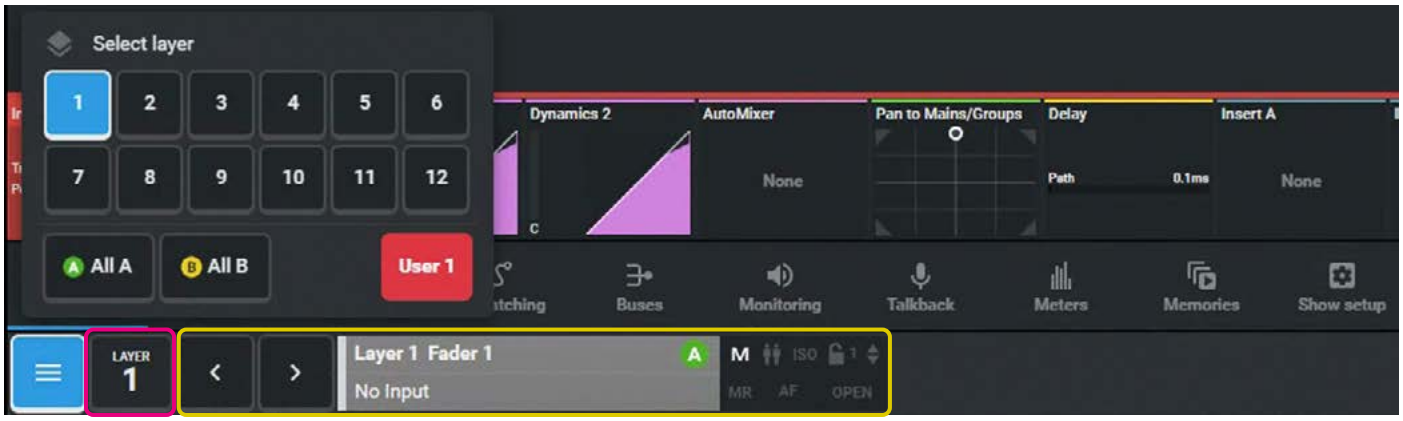
Note: When in one of the 4 'Mixing' panel modes,the bottom of button cell 8 shows the Icons of the other mixing modes with direction arrows. This allows the user to quickly change between the mixing modes without returning up to the Modes menu and back down to the required mode. See :- **"Processing Mode" on page 36**, **"Routing Mode" on page 37**, **"Buses Mode" on page 38** and **"Monitoring Mode" on page 39,** These indicate the quick icons that are available per mode.

TOUCHSCREEN OPERATION

Touchscreen Layers selection

The Layers section in Fig 1 is shown at the bottom of the Touchscreen UI. This area is used to select and display the various Layers available on the ARGO. The Layers section across the bottom allows the user to select any of the 12 A/B layers by tapping on the Layer button highlighted in magenta. This opens the 'Select Layer' dialogue box which allows the user to change the current layer, or select all the paths in this user's area (in this case User 1) to switch between all A paths or all B paths on the faders.

FIG 1 - LAYERS ROW ON THE TOUCHSCREEN PANEL



To the right of the Layers select button is the current fader selection and information block highlighted in yellow. The middle area of this block informs the user the Layer Number, Fader Number, A/B sublayer and Label of the currently accessed path in that user area. Tapping on this block opens up a copy of the fader layout called fader select, which provides a visual representation of all faders and all layers, showing the current path to fader assignment. This allows the user to select any path as the current access path. After selecting the required path the fader select screen closes and the Fader information block is updated. The right of the block displays various Icons to provide information about the current path such as path width, clone , ISO, Lock, Null indicators, VCA status, AutoFader and fader open indication. Whilst the **<** & **>** arrow buttons on the left of the block allows the user to step through the fader selection.

Touchscreen Modes selection

The Modes section above the Layers section shown in Fig 2 allows the user to select the various operational modes highlighted in Green and its related sub modes above. For instance this is currently showing that the user is accessing the Processing>Input pages. This is accessed by first tapping on the Processing Mode Icon and then on the Input Sub-mode (thumbnail image) just above it.

Each Mode has it's own set of Sub-modes placed above it and the Layers & Modes rows are shown in this manual for each Mode on both the Standard fader panel and the Touchscreen UI display. Note: there is a blue menu button shown in the bottom left corner of the Touchscreen UI when this is pressed the Modes Row is hidden to provide more control space for the Sub-Mode pages as shown in Fig 3. Press it again to re-display the Modes row.

FIG 2 - MODES ROWS SHOWN ON THE TOUCHSCREEN PANEL

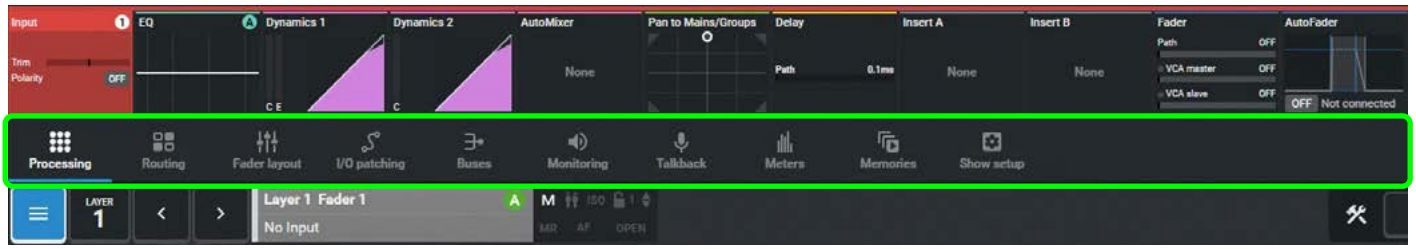


FIG 3 - MODES ROW HIDDEN ON THE TOUCHSCREEN PANEL

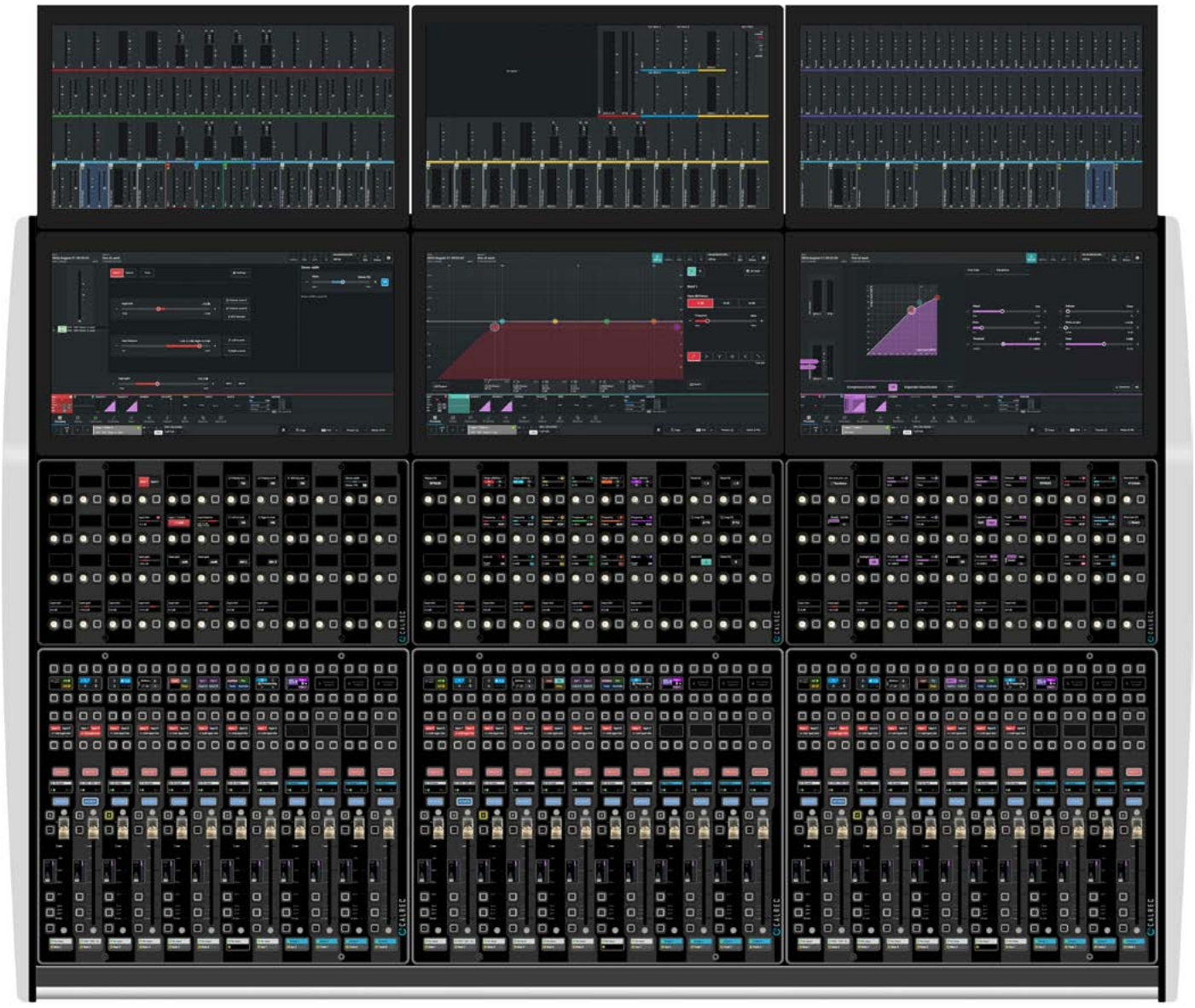
ASSIGNABLE MODES

Assignable modes
The PROCESSING and ROUTING panel modes are two of the most commonly used modes. Both are assignable control modes, in that they display information for, and can adjust parameters of the currently accessed audio path.

Unless user splits have been put in place for multiple operators, only one audio path is accessed at any given time. The currently accessed path is shown on the TFT touchscreen in the upstand when displaying either of the two assign modes.
If the currently accessed path is on an active fader layer, it is highlighted by its fader label display and its Access button is lit blue.
The most common way to select an audio path to make it the currently accessed path and the focus of assignable panel modes is by pressing the fader's access button and if necessary selecting or de-selecting the B button to select either the A or B sub-layer.

The actual controls available in an assignable panel mode may change depending upon the type of audio path currently assigned. For example, mono and stereo paths have different pan controls available. Paths with analogue inputs patched to them have phantom power buttons, whilst paths with digital inputs have sample rate convertor buttons. If a Main output is the currently accessed path, fewer routing options are available than if a channel or group path is accessed. These controls appear on both the Wild Assign panel and the TFT touchscreen. Fig 1 below shows an example of various Modes placed on an Argo S console with fader 2 being the currently accessed path, section 1 is in **Processing>Input** mode, Section 2 is in **Processing>Equaliser** mode and section 3 is in **Processing> Dynamics1** mode.

FIG 1 - 36 FADER ARGO S SHOWING DIFFERENT MODES



ACCESSING PATHS

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

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

Accessing a path

Above each fader is a display and two buttons an 'ACCESS' button and a 'B' button as shown in Fig 1 below left. The path display shows the name of the current A or B path being accessed. If a fader strip is accessed, the fader path's Access button will be lit blue and if it is set to access that fader's A path, its A path label is shown identified by the Green 'A' and the 'B' button will not be lit. If the B path is accessed its B path label is shown, identified by the Yellow 'B' and the 'B' button will be lit yellow. To switch between the A and B paths simply toggle the 'B' button. Also note that the Label Display at the bottom of the fader strips can either show a label for the current sublayer (A or B) or show both the A and B sub-layer paths for that layer, see **"Surface options" on page 111.**

The fader will now control the assigned path and the other areas of the surface that are set up to respond to assignment, will display and control the parameters of the accessed path.

Current Access Path and Overload indication shown on meters

When an Access button is pressed the associated meter highlights in a matching colour to the blue Access button and blue background for the Fader display. This is to further clarify which is the currently assigned path, in addition Fig 2 shows when a fader path (in this case fader 2A) is in signal overload, that the meter background turns red.

FIG 1. - ACCESS & B LAYER BUTTONS FOR PATH AND SUBLAYER SELECTION

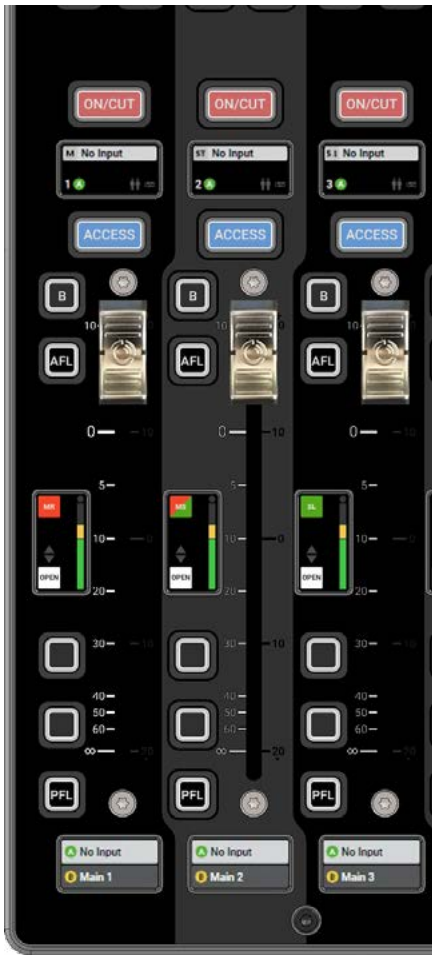
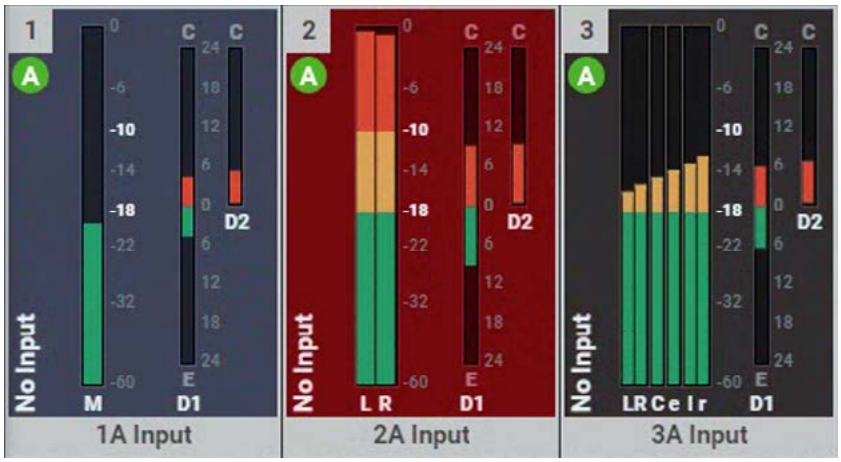


FIG 2. - CURRENT ACCESSED PATH, SIGNAL IN OVERLOAD AND NORMAL STATES AS SHOWN ON FADER METERS



ACCESSED OVERLOADED NORMAL

USER SPLITS

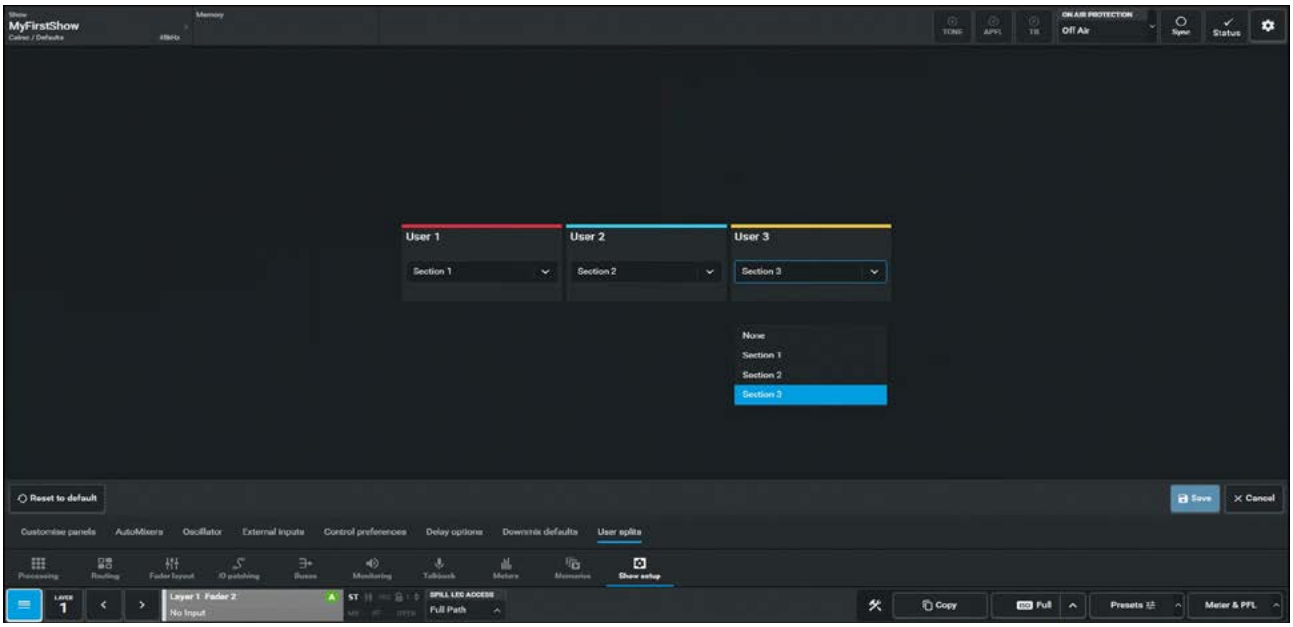
User splits allow the control surface to be partitioned, allowing multiple operators to work independently.
User splits are also often used to separate an extended control surface or sidecar from the main control surface.

A maximum of three user splits can be set across the combination of main console and extension/sidecar. User splits can be placed between Standard Fader panels to provide separate areas of control for up to three operators. User splits partition faders and the assignable panel modes PROCESSING & ROUTING.

The assignable panel modes can only affect the currently accessed path within their user area. Each area can have its own currently accessed path. Changing the accessed path within an area does not change or cancel the accessed path or focus of assignable panels or their operating modes in other user areas. Also, changing layers only affects faders within the user area that the change was made from. If multiple operators require their own monitoring, speakers/headphones can be fed from monitor output 1, monitor output 2 or miscellaneous monitor outputs, and each operator can then use the controls relevant to their area.

The PFL and AFL listen outputs of the faders within each user are can be selected to feed one of three different APFL bus sets, each of which can be patched to outputs for local monitoring, and the two main monitors can be configured to be interrupted by different APFL sets, allowing each user to be able to listen to their paths without affecting each other's monitoring. Please refer to Monitoring section for details on configuring monitoring for multiple users.

FIG 1 - TOUCH SCREEN IN SHOW SETUP>USER SPLIT MODE



Creating / removing user splits
User splits are managed from the Touchscreen **Show setup>User Splits** page, see Fig 1 above. Clicking on the User 1, 2 or 3 dropdowns allows the user to select a section to apply a 'Split' or remove a split by selecting None. The choice of users 1, 2 or 3 to be applied to that panel and to those to the right of it.

Tapping the 'Save' button applies the user split settings on the screen to the control surface, or 'Cancel' to put it back as it was. The User split configuration is saved in the Show. No changes are applied to the surface until the 'Save' button is tapped.

Identifying User Split Locations
The location of active user splits is shown on the control surface in the left hand button cell in the Layers & Modes row in place of the Layer Split indication. If this display shows 'USER 1, 2 or 3', the panels to the left if any are in a different user area to the panel with the indication and the panels to the right until another User split is reached, see Fig 2. The User split indicator also appears in various other pages and also in the Argo Assist Fader Surface pages. A User split area has to be made up of adjacent panel sections, but the User 1, User 2 & User 3 areas can appear in any order e.g. User 2, User 3 and then User 1 etc. across the surface.

FIG 2 - ACTIVE USER SPLIT DISPLAY

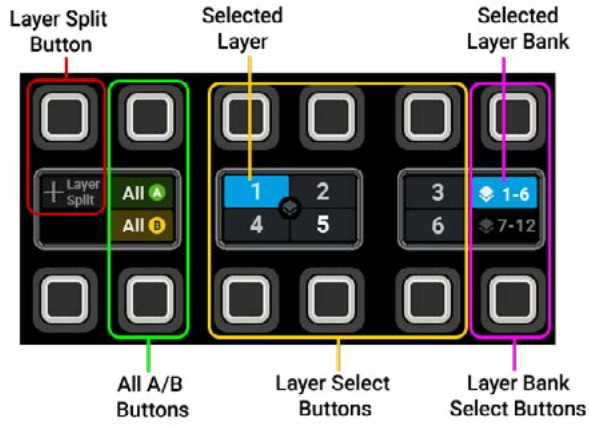
LAYERS

Argo S & Argo Q consoles provide a comprehensive layers feature to aid in organising and quickly accessing paths.
Layer selection is performed from the left side of the Layers and Modes row of any Standard Fader panel, as shown in Fig 1.
The Layer controls in the 1st, 2nd & 3rd button cells.

Layer Split

The 1st button cell on the Layers & Modes row contains a button labelled '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/All B selections too. Multiple layer splits can be put in place across the surface, each obeying the same rules described above.

FIG 1 - LEFT SIDE OF LAYERS & MODES 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 Accessing 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 & Modes row.

Layers 1-12

There are also 12 layers available on the surface. Each layer contains its own A and B paths. Layers can be switched using the numbered buttons on the Layers and Modes row, using the 2nd & 3rd button cells. The 12 layers are divided into two Layer Banks. The first layer bank contains layers 1-6 and the second contains layers 7-12. The selected bank and selected layer are highlighted.

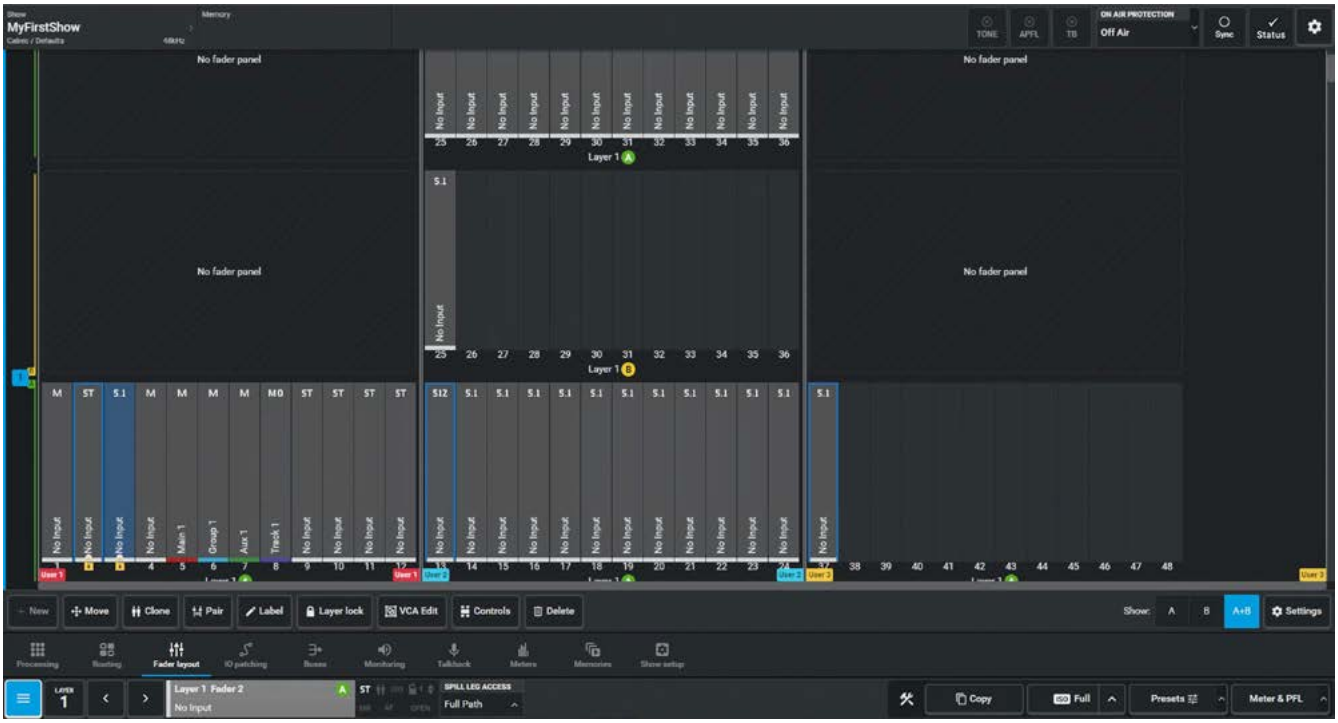
Using layers

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 provides fast access to these organised sources. A path may appear on multiple layers simultaneously.

Layer Locking

A path can be locked to a fader and remain on the surface regardless of the selected layer. The Layer Lock can be applied in the Fader Layout page on the Touchscreen panel by selecting the path and then touching the Layer Lock button in the footer, which has a toggle action. See Fig 2 which shows Faders 2 & 3 on Layer 1 are locked. When a path is locked, a padlock icon will appear in the path label display above the Access button to indicate the lock is active. When a path is unlocked the A/B display 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. Note: the User Splits 1, 2 & 3 created from the previous page are also shown below.

FIG 2 - LAYER LOCK ON FADER LAYOUT PAGE



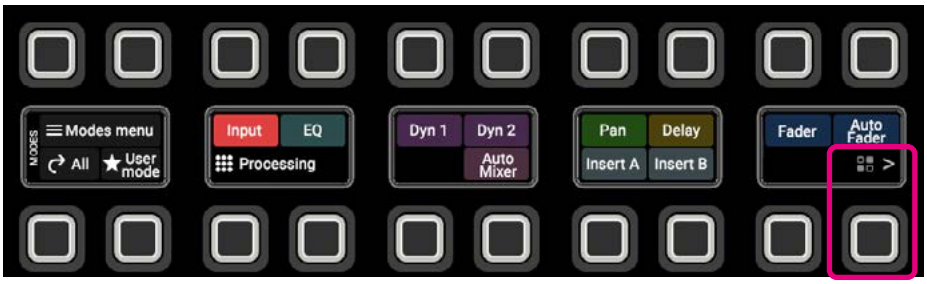
ARGO
CONTROL PANEL MODES

CALREC

PROCESSING MODE

The Processing mode is actually a set of viewing modes to control the processing of an accessible path, in that it displays information for, and can adjust certain parameters of the currently accessed audio path.

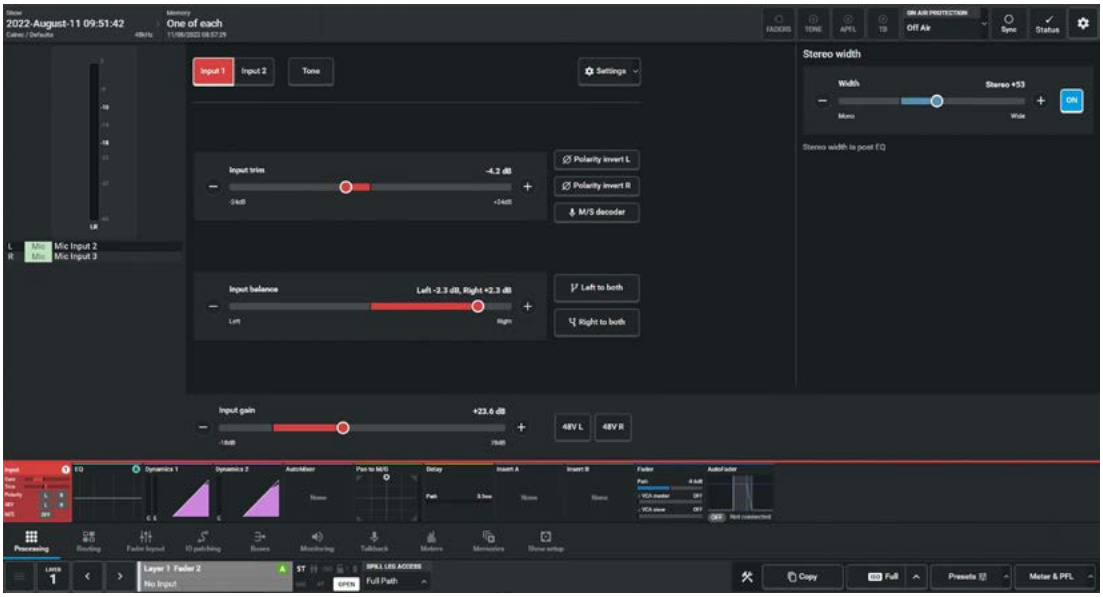
FIG 1 - MODES SELECTOR SET TO PROCESSING>INPUT CONTROL



The controls available in an assignable panel mode may change depending upon the type of audio path accessed.
For example, paths with mic inputs patched have additional gain and power controls, whilst paths with digital inputs have sample rate convertor controls. Fig 1 shows the Modes row of a Standard fader panel in **Processing>Input** mode, which is selected by pressing Modes Menu (if not in Processing mode) then the Processing button and then the Input button, giving the user access to a combination of operational controls, related to the Input function. Note: the Routing Icon highlighted in button cell 8 above, pressing these Icons allow the user quick access to other modes. Fig 2 shows the available Input controls for the accessed path on the touchscreen.

Processing Mode functions including:- Input, Equaliser, Dynamics 1 & 2, AutoMixer, Pan, Delay, Inserts, Faders and Autofader control. These are selected either by pressing the associated button on the modes row of the fader panel shown above in Fig 1,or by touching the function selection from the Processing Icons row across the lower area of the touchscreen shown in Fig 2.

FIG 2 - TOUCHSCREEN IN PROCESSING>INPUT MODE FOR THE CURRENT ACCESS PATH



These Icons show a thumbnail representation of each processing function and below that row is the Modes selection. These rows work in parallel with the Modes row on the Standard Fader panel to change between the various modes including Processing, Routing, Buses & Monitoring.

FIG 3 - TOUCHSCREEN IN PROCESSING>EQUALISER MODE FOR THE ACCESSED PATH

Also shown here in Fig 3, is the Processing>Equaliser mode displaying the controls for band 3 of the 6 band equaliser with its associated slider and button controls..

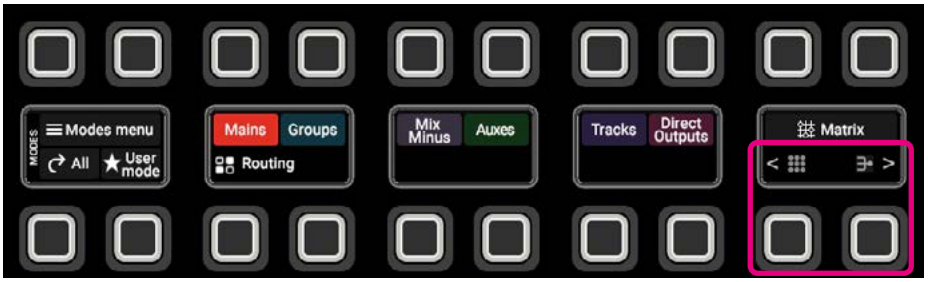
Details of each processing function is described in the Processing Audio section of this manual. See **"Processing Audio" on page 41.**

ROUTING MODE

The Routing mode is also an assignable panel mode, in that it displays information for, and can adjust parameters of the currently accessed audio path.

The controls available in an assignable panel mode may change depending upon the type of audio path accessed.

FIG 1 - MODES SELECTOR SET TO ROUTING>MAINS CONTROL



This panel mode allows for the currently accessed path to be routed to the various buses and outputs that are available. Fig 1 shows the Modes row of a Standard fader panel in **Routing>Mains** mode which is selected by pressing Modes Menu (if not in Routing mode) then the Routing button and then the Mains button, giving the user access to the routing controls. This allows the user to route the accessed path to any one of the 16 Main buses available on the touchscreen shown in Fig 2. Note: the Processing & Buses Icons highlighted in button cell 8 above, pressing these Icons allow the user quick access to other modes.

Some of the buses being routed to such as Auxes, Tracks and Direct Outputs also have send level controls as shown in Fig 3 for Aux Routing.

In this example the current access path has been routed to Aux 3 and the send level from the accessed path to Aux 3 is shown in the routing icon and controlled from the slider below left and the On switch below right.

Just above the Modes selection row on the touchscreen is shown the buses that the accessed path is routed to as Icons in blocks for each of the bus types, this includes :- Mains, Groups, Mix-Minus, Auxes, Tracks and Direct Outputs.

These Icon blocks when touched work in parallel with the Modes Row on a Standard Fader panel in to change between the various Routing types.

Details of each Routing mode type are described in the Routing Audio section of this manual. See **"Routing Audio" on page 81.**

FIG 2 - TOUCHSCREEN IN ROUTING>MAINS MODE FOR THE ACCESSED PATH

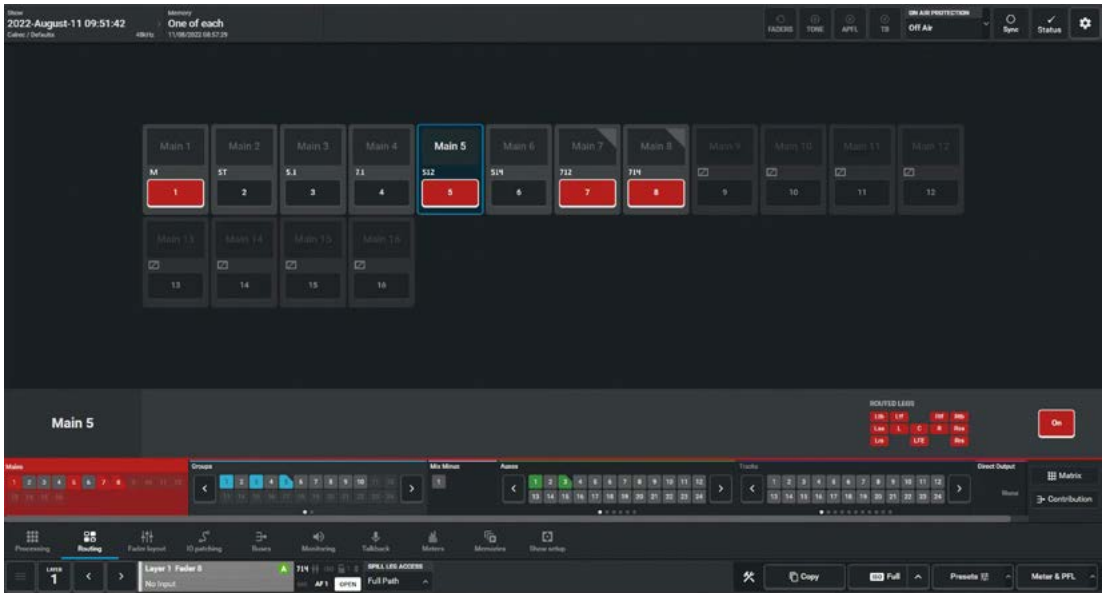
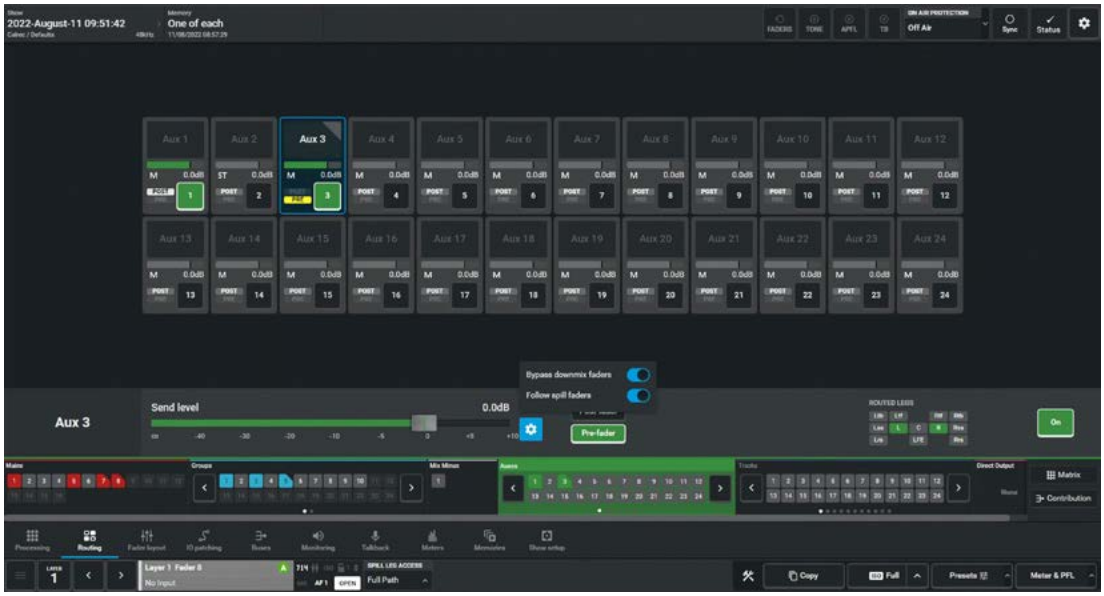


FIG 3 - TOUCHSCREEN IN ROUTING>AUXES MODE FOR THE ACCESSED PATH.



BUSES MODE

Buses mode provides controls for altering levels of Main outputs, Group buses, Track outputs and Aux outputs.

FIG 1 - MODES SELECTOR SET TO BUSES>MAINS CONTROL

In addition there is an Edit Buses page which allows the user to quickly add or remove multiple buses, configure their widths and lockout any width changes. Fig 1 above shows the Modes row of a Standard fader panel in Buses Mode> Mains function which has been selected by pressing Modes Menu (if not in Buses mode). The required bus output types are selected either by pressing the associated buttons on the modes row of the fader panel, after selecting Buses mode shown in Fig 1, or by touching the function selection from the Buses Icons row across the lower area of the touchscreen shown in Fig 2. Note: the Routing & Monitoring Icons highlighted in button cell 8 above, pressing these Icons allows the user quick access to other modes.

The TFT display shows the various buses available in blocks of 24 per page as shown in the lower area, except for Main Buses which have a maximum of 16 buses in one page. The upper area of the screen shows the name, width, current level On/Cut state of the buses of the selected type, in this case Groups. The user taps on the required bus which highlights and its control parameters appear in the middle area for adjustment. An important control is the Access button middle left, allowing that bus to be accessed as the current path without the need to have the bus on a physical fader.

FIG 2 - TOUCHSCREEN IN BUSES>GROUPS MODE

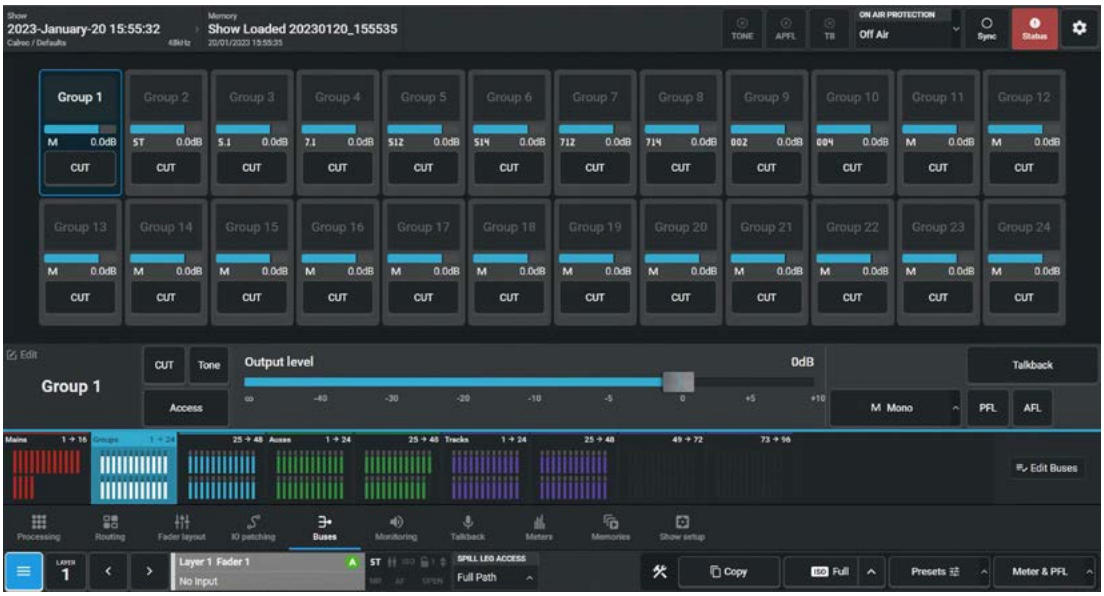


FIG 3 - TOUCHSCREEN IN BUSES>EDIT BUSES GROUPS MODE

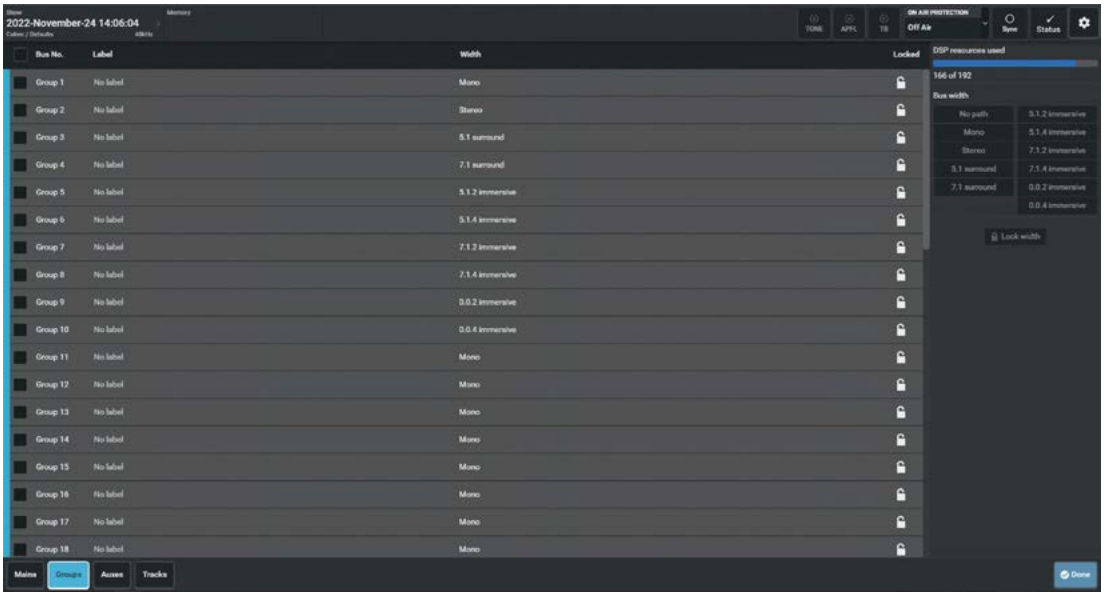


Fig 3, shows the 'Edit Buses' page, which is selected from the '**Edit Buses**' button shown in Fig 2, this is used to add or remove buses individually or in multiples from the console, set the buses to the various widths and Lock those widths to prevent them from change.

Details of each Buses mode type are described in the Buses section of this manual. See **"Buses" on page 159**

MONITORING MODE

Monitoring mode compliments the dedicated monitor panel, providing control over monitor configuration and source selection by providing monitor controls that can be accessed from any location on the control surface along with provision for independent monitoring for multiple operators.

FIG 1 - MODES SELECTOR SET TO MONITORING>CR1 CONTROL

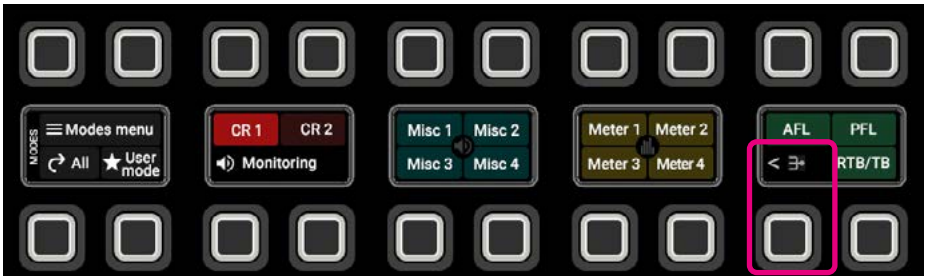
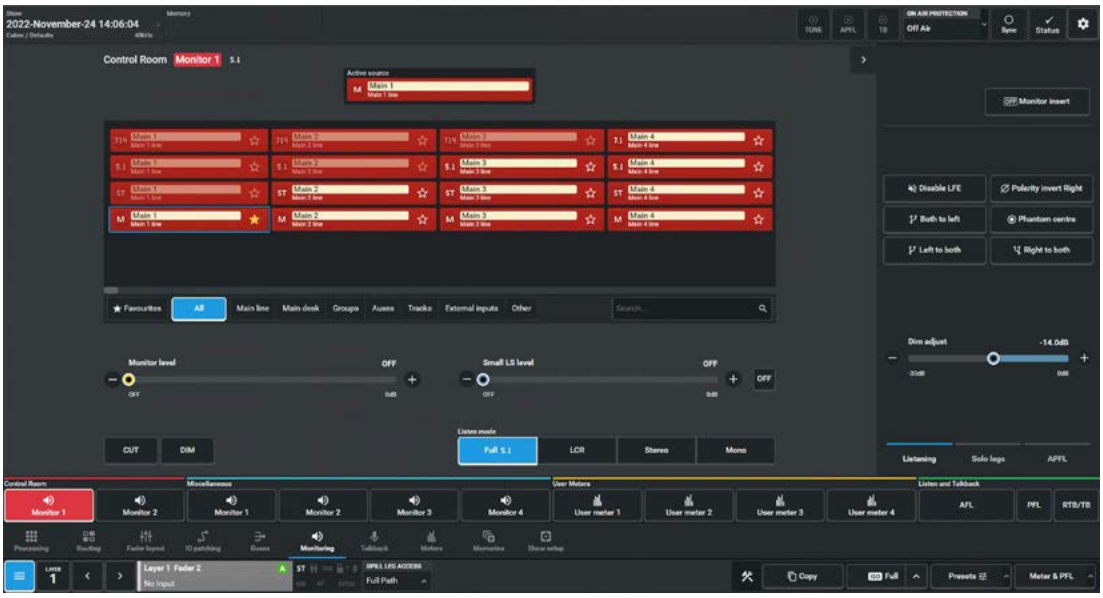


Fig 1 shows the Modes row of a Standard fader panel in Monitor Mode>CR1 function which has been selected by pressing Modes Menu (if not in Monitor mode). The monitors outputs are selected either by pressing the associated buttons on the modes row of the fader panel, after selecting Monitoring mode shown in Fig 1, or by touching the function selection from the Monitoring Icons row across the lower area of the touchscreen as shown in Fig 2. Note: the Buses Icon highlighted in button cell 8 above, pressing these Icons allows the user quick access to other modes.

The TFT display shows the various monitor outputs available in the lower area, there are 2 Control Room Monitors CR1 & CR2, 4 Misc Monitors for headphones, green rooms etc. 4 User Meters and controls for AFL, PFL and RTB/TB settings. The upper area of the screen shows the name and width of the selected monitor and the active source being listened to. Below this is a source list from which can be selected any of the available sources.

FIG 2 - TOUCHSCREEN IN MONITORING>CONTROL ROOM 1 CR1 MODE



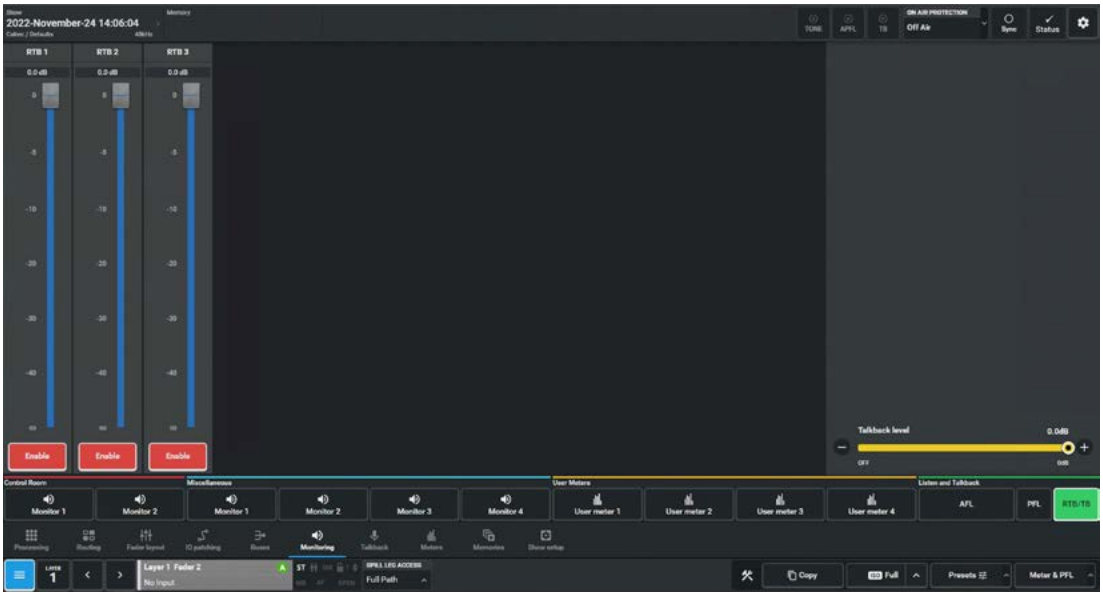
The user taps on the source required, the middle & right areas of the screen display the various level controls and listening modes available to each of the monitor outputs.

Fig 3 shows the 'RTB/TB page, which is selected from the lower right side of the screen it shows:-

- 3 Return Talkback level controls and Enables from the Studio back to the Control Room.
- Operator Talkback level control.

Details of each Monitoring mode type are described in the Monitoring section of this manual. See **"Monitoring" on page 171.**

FIG 3 - TOUCHSCREEN IN MONITORING>RTB/TB MODE

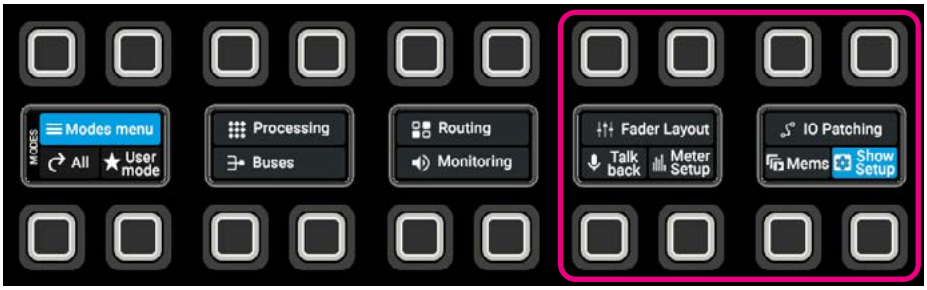


SETUP MODES

Control Panel Setup Modes are accessed by pressing the 'Modes Menu' button shown in the previous modes. These modes give further access to the various Menu entries that are shown on the touchscreen.

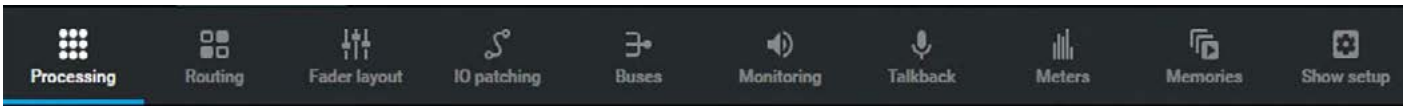
The four 'Mixing' modes are again shown for Processing, Routing, Buses and Monitoring.

FIG 1 - SETUP MODES ACCESS



The 'Setup' modes refer to the further six modes shown in the highlighted button cells, which when selected access the relevant menu items on the surface panels, these are referenced below and Fig 2 shows those menu items on the TFT touchscreen.

FIG 2 - CONTROL PANEL MODES ON THE LOWER AREA OF THE TFT TOUCHSCREEN



Fader Layout Mode - This is the page that is used to create and place paths on to the various layers of the control surface. It allows the user to: move, clone, pair, label, lock and delete paths. VCA structures and User Wild Controls can also be created.

Details of the Fader Layout mode are described in the Fader Layout section of this manual. See **"Fader Layout" on page 107**

IO Patching Mode - This is the page that is used to connect Sources to Destinations. A source can be a console DSP output, such as an Aux or Monitor output, a destination can be a Console DSP input such as a channel or talkback input, an AoIP transmitter, VPB input or Port list output.

Details of the IO Patching mode are in the IO Patching section of this manual. See **"IO Patching" on page 145**

Talkback Mode - This is the page that is used to create up to 4 talkback sets which allows the user to talkback to multiple destinations from 1 button press. In addition it can be used to talkback to any of the destinations in the list.

Details of the Talkback mode are in the Talkback section of this manual. See **"Talkback" on page 193**

Meter Setup Mode - This is the page that is used to create and place meters on to each of the TFT upstand displays across the console. This includes Fader Meters Bus Meters, Loudness Meters and Video inputs. Loudness settings are also set from the Loudness page.

Details of the Edit Meter and Loudness modes are in the Metering section of this manual. See **"Metering" on page 199**

Memories Mode - This is the page that is used to create user memories which store processing, routing and IO patching information which can be recalled at any time. It also allows the user to create a Cue list to stack user memories in a certain order & recall them in a sequence.

Details of the Memories and Cues modes are in the Memories section of this manual. See **"Shows And Memories" on page 217**

Show Setup Mode - This option highlighted in Fig 1 accesses another set of function pages that are related to the setting up of a show, this includes the following :-

Customise Panels - which allows the user to assign/display custom configured functions on the selected button and rotary controls on the surface panels.

AutoMixers - which allows the user to set the global controls for the eight Automixer masters for attack and release times.
Oscillators - which allows the user to set the level & frequency settings for the Mono, Stereo, Surround & Immersive tone generators with optional idents.
External Inputs - which allows the user to create & configure the widths of inputs used to bring in outside sources into the monitoring system.
Control Preferences -which allows the user to determine how various features behave, such as Spill Faders on a panel.
Delay Options - which allows the user to set the delay units to be displayed in Time or Frames and alter the Frame Rate /Time settings.
Downmix Defaults - which allows the user to set the gain levels to be applied when downmixing from one format to another.
User Splits - which allows the user to partition the surface, allowing multiple operators to work on the same surface.

Details of the various Show Setup functions are described in the Show setup section of this manual. See **"Show Setup" on page 233**

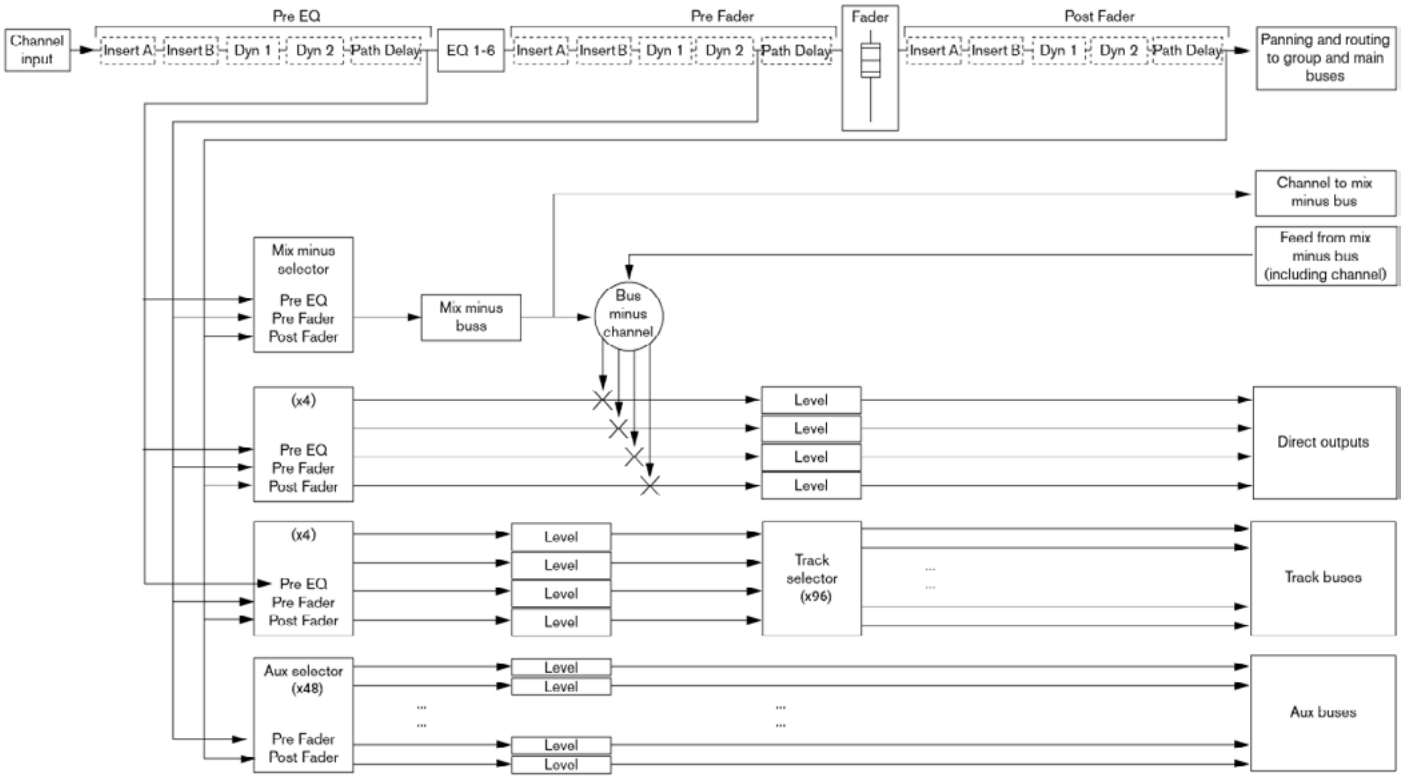
ARGO
PROCESSING AUDIO

CALREC

CHANNEL SIGNAL FLOW

Fig 1 below illustrates the signal flow in an Argo channel path, showing how Inserts, EQ, Dynamics, Path Delay and the relevant send and output points can be positioned within the signal path.

FIG 1 - CHANNEL SIGNAL FLOW



INPUT

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 Customise mode are very flexible and may have been altered by the user, this section will detail the controls available on a panel in Assign Mode using any of the standard Processing layouts. The **Processing>Input** page on the touchscreen is accessed from either the Modes row of a standard fader panel by first tapping on the Modes Menu then the Processing button and then the Input button as shown in Fig 1, or by tapping on the appropriate icons on the touchscreen. It then displays/controls the Input mode with the same information also shown on the Wild Assign panel, see Fig 2. This is shows a stereo input channel with Mic/Line inputs ported to it.

Input Controls

Inputs 1 and 2: Each input channel can be quickly switched between two inputs using the Input 1 and Input 2 selection buttons. A common use for Input 2 is for backup microphones, allowing them to be easily available, using the same fader, processing and routing as when using the primary microphone on Input 1.

Input Meter: Shows the Input signals being received by this path.

Input Ports: Shows the ports in use for this path.

Mic/Line gain: The gain of any connected mic/line input can be adjusted with this control. The gain range varies from +78 dB to -18 dB and 48V power control button(s) are made available.

This gain control alters the gain at the input port in an AoIP Device and will only be available to the owner of that port. Port ownership is discussed in the Input Sources section of this document. If the gain is not the same on all legs of a channel then the gain display will show the highest and lowest value.

±6dB coarse gain: These controls shown on the wild assign panel 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: This boosts or attenuates an input signal by ±24dB inside the channel path. This is the only input trim control available for digital input signals and the only input trim control available for a receiver owned by another user.

As the trim is applied inside the channel path it has no effect on any other operators using the same receiver.

FIG 1 - INPUT PROCESSING MODE SELECTED FROM MODES ROW.

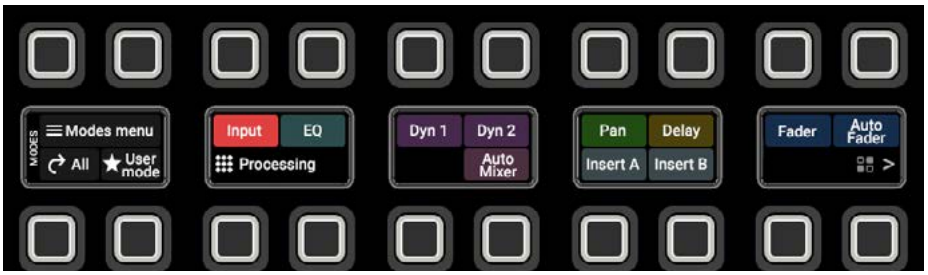
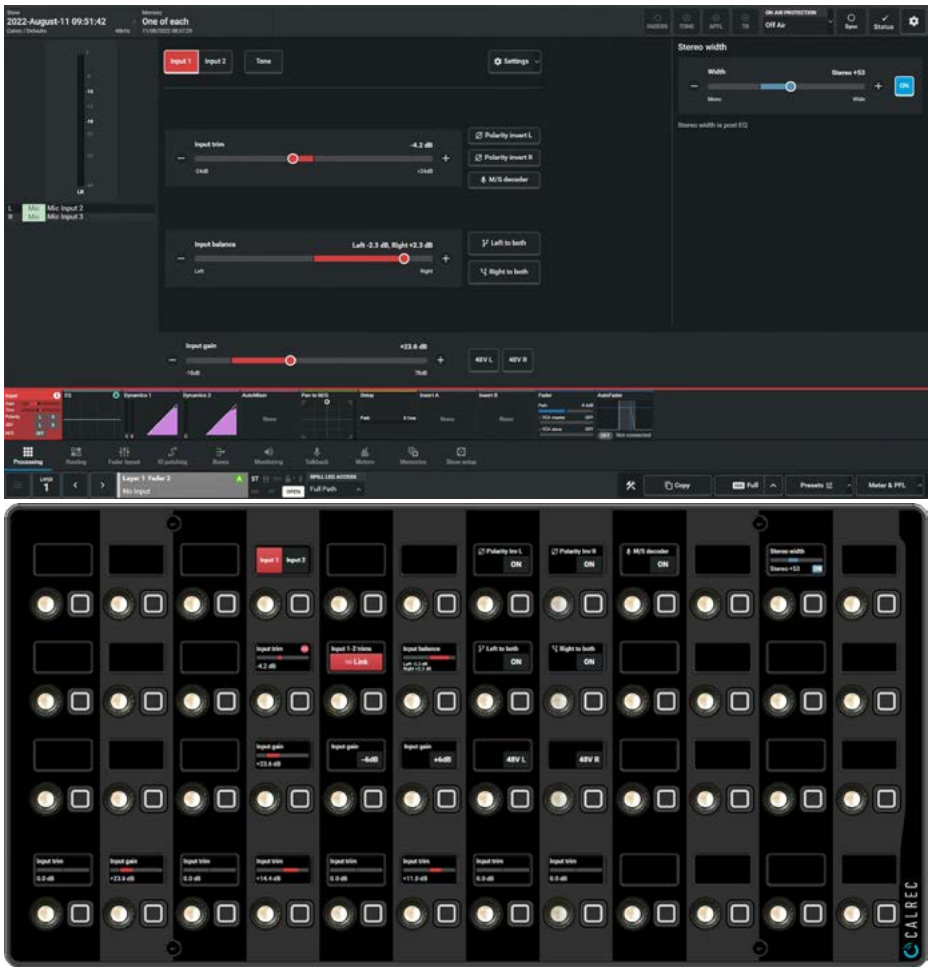


FIG 2 - INPUT 1 CONTROLS ON TOUCHSCREEN & WILD ASSIGN PANEL



Input Balance & Width: If the source is a stereo signal then additional controls to alter the left-right balance and a Stereo width control to allow the stereo signal to be reduced to a mono source or made wider are provided.

Tone: A button on the TFT touchscreen inserts tone into the input of the channel path. When tone is applied to a channel an indicator will appear on the input controls, the fader and any meters relevant to the fader act as a visual aid to the user.

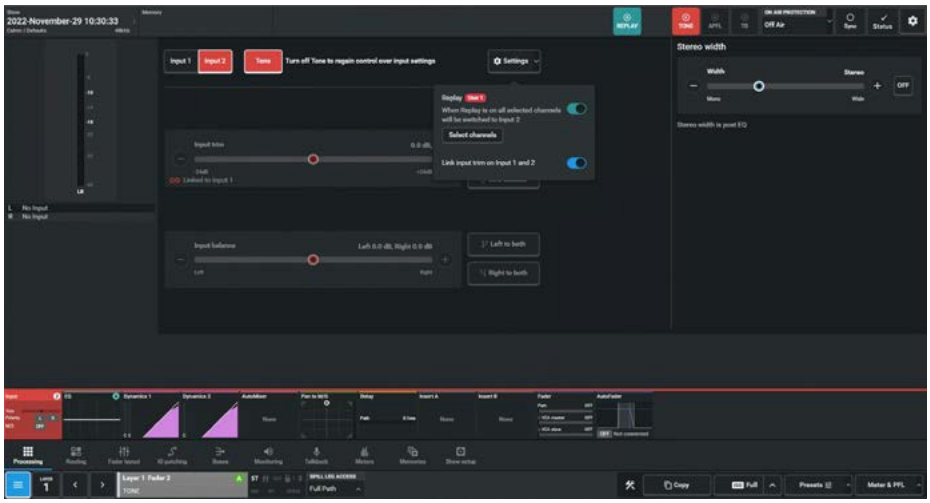
Linking Input Trims: Inputs 1 and 2 have separate input trim controls. These can be linked either by pressing the Link button in the Input 1-2 trims button cell shown above or going to the Settings dropdown on the touchscreen and using the slider switch.

Adjustment of a linked input trim control will be applied to both Input 1 and Input 2, maintaining any offset between them.

Input 2: Fig 3 shows the layout of Input controls accessed from the Input 2 button on either the Touchscreen or the Input 2 button on the wild assign panel. It shows that Input 2 is not yet ported.

When the tone switch is turned on, it disables the Input controls dimming their displays and a "Turn off Tone to regain control over input settings" message appears.

FIG 3 - INPUT 2 CONTROLS ON TFT TOUCHSCREEN

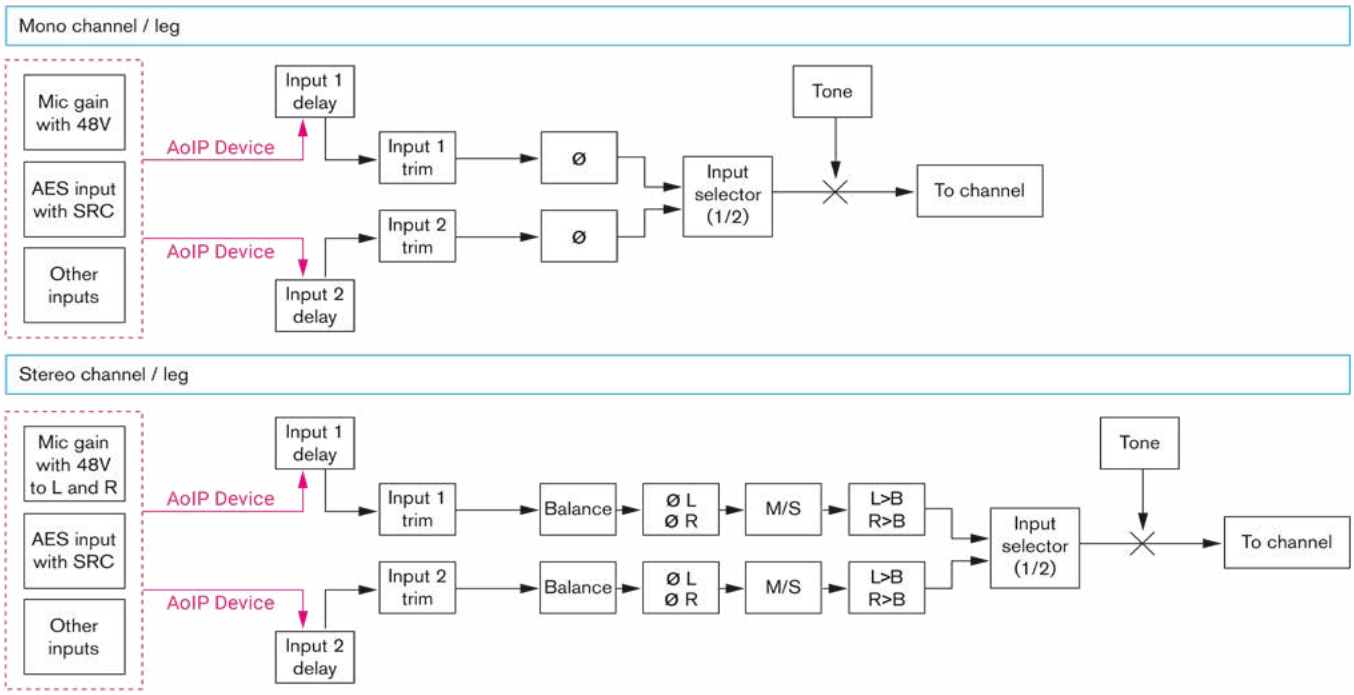


Also shown is the input settings button in the top centre of the content area which allows the user to link input 1 & 2 trims and the linked symbol appears on the Input Trim control. Input 2 is often used for a backup mic to Input 1, so that the trims can track each other allowing a changeover at the same signal level in case of a mic failure.

Replay Function

The other setting accessed from the input settings button is the Replay On switch, this feature allows easy switching of a pre-determined set of paths between Input 1 and Input 2, within each user split. The primary use of replay is to provide a quick way to play back multitrack content over the same fader paths used for recording.

FIG 4 - INPUT SIGNAL FLOW



This is achieved by patching each live audio source to a path's Input 1 and the corresponding recording device output to the path's input 2.
All paths being used with the multitrack recorder should then be added to the replay set, allowing their inputs to be switched between Input 1 and Input 2.

Adding Paths to the Replay Set
Paths can be added or removed from the Replay Set by pressing the **'Select Channels'** button which prompts the user to press the Access button above each fader to include those channels into the Replay group.

Activating Replay
Activating Replay, by sliding the Replay switch to the right switches all paths within the Replay Set to input 2, regardless of which input they were previously assigned to.

Deactivating Replay by sliding the Replay switch to the left will switch all paths in the Replay Set to input 1.

Note: the Replay function can also be cancelled by tapping the Replay indicator in the header.

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

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 Input column of the TFT touchscreen.

Polarity inversion: The polarity of the each leg of the signal may be inverted individually.

Input balance: The balance of a stereo input pair can be varied from +/- 3dB left/right, through centre stereo.

L>B and R>B: Path leg routing options L>B (left to both) and R>B (right to both) allow you to route the left or right legs to both sides of a stereo channel.

With both switches in the off position the left signal feeds the left leg and the right signal feeds the right leg of the stereo path, this is a 'normal' stereo setup.

Switching on L>B feeds the left signal to both left and right sides of the stereo path.

Switching on R>B feeds the right portion of the signal to both left and right sides of the stereo path.

Switching both switches on sums the left and right portions of the signal together and outputs this on both the left and right legs.

With both switches in the same position, either on or off, you have access to the input balance control.

When they are both off the balance control responds as described above but with both controls switched on it is a full range balance control, i.e. turning the rotary control all the way to the left on the wild assign panel or sliding the slider all the way to the left in the touchscreen, just outputs the left hand signal from both legs of the path.

With either L>B or R>B switched on independently, the balance control is unavailable—it would have no effect as the left and right portions of the signal would be the same.

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. The buttons for this are found in the same location as the 48V buttons when a Digital Source is selected.

Signal flow
Fig 4 on the previous page shows the signal flow of both an Argo mono input section and stereo input section with input 1/2 selection.

Note: that it is possible to change input controls for an AoIP Device which is offline. In this circumstance it is important that console operators regularly save their User Memory to avoid losing settings once the AoIP device comes back online.

Spill Leg Access: If the path is wider than Mono, a drop-down box labelled "Spill Leg Access" appears showing 'Full Path' appears to the right of the fader information block.

Opening this dropdown allows the user to access each spill legs' control parameters. In the case of the input, it allows the user to apply offsets to the various input parameters per leg with the legs arranged as follows:-

- each L or R spill leg in a Stereo path
- each LR, C, Lfe, Ls/Rs spill leg in a 5.1 surround path
- each L/R, C, Lfe, Lss/Rss, Lrs/Rrs, spill leg in a 7.1 surround path.
- each L/R, C, Lfe, Ls/Rs, Ltf/Rtf spill leg in a 5.1.2 immersive path.
- each L/R, C, Lfe, Ls/Rs, Ltf/Rtf, Ltr/Rtr spill leg in a 5.1.4 immersive path.
- each L/R, C, Lfe, Lss/Rss, Lrs/Rrs, Ltf/Rtf spill leg in a 7.1.2 immersive path.
- each L/R, C, Lfe, Lss/Rss, Lrs/Rrs, Ltf/Rtf, Ltb/Rtb spill leg in a 7.1.4 immersive path.

Note: that a thumbnail view of the Input settings is also made available in the Processing>Input icon on the Touchscreen.

EQUALISER AND FILTERS

EQ is available on every Channel, Group, Main, Aux and Track signal path without restriction. Each path has access to six full range, fully parametric, switchable response EQ bands.
The **Processing>EQ** page on the touchscreen is accessed from either the Modes row of a standard fader panel by first tapping on the Modes Menu then the Processing button and then the Equaliser button as shown in Fig 1, or by tapping on the appropriate icons on the touchscreen. It then displays/controls the Equaliser mode with the same information also shown on the Wild Assign panel see Fig 2. The EQ control layout used here is that which is available in the standard mode as shown.

The frequency range for all bands is 20Hz to 20kHz, the gain range is -18dB to +18dB. The Q control for the bell curve can be set at: 0.3, 0.5, 0.7, 1, 2, 3, 5, 7 or 10, and for all other bands is set at 0.7. Each band has an On/Off button and the bands 1-6 are switched in and out of circuit together using the buttons on the panel to the right. When looking at an equaliser module, any control situated within the content area affects the whole module if not independent.

Note: in the case of 5.1 paths and wider the Lfe (e) leg is made independent by default and has its own independent equaliser controls.

Equaliser and Filter Controls

After tapping **Processing>EQ** from the Menu, controls can be adjusted in a number of ways:-

From the Touchscreen

- Dragging the sliders left and right for continuous controls.
- Using the + and - buttons at the end of the sliders.
- Using the On-Screen buttons to select switch functions e.g. On/Off.
- Dragging the numbered bands with their control circles on the graph.

The resultant numerical values are shown in the top right hand corner of each control and also reflected on the graph.

From the Wild Assign Panel

- Moving the Rotary controls round to the left or right.
- Using the button next to the rotary control to switch functions On or Off.
- Pressing the top of the rotary controls down to reset parameters to default

The resultant numerical values & slider control displays are shown in each individual TFT on the Wild Assign Panel.

FIG 1 - EQ PROCESSING MODE SELECTED FROM MODES ROW.

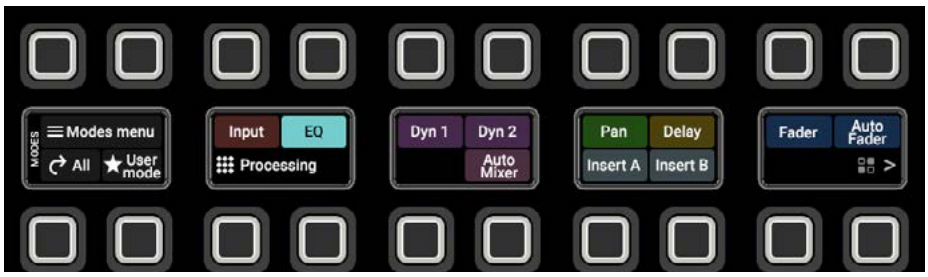
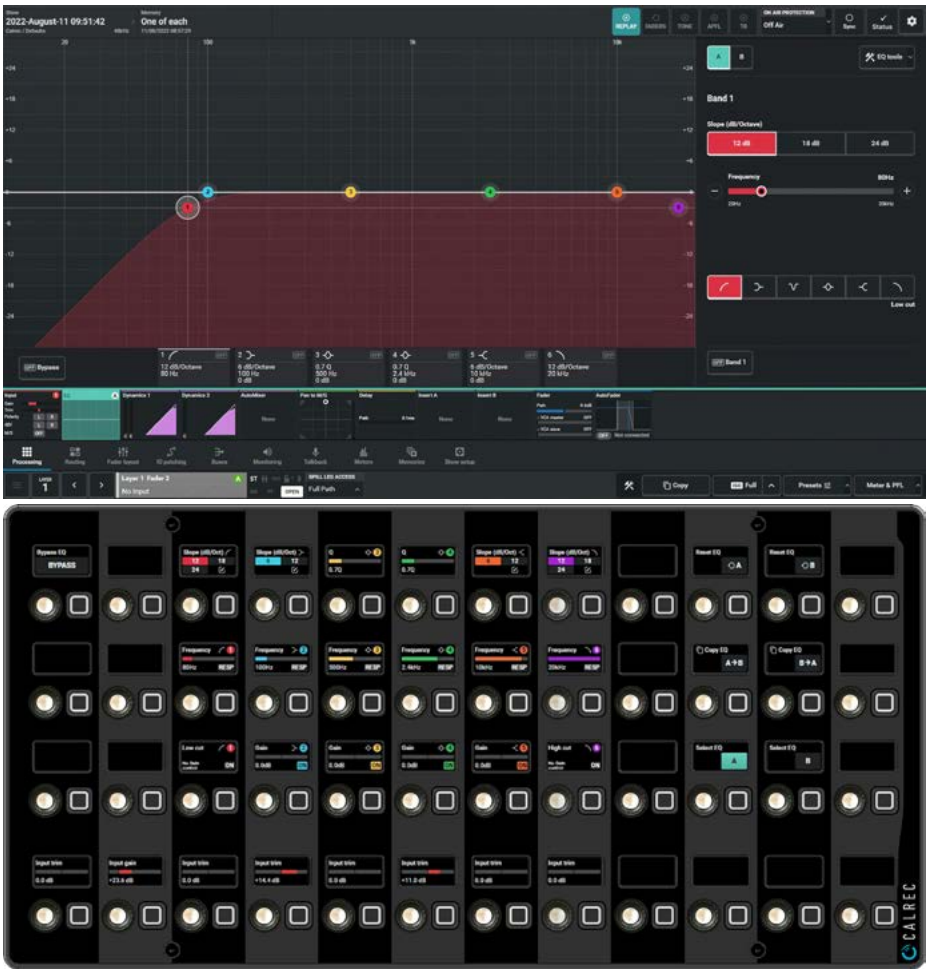


FIG 2 - EQ CONTROLS ON TOUCHSCREEN & WILD ASSIGN PANEL



The following controls are available:-
From the Touchscreen
Tapping on any of the 6 band tabs along the top of the EQ control screen highlight that band in the EQ graph display.

The EQ controls to the right of the screen apply to whichever EQ band is currently selected. The graph instantly updates to reflect EQ parameter changes.

Bands 1 & 6 are by default set as Filters but can by changing their response have the same behaviour as EQ bands 2-5.

When they are set as Filters they can be set to a 12dB/Oct, 18dB/Oct or 24dB/Oct slope.

The 6 EQ bands can be set to any response type at any frequency and gain setting, but it is good practice to set them in a logical, frequency-based order.

From the Wild Assign Panel
The 6 EQ bands are arranged left to right in columns across the panel and the rotary controls are in 3 rows top row Slope or Q, middle row frequency/ response and bottom row Gain/On.

The various button controls are placed to the right of this and the EQ Bypass button is placed top left.

EQ in and out of circuit: Fig 2 shows that all the EQ Band switches are off and as such the EQ processing is not in circuit and the overall EQ curve is flat.

Fig 3 shows that all the EQ Band switches are on and as such the EQ processing is in circuit, the overall EQ curve follows the resultant shape from the active EQ bands.

Bypass EQ: At the bottom left of the content area and top left of the wild assign panel is a Bypass switch which allows the user to quickly turn off any active EQ processing rather than turn off each active EQ band individually, see Fig 4. The Bypass indication also appears in the Processing EQ icon as does the overall EQ curve.

FIG 3 - EQ CONTROLS IN CIRCUIT - STEREO PATH

FIG 4 - EQ CONTROLS IN BYPASS - STEREO PATH

Band On/Off: This switches the selected EQ band in/out of circuit.

Slope: For Bands 1 & 6 this offers different slope settings for both Low & High Cut filters and Low & High shelves. For Bands 2, 3, 4 & 5 this offers different slope settings for Low & High shelves.

Q: Sets the width of the frequency band for the selected response. The higher the Q, the narrower the bandwidth. This is valid for any band with a Bell response.

Frequency: Sets the frequency that the EQ band is operating around.

Gain: Sets the gain increase or gain reduction for the selected band, except for bands set as Notch filters or Low & High Cut filters for Bands 2, 3, 4 & 5.

Response: Select the desired EQ response curve for the selected band, from low cut filter, low shelf, notch, bell, high shelf and high cut filter.

Note: see the Equaliser Response Type highlighted area in Fig 3.

EQ A/EQ B Comparison: Allows the user to compare two EQ set-ups. To do this tap the EQ Settings **A B** buttons on the panel to switch between EQ A and EQ B and change the parameters within each setup as required. The user can then switch between the two setups.

Note: see the Equaliser A/B Comparison and EQ Tools highlighted areas in Fig 5.

EQ Tools (Touchscreen)
Tapping this button in the side panel displays the following options:

Copy EQ -Copy A to B & Copy B to A
This allows the user to duplicate EQ settings and audition subtle differences in EQ, by copying the EQ settings to the other EQ setup, modifying EQ A or EQ B and then using the EQ A/B switching buttons in the side panel, or the buttons on the Wild Assign panel allows the user to quickly switch between the two.

Reset EQ - Reset A & Reset B returns all the EQ A or EQ B settings to their default values respectively.

Equaliser Independence Controls for Stereo, Surround & Immersive Paths

For Multichannel paths such as stereo, surround and immersive paths it is possible to apply equaliser processing independently for:

- each L or R spill leg in a Stereo path
- each LR, C, Lfe, Ls/Rs spill leg in a 5.1 surround path
- each L/R, C, Lfe, Lss/Rss, Lrs/Rrs, spill leg in a 7.1 surround path.
- each L/R, C, Lfe, Ls/Rs, Ltf/Rtf spill leg in a 5.1.2 immersive path.
- each L/R, C, Lfe, Ls/Rs, Ltf/Rtf, Ltr/Rtr spill leg in a 5.1.4 immersive path.
- each L/R, C, Lfe, Lss/Rss, Lrs/Rrs, Ltf/Rtf spill leg in a 7.1.2 immersive path.
- each L/R, C, Lfe, Lss/Rss, Lrs/Rrs, Ltf/Rtf, Ltb/Rtb spill leg in a 7.1.4 immersive path.

FIG 5 - EQ CONTROLS COPY A TO B OR B TO A

FIG 6 - MULTICHANNEL EQ CONTROLS ON TFT TOUCHSCREEN

FIG 7 - MULTICHANNEL INDEPENDENCE TABLE ON TFT TOUCHSCREEN

Fig 6 shows the equaliser page for a 7.1.4 path, in the path footer is shown a drop down box labelled **“Spill Leg Access”** which normally says ‘**Full Path**’.

Tapping on this opens the independence control table shown in Fig 7 this determines which spill leg controls will be made independent of its multichannel master for any of the 6 equaliser bands shown down the spill leg independence column.

For instance the user may want to make some equaliser bands act independently and others to track with the master such as the filters.

Sliding the required switches makes those controls for the chosen spill leg become independent of the master. Fig 7 shows all the controls switches for the Lfe leg are set to independent, this is by default.

In Fig 8, the user has just selected the ‘**Lfe only**’ leg to be controlled by tapping outside the independence pop-up and this then shows the equaliser control for the Lfe spill leg. To return to full path tap on **“Spill Leg Access”** and select ‘**Full Path**’.

Fig 9, shows the EQ Response types along with their parameter ranges.

FIG 8 - INDEPENDENT EQ CONTROLS FOR LFE ONLY LEG OF A 7.1.4 PATH

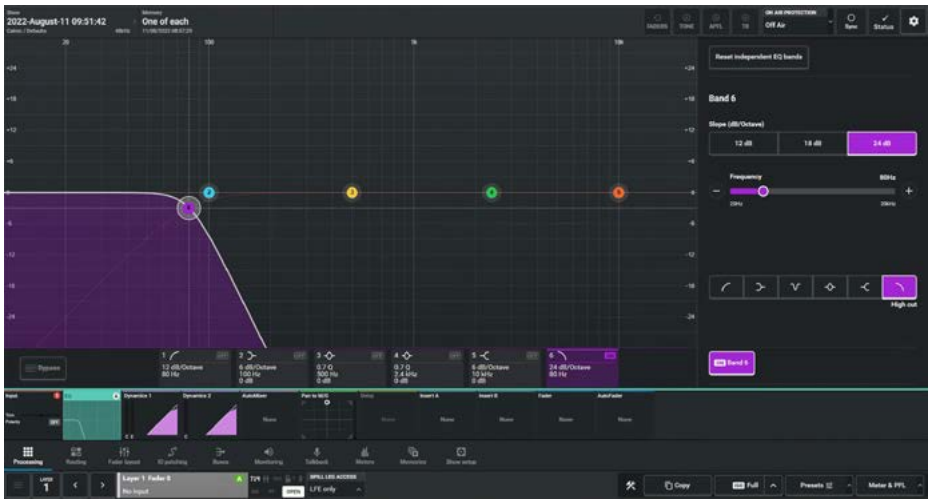


FIG 9 - EQ RESPONSE TYPES AND RANGE PARAMETERS

	Gain Range	Q or dB/Octave
High Pass Filter	N/A	12dB, 18dB or 24 dB/octave on Bands 1 & 6 else 6db/octave
Low Shelf	+18dB to -18dB Variable	6dB or 12dB/octave
Notch	-30dB Fixed	22.2
Higher Mid Frequency Bell	+18dB to -18dB Variable	0.3 to 10
Lower Mid Frequency Bell	+18dB to -18dB Variable	0.3 to 10
High Shelf	+18dB to -18dB Variable	6dB or 12 dB/octave
Low Pass Filter	N/A	12dB, 18dB or 24 dB/octave on Bands 1 & 6 else 6db/octave

DYNAMICS 1

Every Channel input, Group bus, Main bus, Aux bus and Track bus have 2 Dynamics processors available to them. For Channels, Groups and Mains there is also an associated sidechain equaliser with sidechain listen and a sidechain source selector. This Dynamics 1 processor can be placed Pre EQ/Pre Fader or Post Fader and either run standalone or be linked to any of the eight Gain Reduction buses available.

The **Processing>Dynamics 1** page on the touchscreen is accessed from either the Modes row of a standard fader panel by first tapping on the Modes Menu then the Processing button and then the Dynamics 1 button as shown in Fig 1, or by tapping on the appropriate icons on the touchscreen. It then displays/controls the Dynamics 1 mode with the same information also shown on the Wild Assign panel see Fig 2. The Dynamics 1 control layout used here is that which is available in the standard mode as shown.

Dynamics 1 controls and displays are arranged in 3 blocks:-

- Compressor/Limiter controls for ON, Threshold, Ratio, Attack, Release, Gain Make-up and Knee.
- Expander/Gate/Ducker controls for ON, Threshold, Ratio, Attack, Release, Depth, Delay for Gate and Ducker via the Mode selection buttons.
- 1 or 2 bands of Dynamics sidechain EQ controls for Gain, Frequency and Q / Response types. Selected via the Sidechain buttons.

Compressor/Limiter 1

Compressor/Limiters provide controls for reducing and smoothing the dynamic range of an audio signal. Both dynamics 1 & 2 can be used as limiters simply by switching the compressor in and setting the ratio to the maximum of 50:1.

At this setting, the input has to increase by 50dB above the threshold in order for the output to increase by a negligible 1dB so the signal is effectively being limited.

The TFT screen displays a graph of input level versus output level along with gain reduction meters, and Sidechain source metering where applied.

This displays the amount of gain reduction being applied to the signal, note that in the case of 5.1 paths and wider, the Lfe (e) leg is made independent by default, so no reduction is applied as shown above right as Lfe has its own independent dynamics controls.

Note: below the Gain reduction bargraphs is shown the Sidechain source audio meter display overlaid with the threshold positions for the Compressor/ Limiter and the Expander/Gate/Ducker.

FIG 1 - DYNAMICS 1 PROCESSING MODE SELECTED FROM MODES ROW.

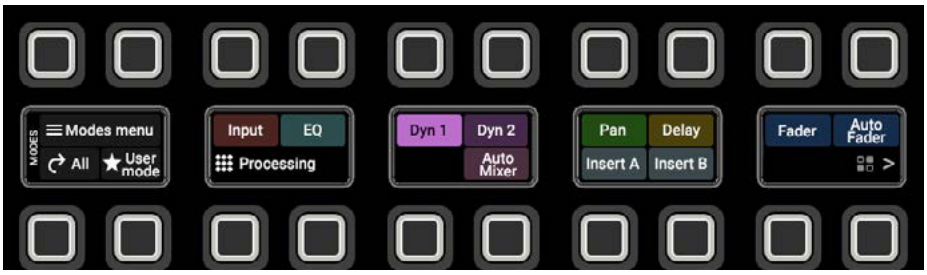
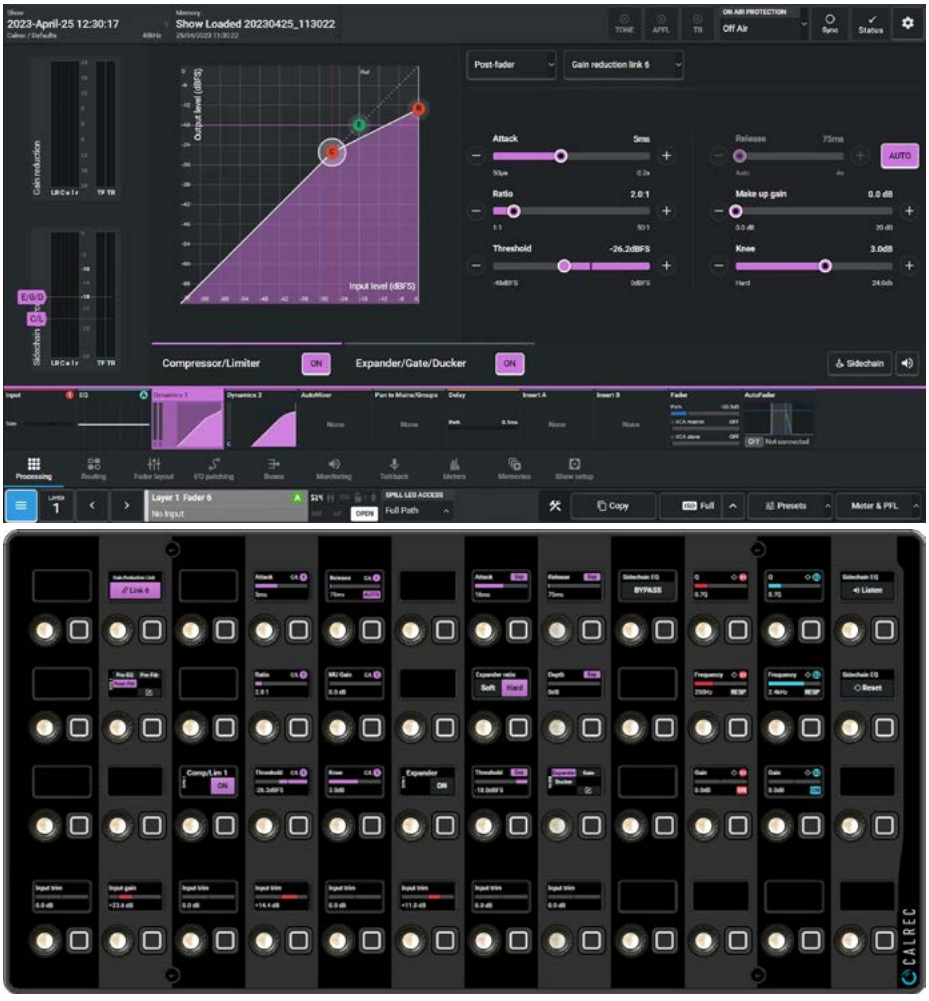


FIG 2 - DYNAMICS 1 CONTROLS ON TOUCHSCREEN & WILD ASSIGN PANEL



The audio meter is used to show the signal level of the sidechain source which can either be from its own path or an external Mono channel, group or aux source.

Compressor/Limiter 1 Controls
After tapping **Processing>Dynamics 1** from the Menu and selecting the Compressor/Limiter from the top of the contents area, the controls can be adjusted in a number of ways:-

From the Touchscreen
- Dragging the sliders left and right for continuous controls.
- Using the + and - buttons at the end of the sliders.
- Using the On-Screen buttons to select switch functions e.g. On/Off.
- Dragging the numbered bands with their control circles on the graph.

The resultant numerical values are shown in the top right hand corner of each control and also reflected on the graph.

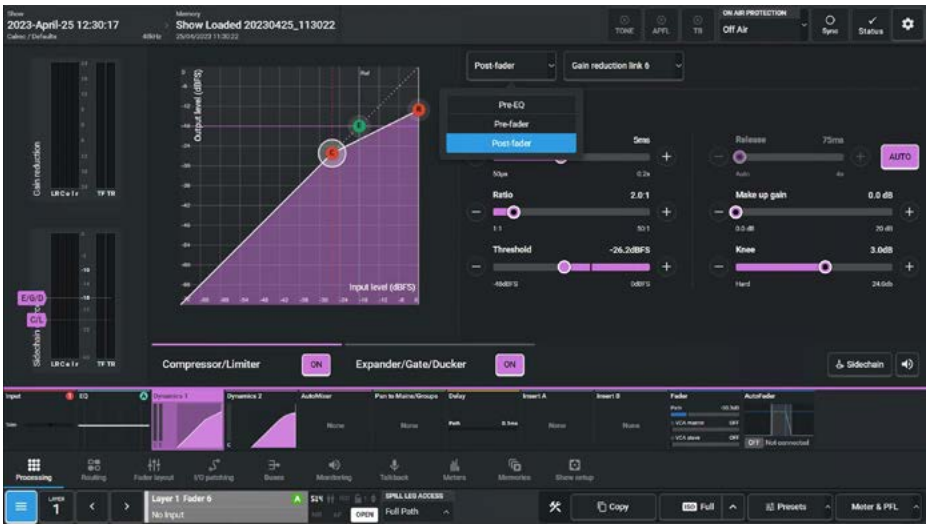
From the Wild Assign Panel
- Moving the Rotary controls round to the left or right.
- Using the button next to the rotary control to switch functions On or Off.
- Pressing the top of the rotary controls down to reset parameters to default

The resultant numerical values & bargraph are shown in each individual TFT on the Wild Assign Panel.

Dynamics 1 Position in Path
Each Compressor/Limiter module can be inserted either Pre EQ, Pre Fader or Post Fader. Tap on the dynamics position button currently showing "Post Fader' (top centre of the screen) and select an option as shown in Fig 3.

Note: the Expander/Gate/Ducker processing is tied to the Compressor/Limiter in Dynamics 1, in that both follow the same Pre EQ, Pre Fader, Post Fader selection.

FIG 3 - DYNAMICS 1 PATH POSITION ON TOUCHSCREEN



The following controls are available from both the TFT touchscreen and Wild Assign Panel:-

Compressor/Limiter On/Off switch: This button switches the Compressor / Limiter in or out of circuit.

Threshold: The level (dBFS) at which the signal will begin to have its gain reduced.

Ratio: Controls gain reduction once a signal has exceeded the threshold, for example, if the ratio is set at 2:1 and the signal exceeds the threshold by 4dBFS, the gain will be reduced so it exceeds the threshold by only 2dBFS.

When set to 50:1, the compressor is acting as a limiter.

Attack: Time taken to reduce the gain to reach the new compressed level. Short attack times enable the compressor to catch transients in the audio feed, whereas increasing the attack time will allow initial transients through but catch later transients. Fast attack times are good for catching transients and possibly stopping clipping but, when an attack time is too fast, signals can sound bad, can have artefacts, etc, so it's probably better to start with a fast attack time then slow the attack time down until it sounds right.

Release: Time taken to remove gain reduction once the signal falls back below the threshold. Short release times can lead to a "pulsing" effect, with only audio peaks being compressed. A longer release time will lead to a smoother effect at the expense of some lower level audio components being compressed.

Release Auto: In this mode a filter is applied which determines how quickly the signal comes out of compression by measuring the amount and duration of the compression attack.

This is useful in dealing with both sudden noises which recover quickly and sustained noises such as applause which recover slowly. Release Auto is enabled when the slider is dragged all the way to the left, or the **'AUTO'** button is pressed as shown on the touchscreen and highlighted on the Wild Assign panel image in Fig 2.

Make Up Gain: Allows the gain of the whole compressed signal to be increased by up to 20dB.

Knee: Allows the gain of the whole compressed signal to act on signal transients quickly in the case of a Hard knee, whereas a Soft knee applies compression gradually over a range of up to 24dB.

Gain Reduction Links
By default, dynamics modules operate as standalone units.

Tap on the dynamics gain reduction link button currently showing 'Standalone' (top centre of the screen) and select an option as shown in Fig 4. This allows the module to be put into one of eight gain reduction links. Gain reduction links allow multiple audio feeds to have the same dynamics processing applied.

Note: the compressor-limiter and expander/gate/ducker modules use the same gain reduction links.

When multiple paths' dynamics modules are set to be part of a gain reduction link, the amount of gain reduction applied across the link will always equal that for the signal which is being affected the most. For example, within a gain reduction link, if one path's signal is causing 5dB of gain reduction and another is causing a reduction of 10dB, all signals within the gain reduction link will have a gain reduction of 10dB applied. When expander/gate/ducker units are used within a link and one feed within the link reaches the threshold level to open the expander/gate/ducker, all expander/gate/duckers within the link open regardless of their audio feed levels.

Sidechain Listen
Selecting the Sidechain Listen (speaker icon shown next to the Sidechain Button in Fig 5), allows the user to listen to the effect that the sidechain EQ is having on the signal as it is altered.

Note: activating the sidechain listen uses the APFL system and the APFL clear button will become lit in the header area.

Sidechain EQ (SCEQ)
Dynamics units take copies of their input signals, analyse them, and work out how best to process the originals. These copies are called sidechains. SCEQ controls are used to process frequency components of the sidechain signal in order to control which components of the input signal the dynamics will respond to.

FIG 4 - DYNAMICS 1 GAIN REDUCTION LINKS ON TOUCHSCREEN

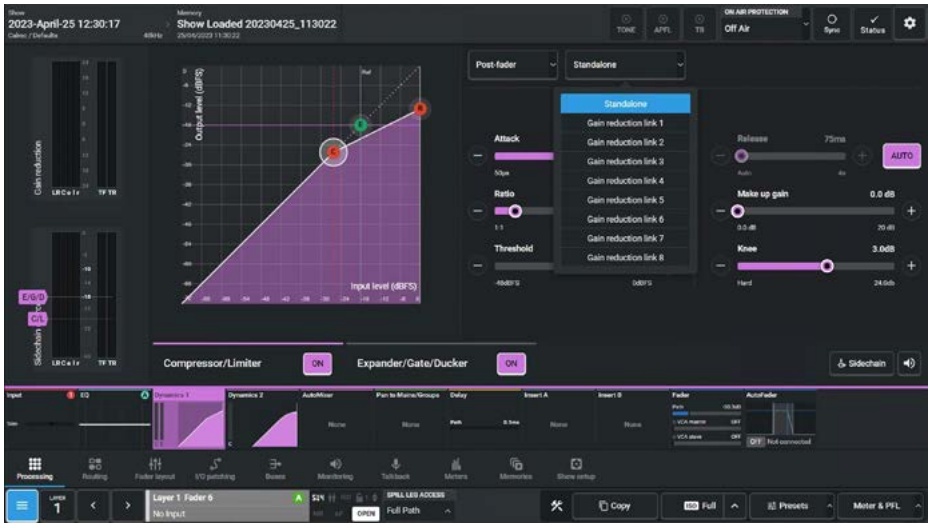


FIG 5 - SIDECHAIN EQUALISER ON TOUCHSCREEN

With Dynamics 1 processing selected, tap on the Sidechain button in top right corner of the contents screen to see the SCEQ controls as shown in Fig 4.

The following controls are available from both the TFT touchscreen and Wild Assign Panel:-

Sidechain EQ Band On/Off switches: Switching the SCEQ controls in and out for Band 1 or Band 2 of the SCEQ bands, allows the user to hear the difference SCEQ processing makes.

The **'Reset'** button allows the user to reset the parameters of both the SCEQ bands to their default values.

The other SCEQ parameter controls, i.e. **Bypass, Response dropdown, Slope, Band On/Off, Frequency, Gain & Q** are the same as the EQ controls and are explained in more detail in the EQ section.

Note: the SCEQ function is shared between the Compressor/Limiter 1 and the Expander/Gate/Ducker of each Channel, Group and Main Path.

Channels have 2 bands of Sidechain EQ, Groups & Mains have 1 band of SCEQ each.

Also note that the Ducker function is not available for Mains.

Sidechain Source Selection
This option is available for Channels and Groups and the control panel appears to the right of the Sidechain EQ panel when valid. This allows the user to choose a source other than itself to be used to control the amount of compression applied.

Only mono channels, groups or auxes can be used as a sidechain source and the Sidechain audio source meter display is shown overlaid with this paths C/L and E/G/D threshold markers.

When the user taps on the **'Choose sidechain source**' button, this opens the "Select a fader" dialogue shown in Fig 6.

They can then select the required signal the dynamics needs to respond to. Details of the selected source are displayed and the user has the option of changing the sources send position between Pre EQ, Pre Fader or Post Fader.

Although essential for ducking control, the sidechain source is also available for use with Compressor/Limiter 1, Expander and Gate processing and it is this path's audio that is used as the source for the sidechain equaliser control.

The selected Sidechain source can be removed if not required by clicking on the **'Remove'** button in the top right corner of the Sidechain source panel.

Expander/Gate/Ducker
An expander acts in the opposite way to a compressor. When a signal exceeds the expander threshold it is passed through unchanged, and when it falls below the threshold it is reduced, effectively increasing the dynamic range of the signal and reducing unwanted audio content. The expander page is shown in Fig 7.

A gate is effectively an extreme version of an expander, with a very high ratio, resulting in the gain of the input signal being significantly reduced almost immediately as it falls below the threshold.

FIG 6 - SIDECHAIN SOURCE SELECTION ON TOUCHSCREEN

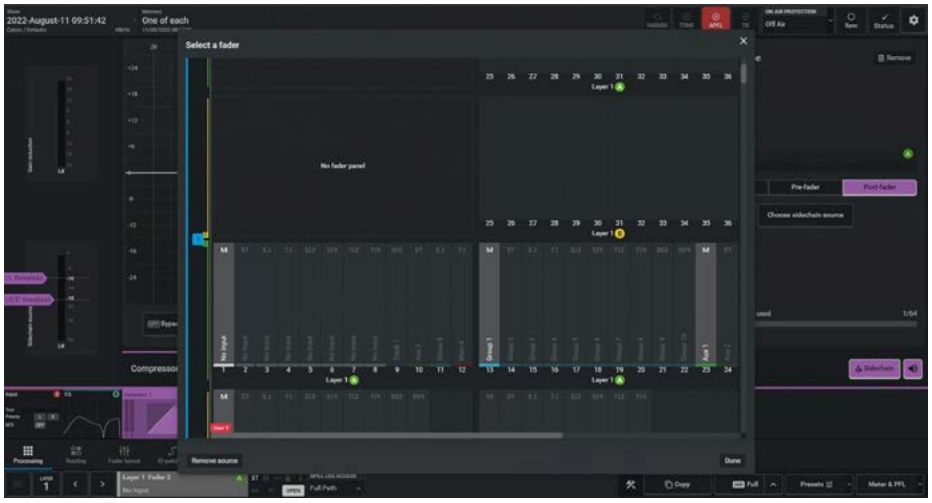
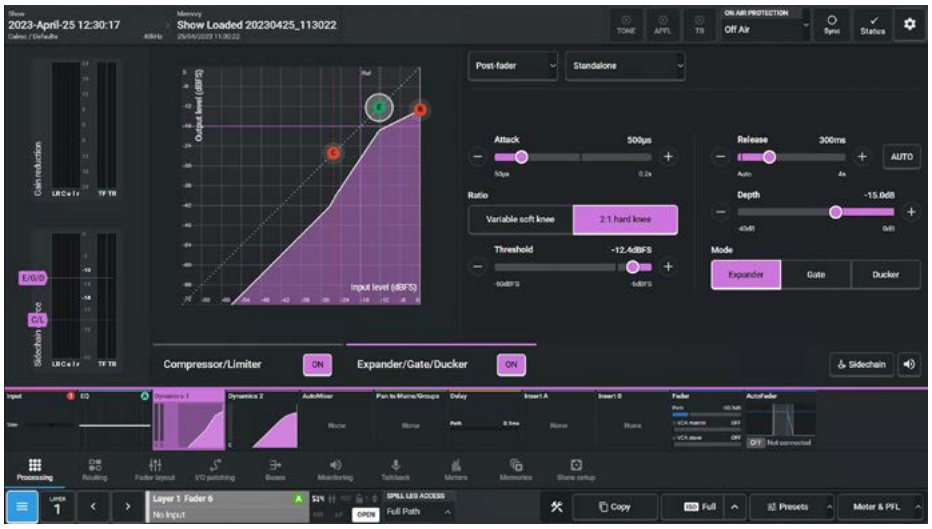


FIG 7 - EXPANDER ON TOUCHSCREEN



The gate page is shown in Fig 8 on the next page. Gates are often used to minimise unwanted audio content.

A ducker is used to reduce the level of a signal by the presence of another signal or side chain source. A typical use of this effect in a daily radio production routine is for creating a voice-over:
A foreign language original sound is dubbed (and ducked) by a professional speaker reading the translation. Ducking becomes active as soon as the translation starts.

The ducker page is shown in Fig 9, on the next page.

Calrec's expander/gate/ducker processing has 6dB of built-in hysteresis to avoid unwanted "chatter" (constant on/off switching) resulting from an input signal residing on or around the threshold.
The gain reduction bargraphs are again shown in the images on the right, on the left of the process window.

Expander/Gate/Ducker Controls
After tapping **Processing>Dynamics 1** from the Menu and selecting the Expander, Gate or Ducker Mode the controls can be adjusted in a number of ways:-

From the Touchscreen

- Dragging the sliders left and right for continuous controls.
- Using the + and - buttons at the end of the sliders.
- Using the On-Screen buttons to select switch functions e.g. On/Off.
- Dragging the numbered bands with their control circles on the graph.

The resultant numerical values are shown in the top right hand corner of each control and also reflected on the graph.

From the Wild Assign Panel

- Moving the Rotary controls round to the left or right.
- Using the button next to the rotary control to switch functions On or Off.
- Pressing the top of the rotary controls down to reset parameters to default

The resultant numerical values & bargraph are shown in each individual TFT on the Wild Assign Panel.

The following controls are available from both the TFT touchscreen and Wild Assign Panel:-

Expander/Gate/Ducker In/Out switch: This is shown at the top centre of the contents area, it switches the expander/gate/ducker in or out of circuit.

Mode: The expander/gate/ducker module has a triple mode button for switching between expander, gate and ducker functionality.

Threshold: The level (dBFS) at which the signal will begin to have its gain affected.

Depth: Controls the maximum amount of attenuation which can be applied to signals below the threshold.

Delay (Gate & Ducker Only): The minimum time the gate or ducker will be held open before closing once the threshold is reached.

FIG 8 - GATE ON TOUCHSCREEN

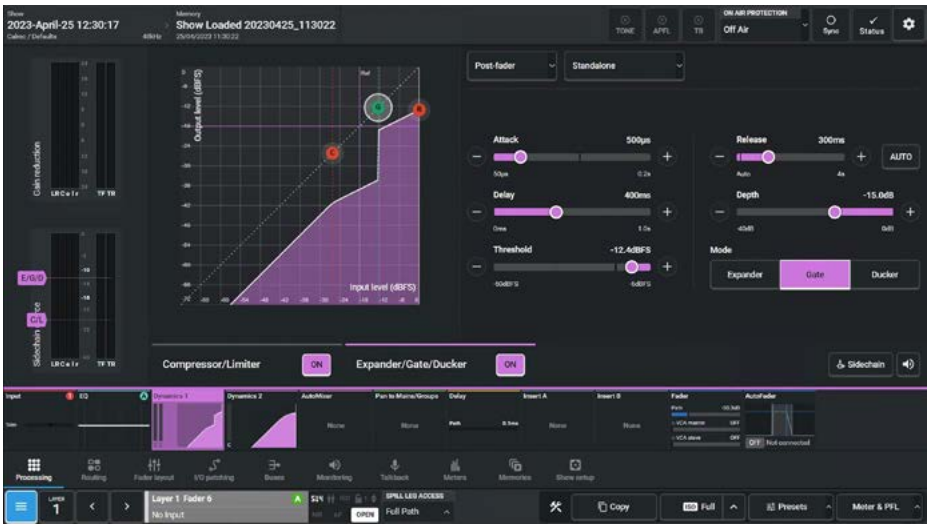
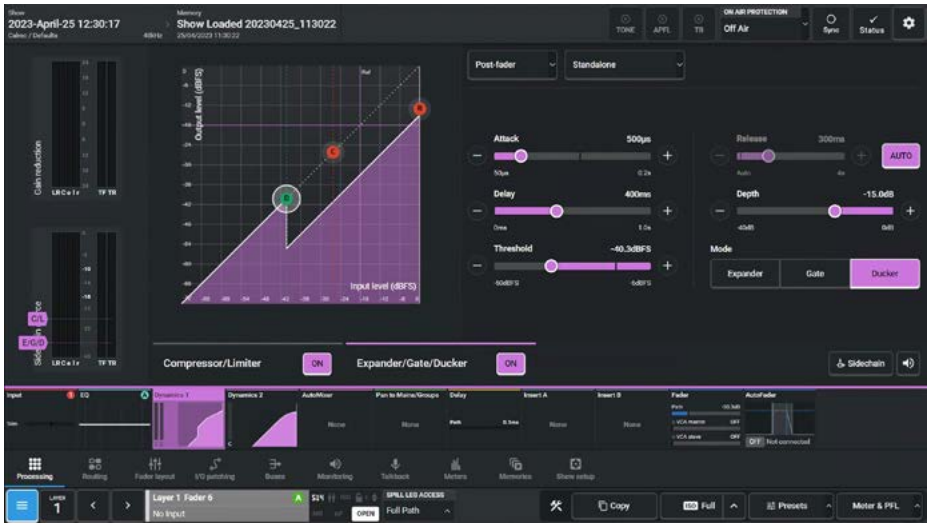


FIG 9 - DUCKER ON TOUCHSCREEN



Ratio (Expander only): Controls the amount of gain reduction applied to the input signal level.

A 2.1 Hard knee uses a fixed ratio of 2:1, meaning 1dB of gain reduction is applied for every 1dB that the signal falls below the threshold.

A Variable Soft knee uses a variable ratio dependent on the input signal level with the final ratio of 3:1 being applied when the signal drops to 20dB below the threshold.

Attack: Time taken for the expander/gate takes to open. Short attack times help to preserve natural transient attack but can result in a "tapping" sound due to the rapid transition. A longer attack time ensures a smoother transition but some of the transient information will be lost.

Release: Time taken for the expander/gate/ducker to close. Longer release times create a smoother more natural transition.

Release Auto: In this mode a filter is applied which determines how quickly the expander/gate/ducker closes by measuring the amount and duration of the attack.

This is useful in dealing with both sudden noises which recover quickly and sustained noises such as applause which recover slowly. Release Auto is enabled when the slider is dragged all the way to the left, or the **'AUTO'** button is pressed as shown in the image above right.

Dynamics 1 Independence Controls for Stereo, Surround & Immersive Paths

For Multichannel paths such as stereo, surround and immersive paths it is possible to apply Dynamics 1 processing independently for:

- each L or R spill leg in a Stereo path
- each LR, C, Lfe, Ls/Rs spill leg in a 5.1 surround path
- each L/R, C, Lfe, Lss/Rss, Lrs/Rrs, spill leg in a 7.1 surround path.
- each L/R, C, Lfe, Ls/Rs, Ltf/Rtf spill leg in a 5.1.2 immersive path.
- each L/R, C, Lfe, Ls/Rs, Ltf/Rtf Ltr/Rtr spill leg in a 5.1.4 immersive path.
- each L/R, C, Lfe, Lss/Rss, Lrs/Rrs, Ltf/Rtf spill leg in a 7.1.2 immersive path.
- each L/R, C, Lfe, Lss/Rss, Lrs/Rrs, Ltf/Rtf, Ltb/Rtb spill leg in a 7.1.4 immersive path.

The image in Fig 9 shows the expander/gate/ducker page for a 5.1.4 path, in the path footer is shown a dropdown box labelled "Spill Leg Access" which normally says 'Full Path'.

Tapping on this opens a multichannel independence control table as shown in Fig 10, which is used to determine which spill leg controls will be made independent of its multichannel master for any of the dynamics controls or gain reduction elements shown down the spill leg Independence column.

FIG 10 - DYNAMICS 1 MULTICHANNEL INDEPENDENCE ON TOUCHSCREEN

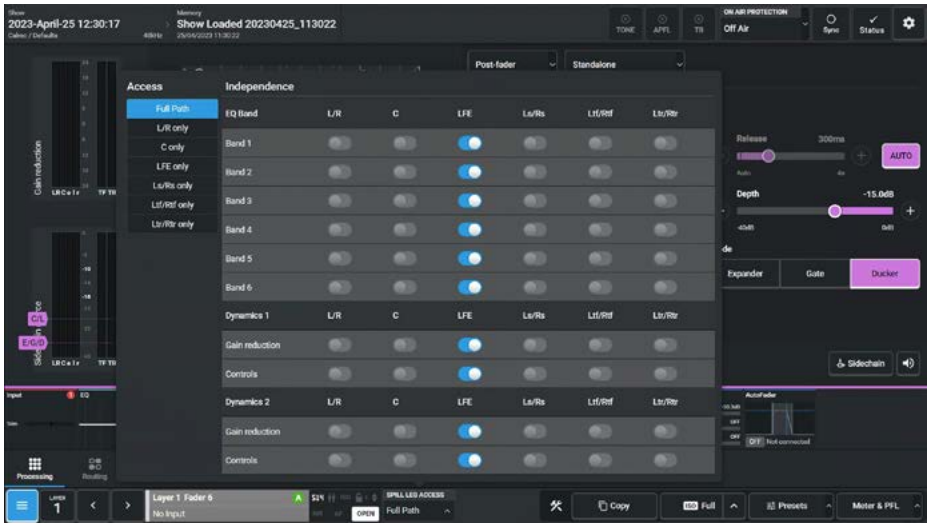
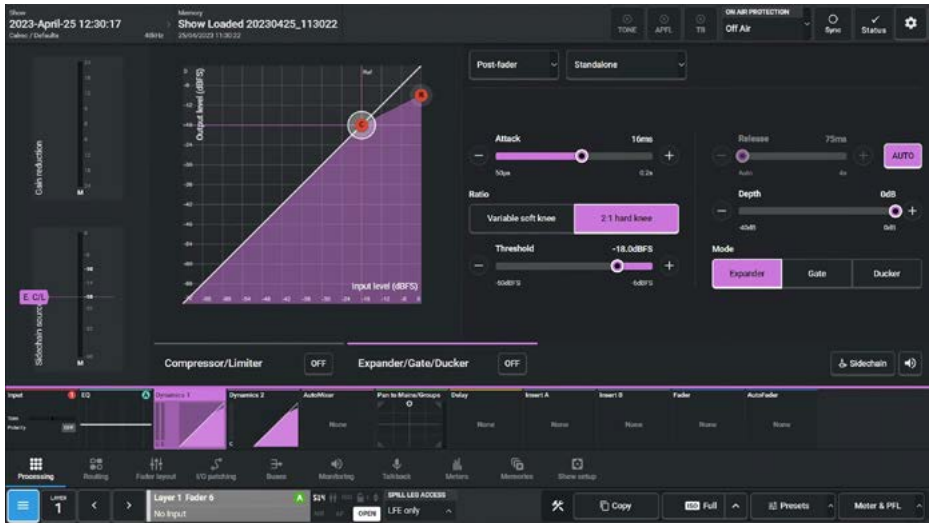


FIG 11 - INDEPENDENT EXPANDER FOR LFE ONLY LEG OF A 5.1.4 PATH



Sliding any of these switches makes those particular Dynamics 1 controls and or gain reduction elements for a particular spill leg, to become independent.

Note: also shown in the independence control table are the controls for the Lfe leg are independent, this is by default.

In the image in Fig 11, the user has just selected the 'Lfe only' leg to be controlled/displayed and this then shows the independent Dynamics 1 controls for the Lfe spill leg.

Removing Dynamics Independence from Spill Legs

Tapping on the Spill Legs Access button to the right of the Fader Display block shown as 'L/R Only' in Fig 12 on the next page, opens the independence control switch table as shown in the Multichannel Independence Controls for Dynamics 1, Fig 10.

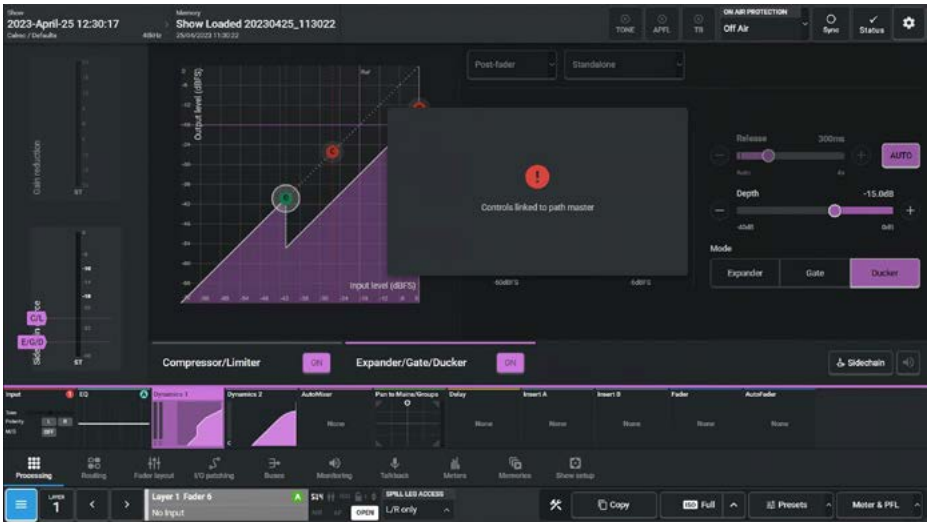
Turning Off the independence switches overwrites the independent control settings that this dynamics process had for this spill leg and replaces it with its master's settings.

If the user selects a spill leg that has not been made independent from its master or selects an expander/gate or compressor-limiter control set that has not been made independent then the display is 'greyed out' and a message saying "Controls linked to path master" appears meaning that no controls are available from this page.

Fig 12, shows the Compressor/Limiter page for the L/R only spill leg of a 5.1.4 path which has not been made independent.

Note: the Gain Reduction bargraphs on the left side of the contents area will show the meter values for L/R only however no controls are available as they are controlled from its master.

FIG 12 - NON-INDEPENDENT COMP/LIM 1 FOR L/R ONLY LEG OF A 5.1.4 PATH



Wild Assign Panel - Dynamics 1

The wild assign panel in Fig 13 is shown displaying the Dynamics 1 control parameters. Each column/row is identified by a position overlay as shown.

Note: this panel is not used for Sidechain Source selection.

The Wild Assign Panel controls for Dynamics 1 are arranged in 3 blocks:-

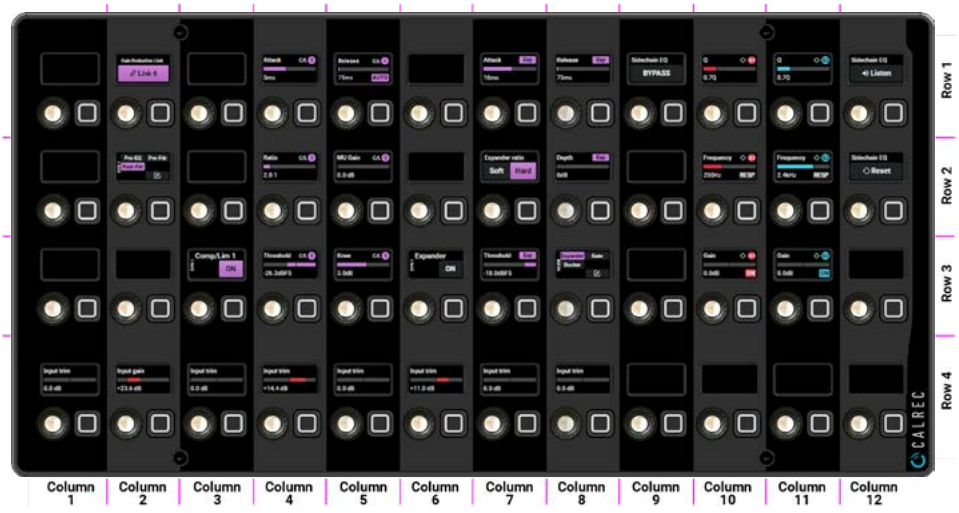
Column 2 shows the Gain Reduction Links and the Dynamics 1 path position.

Columns 3, 4 & 5 are controlling and displaying the parameters for Compressor/Limiter 1's:-On/Off, Threshold, Ratio, Attack, Release, Make Up Gain and Knee.

Columns 6, 7 & 8 are controlling and displaying the parameters for the Expander/Gate/Ducker's:- On/Off, Threshold, Ratio (Expander Only), Attack, Release, Delay (Gate & Ducker Only), Depth and Expander/Gate/Ducker process selector.

Column 9 allows the user to Bypass the Sidechain Equaliser.

FIG 13 - WILD ASSIGN PANEL DISPLAYING DYNAMICS 1 CONTROLS



Columns 10 & 11 are controlling and displaying the parameters for the Sidechain Equaliser's:- On/Off, Gain, RESPonse selector, Frequency & Q.

Columns 12 allows the user to Listen to the Sidechain EQ and also to 'Reset' the Sidechain EQ back to its default values.

Note: Channels have 2 bands of sidechain equaliser, whereas Groups and Mains have 1 band of sidechain equaliser each.

Dynamics 1 & 2 Parameters

Fig 14 on the next page shows the parameter ranges for the Dynamics processors including :-

Compressor/Limiter 1, Expander, Gate and Ducker in Dynamics 1 and the Compressor/Limiter 2 in Dynamics 2.

FIG 14 - DYNAMICS PARAMETERS

	Compressors both C/L 1 & C/L 2
Threshold	0dBFS to -48dBFS
Release	75ms to 4s + Auto
Ratio	1:1 up to 4:1 in 0.1 steps, 4:1 up to 10:1 in 0.2 steps, 10:1 up to 20:1 in 1.0 steps, 20:1, 25:1, 30:1, 35:1, 40:1, 50:1 (Limiter)
Attack	50µs to 200ms (5ms default)
Make Up Gain	0dB to 20dB
Knee	24dB(soft) to 0dB (Hard)

	Expander
Threshold	-6dBFS to -60dBFS with 6dB of built-in hysteresis
Release	75ms to 4s + Auto
Depth	0dB to 40dB
Ratio	2:1 and Var (variable according to level)
Attack	50µs to 200ms (16ms default)

	Gate
Threshold	-6dBFS to -60dBFS with 6dB of built-in hysteresis
Release	75ms to 4s + Auto
Depth	0dB to 40dB
Attack	50µs to 200ms (16ms default)
Delay	0s to 1s

	Ducker
Threshold	-6dBFS to -60dBFS with 6dB of built-in hysteresis
Release	75ms to 4s + Auto
Depth	0dB to 40dB
Attack	50µs to 200ms (16ms default)
Delay	0s to 1s

PROCESSING INDEPENDENCE OVERVIEW

Processing independence
By default on a stereo, surround or immersive path, any processing is applied to all legs in the path.

One set of master controls set the processing applied to all legs. However, processing can be made independent for an individual leg of a stereo, surround or immersive signal, for example the C leg of a 5.1 path.

A stereo, surround or immersive path which is being processed is referred to as the stereo, surround or immersive master.

EQ independence
By default, the EQ set on the stereo, surround or immersive master is applied to all legs of the path except the LFE leg.

Independence can be set for each band of EQ for each Leg of a multichannel path with the LFE leg of a surround channel set to be independent by default.

To apply independent EQ to an individual leg of the path, first access the required leg on the spill faders, then see **"Equaliser Independence Controls for Stereo, Surround & Immersive Paths" on page 48** for further information on this process.

Once made independent, the EQ band can now be adjusted to process the accessed leg independently from the assigned stereo, surround or immersive master. EQ bands that are not made independent will still be following the stereo, surround or immersive master.

Adjustments to EQ bands still following the surround master will also affect all other non-independent legs in the path.

Note: switching off the Equaliser independence of an EQ band restores its settings from its Master's values

.

Dynamics independence
By default, the Dynamics settings on the stereo, surround or immersive master is applied to all legs of the path except the LFE leg on surround and immersive paths

Dynamics of individual legs can be made independent from the stereo, surround or immersive master in two ways:-

The independence over dynamics settings for the accessed stereo, surround or immersive element are switched for control and sidechain independence for stereo, surround and immersive path legs.

The first way to make a given leg e.g. LFE dynamics processing independent is to make the gain reduction independent.

Under normal circumstances, any leg of the stereo, surround or immersive signal which crosses the threshold first determines the amount of processing to be applied to all legs equally. For example, if the C leg has the highest level and is the only leg to cross the compressor threshold, it will have a certain amount of gain reduction applied to it. This same amount of gain reduction is also applied to all other legs even if they didn't cross the threshold. This keeps the relative balance of the sound field intact.

By making the dynamics gain reduction linking independent for a given leg, that leg will only have gain reduction applied when it crosses the threshold itself. The control values remain common with the stereo, surround or immersive master, but the leg will be processed independently.

The second way to make dynamics processing independent is to make the control values independent for a given leg. This would mean that any leg in the stereo, surround or immersive master can have different dynamics controls. If the dynamics linking is not made independent, the paths would be processed according to the first path to cross the threshold, but their thresholds and other parameters may be set independently.

It is possible to have both dynamics linking independence and control independence set for individual legs. For example, a 5.1 surround group or main path may contain a 5.1 sports mix with a commentator in the C leg, and crowd, music and effects signals in other legs.

Using the Argo it is possible to compress the commentator independently from the signal in the 5.1 surround legs.

This provides a very flexible processing section, able to handle almost all situations with ease.

When gain reductions are linked, but control is independent, different dynamics parameters, such as threshold and ratio can be set for the elements, but the same amount of gain reduction will be applied to all gain reduction linked elements if the audio on any of them crosses their threshold settings.

This allows for different dynamics settings to be applied to each element whilst maintaining the overall mix level between them. If gain reduction independence is set for an element, gain reduction will only ever be applied to that element if the audio crosses its own threshold settings.

As well as EQ & dynamics, other settings can be applied to elements of a stereo, surround or immersive path that do not require an independence setting, such as input gain and routing. These parameters can simply be selected or adjusted whilst the stereo, surround or immersive element is the currently accessed path.

By default the LFE leg of a surround or immersive path has independent EQ and dynamics from the surround or immersive master.

Note: switching off the Dynamics Independence for that control restores its settings from its Master's values.

DYNAMICS 2

Every Channel input, Group bus, Main bus, Aux bus and Track bus have 2 Dynamics processors available to them. This Dynamics 2 processor can be placed Pre EQ/Pre Fader or Post Fader and either run standalone or be linked to any of the eight Gain Reduction buses available.

The **Processing>Dynamics 2** page on the touchscreen is accessed from either the Modes row of a standard fader panel by first tapping on the Modes Menu then the Processing button and then the Dynamics 2 button as shown in Fig 1, or by tapping on the appropriate icons on the touchscreen. It then displays/controls the Dynamics 2 mode with the same information also shown on the Wild Assign panel see Fig 2. The Dynamics 2 control layout used here is that which is available in the standard mode as shown.

Compressor-Limiter 2

Compressor/Limiters provide controls for reducing and smoothing the dynamic range of an audio signal. Compressors proportionally reduce the gain of a signal as it exceeds a definable threshold. When the compressor is set to be a limiter (by selecting a ratio of 50:1), the input signal must increase by a massive 50dB above the threshold in order for the output to increase by a negligible 1dB. When looking at a dynamics module, any control situated within the function header affects the whole module if not independent.

The gain reduction bargraphs are shown in the image above right, on the left side of the contents area and show the amount of gain reduction being applied to the signal, note that in the case of 5.1 paths and wider, the Lfe (e) leg is made independent by default, so no reduction is applied as shown above right as Lfe has its own independent dynamics controls.

Note: the Dynamics 2 module is a separate compressor-limiter and does not have separate sidechain features.

Compressor/Limiter 1 Controls

After tapping **Processing>Dynamics 1** from the Menu and selecting the Compressor/Limiter from the top of the contents area, the controls can be adjusted in a number of ways:-

From the Touchscreen

- Dragging the sliders left and right for continuous controls.
- Using the + and - buttons at the end of the sliders.
- Using the On-Screen buttons to select switch functions e.g. On/Off.
- Dragging the numbered bands with their control circles on the graph.

The resultant numerical values are shown in the top right hand corner of each control and also reflected on the graph.

FIG 1 - DYNAMICS 2 PROCESSING MODE SELECTED FROM MODES ROW.

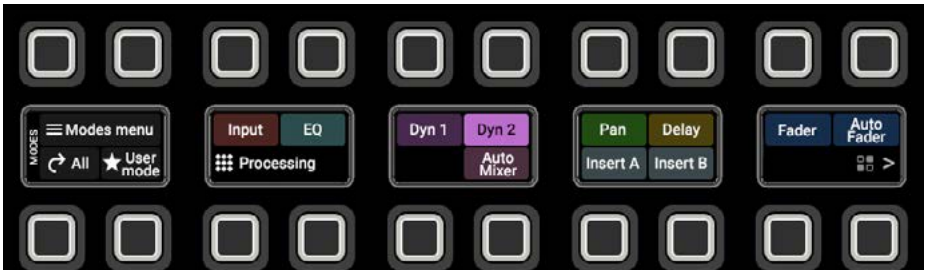
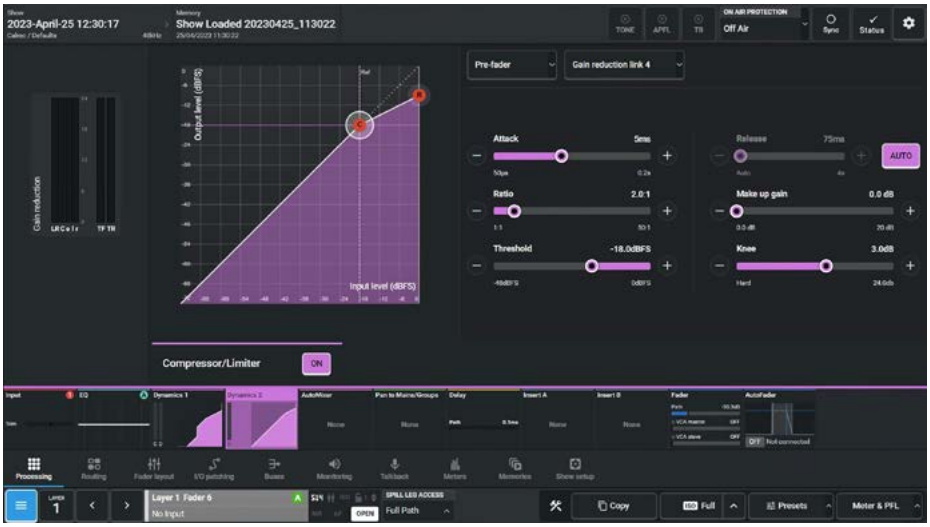


FIG 2 - DYNAMICS 2 CONTROLS ON TOUCHSCREEN & WILD ASSIGN PANEL



From the Wild Assign Panel

- Moving the Rotary controls round to the left or right.
- Using the button next to the rotary control to switch functions On or Off.
- Pressing the top of the rotary controls down to reset parameters to default.

The resultant numerical values & bargraph are shown in each individual TFT on the Wild Assign Panel.

Dynamics 2 Position in Path
Each Compressor/Limiter module can be inserted either Pre EQ, Pre Fader or Post Fader. Tap on the dynamics position button currently showing 'Post Fader' in the top centre of the screen and select an option as shown in Fig 3.

Note: Dynamics 2's Compressor/Limiter can be placed independently of Dynamics 1 in the Pre EQ, Pre Fader or Post Fader position.

The following controls are available from both the TFT touchscreen and Wild Assign Panel:-

Compressor/Limiter On/Off switch: This is shown at the bottom centre of the contents area it switches the compressor in or out of circuit.

Threshold: The level (dBFS) at which the signal will begin to have its gain reduced.

Ratio: Controls gain reduction once a signal has exceeded the threshold, for example, if the ratio is set at 2:1 and the signal exceeds the threshold by 4dBFS, the gain will be reduced so it exceeds the threshold by only 2dBFS. When set to 50:1, the compressor is acting as a limiter.

Attack: Time taken to reduce the gain to reach the new compressed level. Short attack times enable the compressor to catch transients in the audio feed, whereas increasing the attack time will allow initial transients through but catch later transients. Fast attack times are good for catching transients and possibly stopping clipping but, when an attack time is too fast, signals can sound bad, can have artefacts, etc, so it's probably better to start with a fast attack time then slow the attack time down until it sounds right.

Release: Time taken to remove gain reduction once the signal falls back below the threshold. Short release times can lead to a "pulsing" effect, with only audio peaks being compressed. A longer release time will lead to a smoother effect at the expense of some lower level audio components being compressed.

FIG 3 - DYNAMICS 2 PATH POSITION ON TOUCHSCREEN

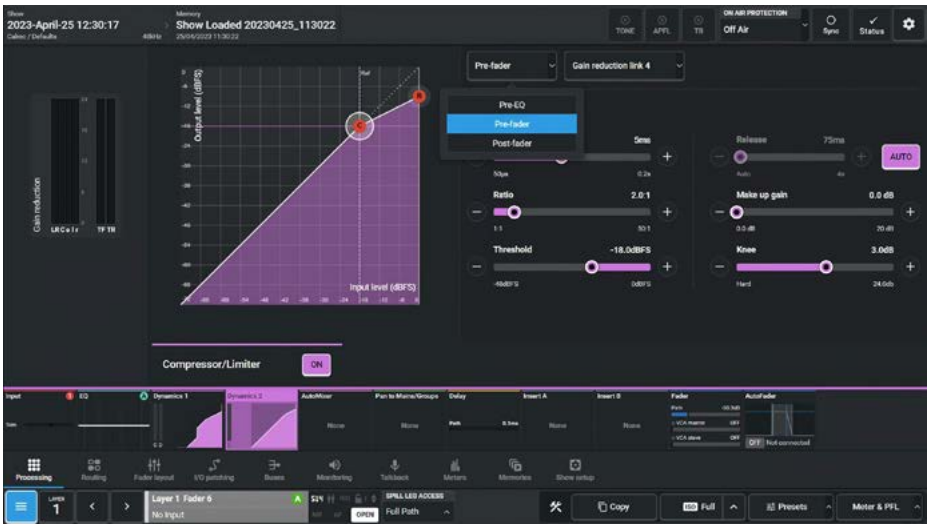
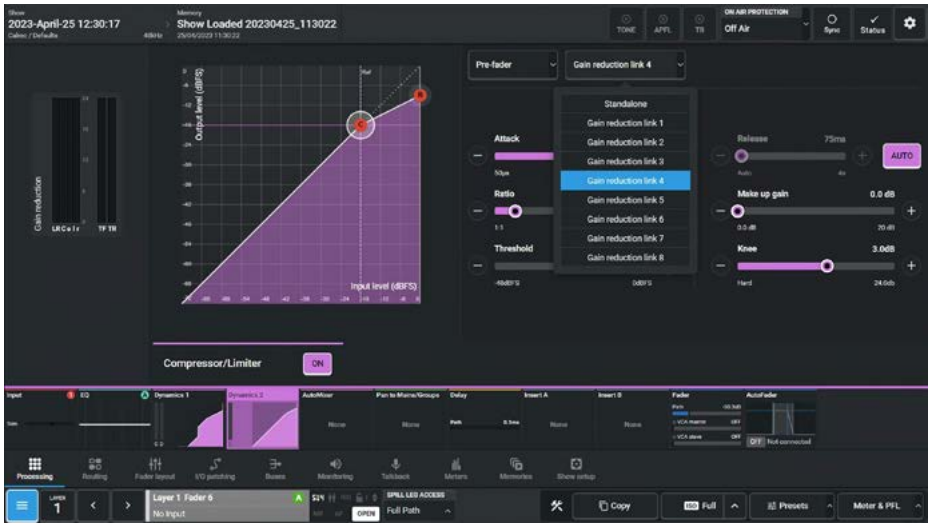


FIG 4 - DYNAMICS 2 GAIN REDUCTION LINKS ON TOUCHSCREEN



Make Up Gain: Allows the gain of the whole compressed signal to be increased by up to 20dB.

Knee: Allows the gain of the whole compressed signal to act on signal transients quickly in the case of a Hard knee, a Soft knee applies compression gradually over a range of up to 24dB.

Gain Reduction Links
By default, dynamics modules operate as standalone units. Tap on the dynamics gain reduction link button currently showing "Standalone' in the side panel and select an option as shown in Fig 3, this allows the module to be put into one of eight gain reduction links.

Gain reduction links allow multiple audio feeds to have the same dynamics processing applied.

Note: the Dynamics 2 Comp/Limiter acts independently and can use different gain reduction links than Dynamics 1.

When multiple paths' dynamics modules are set to be part of a gain reduction link, the amount of gain reduction applied across the link will always equal that for the signal being affected the most. For example, within a gain reduction link, if one path's signal is causing 5dB of gain reduction and another is causing a reduction of 10dB, all signals within the gain reduction link will have a gain reduction of 10dB applied.

Dynamics 2 Independence Controls for Stereo, Surround & Immersive Paths

For Multichannel paths such as stereo, surround and immersive paths it is possible to apply Dynamics 2 processing independently for:

- each L or R spill leg in a Stereo path
- each LR, C, Lfe, LsRs spill leg in a 5.1 surround path
- each L/R, C, Lfe, Lss/Rss, Lrs/Rrs spill leg in a 7.1 surround path
- each L/R, C, Lfe, Ls/Rs, Ltf/Rtf spill leg in a 5.1.2 immersive path.
- each L/R, C, Lfe, Ls/Rs, Ltf/Rtf, Ltr/Rtr spill leg in a 5.1.4 immersive path.
- each L/R, C, Lfe, Lss/Rss, Lrs/Rrs, Ltf/Rtf spill leg in a 7.1.2 immersive path.
- each L/R, C, Lfe, Lss/Rss, Lrs/Rrs, Ltf/Rtf, Ltb/Rtb spill leg in a 7.1.4 immersive path.

The image in Fig 4 shows the Dynamics 2 Processing Compressor/Limiter page for a 5.1.4 path, in the path footer is shown a drop down box labelled "Spill Leg Access" which normally says 'Full Path'.

Tapping on this opens an independence control table, as shown in Fig 5, which is used to determine which spill leg controls will be made independent of its multichannel master for any of the dynamics controls or gain reduction elements shown down the spill leg Independence column. Sliding any of these switches makes those particular controls and or gain reduction elements for a particular spill leg independent.

Wild Assign Panel - Dynamics 2

The wild assign panel shown in Fig 6, is displaying the Dynamics 2 control parameters with the controls arranged as follows with each column/row being identified by a position overlay as shown.:-

Column 2 allows the user to set the Gain Reduction Links and the path position.

Columns 3, 4 & 5 are controlling and displaying the parameters for Compressor/Limiter 2's:-On/Off, Threshold, Ratio, Attack, Release, Make Up Gain and Knee.

FIG 5 - DYNAMICS 2 MULTICHANNEL INDEPENDENCE ON TOUCHSCREEN

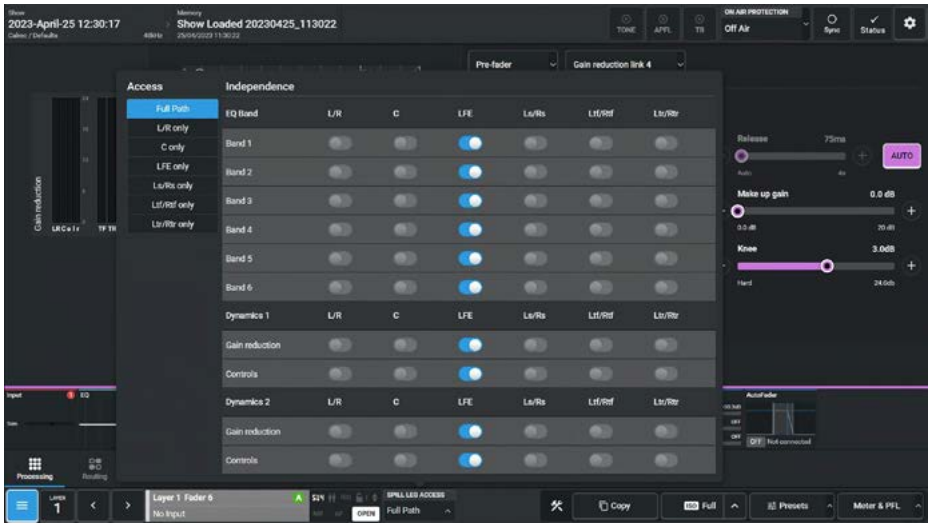


FIG 6 - WILD ASSIGN PANEL DISPLAYING DYNAMICS 2 CONTROLS

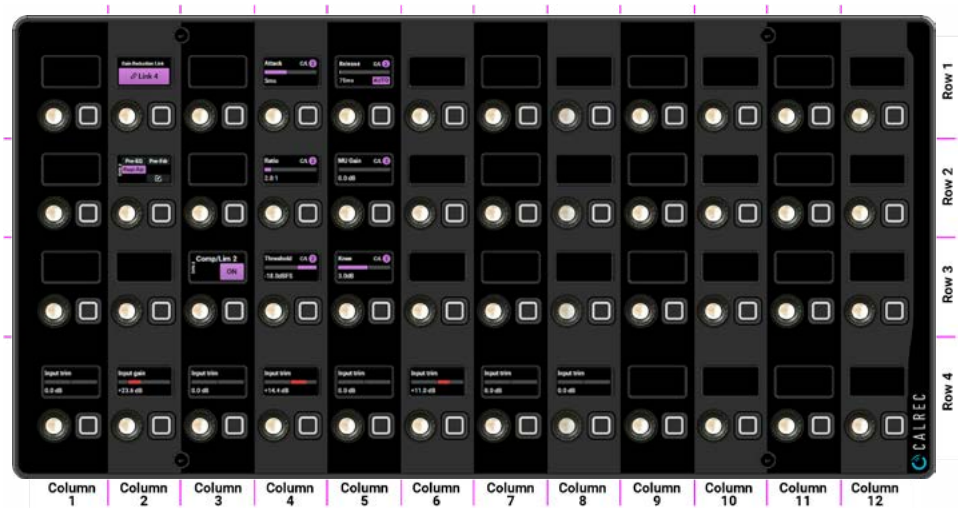
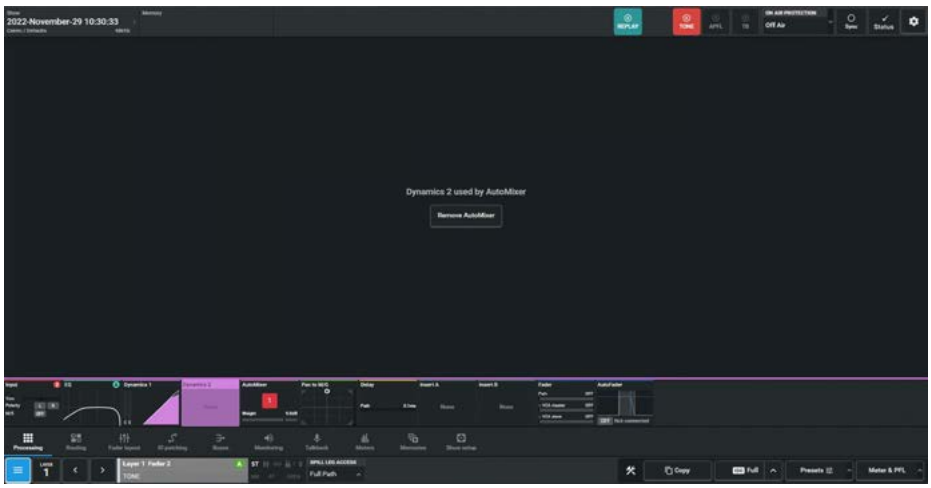


FIG 7 - DYNAMICS 2 PROCESSING USED BY AUTOMIXER - REMOVE AUTOMIXER



Dynamics 2 - Remove AutoMixer

The Automixer function replaces the Dynamics 2 Compressor/Limiter process and paths assigned to automixer.

If the AutoMixer is no longer required tapping on the 'Remove AutoMixer' button shown in Fig 7 restores the Dynamics 2 function.

AUTOMIXER

Automixers are designed to control audio levels for shows where there are multiple guests or presenters talking together. Automixers adjust the individual microphone levels automatically and dynamically in order to pick out the people speaking and to reduce the level of people that are not speaking, whilst maintaining consistent overall mix and ambient levels. In reality, Automixers only ever apply attenuation, signals are never actually boosted.

The **Processing>AutoMixer** page on the touchscreen is accessed from either the Modes row of a standard fader panel by first tapping on the Modes Menu then the Processing button and then the AutoMixer button as shown in Fig 1, or by tapping on the appropriate icons on the touchscreen. It then displays/controls the AutoMixer mode with the same information also shown on the Wild Assign panel see Fig 2.

Eight Automixers are available to Argo and each can be applied to automatically mix the levels of a selection of Mono or Stereo Channels and Groups.

The Automixer function replaces the Dynamics 2 Compressor/Limiter process and paths assigned to automixer control cannot use the Dynamics 2 processor for normal compression/limiting at the same time, however the Dynamics 1 processor is still available for full use as compressor/limiter and expander or gate or ducker.

Accessing AutoMixers

Go to the **Processing>AutoMixer** submenu, if no AutoMixer process is present on the Mono or Stereo path, a selection will appear as shown in Fig 3 on the next page. If an Automixer has been allocated the Automixer will appear as shown in Fig 2 on both the touchscreen and the Wild Assign Panel.

Applying AutoMixers to Paths

1. Access the mono or stereo channel or group.
2. Tap the **Processing>AutoMixer** tab.
3. Tap to choose an Automixer bus for this path: 1 thru 8, see Fig 3.
4. Check the Automixer Contribution is turned on (it's on by default) see button below gain reduction meter on the left of the screen shown in Fig 2.

Setting Individual Path Weighting

AutoMixers calculate the ratios of path audio levels to the sum of all path levels to which the AutoMixer has been applied.

Weighting can be applied individually to each path—the higher the weighting, the more prominence is given to that path in the ratio calculation, giving it more prominence within the mix.

FIG 1 - AUTOMIXER PROCESSING MODE SELECTED FROM MODES ROW.

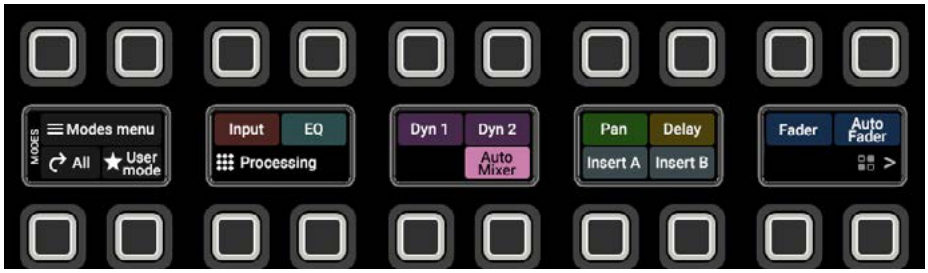
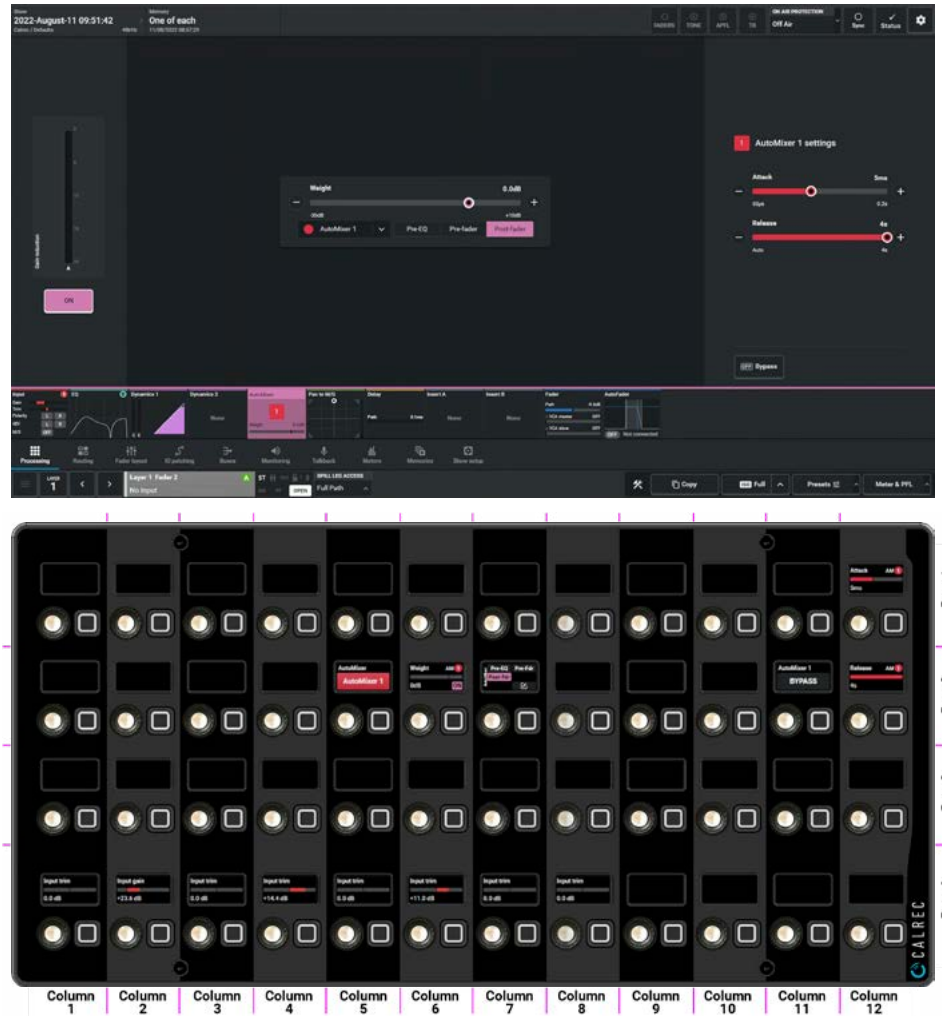


FIG 2 - AUTOMIXER CONTROLS ON TOUCHSCREEN & WILD ASSIGN PANEL



The following controls are available from both the TFT touchscreen and Wild Assign Panel:-

Weight: This is used to calculate the level of attention applied to the path. The higher the weighting from -30dB to +10dB, the more prominent the path will be in the resulting mix.

AutoMixer On/Off: This switch underneath the Gain Reduction meter turns the AutoMixer Off or On for this particular path.

Position Buttons: This sets the position of the AutoMixer in the audio path processing. The AutoMixer can be applied Pre EQ, Pre fader or Post fader as shown in the image above right just below the Weighting slider.

Gain reduction meter: This is provided so the user can see how much gain reduction is being applied.

Remove/Select another Automixer
To remove select '**No AutoMixer**' or pick one of the other Automixers from the AutoMixer dropdown as shown in Fig 4. Alternatively tap on the '**Remove The AutoMixer**' button on the Dynamics 2 page. This will remove the AutoMixer and allow the user to again control the Dynamics 2 processing on that path.

FIG 3 - SELECT AUTOMIXER ON TOUCHSCREEN

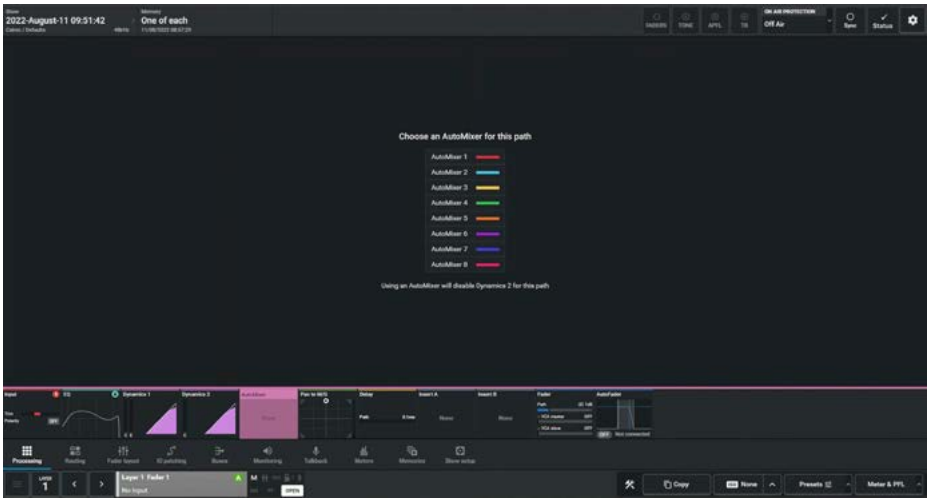
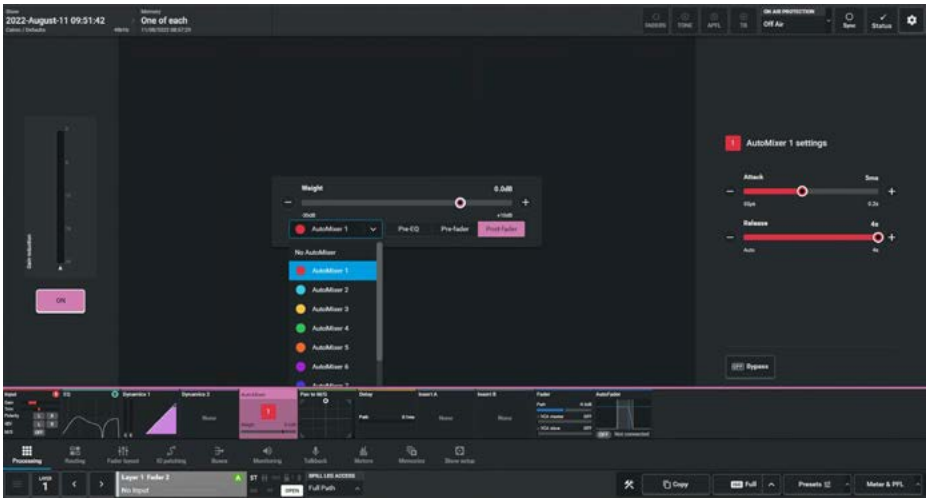


FIG 4 - AUTOMIXER SELECTION POP-UP INCLUDING NO AUTOMIXER OPTION



AutoMixer Global Control
Each of the Argo eight AutoMixer buses have their own global attack, release and bypass controls. Attack and release are used to smooth out the signals prior to the level ratio calculation being made. A compromise must be made between fast attack and release, which leads to a more erratic but fast-acting functioning, and slow attack and release times, which leads to a slower acting but smoother functioning. The relevant AutoMixer global controls are shown alongside the AutoMixer path controls in the right hand side panel as shown in Fig 4.

The 8 AutoMixer global controls also appear in **Show setup>AutoMixers** this allows the user to adjust all the global controls from the same page.

Bypass Button: Tapping the **'Bypass'** button at the bottom of the right side panel, disables that AutoMixer bus for all assigned paths and puts a Bypass flag on the menu icon.

Attack Time: The Attack Time for each AutoMixer can be set between 50us (default) and 0.2s

Release Time: The Release Time for each AutoMixer can be set between 75ms and 4s (default).

If the user wants to momentarily take just a path out of the AutoMixer assignment, the **'AutoMixer Contribution'** On/Off button should be used which can be found underneath the Gain Reduction meter.

Wild Assign Panel - AutoMixer
The wild assign panel in Fig 2 is displaying the AutoMixer 1 control parameters, with the controls arranged as follows with each column/row being identified by a position overlay as shown :-

Column 5 shows which AutoMixer is being used for this mono or stereo path.

Columns 6 & 7 are controlling the Weight & Contribution On/Off button and Position of the contribution in the Audio chain.

Column 11 controls the AutoMixer Bypass.

Column 12 controls the Global Attack and Release times.

PAN

Pan processing provides individual pan controls from each channel, group or main. The pan controls in this page are available for panning to mains and groups. Panning to auxes and tracks is handled in the Aux Sends & Pan and the Track Sends & Pan pages.

The **Processing>Pan** page on the touchscreen is accessed from either the Modes row of a standard fader panel by first tapping on the Modes Menu then the Processing button and then the Pan button as shown in Fig 1, or by tapping on the appropriate icons on the touchscreen. It then displays/controls the Pan mode with the same information also shown on the Wild Assign panel see Fig 2.

This page provides flexible 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 path's contribution to its destination bus. It is therefore possible to have different pan positions set when sending to multiple buses, 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 buses. 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 bus it is sent to.

FIG 1 - PAN PROCESSING MODE SELECTED FROM MODES ROW.

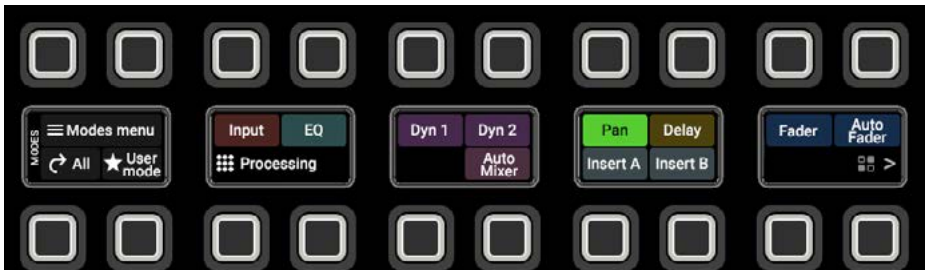
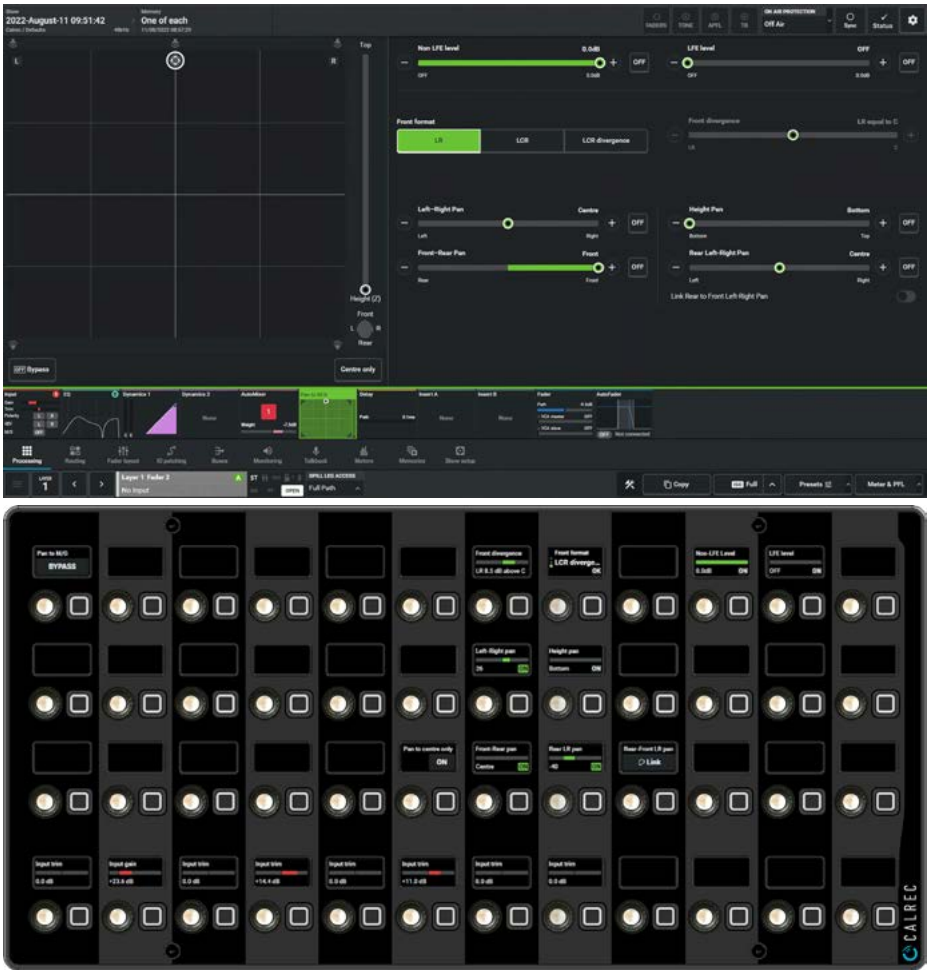


FIG 2 - PAN CONTROLS IN LR MODE ON TOUCHSCREEN & WILD ASSIGN PANEL



Pan Controls

Depending on the width of the current path, and the width of the destination bus, different pan controls will be made available on the surface. For example when sending a mono path to a mono bus, there will be no controls available.

When sending a mono path to a surround or immersive bus, a great deal more controls will be presented that allow control over mono placement in a surround or immersive field.

After tapping **Processing>Pan** from the Processing section of the Menu, the controls can be adjusted in a number of ways:-

From the Touchscreen

- Dragging the sliders left and right for continuous controls.
- Using the + and - buttons at the end of the sliders.
- Using the On-Screen buttons to select switch functions e.g. On/Off.
- Dragging the puck control circle around the X-Y axes on the graph for left, right, front, rear positioning.
- Dragging the Height control circle up and down the Z axis for height positioning.

The resultant numerical values are shown in the top right hand corner of each control and also reflected on the graph.

From the Wild Assign Panel

- Moving the Rotary controls round to the left or right.
- Using the button next to the rotary control to switch functions On or Off.
- Pressing the top of the rotary controls down to reset parameters to default

The resultant numerical values & bargraph are shown in each individual TFT on the Wild Assign Panel.

The following controls are available from both the TFT touchscreen and Wild Assign Panel:- :-

Front Pan: If the Front Format is set to LR the (Front)Left-Right pan allows positioning of the signal in the L and R speakers. The button just to the right of the Left Right pan control, switches the Left-Right Pan position in or out, as shown in Fig 2 when out of circuit (OFF) and as shown in Fig 3 where the (ON) is lit when in circuit.

The speaker symbols also illuminate around the X-Y display to show active panning options, in this case the L, R & C speaker symbols. To the right of the X-Y and Z displays, Fig 3 shows a button selector defining the Front Pan Format with 3 options LR, LCR and LCR Divergence. The Front L-R and L-C-R buttons switches the Front Pan control between L-R panning and L-C-R panning.

Front Divergence: With Front L-C-R Divergence selected the user can then control the spread of the signal ranging from fully converged in the C speaker, through equal level in L, R & C, to full divergence with no level in the C speaker and full level in the L & R speakers.

The divergence slider on the Touchscreen or the rotary controls on the Wild Assign panel only become active in front divergence mode, see Figs 6 & 7.

FIG 3 - PAN IN LCR MODE ON TOUCHSCREEN

FIG 4 - PAN IN LCR DIVERGENCE MODE ON TOUCHSCREEN

Front-Rear pan: This control varies the position of the signal between the front and rear speakers.

The use of this control in combination with the Left-Right Pan control allows the user to steer and place the source audio in the sound field as represented by the panning control/display to the left of the screen.

The button just to the right of the Front-Rear pan control switches the Front-Rear Pan position in or out of circuit, see Fig 4.

Bypass M&G Pan only: When this switch underneath the X-Y display area is active all the various pan controls are bypassed as though they had been switched out of circuit as shown.

Note: this also displays a Bypass flag on the sub-menu icon as shown in Fig 4.

Lfe Level: Lfe varies the level sent to the Lfe speaker. When this control is switched out, no signal is sent to the Lfe. For all legs other than Lfe itself the Lfe level is off by default to prevent them adding audio to the Lfe leg unintentionally, but can be added in as required to the LFE speaker. When this control is switched out, no signal is sent to the LFE.

Non-Lfe Level: The level sent to all channels other than the Lfe channel can be varied with the Non-Lfe control if switched in circuit.

When this control is switched out (and it is by default) and the signal is panned to one or more channels other than the Lfe, the signal is sent at full level.

Note: the Non-Lfe control is turned on but set at the off level (by default) when an Lfe leg is being independently controlled to prevent Lfe audio being added to the other legs unintentionally.

Centre only: This sets the signal to appear only in the centre speaker. It effectively overrides all pan positions, and a message showing that 'No panning controls are available while centre only is enabled' is displayed, see Fig 5.

"Puck" Control: In addition to using the pan controls' sliders and switches, the pan position can be controlled by dragging the puck around the X-Y display area on the touchscreen.

The area available for panning changes depending on the panning format and the speaker symbols around it, show which speakers are being panned between.

When the 'Link Rear to Front Left-Right Pan' is in circuit, as shown in Figs 3 & 4, the puck and the green dot are shown in the same position and act in a true X-Y manner.

Note: the behaviour changes if the Rear Left-Right pan is NOT linked to the Front Left-Right pan as shown in Fig 6.

Independent Rear Left-Right Pan: The Rear Left-Right Pan control, when NOT linked to the Front Left-Right Pan control with the highlighted slider shown in Fig 6 allows the user to vary the Rear Left-Right position to be set independently from that of the Front Left -Right Position.

FIG 5 - PAN IN CENTRE ONLY MODE ON TOUCHSCREEN

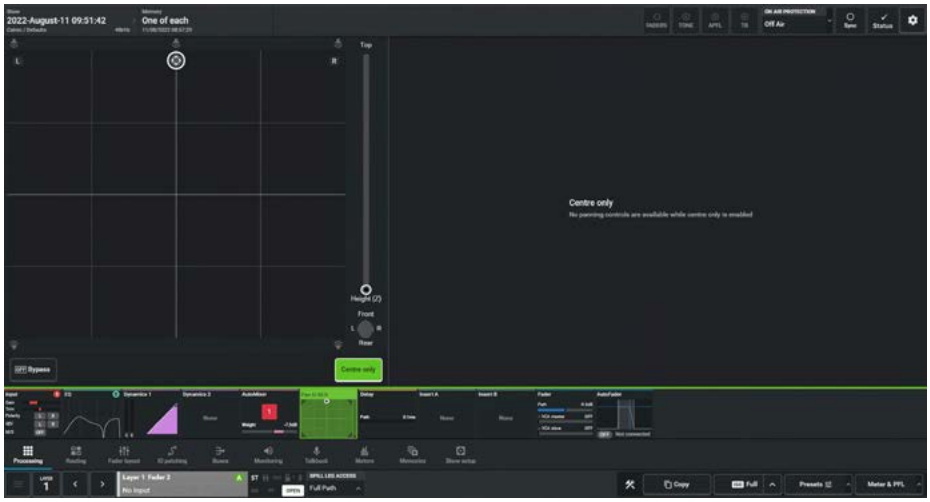
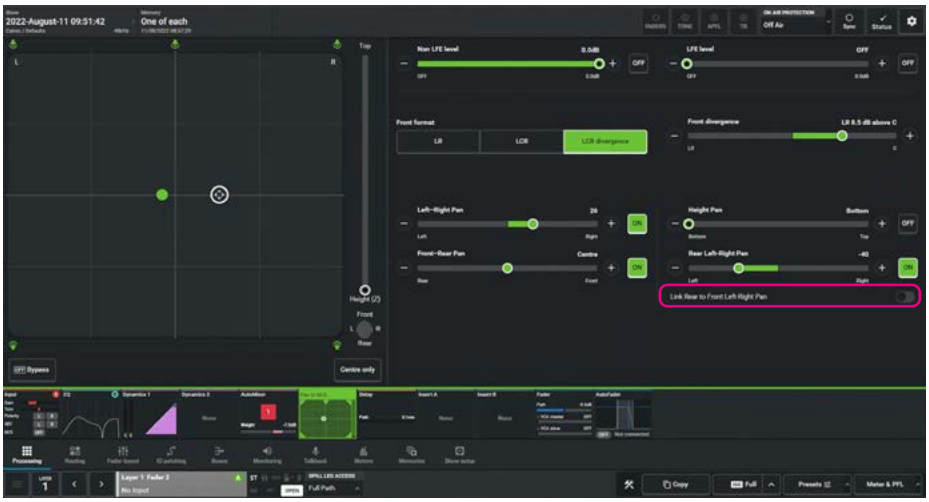


FIG 6 - INDEPENDENT REAR LEFT-RIGHT PAN MODE ON TOUCHSCREEN



The use of this control in combination with the Left-Right Pan and the Front-Rear Pan control allows the user to steer and place the source audio in the sound field as represented by the control/display '**dot**' shown on the left of the screen.

Note: the different positions of the 'puck' and 'dot' although the puck is showing the X-Y position the green dot is showing the actual pan position as shown in Fig 6.

Height Panning

With the introduction of Immersive path formats in Argo, additional position control of the signal's height is also required.

The combination of Left-Right (X), Front-Back (Y), and now Bottom-Top (Z) pan position controls allows the user to pan the signal in a 3-dimensional space (X,Y,Z).

The button just to the right of the Height pan control, switches the Height Pan position in or out, as shown in Fig 7 on the next page.

When the Height Pan switch is on, vertical height panning between the surround speakers at head height and the speakers placed typically at ceiling height as top left and right front speakers for 5.1.2, 7.1.2 and 0.0.2 (height only) formats or the speakers placed as top left and right front and top left and right rear speakers for 5.1.4, 7.1.4 and 0.0.4 (height only) formats is enabled.

In addition to using the Height pan controls' sliders and switches, the area just to the right of the X-Y display also contains a Height (Z) control which when dragged up & down provides Height pan.

FIG 7 - HEIGHT PAN MODE ON TOUCHSCREEN

Wild Assign Panel - Pan

The Wild Assign panel in Fig 8 is displaying the Pan control parameters with the controls arranged as follows with each column/row being identified by a position overlay as shown :-

Column 1's top row control is a Bypass switch where all the various pan controls are bypassed as though they had been switched out of circuit as shown.

Column 6's 3rd row control is a Centre only ON switch, this sets the signal to appear only in the centre speaker. It effectively overrides all pan positions.

Columns 7 displays and controls the parameters for:-
Front Divergence,
Left-Right Pan and its On/Off switch,
Front-Rear Pan and its On/Off switch,

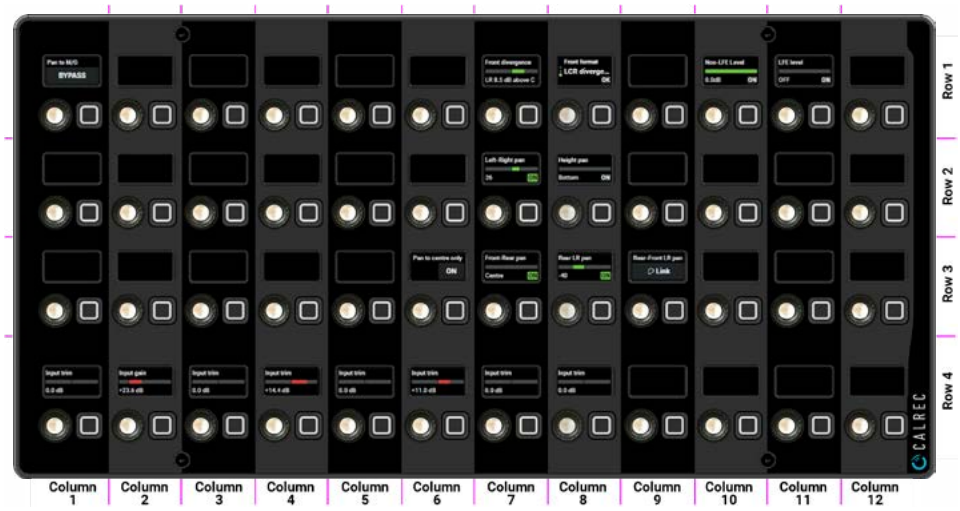
Columns 8 displays and controls the parameters for:-
Front format control switching between L-R, L-C-R and L-C-R divergence,
Height Pan (Z) and its On/Off switch,
Rear L-R Pan and its On/Off switch.

Column 9's 3rd row control is the a Rear -Front L-R Pan Link button.

Column 10's top row control is used to set the Non LFE level and its On/Off switch.

Column 11's top row control is used to set the LFE level and its On/Off switch.

FIG 8 - WILD ASSIGN PANEL DISPLAYING PAN CONTROLS



Pan Independence Controls for Stereo, Surround & Immersive Paths

Using the independence drop down as shown previously in the EQ and Dynamics sections, it is possible to access each of the spill legs for the stereo paths, 5.1 & 7.1 surround paths and the 5.1.2, 5.1.4, 7.1.2 & 7.1.4 immersive paths, such as the 7.1.4 immersive path shown above right.

This allows parameter changes to be made on each spill leg. In the left of the path footer is shown a drop down box labelled "Spill Leg Access" which says 'Full Path'.

When shown as Full Path it is not possible to apply pan to each Mono leg of a Stereo channel and for Surround or Immersive channels, no pan controls are made available, however accessing each of the Spill legs allows the user to pan those legs to the required position in the destination formats.

Access Spill legs for Panning

Tapping on the drop down box labelled "Spill Leg Access" which normally says 'Full Path' opens the independence control table, which is used to determine which spill leg controls will be made independent.

Clicking on a mono spill leg such as 'C' or 'Lfe' or clicking on a stereo spill leg such as 'L/R only' enables the pan controls allowing the user to pan the selected spill legs anywhere in the 3-dimensional space i.e. X, Y & Z panning.

DELAY

Argo has three types of delay available:- Input Delays, Path Delay and Output/Direct Output Delays at the same width or downmixed, which can be placed in various positions in the Audio Chain.
The **Processing>Delay** page on the touchscreen is accessed from either the Modes row of a standard fader panel by first tapping on the Modes Menu then the Processing button and then the Delay button as shown in Fig 1, or by tapping on the appropriate icons on the touchscreen. It then displays/controls the Delay mode with the same information also shown on the Wild Assign panel see Fig 2.

- Input delay: up to 5.4s available per path from an input delay pool of up to 256 mono legs, for example, when assigning input delay to a 5.1 path, six of the mono legs are used.
- Path delay: up to 5.4s available per path always available for all paths, which can be placed Pre-EQ, Pre-fader or Post-fader
- Output & Direct Output delay: up to 5.4s available per path from an output delay pool of up to 256 mono legs and applied to Groups, Auxes, Mains and Direct Outputs in the same way as the Input delay.

Note: Input, Path and Output delay can be used individually or in combination and the number of input & output delay resources available are shown on the TFT touchscreen.

FIG 1 - DELAY PROCESSING MODE SELECTED FROM MODES ROW.

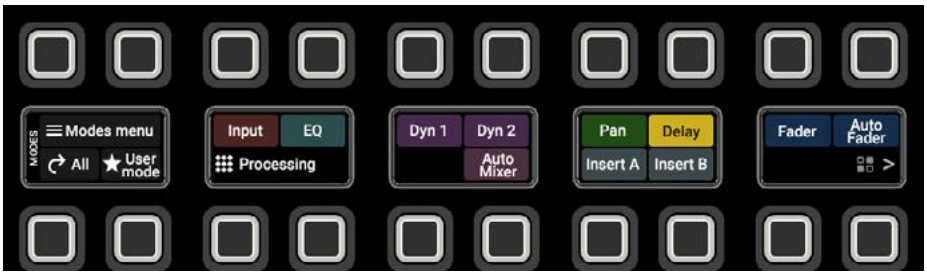
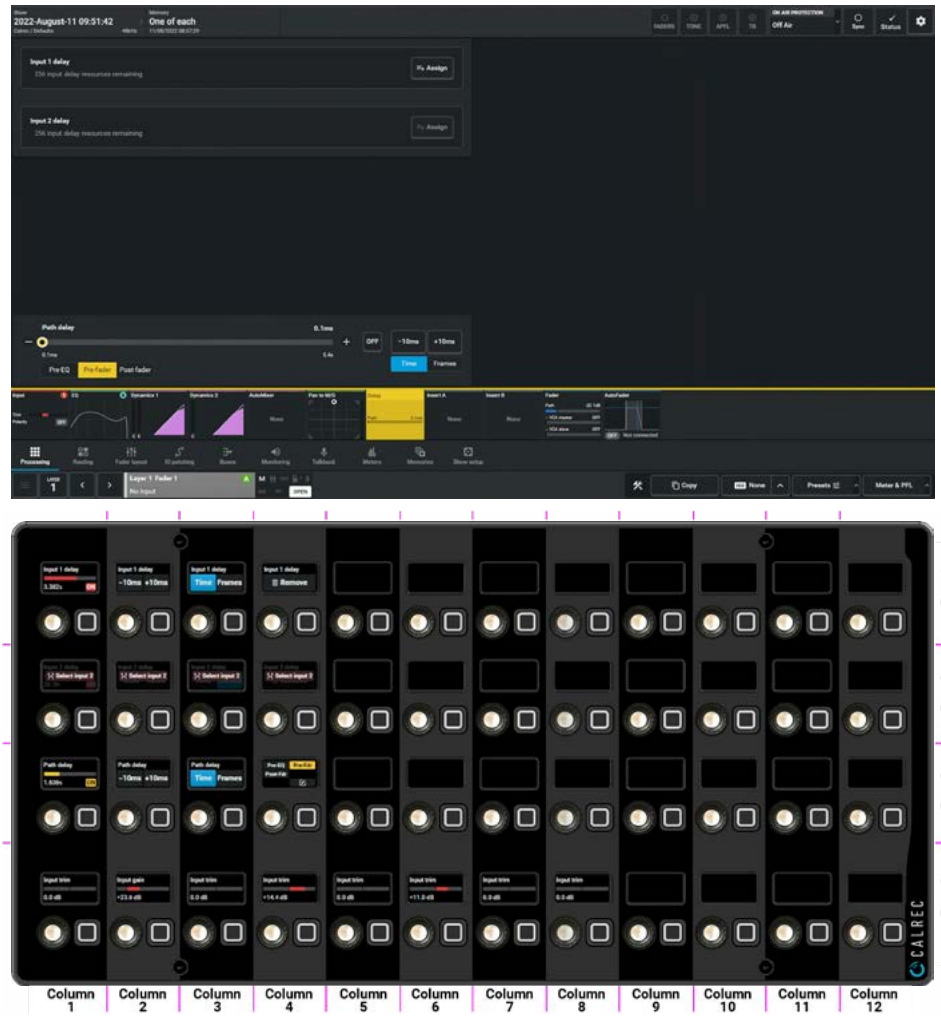


FIG 2 - PATH DELAY CONTROLS ON TOUCHSCREEN & WILD ASSIGN PANEL



Individual Path Delay
The Path Delay control is always available on all Channel, Group, Main, Aux & Track paths and the delay process can be placed using the Position buttons below the Path delay control on the Touchscreen as shown in Fig 1 above.

The three-state button cell allows the signal chain positioning to be changed between Pre-EQ, Pre-fader & Post-fader.

As shown in **"Channel Signal Flow" on page 42,** the Path Delay is inserted at the end of the processing block, after Insert , Dynamics 1 and Dynamics 2.

The pre EQ and post fader sends are situated after the respective Path Delay, but it is worth noting that the pre fader send is situated prior to the pre fader Path Delay.

Input & Output Delay Controls
After tapping **Processing>Delay** from the Menu, the image in Fig 2 is displayed, this shows the Path Delay which is always available and also the Input 1 delay and Input 2 delay unassigned options which can be added by tapping on the Access buttons.

The Delay controls can be adjusted in a number of ways:-

From the Touchscreen
- Dragging the sliders left and right for continuous controls.
- Using the + and - buttons at the end of the sliders.
- Using the On-Screen buttons to select switch functions e.g. On/Off.

The resultant numerical values are shown in the top right hand corner of each control above the bargraph.

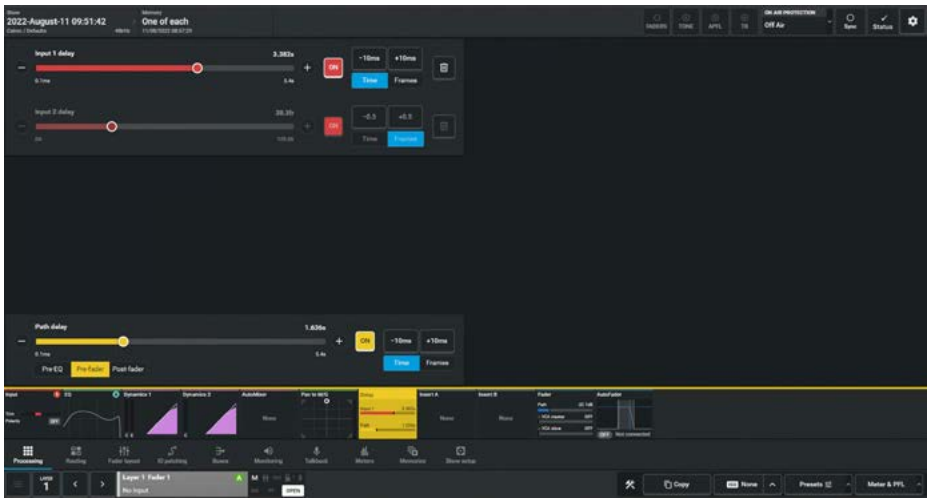
From the Wild Assign Panel
- Moving the Rotary controls round to the left or right.
- Using the button next to the rotary control to switch functions On or Off.
- Pressing the top of the rotary controls down to reset parameters to default.

The resultant numerical values & bargraph are shown in each individual TFT on the Wild Assign Panel.

The image in Fig 3 shows that a mono input channel has had Input 1 & Input 2 delays assigned to it and all 3 delays have been switched on using the slider switch to the right of the delay duration controls.

Note: if the input of the channel is selected to Input 1, the Delay value for Input 2 is also shown but is greyed out and cannot be altered until the user changes to Input 2 and vice versa.

FIG 3 - PATH DELAY, INPUT 1 & INPUT 2 DELAYS ON TOUCHSCREEN



The following controls are available from both the TFT touchscreen and Wild Assign Panel:-

Assign or Remove Delay buttons: The user can tap on the '**Access**' button to assign Input and/or Output /Direct Output delay processing from their respective pools.

If the delay is no longer required the user can tap on the '**Bin**' icon to put that delay resource back to the pool.

Delay Duration: The user can adjust the amount of delay applied to any of the delays between 0.1ms up to 5.4s.

Step Buttons: To the right of each control block are +/- Step buttons with the Step size shown e.g. 10ms or 0.5fr.

Note: this can change depending on the delay units used (Time or Frames) as set by the switches below the Step buttons.

The frame rate in frames per second (fps) will change the delay amount being applied and there are 5 frame rates available:- 23.98 fps, 24 fps, 25 fps (PAL), 29.97 fps (NTSC) and 30 fps, as set in **Show setup>Delay options**.

Path Delay Position: The user can select the position in the audio chain where the Path delay is applied, by tapping on the Pre EQ, Pre Fader or Post Fader buttons under the Path delay control as required.

Delay On/Off Switch: The user can switch in or out the amount of delay being applied to the path, input and output delays with the slider switches just to the right of each delay duration control.

Wild Assign Panel - Input Delay
The wild assign panel in Fig 2 shows the Delay controls for Input & Path delays.

The Delay parameters are arranged in 3 rows across columns 1 to 4 with each column/row being identified by a position overlay as shown the controls are arranged as follows:-

Row 1 - Cell 1 to Cell 4 shows
Input 1 Delay and its On/Off switch.
Input 1 Delay 10ms Delay stepper.
Input 1 Delay Time/Frame switch.
Input 1 Delay Remove Assignment.

Row 2 - Cell 1 to Cell 4 shows the same set of controls for Input 2 as for Input 1, but Input 2 must first be selected to show its delay values.

Row 3 - Cell 1 to Cell 3 shows the same set of controls for Path delay as for Input 1 but, as the Path delay is always present the Path Delay position is shown in Cell 4.

Group and Direct Output Delays
The image in Fig 4 shows a 7.1.4 group with path delay and 4 direct output delays assigned, note that the direct output delays are only available if the user has first created direct outputs for that path.

In this case, four different direct outputs at various widths have been assigned: the original 7.1.4 width, a 5.1 downmix width, a stereo downmix width and a mono downmix width, each of which can have their own delay setting.

The user in this example has decided to work in frames of delay by changing the unit selection from Time to Frames.

Note: Output Delay can be applied to Mains, Auxes & Tracks. Channels and Groups can also have Output delay applied in the form of Direct Outputs.

Wild Assign Panel - Group and Direct Output Delay
The wild assign panel in Fig 5 shows the Delay control parameters for the same 7.1.4 Group Path delay and 4 user assigned Direct Output delays as shown on the touchscreen above it which are:- the 7.1.4 group path delay and the 5.1 surround, stereo and mono downmixed direct output delays.

The Delay parameters are arranged in blocks across rows 1-3 with each column/row being identified by a position overlay as shown :-

FIG 4 - GROUP AND DIRECT OUTPUT DELAY CONTROLS ON TOUCHSCREEN

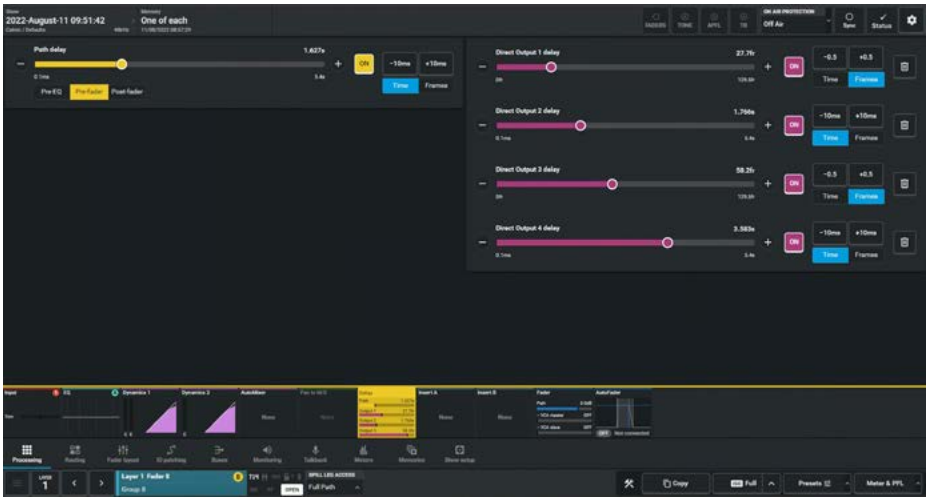
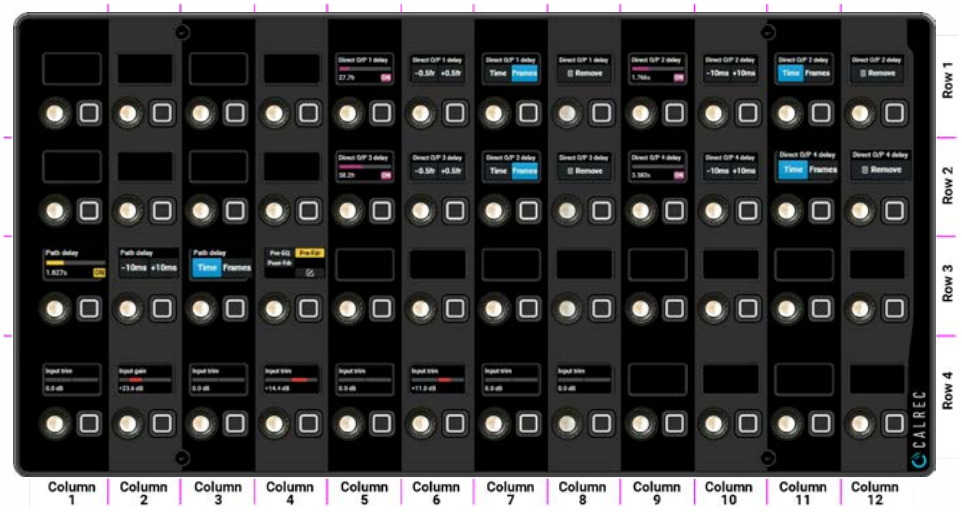


FIG 5 - GROUP AND DIRECT OUTPUT DELAY CONTROLS ON WILD ASSIGN PANEL



Row 1 - Cell 5 to Cell 8 shows a Mono Dir Output Delay and its On/Off switch, Dir Output Delay 10ms Delay stepper, Dir Output Delay Time/Frame switch and Dir Output Delay Remove Switch.

Row 2 - Cell 5 to Cell 8 shows a Stereo Dir Output Delay and its On/Off switch, Dir Output Delay 10ms Delay stepper, Dir Output Delay Time/Frame switch and Dir Output Delay Remove Switch.

Row 1 - Cell 9 to Cell 12 shows a 5.1 Dir Output Delay and its On/Off switch, Dir Output Delay 10ms Delay stepper, Dir Output Delay Time/Frame switch and Dir Output Delay Remove Switch.

Row 2 - Cell 9 to Cell 12 shows a 5.1.4 Dir Output Delay and its On/Off switch, Dir Output Delay 10ms Delay stepper, Dir Output Delay Time/Frame switch and Dir Output Delay Remove Switch.

Row 3 - Cell 1 to Cell 4 - shows the Path Delay and its On/Off switch, Path Delay 10ms Delay stepper, Path Delay Time/Frame switch, and the Path Delay position selector.

Main Outputs and Downmix Delays
The image in Fig 6 shows the delay page for a 5.1.4 - Main Output, on both the TFT Touchscreen and Wild Assign panel.

Apart from the path delay which is always available, the user has also assigned output delays for the 5.1.4 main output, the 5.1 downmix output, the stereo downmix output and the mono downmix output.

Two delay links are available and selecting two or more delays to the same delay link as shown allows the user to control the delay duration from any of the controls in the link to control all the other delays on the same link.

The linking is done relatively, so that if one link member is set to 1.1s and another is set to 2.1s, then adding 0.1s to either changes both to 1.2s & 2.2s respectively.

Note: to have the same delay in each link member, set each output to the same value as the others when not in the link and then put them in the link.

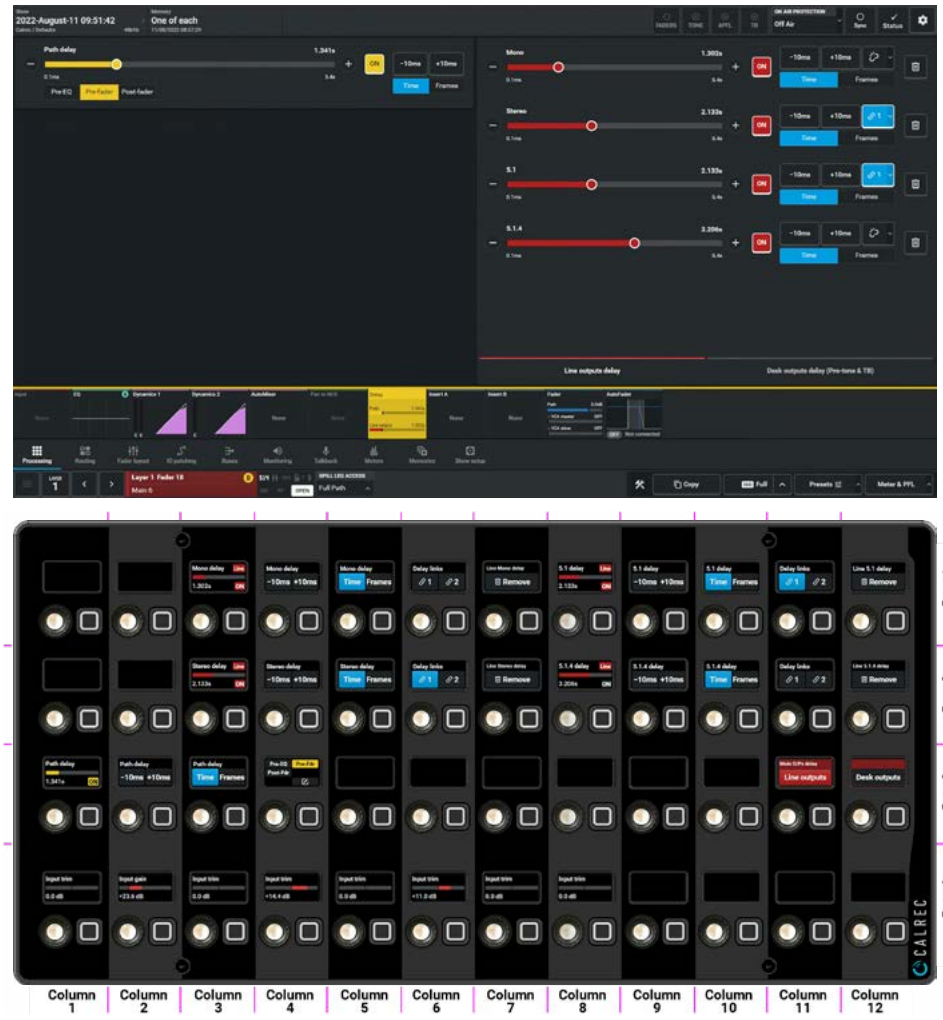
Main Line and Main Desk Outputs
On Argo there are two types of outputs from the main buses, Line Outputs & Desk Outputs. The difference being that Desk Outputs are taken pre-tone & talkback and Line Outputs are post-tone & talkback. The user can access either the Main Line outputs delay set or Main Desk outputs delay set by tapping on the areas above the main output & downmix output delay duration controls.

Note: the Main Line delay outputs and Main Desk delay outputs may be put in the same link if required.

Also note that for all stereo, surround or immersive paths it is not possible to independently alter the delay settings of the spill legs.

Accessing the dropdown box labelled "Spill Leg Access" which normally says 'Full Path' and selecting any of the Independent Spill Legs will show the "No Controls Available" message for the Delay page of a Spill Leg.

FIG 6 - MAIN AND OUTPUT DELAYS ON TOUCHSCREEN & WILD ASSIGN PANEL



Wild Assign Panel - Output Delay
The wild assign panel in Fig 6 shows the Delay control parameters for the same 5.1.4 Main Path delay and 4 user assigned Output delays as shown on the touchscreen above it which are:- the 5.1.4 main path delay and the 5.1 surround, stereo and mono downmixed output delays. The Delay parameters are arranged in blocks across rows 1-3 with each column/row identified by a position overlay as shown :-

Row 1 - Cell 3 to Cell 7 shows a Mono Line Output Delay and its On/Off switch, Line Output Delay 10ms Delay stepper, Line Output Delay Time/Frame switch and Output Delay Links Selector.

Row 2 - Cell 3 to Cell 7 shows a Stereo Line Output Delay and its On/Off switch, Line Output Delay 10ms Delay stepper, Line Output Delay Time/Frame switch and Output Delay Links Selector.

Row 1 - Cell 8 to Cell 12 shows a 5.1 Line Output Delay and its On/Off switch, Line Output Delay 10ms Delay stepper, Line Output Delay Time/Frame switch and Output Delay Links Selector.

Row 2 - Cell 8 to Cell 12 shows a 5.1.4 Line Output Delay and its On/Off switch, Line Output Delay 10ms Delay stepper, Line Output Delay Time/Frame switch and Output Delay Links Selector.

Row 3 - Cell 1 to Cell 4 - shows the Path Delay and its On/Off switch, Path Delay 10ms Delay stepper, Path Delay Time/Frame switch, and the Path Delay position selector.

Row 3 - Cells 11 & 12 - select between the path's Line Output or Desk Output delay sets for display.

INSERTS

Inserts provide a quick way to insert signal processing in the path. Input channels, Groups, Mains, Auxes and Tracks can each have two inserts labelled Insert A & Insert B. The configuration is the same for either.

Configuring inserts is a two step process and the procedure is the same for either of the 2 available inserts.

First any insert send and return resources should be patched to output transmitters and input receivers respectively. Then the insert resources should be connected to the required paths on the surface.

This process is shown in Fig 1. Each insert has a send and a return, with external port connections and Sends and Returns appear in the IO patching screen where they can be patched to and from to external devices.

For Argo there is a pool of up to 1024 Inserts (depending on the DSP pack size) available which can be used for channels, groups, mains, auxes & tracks.

The **Processing>Insert A or Insert B** page on the touchscreen is accessed from either the Modes row of a standard fader panel by first tapping on the Modes Menu then the Processing button and then the Insert A or Insert B button as shown in Fig 2, or by tapping on the appropriate icons on the touchscreen.

It then displays/controls the Delay mode with the same information also shown on the Wild Assign panel see Fig 3.

The **Processing>Insert A** shown in Fig 3 and the **Processing>Insert B** submenus allows the user to allocate inserts from this pool to the various paths.

Note: the Monitor Sends & Returns Inserts are always available . The control for that Insert On/Off is in the monitor section.

Insert Controls on Wild Assign panel
There are just 2 controls per insert on the Wild Assign panel: Insert A or Insert B On or Off and the path position selector for Insert A or Insert B which places the selected insert either Pre-EQ, Pre-fader or Post-fader as shown in the lower section of Fig 3.

FIG 1 - INSERT ABSTRACTION

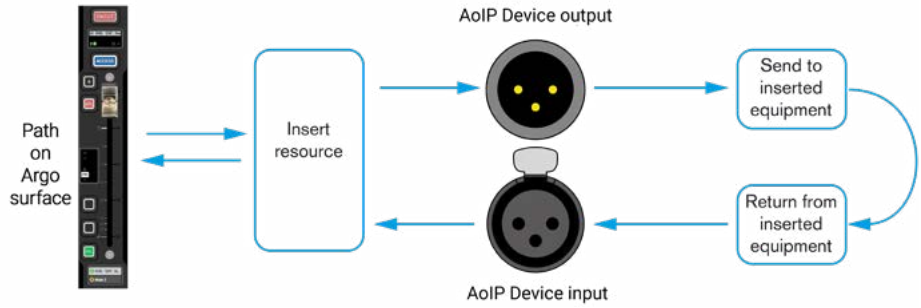


FIG 2 - INSERT A OR B PROCESSING MODE SELECTED FROM MODES ROW.

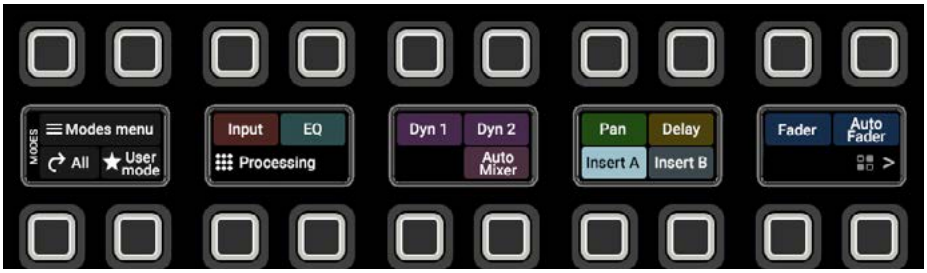
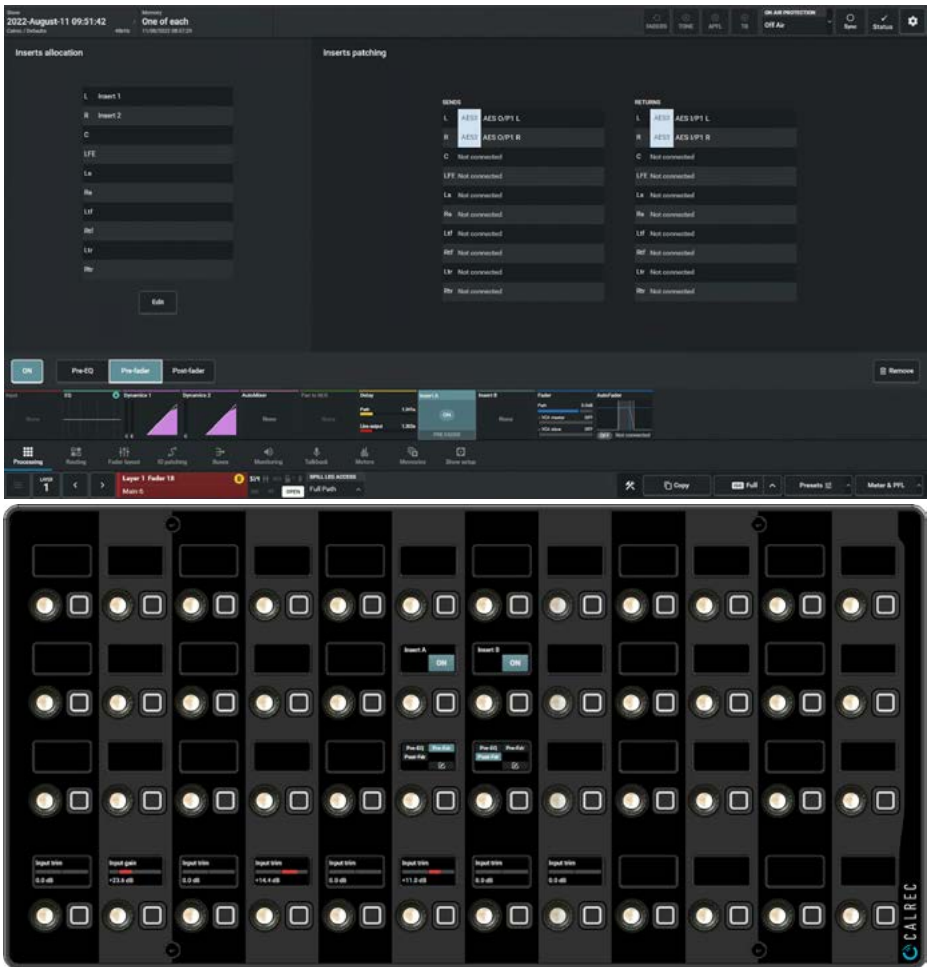


FIG 3 - PATH DELAY CONTROLS ON TOUCHSCREEN & WILD ASSIGN PANEL



Path Inserts

Path inserts are associated with the attached path. If for example, an input channel is attached to a fader and its paths insert is patched to an IO box, then the input channel on that fader is moved to a different fader, the insert patching will move along with it to appear on the faders insert send and return displays.

Add Inserts

Fig 4 shows the '**Add Insert**' button used to access the insert pool, when the **Processing >Insert A** is selected and no Insert has been put in place for this path.

Select Inserts

Fig 5 shows the dialogue box which appears when the '**Add Insert**' or **'Edit'** button (for paths with inserts present) is tapped. This allows the user to select which Insert(s) are used with this path.

The user selects the leg(s) of the path on the left, the inserts to use on the right, then presses the '**Connect**' button below.

The '**Remove**' button disconnects the leg(s) from the A or B Insert and the '**Done**' button exits the dialogue box.

Patching Fader Insert Sends

The image in Fig 6 shows the Fader Insert sends on the left being connected to the required transmitter stream outputs on the right in the **IO Patching>Desk Outputs-Fader insert sends** page.

The available insert resources are shown in the list in Mono format on the left.

The destination output transmitter streams are shown in the list on the right. Select the required insert resources, then the paths to which the insert should be connected and using the '**Connect**' button patch source to destination.

Naming insert resources

Insert resources may be labelled in the '**Port lists**' in the System Settings section of the interface to provide a new name.

Insert resource lists

Insert resources can be assigned to Port Lists. Port Lists provide a way of filtering the available insert resources and can be selected when patching insert resource sends and returns to transmitters/receivers, or connecting insert resources to paths.

FIG 4 - ADD INSERT A

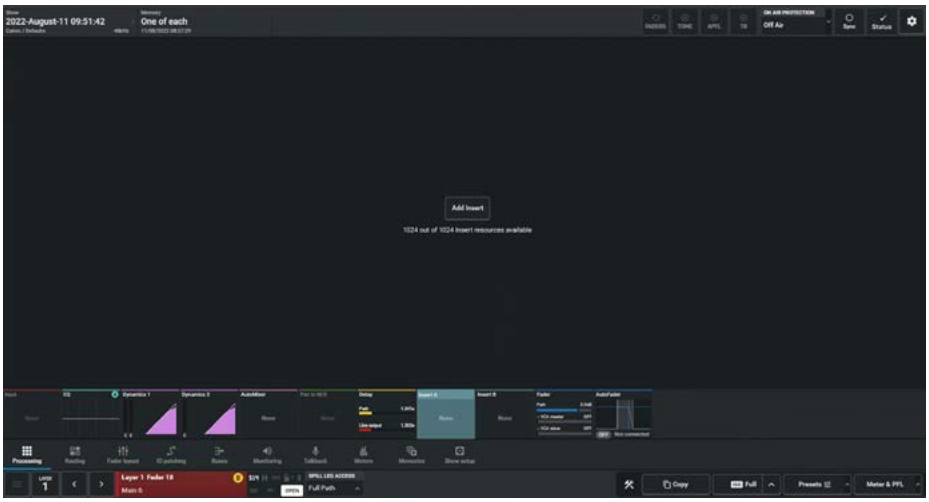


FIG 5 - SELECT INSERTS NUMBERS FOR INSERT A

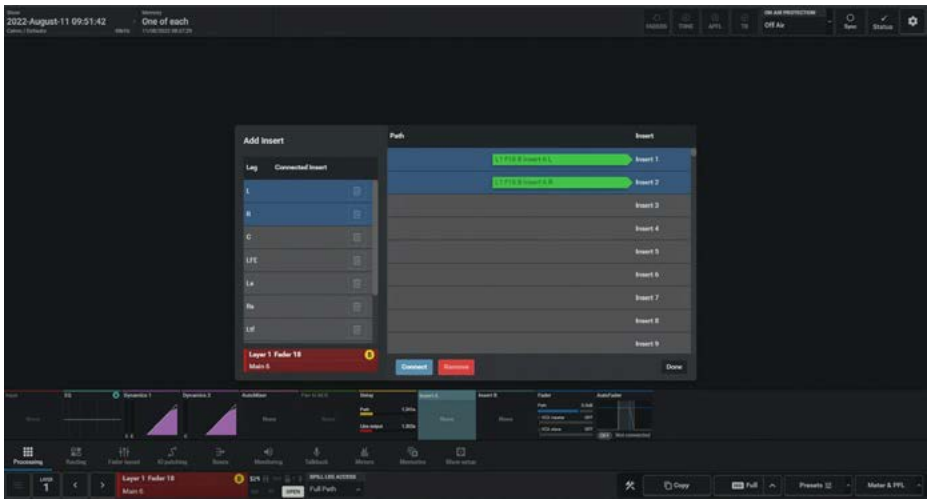
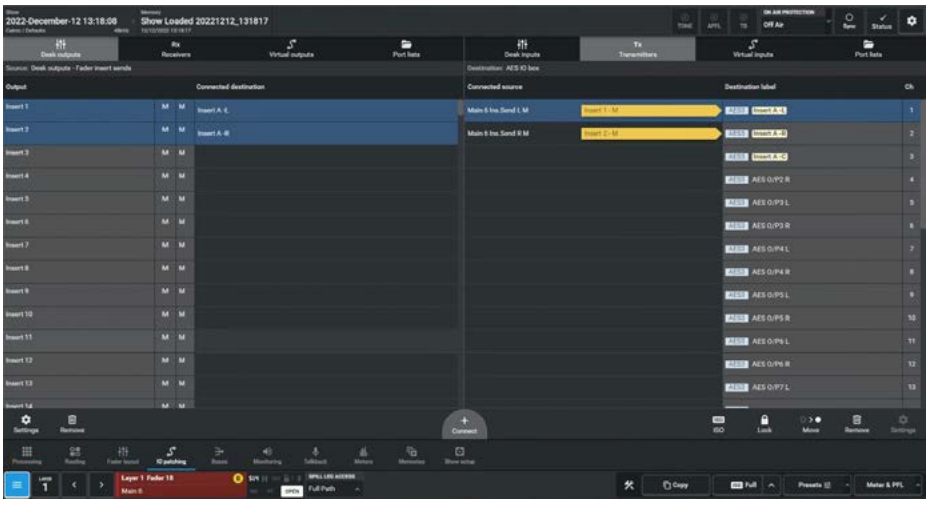


FIG 6 - PATCHING INSERT SENDS



Patching Fader Insert Returns

The image in Fig 7 shows the Fader Insert returns on the right are connected from the required input receivers stream on the left using the **'Connect'** button on the **IO Patching** page.

Insert Allocation

Fig 8 shows the current Insert allocation for each of the legs of the selected path on the left and the patching status of Insert Sends & Returns and the transmitters and receivers on the right that are in use, as well as the various controls used to manage the inserts.

Insert On/Off Button

The button at the bottom left of the contents area is the Insert On/Off control which switches the Insert A in or out of the selected path. This On/Off indicator is also shown in the Submenu Icon.

Insert Position

The buttons to the right of the Insert On/Off button at the bottom left of the contents area, show the current position placement for this insert. The user may place the insert Pre EQ, Pre Fader or Post Fader in the Audio chain of that path. Insert A and Insert B can be fed from different positions in the Audio path.

Remove Inserts

Fig 9 shows the 'Remove Insert' dialogue box for Insert B which appears when the '**Remove**' button at the bottom right of the contents area is tapped.

This warns the user that all the Insert connections associated with this path will be removed, but the IO patches will not be changed. The removed Inserts are returned to the available Insert pool.

Note: for all stereo, surround or immersive paths it is not possible to independently alter the insert settings of the spill legs, as a consequence accessing the dropdown box labelled "Spill Leg Access" which normally says 'Full Path' and selecting any of the Independent Spill Legs will show the "No Controls Available" message for the Insert page of a Spill Leg.

FIG 7 - PATCHING FADER INSERT A RETURNS

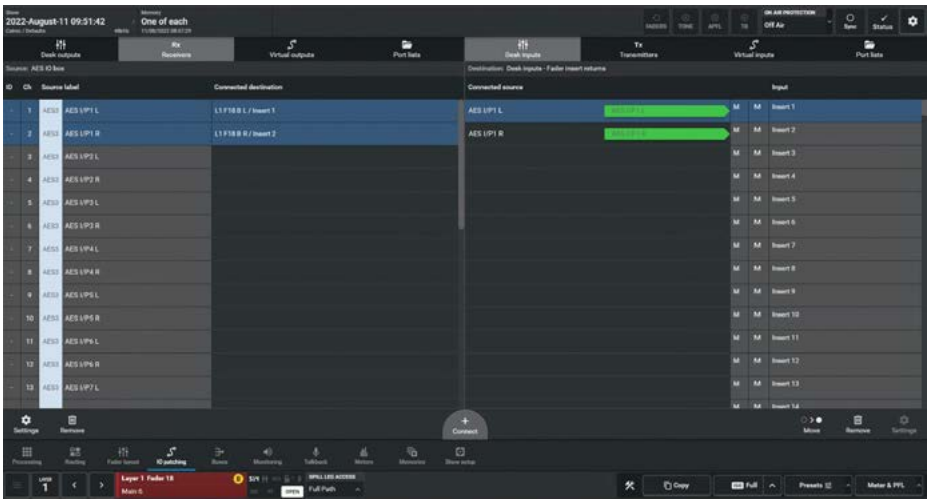


FIG 8 - SELECT INSERTS NUMBERS FOR INSERT A

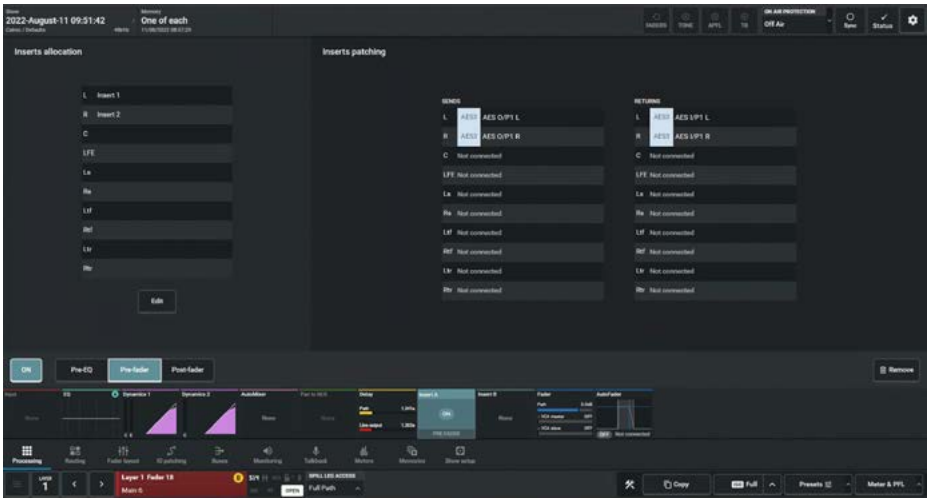
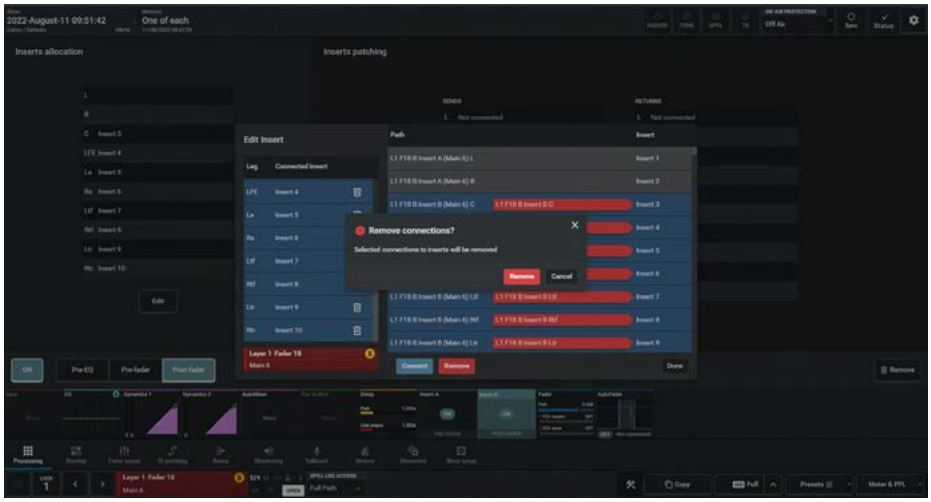


FIG 9 - PATCHING INSERT SENDS



FADER

The first of the 2 tabs on this page, provides the user with a set of faders related to the currently accessed path on which they can control the Fader, Cut, PFL and AFL parameters of all the legs of the accessed path. These are known as Spill legs and the second tab is used to access the Downmix levels of Surround or Immersive paths.

The **Processing>Fader** page on the touchscreen is accessed from either the Modes row of a fader panel by first tapping on the Modes Menu then the Processing button and then the Fader button as shown in Fig 1, or by tapping on the appropriate icons on the touchscreen as shown in Fig 2. The touchscreen displays/controls the same information on a Wild Assign panel shown below, then the user presses the appropriate 'Access' button to select the path whose Fader is to be accessed.

Spill Faders

The example used here is that of an input path which is a 7.1.4 immersive channel shown in Fig 2 both as on screen faders that can be slid up and down by touch on the touch screen or by using the rotary controls and buttons on the Wild Assign panel underneath as shown. The display order of the faders from left to right is: path fader (if Mono) or master path fader when it is the controller for all the legs of stereo, surround or immersive paths. This is followed by the Spill legs arranged in order which for a 7.1.4 path is L/R, C, LFE, Lss/Rss, Lrs/Lss, Ltf/Rtf & Ltb/Rtb.

Note: on the Wild Assign panel the path or Master path and its Spill leg controls are arranged in columns from left to right in the same order as the touchscreen.

The Spill Fader & Downmix Fader controls can be adjusted in a number of ways:-

From the Touchscreen

- Dragging the sliders up and down for continuous controls.
- Using the on-Screen buttons to select switch functions e.g. On/Off.

The resultant numerical values are shown just above the on-screen faders.

From the Wild Assign Panel

- Moving the Rotary controls round to the left or right.
- Using the button next to the rotary control to switch functions On or Off.
- Pressing the top of the rotary controls down to reset parameters to default.

The resultant numerical values & bargraph are shown in each individual TFT on the Wild Assign Panel.

The following controls are available from both the TFT touchscreen and Wild Assign Panel in Spill Fader mode:

Cut: The user can cut the output of the path or leg by tapping on this button.

If controlled from the Wild assign panel the Fader levels & Cuts of the path fader or master path fader and Spill legs are controlled by using the rotary controls and the button adjacent to control the Cuts. If the master path is cut on a stereo, surround or immersive path all its legs are also cut.

Note: The CUT indication would show as an ON indication depending on the "Fader Cut/On button function" setting found in **System settings>General settings**.

FIG 1 - FADER PROCESSING MODE SELECTED FROM MODES ROW.

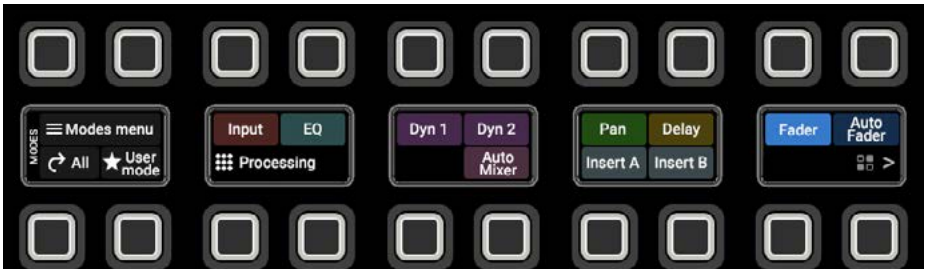
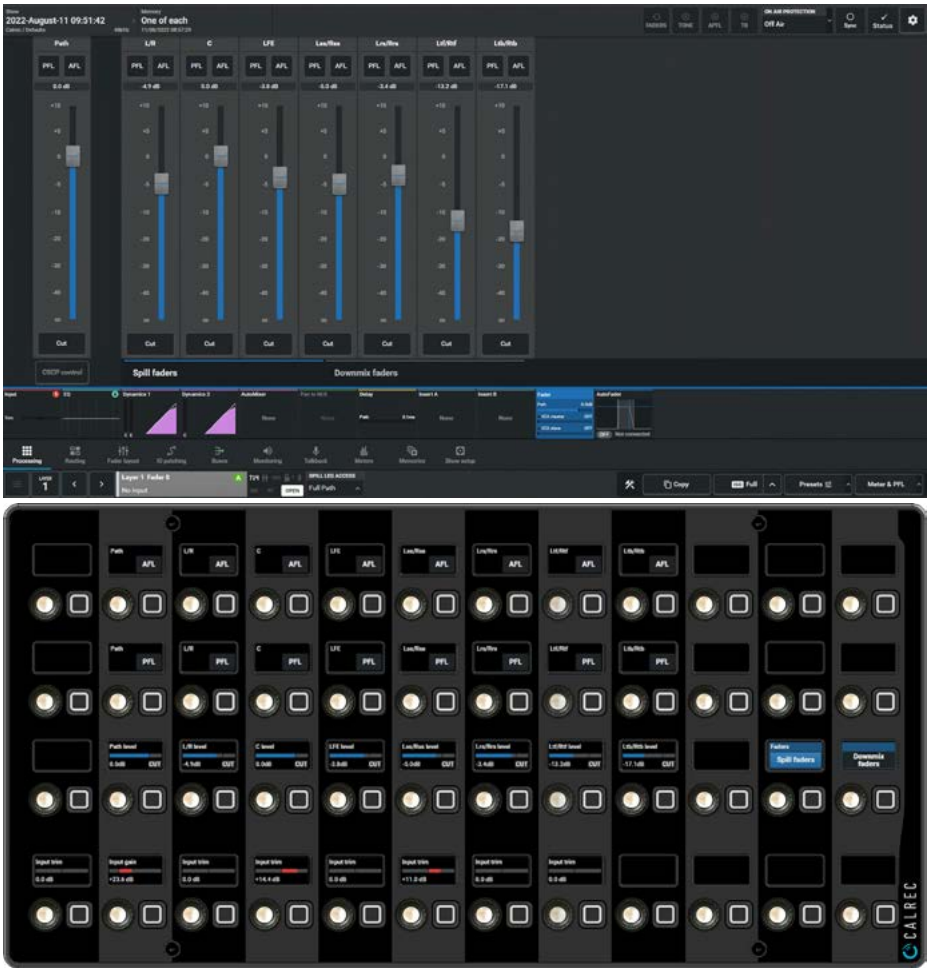


FIG 2 - SPILL FADER CONTROLS ON TOUCHSCREEN & WILD ASSIGN PANEL



Fader Levels: The user can tap and drag the fader knobs to modify the levels of each of the faders. The current value of the fader level is shown by the position of the fader knob and numerically in the box just above the on-screen faders.

PFL & AFL: The user can listen to the PFL (pre-fader listen) or AFL (after-fader listen) using the PFL or AFL buttons. If the master path is AFL'd or PFL'd on a stereo, surround or immersive path all its legs are also AFL'd or PFL'd. The PFL & AFL buttons for the path or master path and Spill legs are accessed by tapping the buttons on the touchscreen or pressing the buttons on the Wild Assign panel.

Note: the 2 Tabs can be accessed by tapping on either the Spill Faders Tab or Downmix Fader tab on the Touchscreen or by pressing the buttons on the lower right area of the Wild Fader panel.

Downmix faders

The other tab of the **Processing>Fader** page shows the downmix fader controls for adjusting the levels of each spill leg into a Stereo Downmix. In this case a 7.1.4 immersive channel as shown in Fig 3.

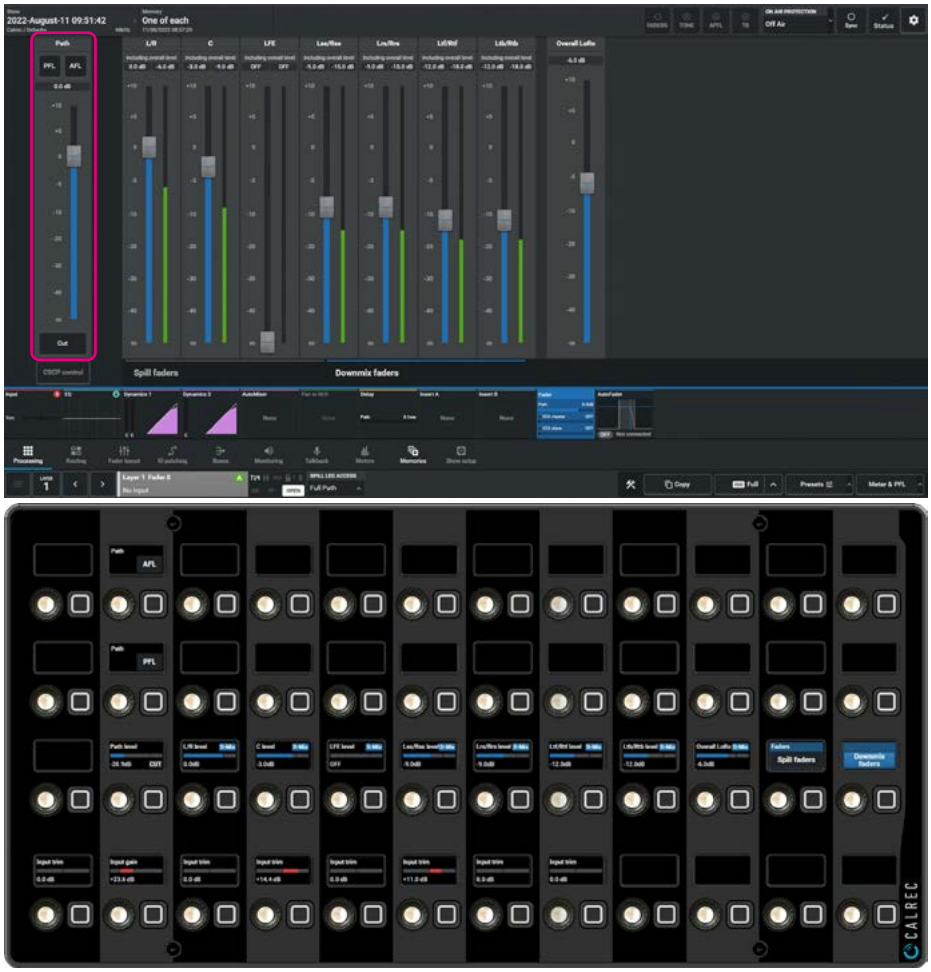
The on screen faders can be slid up and down by touch on the touch screen or altered by using the rotary controls and buttons on the Wild Assign panel underneath as shown. The order of displaying the faders from left to right is: master path fader which is the overall controller for all the legs of the stereo, surround or immersive paths. This is followed by the Spill legs arranged in order which for a 7.1.4 path is L/R, C, LFE, Lss/Rss, Lrs/Lss, Ltf/Rtf and Ltb/Rtb and an Overall LoRo stereo downmix master level control. It should be noted that mono & stereo paths does not have a downmix faders, the tab will be greyed out.

Note: on the Wild Assign panel the master path and its Downmix leg controls are arranged in columns from left to right in the same order as the touchscreen.

The following controls are available from both the TFT touchscreen and Wild Assign Panel in Downmix Fader mode:-

Fader Levels: The user can tap and drag the fader knobs to modify the levels of each of the faders. The current value of the fader level is shown by the position of the fader knob and numerically in the box just above the Downmix faders.

FIG 3 - DOWNMIX FADER CONTROLS ON TOUCHSCREEN & WILD ASSIGN PANEL



Just to the right of the Fader knob is a second green bargraph, this shows the Combined level of the individual downmix leg level and the LoRo overall fader level.

On the Wild Assign panel the individual downmix leg levels are shown without the combined level indication and the separate LoRo is shown further to the right, next to the Spill level or Downmix level tab selector buttons.

Cut: There are no Cut buttons on the downmix faders. If the downmix contribution leg is not wanted (such as LFE) from the individual fader it can be dragged down to the 'Off' position on the touchscreen or the rotary control turned fully to the left. If the master path is Cut on a stereo, surround or immersive path all its legs are also Cut. From the Wild assign panel the Fader level & Cut of the master fader are controlled by using the rotary controls and the button adjacent to the master fader rotary control for the Cut.

PFL & AFL: In Downmix mode only the path master is provided with PFL (pre-fader listen) or AFL (after-fader listen) using its PFL or AFL buttons. If the master path is AFL'd or PFL'd on a stereo, surround or immersive path all its legs are also AFL'd or PFL'd. The PFL & AFL buttons for the master are accessed by tapping the buttons on the touchscreen or pressing the buttons above the path master on the Wild Assign panel.

CSCP control: Underneath the master fader is placed a CSCP control button. When the CSCP controller is active, each path fader or master path fader can be individually enabled to respond to CSCP external commands or disabled to prevent CSCP commands from externally changing its fader settings.

Fader displays in VCA Groups

The fader on the left in the **Processing>Fader** page shows the mono or multichannel master fader which controls the level of all the path 'legs' belonging to it. The level of that fader can be affected when that path is a member of a VCA Group.

Fig 4 shows a fader which is normally shown as part of the **Processing>Fader** page as highlighted in Fig 3 on the last page. It is not part of a VCA Group and the fader level which is shown as 0.0 dB is the actual level for that path '**Fader 1**'.

Fig 5 shows 2 more faders, '**Fader 2**' and '**Fader 3**' which are in a VCA Group, with Fader 2 being the group master and Fader 3 being a slave to that group. Fader 2 is a pathless VCA master as it has no path associated with it and is set to a fader level of +5.0 dB and Fader 3 is a VCA slave to this master and is set to a fader level of -22.0 dB. As Fader 2's level is adjusted this affects all its slave fader levels and the resultant level for Fader 3 is a combination of Fader 2 and Fader 3 levels. Fader 3 shows this combined level of -17.0 dB as both a green meter bar and a numeric value above the fader.

Fig 6 shows 3 more faders, '**Fader 4**', '**Fader 5**' and '**Fader 6**' which are in a VCA Group, Fader 4 is the overall master, Fader 5 is a submaster to the overall master and Fader 6 is a slave to the submaster.

The level of the slave path on Fader 6 is affected by both the master & submaster. In addition to this Fader 4 and Fader 5 have paths attached to them which act as slaves to the master and submaster respectively as shown.

When a Fader is made a master it shows and controls the master fader level by default, however, when the master also has a path on that fader, the path level can be adjusted by holding down its ACCESS button at which point the fader will jump to the position of the slave path. Whilst the ACCESS button is held down moving the fader position changes the level of the slave path instead.

FIG 4 - FADER 1 NOT IN A VCA GROUP

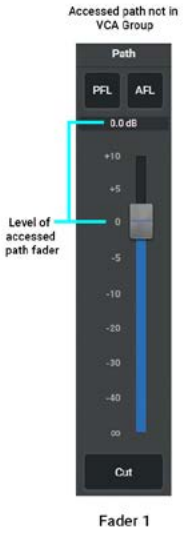


FIG 5 - FADERS 2 & 3 - MASTER AND SLAVE VCA GROUP

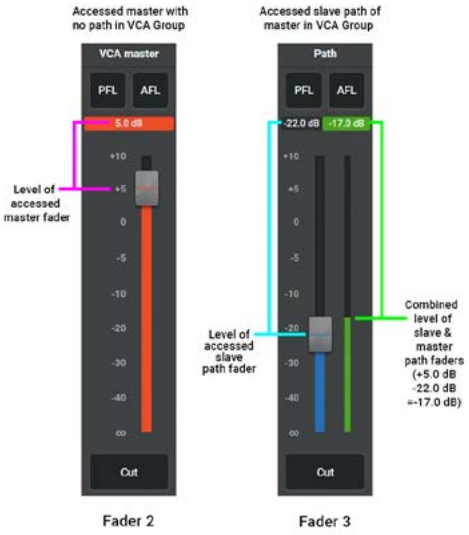
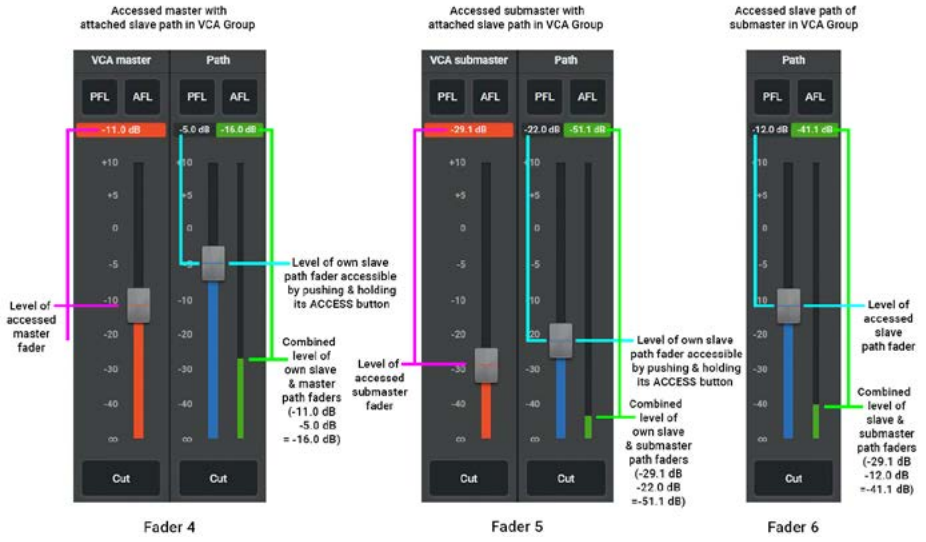


FIG 6 - FADERS 4,5 & 6 - MASTER, SUBMASTER AND SLAVE VCA GROUP



Fader 4 is set to a fader level of -11.0 dB and the slave path on this master is set to a fader level of -5.0 dB. As Fader 4's master level is adjusted this affects the submaster on Fader 5 and all the slave fader levels including the slave path on its own fader. The resultant level for Fader 4 is a combination of Fader 4's master and slave levels. Fader 4 shows this combined level of -16.0 dB as both a green meter bar and a numeric value above the fader.

Fader 5 is set to a fader level of -29.1 dB and the slave path on this submaster is set to a fader level of -5.0 dB. As Fader 5's master level is adjusted this affects all its slave fader levels including the slave path on its own fader. The resultant level for the path on Fader 5 is a combination of Fader 5's master & slave levels. Fader 5 shows this combined level of -51.1 dB as both a green meter bar and a numeric value above the fader.

Fader 6 is set to a fader level of -12.0 dB and is affected by both master and submaster level changes. The level of the submaster on Fader 5 is -29.1 dB and as a consequence, the resultant level for the slave path on Fader 6 is a combination of Fader 5's submaster and Fader 6's slave levels. Fader 6 shows this combined level of -41.1 dB as both a green meter bar and a numeric value above the fader.

AUTOFADERS

Autofaders allow faders to be opened and closed under the control of another system through the use of GPIs.
To control an assignable AutoFader, select the **Processing>Autofader** page from either the Modes row of a fader panel by first tapping on the Modes Menu then the Processing button and then the AutoFader button as shown in Fig 1, or by tapping on the icons on the touchscreen as shown in Fig 2. The Touchscreen displays/controls the same information on a Wild Assign panel shown below, then the user presses the appropriate 'Access' button to select the path whose AutoFader is to be accessed.

The AutoFader screen gives a visual representation of the behaviour of the AutoFaders position over time providing information about which AutoFader is in use from the **System settings>GPI** page. The image in Fig 2 shows the inactive AutoFaders page before being attached to an AutoFader and its GPI and the image below shows the same information on the Wild Assign panel but with the Autofader On and connected to AutoFader 1 which is connected to a GPI.

The following controls are available from both the TFT touchscreen and Wild Assign Panel:-

AutoFader Controls

- **AutoFader On:** - This button at the top left of the contents area, or Wild Assign panel, enables the AutoFader on this assign path.

Note: if the AutoFader is shared across several paths, only this path is affected by this button.

- **Rehearse:** - Tap & Hold the button labelled '**Rehearse**' to trigger the AutoFader and then release the AutoFader to complete the rehearsal. This button allows the user to walk through the action of the AutoFader and adjust parameters if necessary.

This control is placed in the lower central area of the Wild Assign Panel.

- **Fade In Duration:** - This is the fader ramp up period.
- **Fade In Delay:** - This is the delay period before the fader starts to ramp up to the IN LEVEL.
- **Fade In Level:** - This is the level that the fader goes to when the GPI is triggered shown as an 'IN' line.
- **Fade Out Duration:** - This is the fader ramp down period.
- **Fade Out Delay:** - This is the delay period before the fader starts to ramp down to the out level.

FIG 1 - AUTOFADER PROCESSING MODE SELECTED FROM MODES ROW.

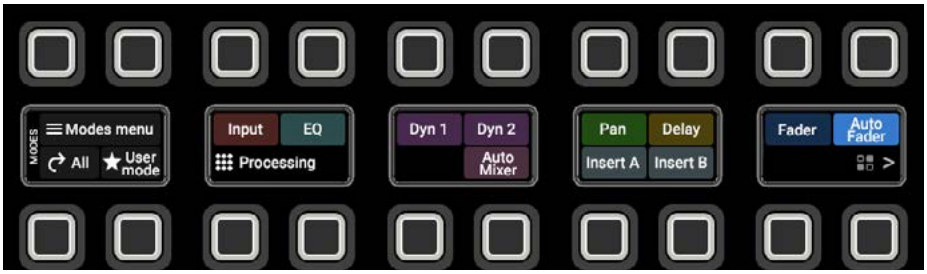


FIG 2 - AUTOFADER CONTROLS ON TOUCHSCREEN & WILD ASSIGN PANEL

- **Fade Out Level**:- This is the level that the fader goes to when the GPI is released shown as an 'OUT' line.

These controls are placed in columns 8 & 10 respectively on the Wild Assign Panel.

- **Force Release:** - When turned ON this time period is used to force the AutoFader into the fade out delay phase even if the AutoFader is still triggered via the GPI. If the Force Release control is set to '**OFF**' the AutoFader will remain triggered indefinitely whilst the GPI is triggered.

This control is placed at the top right of column 11 on the Wild Assign Panel.

Setting Up AutoFaders for use
There are 256 AutoFaders in the Argo system. GPIs are then 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.

The AutoFader to be used is selected from the '**AutoFader'** dropdown button shown as Not connected on the touchscreen next to the On/Off button. Tapping on this button allows the user to select/change the AutoFader trigger. The image in Fig 3 shows the list of available AutoFaders selection with AutoFader 1 being selected for the fader on this path and the AutoFader has been enabled using the ON button at the top left of the contents area.

Bypass AutoFaders: - When active this switch bypasses all AutoFaders as shown in the Fig 4. This control is placed in the top left area of the Wild Assign Panel.

Note: the AutoFader thumbnail shows which AutoFader is in use, if it's in Bypass and its On/Off state even when Assist is on a different control page.

Assigning GPI's to AutoFaders
GPIs are assigned to autofaders in **System Settings>GPI** as shown in Fig 5.

There are both physical GPI interfaces connected to Remote GPI over AoIP streams and virtual GPI interfaces provided via the Ember+ protocol.

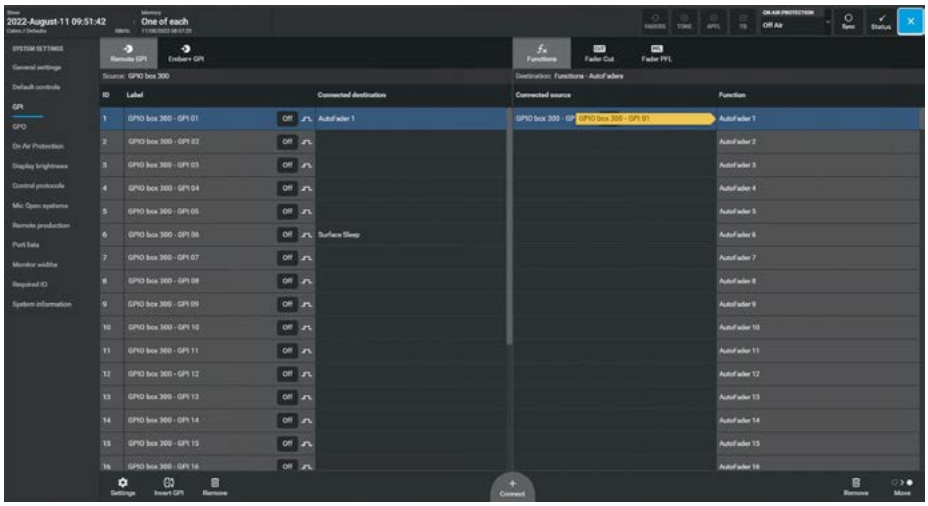
Here we have selected the Remote GPI button and used GPIO box 300 - GPI 01 which is fed from a physical GPI via the stream connection as the GPI source as shown on the left side of the page. This is then connected to a GPI function by tapping on the GPI Functions button which brings up a popup with groups of available functions that can be controlled by the GPIs.

Selecting the **'AutoFader'** function populates the right hand side of the screen with the available autofaders.

FIG 3 - SELECTING AUTOFADERS ON TOUCHSCREEN

FIG 4 - BYPASSING AUTOFADERS ON TOUCHSCREEN

FIG 5 - ASSIGNING GPI'S TO AUTOFADERS ON TOUCHSCREEN



A single GPI may control any number of autofaders, so assignments can be made one to one or one to many. To do this select the required GPI from the list on the left, any number of autofaders from the right and touch the '**Connect**' button.

To remove an AutoFader from a GPI, select the connected AutoFader from the right and touch the '**Remove**' button in the left side of the footer.

To free up a GPI port from all connections, select the GPI from the left and touch the '**Remove**' button in the left side of the footer. This removes all connections made to it, including any AutoFaders

AutoFader levels
When an AutoFader is attached to a fader and is enabled, providing the trigger signal is not present, the fader will go to the OUT LEVEL complying with the Fade-Out Duration parameter, rather than snapping the audio to the Fade-Out level.

If an AutoFader is enabled, either from path or global enable, for a path whose GPI is currently triggered, the audio should fade (up or down) to the Fade-In Level (if it is not there already), complying with the Fade-In Duration parameter, rather than snapping the audio to the Fade-In level.

When the trigger signal is present, the fader will follow the settings made on the **Processing>AutoFader** screen.

AutoFader parameter settings
The AUTOFADER screen allows the settings of the AutoFaders to be configured. The available settings for all the time based controls are :
0 to 100ms in 10ms steps.
100ms to 1s in 100ms steps.
1s to 5s in 500ms steps.
The IN and OUT gain level settings are OFF to +10dB.

AutoFader indicators
When an AutoFader is assigned to a fader, the Fader display will show the AutoFader Number.

Default Fader Interaction Mode
This section describes the operational interaction conditions when settings and fader positions are modified in combination with AutoFaders.

Faders in this default mode allow the user to temporarily override AutoFader control using the path fader to open, close or adjust the path's level.

Faders can be manually adjusted, and their output will reflect the manually set physical position, whether the AutoFader is active or inactive. Adjustments affect current audio, but do not affect subsequent autofades.

AutoFaders do not fight manual control. If a fader is being touched at the time an AutoFader is fired, OR when an AutoFader transitions from its initial 'Fade In Delay' period into its' 'Fade-In' period, then the AutoFader fade-in is cancelled.

This does not cancel the fade-out for this autofade event (which will be triggered as normal if the fader has been manually opened in the interim).

If a fader is touched whilst an AutoFader fade-in is in progress, the auto-fader immediately relinquishes control of the fade-in (but can still perform the subsequent fade out if the fader is no longer touched at that point in time).

Similarly, if a fader is being touched or moved when an AutoFader enters the fade-out stage, or during the fade-out stage, the AutoFader again immediately relinquishes control of the fade out to the operator.

AutoFader fade-in's & fade-out's begin from the current physical position of the fader. If they have been manually adjusted, this becomes the start point, they do not have to go to their specified or expected On or Off level first.

Fade in and fade out values are absolute in that the time taken from the beginning to the end of the fade-in or fade-out period lasts for the duration set by the relevant control, regardless of the actual physical starting level that may have been manually set and differ to that of the AutoFaders set On/Off level.

If a fader is positioned at or below its AutoFaders set Off-Level when a fade-out is instigated, the fade-out will be cancelled.

If a fader is positioned at, or above its AutoFaders set On-Level when a fade-in is instigated, the fade-in will be cancelled.

If the Fade-In Level is being adjusted whilst an AutoFader Fade-In is in progress, or similarly, the Fade-Out Level is being adjusted during a Fade-Out then the Fade-In/Out continues at a constant rate-of-fade until the fader level and In/Out level meet.

At which point the AutoFader stops due to the target level being met. The Fader will then track with the In/Out level control until the next AutoFader fade In/Out by virtue of the fader being fully in/out.

Fade-In Delay, Force Release & Fade-Out Delay can all be adjusted whilst the AutoFader is in their phase of operation, and the adjustments affect the phase they are in (rather than being applied to the next AutoFader trigger cycle).

Each phase can be extended up to its maximum duration whilst that phase is ongoing.

When reducing the duration, the relevant phase will end and the next phase start when the length of time passed since the start of the phase meets that set by the control.

When an AutoFader is fully In or Out, adjusting the relevant In/Out Level control will directly affect the level output by the path - the fader will track the adjustments in real time - it will not apply a fade in/out to track the adjustments.

ARGO
ROUTING AUDIO

CALREC

MAIN & GROUP ROUTING

The Routing Section deals with the routing of sources to the Argo buses. For each path, there are a number of pages showing its bus routing. The following routing pages:- Mains, Groups, Mix-Minus, Auxes, Tracks, Direct Outputs, Routing Matrix & Contribution are all accessed from the Routing Mode shown in Fig 1.
Once the required routing bus type is accessed from either the Modes row of a fader panel by first tapping on the Modes Menu then the Routing button and then the Mains button as shown in Fig 1, or by tapping on the appropriate icons on the touchscreen as shown in Fig 2, the surface displays/controls the same information on both the touchscreen and a Wild Assign panel shown below. The user then presses the appropriate 'Access' button to select the path whose output is to be routed from and route it to the required bus.

Note: Routing is also possible on the dedicated monitor panel.

Main and Group Routing
After tapping on the menu selection **Routing>Mains** the image shown in Fig 2 appears. The user can select other Routing Destinations by tapping on the sub-menu tabs such as **Routing>Groups** as shown in Fig 3 on the next page.

Argo has up to 16 Main Buses displayed in a block, and up to 48 Group Buses arranged in 2 pages of 24 for display purposes. These can be labelled on the Buses page.

Each main or group bus entry has a numbered button which routes the current access path to it and at the bottom right of the page is shown a Route On/Off button for the selected bus and the "Routed Legs" display showing the routed state of each leg of the source to that bus.

Routed Legs display: For mono sources there is no "Routed Legs" display needed, however stereo sources show L & R legs, surround 5.1 & 7.1 sources show L/R, C, Lfe, Ls/Rs legs and L/R, C, Lfe, Lss/Rss, Lrs/Rrs respectively.

Immersive sources show each leg depending on the width, such as the 7.1.4 source as shown above right, displaying L/R, C, Lfe, Lss/Rss, Lrs/Rrs, Ltf/Rtf & Ltb/Rtb legs which are lit in the appropriate colour to show that those legs are routed.

For both Main & Group routing the only controls required are the various routing buttons that are available from both the TFT touchscreen and Wild Assign Panel.

FIG 1 - MAIN ROUTING MODE SELECT ON STANDARD FADER PANEL

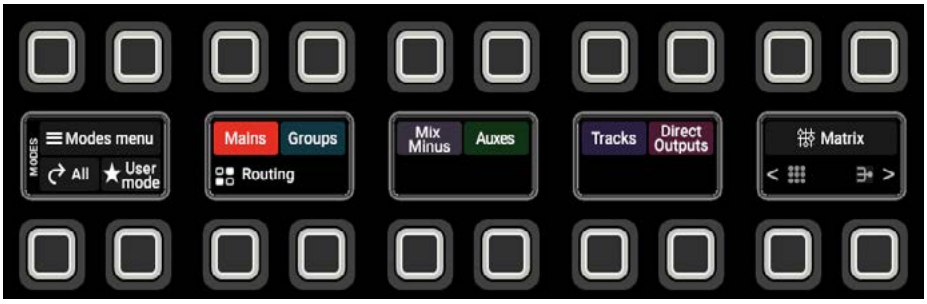
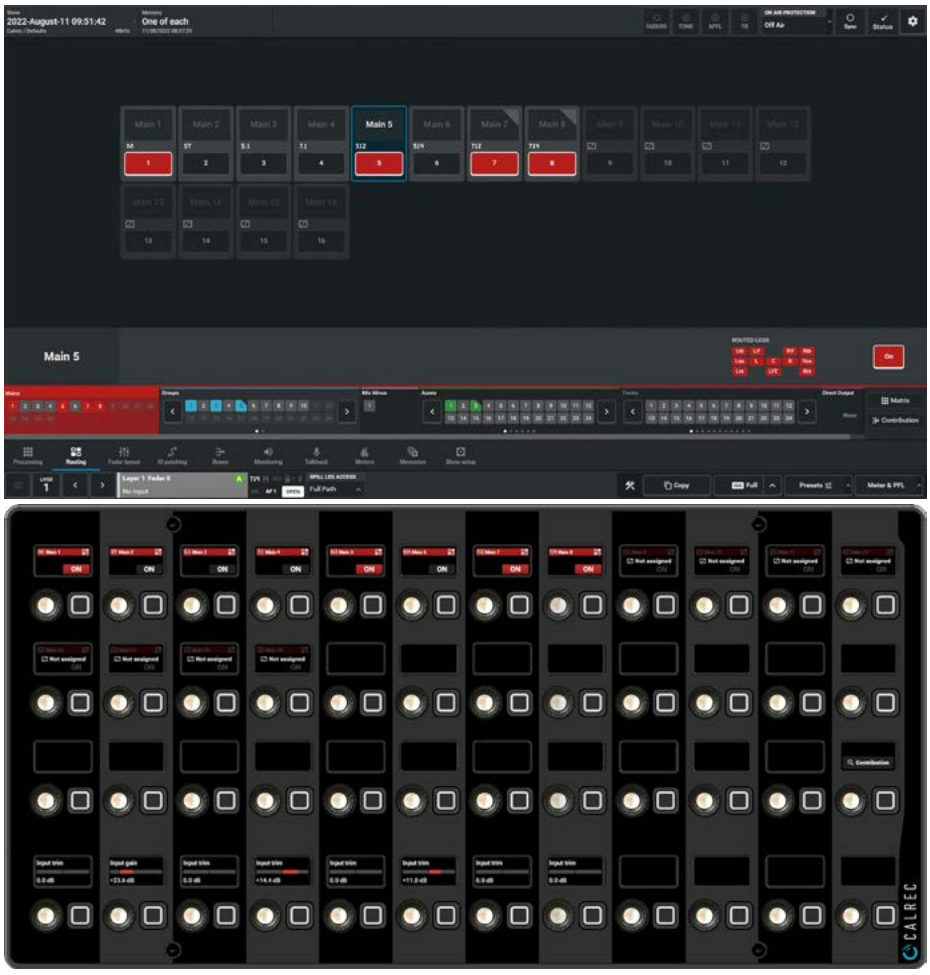


FIG 2 - MAIN ROUTING CONTROLS ON TOUCHSCREEN & WILD ASSIGN PANEL



The bottom row of the display shows an overall view of what the accessed path is routed to and where bus types have more than 24 outputs multiple pages can be accessed using the left-right arrow buttons associated with each button type.

The **Routing>Groups** page on the touchscreen is accessed from either the Modes row of a fader panel by first tapping on the Modes Menu then the Routing button and then the Groups button as shown in Fig 3, or by tapping on the appropriate area on the touchscreen as shown in Fig 4 and it displays/controls the same information on a Wild Assign panel shown below.

The user then presses the appropriate 'Access' button to select the path whose output is to be routed from and route it to the required bus.

Note: Fig 3 shows the multiple Group Routing pages which are arranged in two pages 1-24 & 25-48.

The user first selects the page that the required bus output is in either from the modes row on a standard fader panel as in Fig 3 or via the Touchscreen or and then routes the selected path to it from either the touchscreen or the Wild Assign panel as shown in Fig 4.

Independent Routing for Stereo, Surround & Immersive spill legs.
Using the independence drop down on the Touchscreen, it is possible to access each spill leg of a stereo, surround or immersive path and allow routing changes to be made on each spill leg.

This is done by accessing the dropdown box labelled "Spill Leg Access" which normally says 'Full Path' in the footer and selecting any of the required Spill Legs from the independence table.

- For a stereo source the user can select either the L or R legs to route.
- For a 5.1 source the user can select either the L/R, C, Lfe or LsRs spill leg to route.
- For a 7.1 source the user can select either the L/R, C, Lfe, Lss/Rss or Lrs/Rrs spill leg to route.
- Immersive sources can select each leg to route such as the 7.1.4 immersive source shown below right which the user can select either the L/R, C, Lfe, Lss/Rss, Lrs/Rrs, Ltf/Rtf or Ltb/Rtb spill leg to route.

FIG 3 -GROUP ROUTING MODE SELECT ON STANDARD FADER PANEL

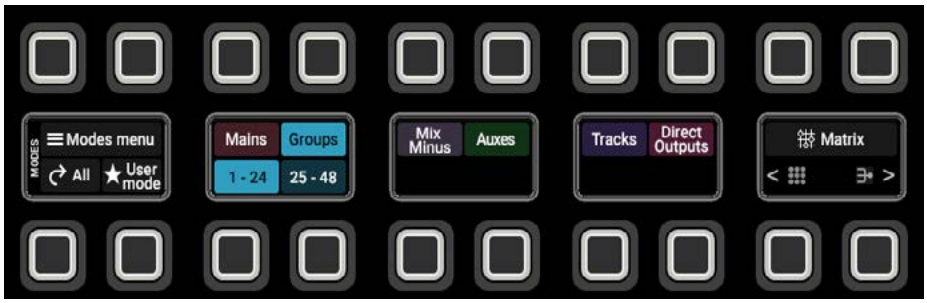
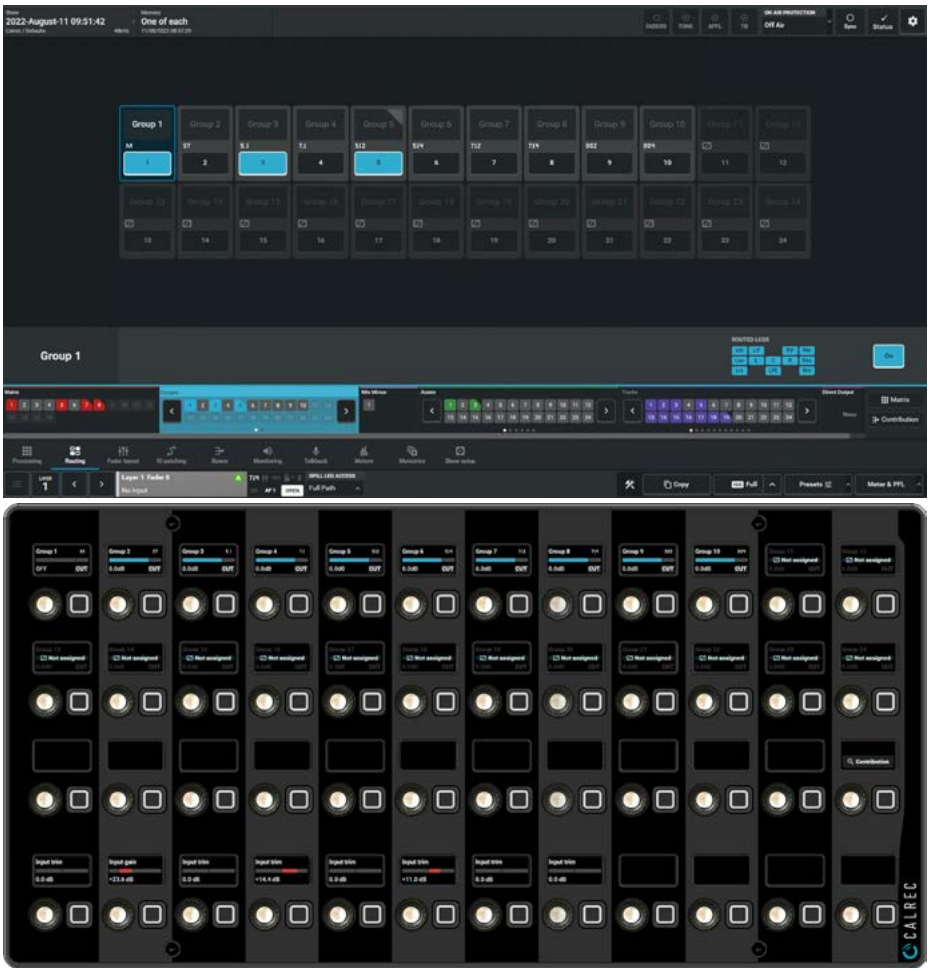


FIG 4 - GROUP ROUTING CONTROLS ON TOUCHSCREEN & WILD ASSIGN PANEL



Note: when part of a path is routed e.g. to Main 7 & Main 8 in the image above and Group 5 in the image below, then this partial routing is shown by the corner of the routing block being 'cut off' in 'Full Path' mode on the routing display and just the individually routed legs are lit rather than all the legs as shown in the Routed Legs display.

It should be further noted that the Wild Assign panel does not show this partial routing state in 'Full Path' mode, and if it is partially routed to a bus then its ON indicator will be lit to show that something is routed to that bus.

If any spill leg is accessed from a path that is not routed to that bus then its ON indicator will NOT be lit.

AUX ROUTING SENDS & PAN

Aux buses are generally used to feed external signal processing devices or to create Interruptible foldback feeds (IFB's). For each path, auxes have individual level controls and 2 send positions for each of the possible aux feeds, this allows extensive control of separate mono or stereo aux mixes.
Once the Aux routing bus type is accessed from either the Modes row of a fader panel by first tapping on the Modes Menu then the Routing button and then the Auxes button as shown in Fig 1, or by tapping on the appropriate icons on the touchscreen as shown in Fig 2, the surface displays/controls the same information on both the touchscreen and a Wild Assign panel shown below. The user then presses the appropriate 'Access' button to select the path whose output is to be routed from and route it to the required Aux bus.

Auxes also have an additional level of logic control, allowing the user to set conditions under which each pre fader aux send is cut, this is shown in the Aux Buses page.

Aux Routing, Send & Pan Controls

After tapping on the menu selection **Routing>Auxes** the image shown in Fig 2 is displayed. Argo has up to 48 Aux Buses. These are arranged into 2 pages of 24 for display purposes. These can be labelled on the buses page.
The Aux routing, send and pan controls can be adjusted in a number of ways:-

From the Touchscreen

- Dragging the sliders left and right for continuous controls.
- Using the + and - buttons at the end of the sliders.
- Using the On-Screen buttons to select switch functions e.g. On/Off.

The resultant numerical values are shown in the top right hand corner of each control above the bargraph.

From the Wild Assign Panel

- Moving the Rotary controls round to the left or right.
- Using the button next to the rotary control to switch functions On or Off.
- Pressing the top of the rotary controls down to reset parameters to default.

The resultant numerical values & bargraph are shown in each individual TFT on the Wild Assign Panel.

The following controls are available from the TFT touchscreen:-

Routing: Each aux bus entry has a numbered button which routes the current access path to it and at the bottom of the page on the right is shown a Route On/Off button for the selected bus and the routed state of each leg of the source.

FIG 1 - AUX ROUTING MODE SELECT ON STANDARD FADER PANEL

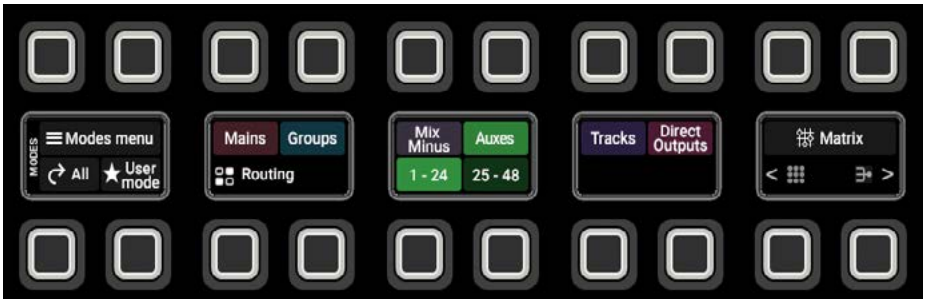
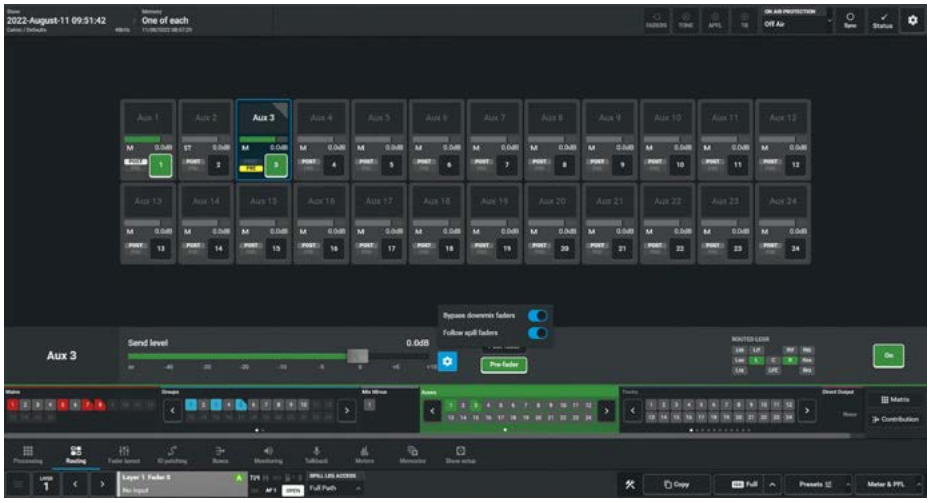


FIG 2 - AUX ROUTING & SEND CONTROLS ON TOUCHSCREEN & WILD ASSIGN PANEL



Send Level: Slide the send level control to alter the level of the aux send between 'OFF' and +10dB. The send level value is also shown in each Aux bus entry.

Aux Send Position: Aux sends can be taken at different points in the associated path's signal flow, pre fader or post fader using the selection buttons to the right of the level control.

Options 'Gearwheel': Accesses the Bypass Downmix Faders and Follow Spill Faders options on slider switches.

Bypass Downmix Faders: If the aux output's associated path is surround or immersive and the aux output is stereo or mono the user can choose whether or not to use the downmix fader levels during the downmixing process.

Follow Spill Faders: If the aux output is stereo and the paths send position to it is Pre Fader, (as shown above right) the user can choose whether or not to follow the levels of the spill faders.

Note: Bypass Downmix Faders & Follow Spill Faders are only selectable when the "Spill Leg Access" displays 'Full Path' and can only be controlled from the Touchscreen, these are not available from the Wild Assign panel.

Pan Position: For stereo aux sends, a pan control is only available in the footer of the contents area to the right of the aux send position when the current assign path is either mono, stereo or a mono or stereo leg of a surround/immersive path.

This allows the user to adjust the position of the source to the left or right of centre of the Stereo Aux Bus. To the right of the pan position is an On button which switches the pan in or out of circuit. Mono aux sends have no pan controls

Routed Legs display: For mono sources there is no 'Routed Legs' display needed, however stereo sources show L & R legs, surround 5.1 & 7.1 sources show L/R, C, Lfe, Ls/Rs legs and L/R, C, Lfe, Lss/Rss, Lrs/Rrs respectively.

Immersive sources show each leg depending on the width, such as the 7.1.4 source shown in Fig 2, displaying L/R, C, Lfe, Lss/Rss, Lrs/Rrs, Ltf/Rtf & Ltb/Rtb legs which are lit in the appropriate colour to show that those legs are routed.

Independent Routing for Stereo, Surround & Immersive spill legs.
Using the independence drop down it is possible to access each spill leg of a stereo, surround or immersive path and allow routing changes to be made on each spill leg.
This is done by accessing the dropdown box labelled "Spill Leg Access" which normally says 'Full Path' in the footer and selecting any of the required Spill Legs from the independence table.

- For a stereo source the user can select either the L or R legs to route.
- For a 5.1 source the user can select either the L/R, C, Lfe or LsRs spill leg to route.
- For a 7.1 source the user can select either the L/R, C, Lfe, Lss/Rss or Lrs/Rrs spill leg to route.
- Immersive sources can select each leg to route such as the 7.1.4 immersive source shown above right which the user can select either the L/R, C, Lfe, Lss/Rss, Lrs/Rrs, Ltf/Rtf or Ltb/Rtb spill leg to route.

Note: when part of a path is routed e.g to Aux 3 in the image above, then this partial routing is shown by the corner of the routing block being 'cut off' on the routing display and just the individual routing legs are lit rather than all the legs as shown in the Routed Legs display.

Also because the Source path in this case is wider than Stereo, the Pan display is not shown unless a Spill Leg is accessed.

From the Wild Assign Panel:-
The 1st and 2nd rows of the Wild Assign Panel shown in Fig 2, show up to 24 Aux bus control cells at a time .with each column/row being identified by a position overlay as shown :-
There are 4 pages of Aux control sets available for these 24 Auxes controlled from the 3rd row in cells 9, 10, 11 & 12:-

Aux controls: Send levels and routing
In this page shown in Fig 2, each rotary control cell displays/controls an Aux bus's routing, send level and displays its send position. The rotary control adjusts the send level whilst the adjacent button switches the Route On or Off.

Aux controls: Bus labels & routing
In this page as shown in Fig 3 below for Stereo Aux 2 and Mono Aux 3 each rotary control cell displays the bus's user label as set in the **Buses>Auxes** page and displays/controls an Aux bus's routing with the adjacent button to the unused rotary control switching the Route On or Off.

FIG 3 - AUX BUS LABELS & ROUTING

Aux controls: Send positions
In this page as shown in Fig 4 below for Stereo Aux 2 and Mono Aux 3 each rotary control cell displays/controls an Aux bus's send position with the adjacent button to the unused rotary control switching the Send position between Pre & Post fader.

FIG 4 - AUX SEND POSITIONS

Aux controls: Pan controls
In this page as shown in Fig 5 below for Stereo Aux 2 and Mono Aux 3 each rotary control cell displays/controls an Aux bus's L/R pan position for Stereo Auxes only and displays its send position. The rotary control adjusts the L/R pan position, whilst the adjacent button switches the Pan control On or Off. If the Aux bus is Mono the **'No pan control'** message is shown.

FIG 5 - AUX PAN CONTROLS

TRACK ROUTING SENDS & PAN

Tracks are generally used to record copies of channels and groups, feed external signal processing devices or to create Interruptible foldback feeds. Each path can have 4 common track level controls and 3 send positions

Once the Track routing bus type is accessed from either the Modes row of a fader panel by first tapping on the Modes Menu then the Routing button and then the Tracks button as shown in Fig 1, or by tapping on the appropriate icons on the touchscreen as shown in Fig 2, the surface displays/controls the same information on both the touchscreen and a Wild Assign panel shown below. The user then presses the appropriate 'Access' button to select the path whose output is to be routed from and route it to the required Track bus.

The track send level is applied to all tracks from each path and normally paths are only routed to one or two tracks so that individual track send control isn't required.

To further extend the flexibility of tracks it is possible to split the track sends which allows each Track to be fed from 1 of 4 track sends, these are labelled A, B, C & D as shown in the image above right. This allows extensive control of up to 96 separate track outputs. The tracks are arranged into 4 pages of 24 as shown in Fig 1.

There are 3 types of track:- Mono Odd, Mono Even and Mono which relates to how the odd numbered tracks are panned as a left leg, the even numbered tracks are panned as a right leg or the tracks can be set as Mono.

Track Routing, Send & Pan Controls

After tapping on **Routing>Tracks** the image in Fig 2 is displayed.

The following controls are available from the Touchscreen:-

Routing: Each track bus entry has a numbered button which routes the current access path to it and at the bottom of the page is shown a Route On/Off button for the selected bus send (A, B, C or D) and the routed state of each leg of the source to that bus.

Note: the Routing indication for stereo, surround & immersive paths for tracks also show the A, B, C or D send ID if Split sends is enabled.

Track Send Level: Slide the level control to alter the level of the track send between 'OFF' & +10dB. The send level is displayed and controlled at the bottom of the bus display for each of the common send levels for the A, B, C & D Track sends by selecting the Split Send A, B, C or D buttons and sliding the Send level slider.

FIG 1 -TRACK ROUTING MODE SELECT ON STANDARD FADER PANEL

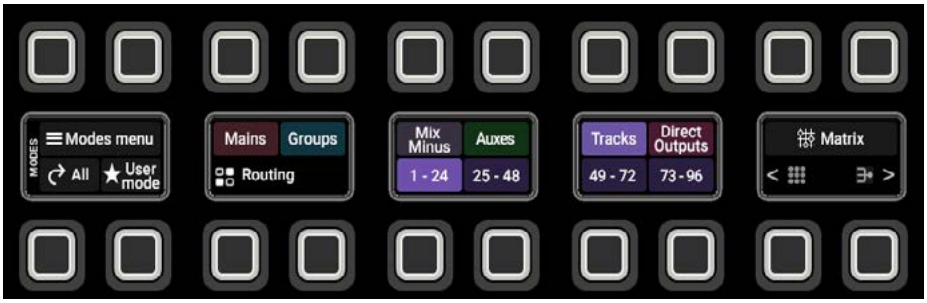


FIG 2 - TRACK ROUTING CONTROLS ON TOUCHSCREEN & WILD ASSIGN PANEL

Track Send Position: Each of the 4 track sends can be taken at different points in the associated path's signal flow, Pre-EQ, Pre-fader or Post-fader using the selection buttons to the right of the level control.

Pan Position: For track sends, a pan control is available to the right of the track send position only when the current access path is either mono, stereo or a mono or stereo leg of a surround or immersive path. This allows the user to adjust the position of the source to the left or right of centre of the Track bus output. This is applied to tracks defined as odd & even pairs. To the right of the pan position is an On button which switches the pan in or out of circuit.

Options 'Gearwheel': The optional slider switches for **Bypass Downmix Faders** & **Follow Spill Faders** shown in Fig 2 are operationally identical to those as described in the Aux Routing section. These can be controlled from both the Touchscreen and the Wild Assign panel.

More about Track Split Sends.
Each channel has up to four track sends although by default only one is enabled. To enable the four sends, touch the SPLIT SEND button underneath the Send Level control. This will enable the four split send buttons which the user can select from (A, B, C or D) and then create or remove routing to the tracks as required. A letter will highlight below the track number entry when a route is made to indicate which send it is associated with. Each of the 4 sends has an individual level control & can be placed Pre-EQ, Pre-Fader or Post Fader. This enables access to a wider range of controls for each split send.

Removing sends
If a channel is routed to track send C then send C must be selected in order to remove the route. Only routes made with the currently selected send may be removed. In order for the track routing to be collapsed back into just one send (A), all routes from sends B, C and D must be removed. The SPLIT SEND button can now be touched again to disable the three unused B, C, D send controls.

Independent Routing for Stereo, Surround & Immersive spill legs.
This is done by accessing the dropdown box labelled "Spill Leg Access" which normally says 'Full Path' in the footer and selecting any of the required Spill Legs from the independence table.
This allows the different Spill legs to be routed to different split sends A, B, C, D as shown in the Routed Legs display.

Note: when part of a bus is routed, this partial routing is shown by the corner of the routing block being 'cut off' only when looking at the 'Full Path'. This is shown in Fig 2 for Track 19.

From the Wild Assign Panel:-
The 1st and 2nd rows of the Wild Assign panel shown in Fig 2, show up to 24 Track bus control cells at a time, with each column/row being identified by a position overlay as shown. Each track shows their:- Type, Name, Number, Routing On/Off status and when Track Split is applied which track send A, B, C, and/or D that the source path/leg is routed to.

The 3rd row controls in cells 1, 2 and 3 controls the Split Send and the A, B, C, D selected send buttons. The function of these are described in detail in the 'More about Track Split Sends' and 'Removing sends' paragraphs earlier on this page. The Split mode is shown in Fig 2 and the non-split mode, is shown in Fig 3 below.

FIG 3 - TRACK SENDS IN NON-SPLIT MODE

The 3rd row control in cell 4 controls the A, B, C or D selected track send level from the rotary control between 'off' & +10dB. Changing the selected Split send also changes the selected send level control as indicated by the Send A, B, C, D letter in the top right of the display. The send level value is displayed in that cell and is the A, B, C or D send level from that path to ALL the Tracks it is routed to, see Fig 4 below.

FIG 4 - A, B, C, D TRACK SEND LEVELS

The 3rd row control in cell 5 controls the A, B, C or D Selected track send position from the rotary control between Pre-EQ, Pre-Fader & Post Fader, pressing the adjacent button sets the selection which is reflected on the Touchscreen. The send position and the A, B, C, D send letter is shown in that cell as shown in Fig 5 below and sets the send position to ALL the Tracks it is routed to.

FIG 5 - TRACK SEND POSITION

The 3rd row controls in cells 6 & 7 controls the Track Bypass Downmix Faders and Follow Spill Faders options, see Fig 6 below. The function of these are described in detail in 'Bypass Downmix Faders' & 'Follow Spill Faders' paragraphs earlier in the Aux Routing, Sends & Pan section.

FIG 6 - BYPASS D-MIX & FOLLOW SPILL

The 3rd row control in cell 9 controls the L/R pan to track setting which is dependent on the Source path and type of Track as described in the 'Pan Position' paragraph earlier on this page. The rotary control adjusts the L/R pan position, whilst the adjacent button switches the Pan control On or Off, as shown in Fig 7 below. If the source is accessing the 'Full Path' of a surround or immersive path the **'No pan control'** message is shown as in Fig 2.

FIG 7 - TRACK PAN CONTROL ACTIVE

DIRECT OUTPUTS

Direct outputs are path specific desk outputs, available to Input Channels and Groups. Argo has a pool of up to 1024 mono output resources, shared between Direct Outputs and *Mix Minus Outputs.
Once the Direct Outputs routing type is accessed from either the Modes row of a fader panel by first tapping on the Modes Menu then the Routing button and then the Direct Outputs button as shown in Fig 1, or by tapping on the appropriate icons on the touchscreen as shown in Fig 2, the surface displays/controls the same information on both the touchscreen and a Wild Assign panel shown immediately below. The user then presses the appropriate 'Access' button to select the path whose direct output is to be created.

Direct Output Controls
After tapping on the menu selection **Routing>Direct Output**, the image in Fig 2 is displayed, ready for a direct output to be created. The user then taps on one of the unassigned Direct Output placeholders which opens the **"Choose a width"** dialogue box, as shown in Fig 3, the available width for the direct outputs are dependent on the original path's width.

In the case of the 7.1.2 path shown the direct outputs can be created at that width and as 5.1, Stereo & Mono downmixes. The number of remaining available outputs is shown on the page, once the pool is empty no further direct outputs can be created. Once the direct output width is selected it appears as shown in Fig 4 which shows the four possible direct outputs at 7.1.2, 5.1, Stereo & Mono from the 7.1.2 channel on Layer 1 Fader 7A.

Note: up to 4 direct outputs are available per path and each can be set to any of the available widths shown. Creating, Removing and changing the width of the Direct Outputs is controlled from the Touchscreen

The following controls are available from the Touchscreen:-

Tone: The Tone On/Off control is shown.

Output Level: Slide the level control or tap on the + or - icons to alter the level of the direct output between 'off' and +10dB.

Send Position: Direct outputs can be taken at different points in the path's signal flow, Pre EQ, Pre Fader, Post Fader or ***Mix Minus** as shown in the 'Position' pop-up towards the right of the display/ control area on the right see Fig 4.

Options 'Gearwheel': Accesses the Bypass Downmix Faders and Follow Spill Faders options on slider switches.

FIG 1 -DIR OUTPUT ROUTING MODE SELECT ON STANDARD FADER PANEL

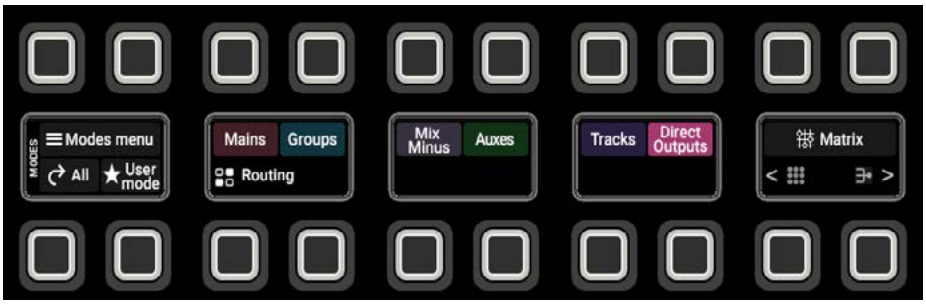


FIG 2 -DIR OUTPUT ROUTING MODE - EMPTY PAGE WITH WIDTH POP-UP

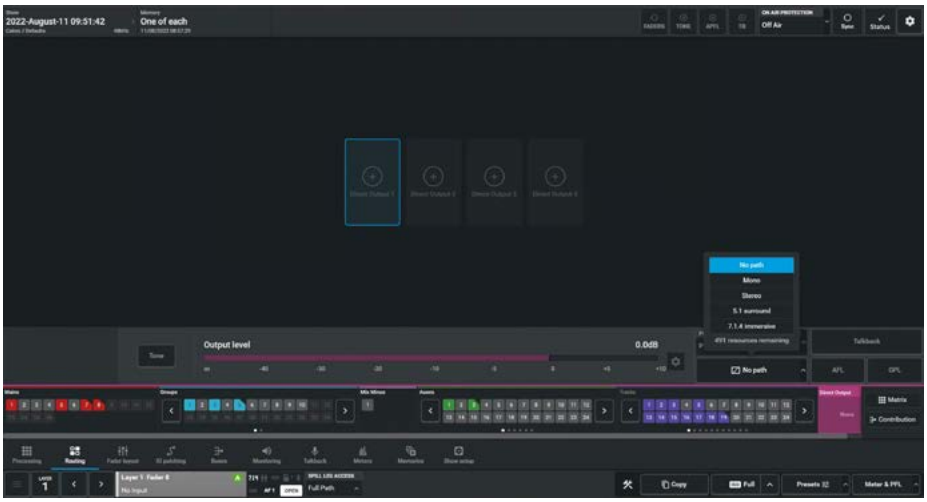
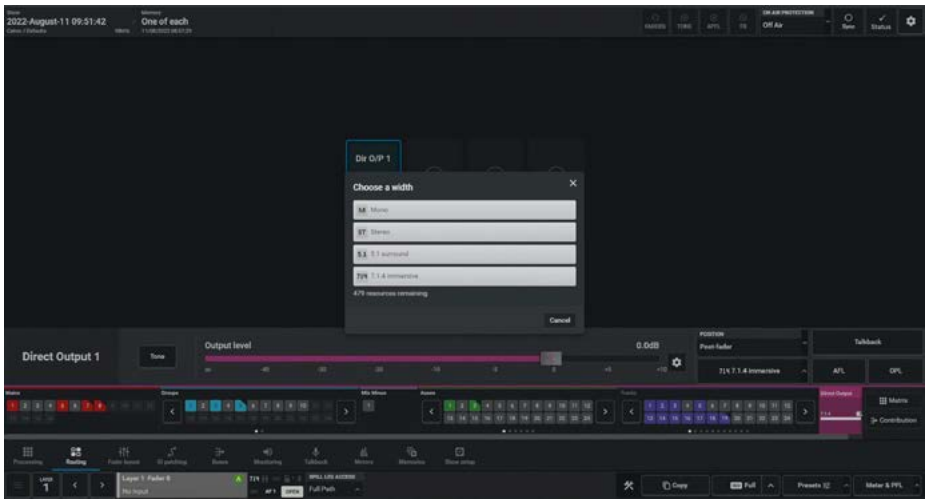


FIG 3 -DIR OUTPUT ROUTING MODE - CREATE DIRECT OUTPUTS



Bypass Downmix Faders: If the direct output's associated path is immersive or surround and the direct output is stereo or mono, the user can choose whether or not to use the downmix fader levels during the downmixing process.

Follow Spill Faders: If the direct output is immersive, surround or stereo and its send position is Pre Eq or Pre Fader, the user can choose whether or not to follow the levels of the Spill faders.

AFL: Tapping on AFL replaces the console monitor source with the direct output feed, post level control, providing a non-destructive solo for the direct output.

Output Listen (OPL): Similar to AFL but the feed is taken post output delay.

Talkback: Replaces the direct output feed with the talkback input source.

Tone: Select this to inject tone into the direct output, replacing the direct output feed with the correct tone for the path width, the button turns the tone on or off.

Path Width Box: As shown on the previous page, tapping on the path width pop-up menu allows the user to change the width of the direct output. Selecting the 'No path' option on an existing Direct Output will open the 'Remove Direct Output' dialogue box see Fig 5.

From the Wild Assign Panel:-
When in Direct Outputs-Routing mode the 1st and 2nd rows of the Wild Assign panel shown in Fig 4, are arranged into 4 areas for each of the 4 possible direct outputs. Each area contains 6 control cells as highlighted in Fig 4's Wild Assign panel for Direct Output 1 (Cells 1-6):-

Cell 1 provides a Tone On/Off switch.
Cell 2 displays/controls the Output level and Talkback button and displays its send position or TONE if ON. The rotary control adjusts the output level whilst the adjacent button switches the Talkback On or Off.

Cell 3 displays/controls the Bypass D-Mix Faders and Follow Spill Faders, the rotary control selects between the two and the adjacent button confirms the selection.

FIG 4 - DIR OUTPUT CONTROLS ON TOUCHSCREEN & WILD ASSIGN PANEL

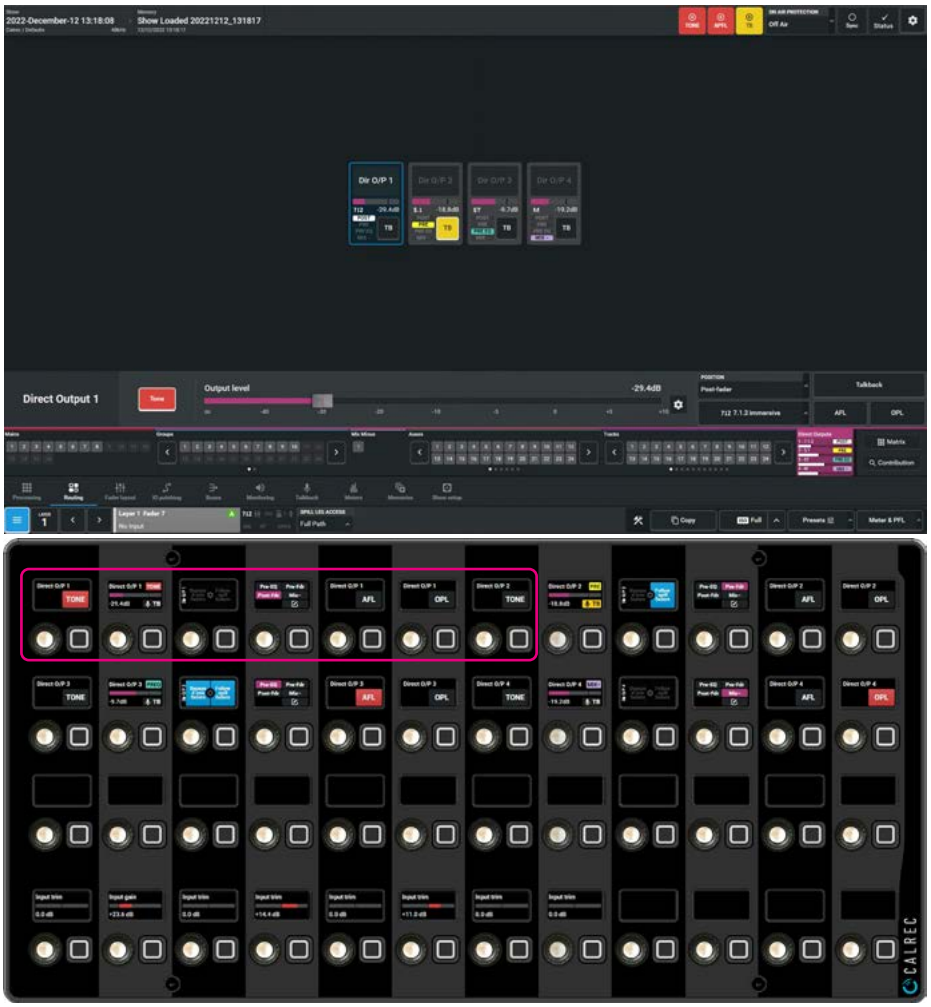
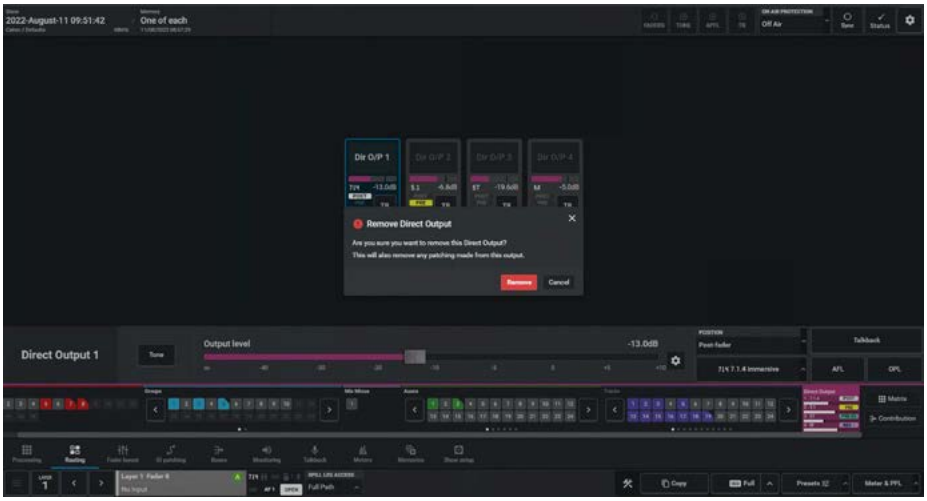


FIG 5 -DIR OUTPUT ROUTING MODE - REMOVE DIRECT OUTPUTS (NO PATH)



Cell 4 displays/controls the send position from the rotary control between Pre-EQ, Pre-Fader, Post Fader & ***Mix-Minus**, the button adjacent to the rotary control sets the selection which is reflected on the Touchscreen.

Cells 5 & 6 displays/controls the AFL and OPL (post delay) buttons respectively which replaces the console monitor source with the selected Direct Output.

MIX MINUS ROUTING & OUTPUT VIA DIRECT OUTPUT

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.

Fig 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 its 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 Fig 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 source's input from its 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.

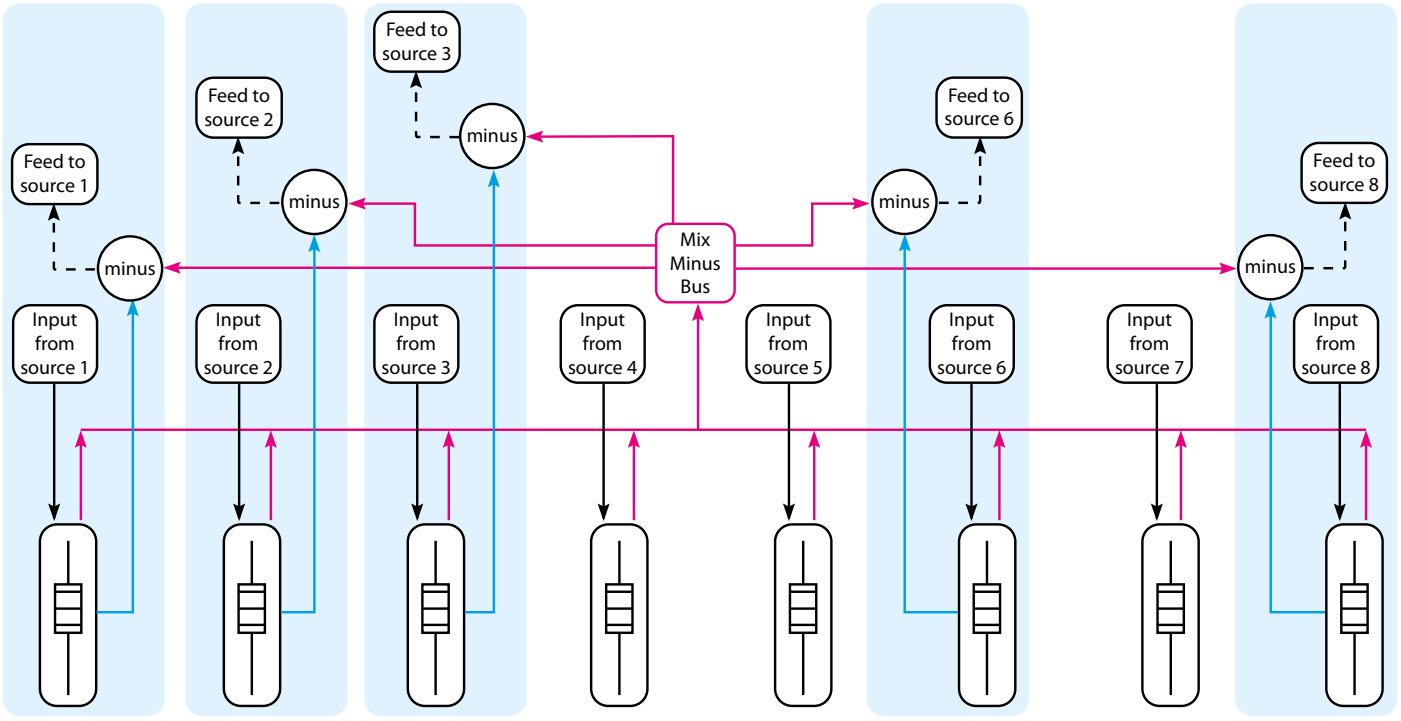
The reporter would need to hear a mix of the show's audio in order to hear cues and communicate with the presenters.

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.

FIG 1 - MIX MINUS ABSTRACTION



Once the Mix Minus routing bus type is accessed from either the Modes row of a fader panel by first tapping on the Modes Menu then the Routing button and then the Mix Minus button as shown in Fig 2, or by tapping on the appropriate icons on the touchscreen as shown in Fig 3, the surface displays/controls the same information on both the touchscreen and a Wild Assign panel shown below. The user then presses the appropriate 'Access' button to select the path to have mix minus applied to it by route it to the Mix Minus bus and the output from the Mix minus bus can be sent to a Direct Output.

Mix Minus Routing
After tapping on the menu selection **Routing>Mix Minus** the page shown in Fig 3 appears.

The following controls are available from the Touchscreen:-

Route signals to a mix minus bus
There is one mono mix minus bus, which is a bus that any path can contribute to. To send a signal to this bus, first access the chosen path and tap the numbered button or the Route On/Off button which routes the current access path to it.

Set Send Position to mix minus bus
At the bottom right of the page is shown the routed state of each leg of the source to that bus. Signals can be sent Pre EQ/ Pre Fader/Post fader using the position buttons.

Using a Direct output as a Mix Minus 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 then feeds the mix-minus route back to that path's source.

***In Argo there is no dedicated Mix Minus Output, however selecting Mix Minus as the send position allows the mix minus bus to feed the selected Direct Output and provides an output for the Mix Minus bus.**

The user assigns a path on the surface that is being fed by the source they wish to send a mix minus signal to. They then select a direct output bus from the Direct Output sub-menu as shown for Direct Output 4 on the previous page, then select the Mix Minus position. This will route the mix minus signal to that direct output. The mix minus signal sent to the required source will be the contents of the mix minus bus, with the source's contribution (if any) removed by adding an inverted copy of the source to the mix minus signal.

FIG 2 -MIX MINUS ROUTING MODE SELECT ON STANDARD FADER PANEL

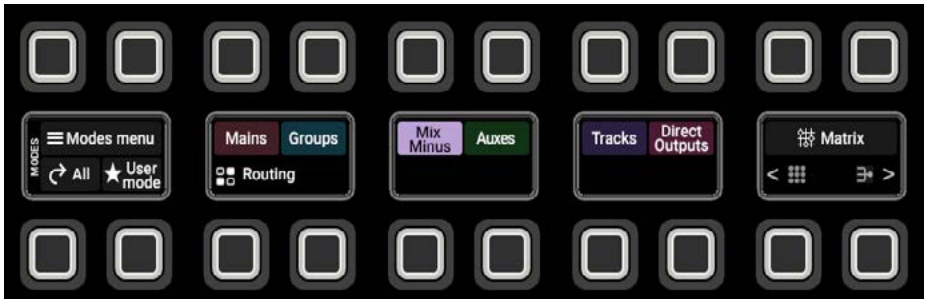
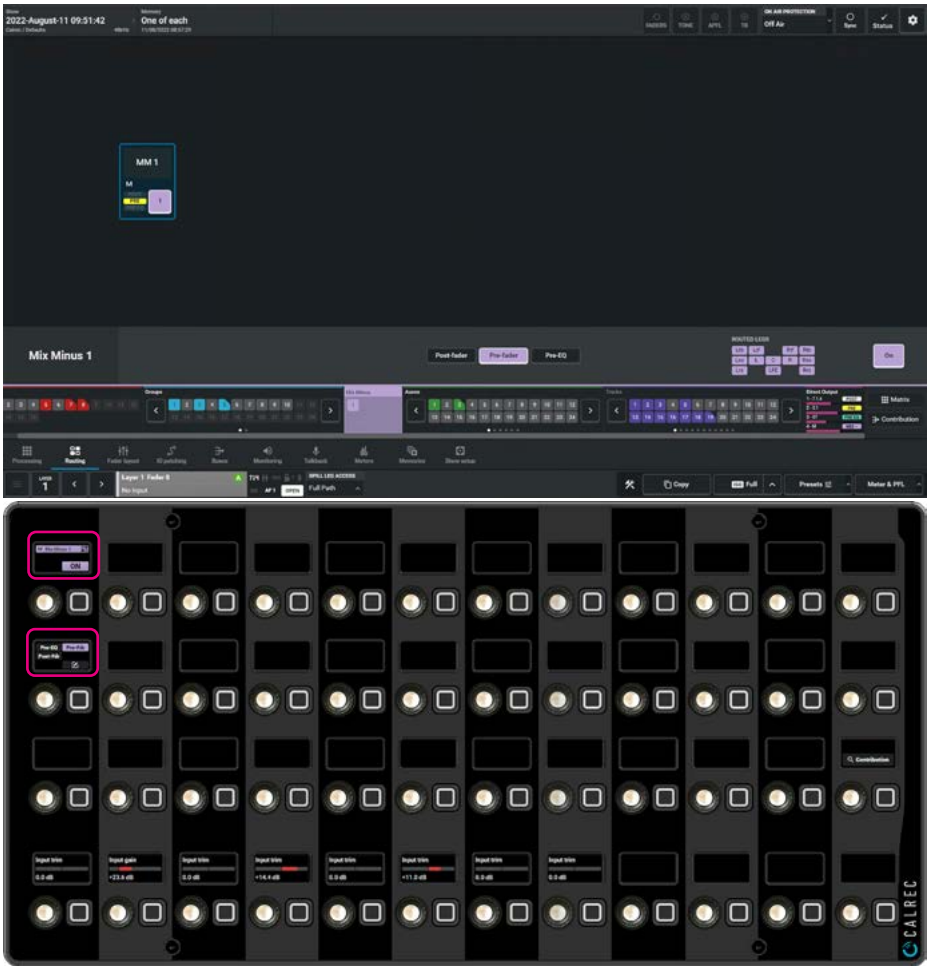


FIG 3 - MIX MINUS ROUTING CONTROLS ON TOUCHSCREEN & WILD ASSIGN PANEL



From the Wild Assign Panel:-
When in Mix Minus Routing mode is selected the Wild Assign panel uses two control cells for routing and send position

Cell 1 on Row 1 is used to route the selected path to the Mix Minus bus using the button adjacent to the unused rotary control highlighted (top row left).

Cell 1 on Row 2 highlighted (second row left) displays/controls the send position from the rotary control between Pre-EQ, Pre-Fader & Post Fader, the button adjacent to the rotary control sets the selection which is reflected on the Touchscreen.

MONITOR PANEL ROUTING

Routing on Monitor Panels
The dedicated monitor panel can also be put into Routing mode and it should be noted that it works independently from the Routing mode on the Touchscreen and Wild Assign combination to provide continuous access to the routing destinations if required.

Fig 1 shows that the Monitor panel is selected to show Routing to Mains and up to 16 Main destinations are individually routable to from here. As can be seen from the image Main 1 has been routed to from Fader 1A. The highlighted cell shown in Fig 1 shows the currently accessed path which is the source used to route to the various outputs where applicable. This cell changes with the selected accessed path.

Fig 2 shows the Monitor panel selected to show Routing to Auxes. Up to 48 Aux destinations are individually routable to from here and arranged in sets of 32. As can be seen from the image Aux 3 has been routed to from Fader 3A.

Fig 3 shows the Monitor panel selected to show Routing to Tracks and up to 96 Track destinations are individually routable to from here and arranged in sets of 32. As can be seen from the image Track 5 has been routed to from Fader 5A, but the Track **'Split'** has been used so that the level for Track 5 from Fader 5A is controlled from Track Send C.

The layout for Routing is very similar to the Monitoring Sources on the Monitor panel in that the Destination selection types are in the 2nd column, up to 32 destinations of the selected type are shown in the middle of the top 2 rows and the 3rd & 4th column of the top row shows the various pages of destinations.

Also when routing to track columns 9 & 10 on the top row show the Track Send split options and on the second row show the Currently accessed path used to route from and the Contribution button.

Note: the lower half of the Monitor panel continues to provide monitoring controls.

FIG 1 - ROUTING MODE ON MONITOR PANEL FOR MAINS

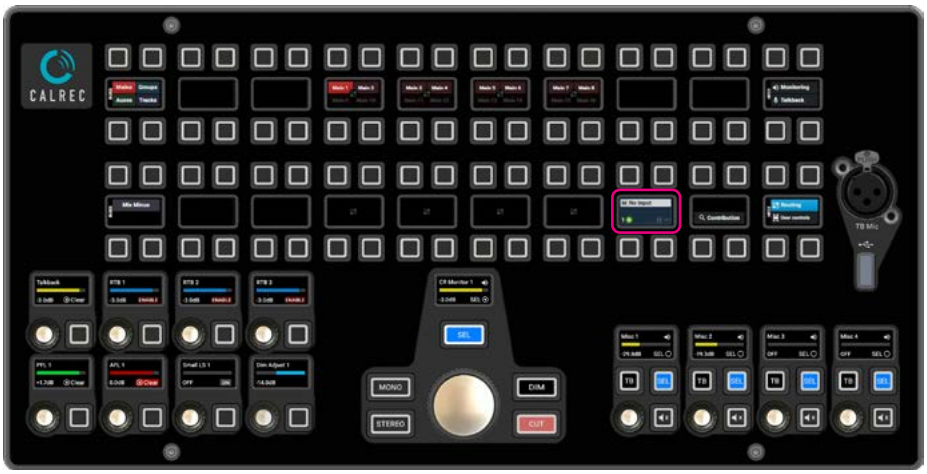


FIG 2 - ROUTING MODE FOR AUXES ON MONITOR PANEL

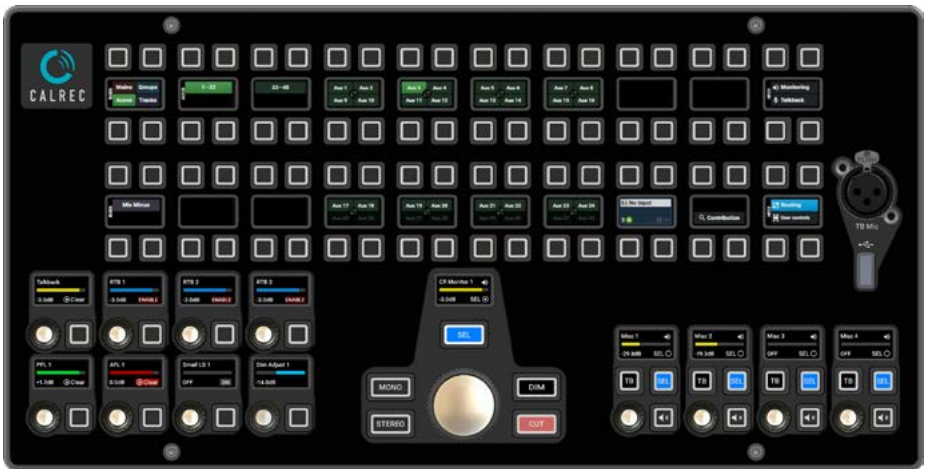
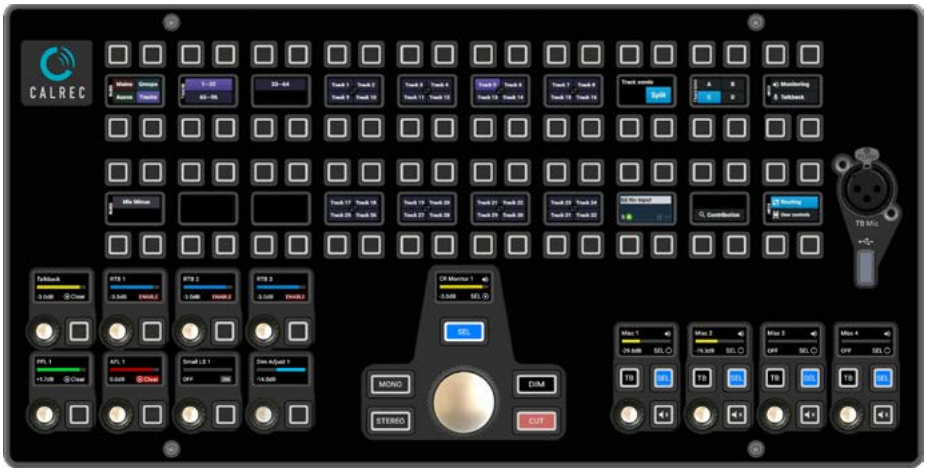


FIG 3 - ROUTING MODE FOR TRACKS WITH SPLIT SENDS ON MONITOR PANEL



CONTRIBUTION MODE

Contribution mode allows the user to see all contributing paths that have been routed to a selected Main, Group, Aux, Track and Mix Minus bus, previously known as reverse routing interrogation. It also provides the user with the ability to AFL the selected Aux, Track and Group buses as they are routed and further provides the ability to put Aux Sends on Faders to allow Aux mixes to be created from the fader bed.

The Contribution routing mode can be accessed from the Contribution icon on the touchscreen as shown in Fig 1, the Contribution button on the Wild Assign panel shown in Fig 2, or the Contribution button shown on the Monitor panel in Fig 13. Whichever panels are selected they are used in conjunction with the path Access buttons on the Fader panels to contribute to the chosen bus.

Accessing Bus Contribution

When the screen is switched to bus contribution mode, tap to select any destination that you wish to interrogate.

The images in Fig 1, 2 & 3 shows the contribution button has been pressed when on the Main Routing page and shows that a bus has not yet been selected for contribution routing.

In order to select a bus, the user first selects a bus type from the lower area by tapping on the Main, Group Mix Minus, Aux or Track area.

Groups, Auxes & Tracks have more than one page of Buses available and each block of 24 buses can be accessed either by tapping on arrow buttons in each bus area or the user can use the Routing mode buttons on the Modes row of a standard fader panel.

Once the required bus page is selected the user can then select it by either tapping it on the touchscreen or by pressing the appropriate button on the Wild Assign panel.

For each contribution interaction the Access display on the fader panel will indicate if a path on the current layer is routed to the selected main, group, track, aux or mix minus bus and the path position it is routed from. It's path access button will also be lit to show it's routed status The path access buttons of any paths that are not routed to the selected bus will be unlit.

This alerts users to paths routed from any fader layer on the surface, including those located within other user sections, allowing operators to check routing is correct, or quickly find offending paths that are incorrectly routed.

FIG 1 - CONTRIBUTION MODE -BUS NOT YET SELECTED ON TOUCHSCREEN

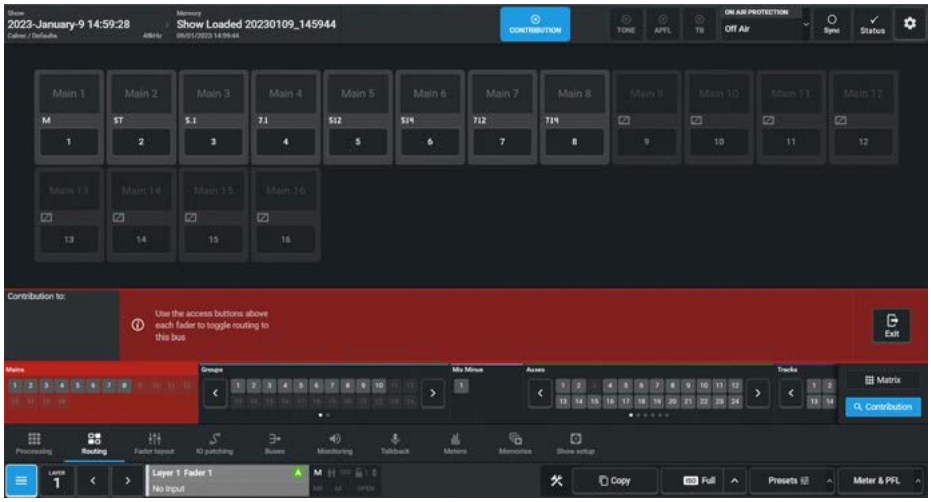


FIG 2 - CONTRIBUTION MODE - BUS NOT SELECTED ON WILD ASSIGN PANEL

FIG 3 - CONTRIBUTION MODE - BUS NOT SELECTED ON FADERS PANEL

Main Bus Contribution

Fig 4 shows 'Main 1' on the contribution touchscreen, wild assign panel and fader panel path display area:-

- The Touchscreen displays the current bus to contribute to.
- The Wild Assign panel shows the same page of buses with Main 1 selected as the illuminated 'Interrogate' button shows.
- The Path Fader display shows that the panel has gone into Contribution mode. Fader 10 which has 'Main 1' assigned to it, shows the Contribution destination label.

The other paths can be in one of 3 states:-

- Routed to the Contribution bus as shown for the Channel on fader 1 and Group 1 on fader 9 and their Access buttons are lit.
- Unrouted which is the state for the Channels on faders 2-8.
- Cannot Route shown by the No Entry symbol for Aux 1 on fader 11 and Track 1 on Fader 12.

Fader access buttons light up to indicate fully routed paths and partial routed paths flash, also note the 'Routed' label in the fader displays as shown. The layer select and layer bank buttons also flash for paths on layers that are not in view that are routed to the output being interrogated, see Fig 5.

Note: It is possible to Spill the paths contributing to the contribution bus providing it is placed on a fader path see **"Spill Contribution Paths on surface" on page 136.**

Partial Routing Indication

If only some of the legs of a Stereo, Surround or Immersive path are routed the access buttons flash rather than light solid.

By scanning the access buttons of the current fader layer, the layer select buttons, and the bank select buttons, users are guided to the faders that are routed to the bus under interrogation in contribution mode.

FIG 4 - MAIN CONTRIBUTION ON SCREEN, WILD ASSIGN & FADER DISPLAY

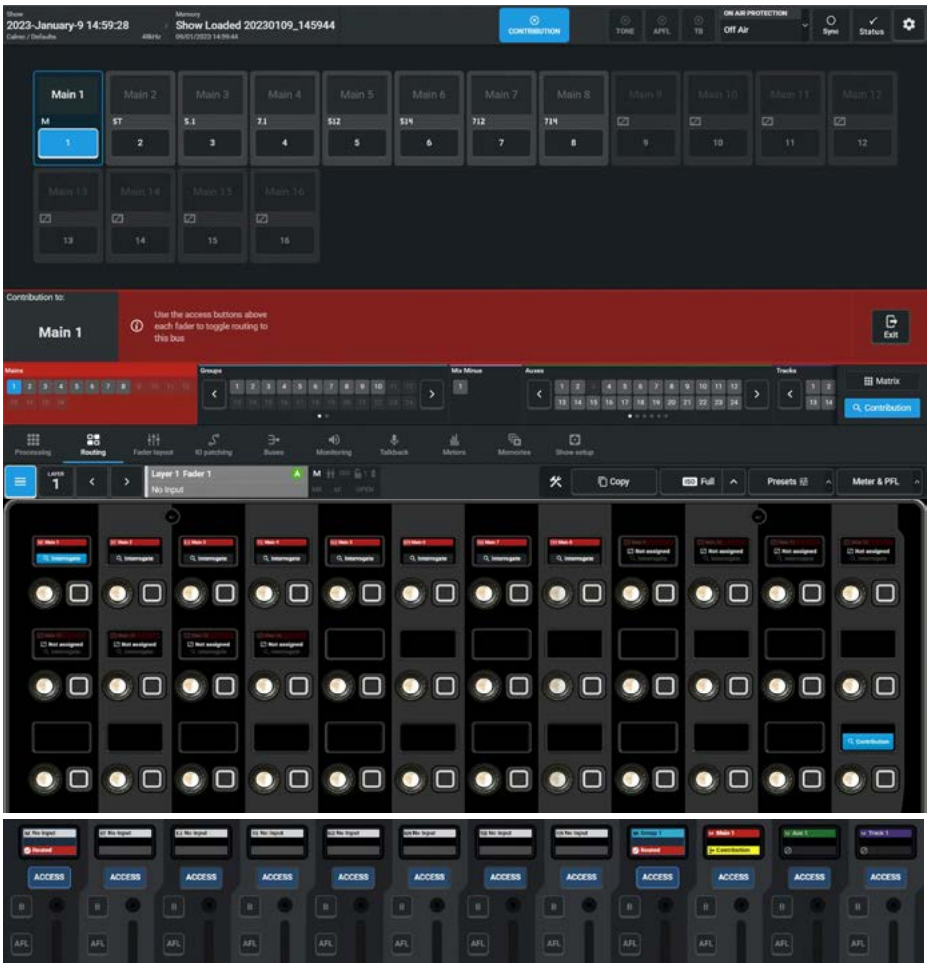
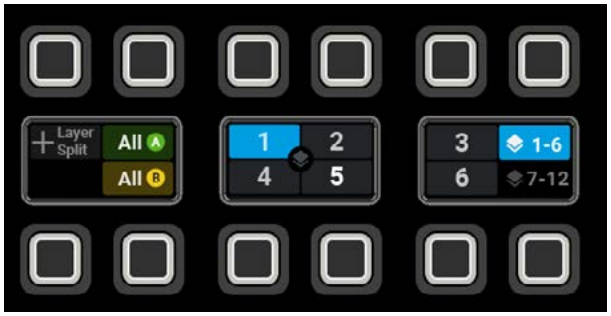


FIG 5 - CONTRIBUTION - LAYERS & LAYERS BANK SELECTION BUTTONS



In addition, users are informed of routes made from other user areas by notification in the contribution footer. While in contribution mode, routes from multiple paths to the selected bus may be made or removed by pressing the relevant path access buttons.

The path access buttons will light if the route is made. The Layer and All A/B buttons may be switched whilst in this mode.

Note: the access buttons no longer alter the current assignment in Contribution mode when pressed and released, however this can still be achieved by holding the access button for a second longer.

Group Bus Contribution

Fig 6 shows 'Group 1' on the contribution touchscreen, wild assign panel and fader panel path display area:-

- The Touchscreen displays the current bus to contribute to.
- The Wild Assign panel shows the same page of buses with Group 1 selected as the illuminated 'interrogate' button shows.
- The Path Fader display shows that the panel has gone into Contribution mode. Fader 9 which has 'Group 1' assigned to it, shows the Contribution destination label.

The other paths can be in one of 3 states:-

- Routed to the Contribution bus as shown for the Channel on fader 2 and its Access button is lit.
- Unrouted which is the state for the Channels on faders 1, 3-8.
- Cannot Route shown by the No Entry symbol for Main 1 on fader 10, Aux 1 on fader 11 and Track 1 on Fader 12.

Access AFL in Contribution Mode

When in contribution mode any Group bus can be AFL'd by switching on the **'AFL Selected**' button in the Contribution footer and pressing the required bus on the screen or the AFL Interrogated Group button on the Wild Assign Panel. This AFL behaves like any other normal AFL.

Note: in Fig 6 the AFL button on Fader 9 is turned on as the AFL selected button is active and the Group 1 bus is selected.

The AFL can be turned off manually by pressing the AFL selected button again or toggling the AFL button on the fader bed if assigned or cancelled globally using the APFL clear button, it follows AFL level controls and other AFLs may be activated before or after this one.

Note: this uses the AFL system that the user section is set to. If another Aux, Track or Group bus is selected, AFL on the previously selected Aux, Track or Group bus is turned off if active, and AFL on the newly selected Aux, Track or Group bus is turned on.

FIG 6 - GROUP CONTRIBUTION ON SCREEN, WILD ASSIGN & FADER DISPLAY

Mix Minus Bus Contribution

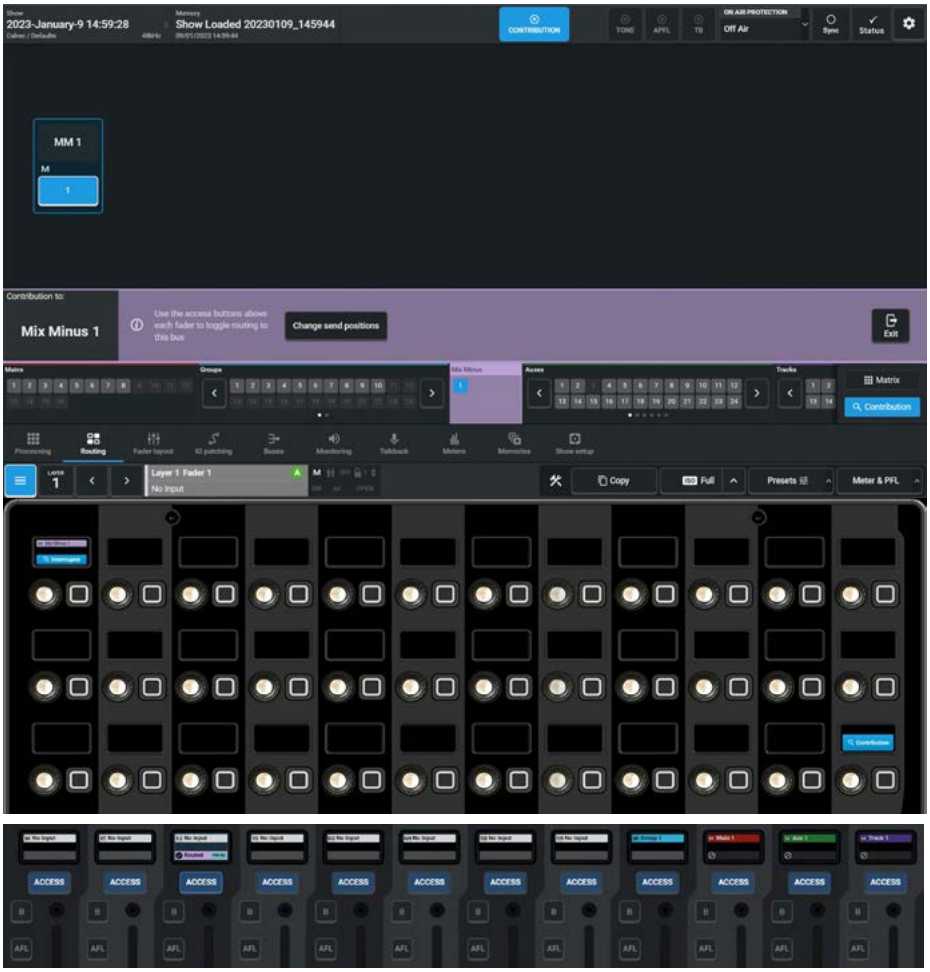
Fig 7 shows the Contribution screen, wild assign panel and fader panel path display area for the Mix Minus 1 bus:-

- This is the only Mix Minus bus currently in the system and is routed to in the same way as the other buses, with the Touchscreen displaying the current bus to contribute to.
- The Wild Assign panel shows the Mix Minus 1 bus selected as the illuminated 'Interrogate' button shows.
- The Path Fader display shows that the panel has gone into Contribution mode.

The other paths can be in one of 3 states:-

- Routed to the Contribution bus as shown for the Channel on fader 3 and its Access button is lit.
- Unrouted which is the state for the Channels on faders 1, 2 & 4-8.
- Cannot Route shown by the No Entry symbol for Main 1 on fader 10, Aux 1 on fader 11 and Track 1 on Fader 12.

FIG 7 - MIX MINUS CONTRIBUTION ON SCREEN, WILD ASSIGN & FADER DISPLAY

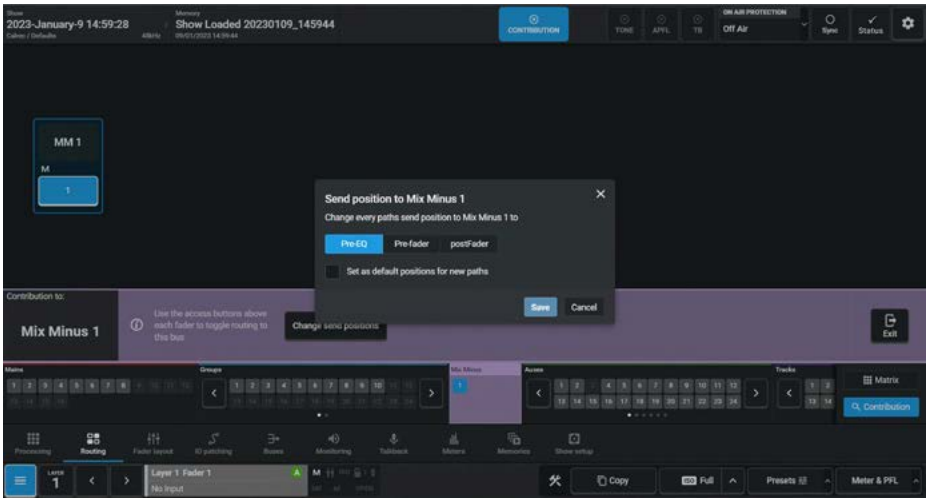


Default Send Positions

The User can change the default send positions for all paths that can be routed to the Mix Minus bus by tapping the 'Change send positions' button in the Contribution footer when viewing the contribution to the Mix Minus 1 bus.

There is also an options button in the dialogue box that will change the default send position for all new paths to that set by the selected send position, see Fig 8.

FIG 8 - MIX MINUS CONTRIBUTION SEND POSITION DIALOGUE ON TOUCHSCREEN



Track Bus Contribution

Fig 9 shows 'Track 1' on the contribution touchscreen, wild assign panel and fader panel path display area.:-

- The Touchscreen displays the current bus to contribute to.
- The Wild Assign panel shows the same page of buses with Track 1 selected as the illuminated 'Interrogate' button shows.
- The Path Fader display shows that the panel has gone into Contribution mode. Fader 12 which has 'Track 1' assigned to it, shows the Contribution destination label.

The other paths can be in one of 3 states:-

- Routed to the Contribution bus as shown for the Channel on fader 3 and Group 1 on fader 9 and their Access buttons are lit.
- Unrouted which is the state for the Channels on faders 1, 2 & 4-8.
- Cannot Route shown by the No Entry symbol for Main 1 on fader 10 and Aux 1 on fader 11.

Access AFL in Contribution Mode

When in contribution mode any Track bus can be AFL'd by switching on the **'AFL Selected**' button in the Contribution footer and pressing the required bus on the screen or the AFL Interrogated Track button on the Wild Assign Panel. This AFL behaves like any other normal AFL.

Note: in Fig 9 the AFL button on Fader 12 is turned on as the AFL selected button is active and the Track 1 bus is selected.

The AFL can be turned off manually by pressing the AFL selected button again or toggling the AFL button on the fader bed if assigned or cancelled globally using the APFL clear button, it follows AFL level controls and other AFLs may be activated before or after this one.

Note: this uses the AFL system that the user section is set to. If another Aux, Track or Group bus is selected, the AFL on the previously selected Aux, Track or Group bus is turned off if active, and the AFL on the newly selected Aux, Track or Group bus is turned on.

FIG 9 - TRACK CONTRIBUTION ON SCREEN, WILD ASSIGN & FADER DISPLAY

Aux Bus Contribution

Fig 10 shows 'Aux 1' on the contribution touchscreen, wild assign panel and fader panel path display area:-

- The Touchscreen displays the current bus to contribute to.
- The Wild Assign panel shows the same page of buses with Aux 1 selected as the illuminated 'Interrogate' button shows.
- The Path Fader display shows that the panel has gone into Contribution mode. Fader 11 which has 'Aux 1' assigned to it, shows the Contribution destination label.

The other paths can be in one of 3 states:-

- Routed to the Contribution bus as shown for the Channel on fader 4 and Group 1 on fader 9 and their Access buttons are lit.
- Unrouted which is the state for the Channels on faders 1-3 & 5-8.
- Cannot Route shown by the No Entry symbol for Main 1 on fader 10 and Track 1 on Fader 12

FIG 10 - AUX CONTRIBUTION ON SCREEN, WILD ASSIGN & FADER DISPLAY

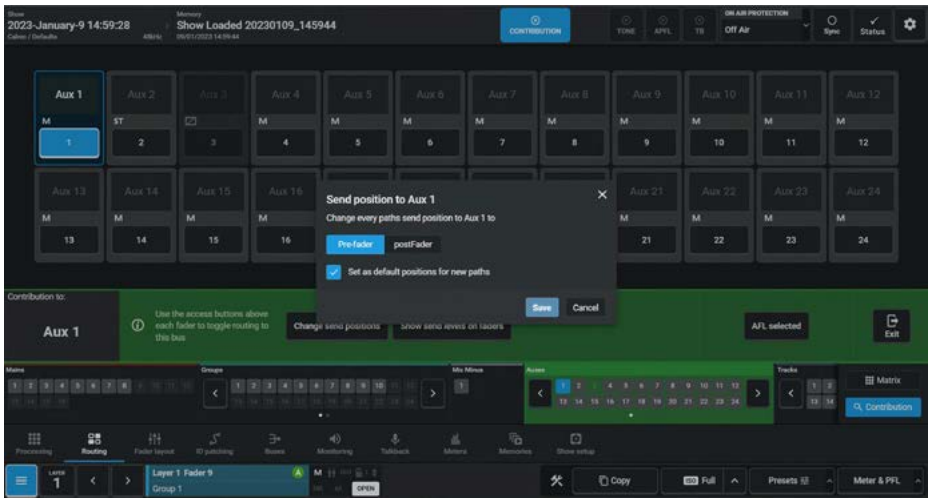
Default Send Positions

The User can change the default send positions for all paths that can be routed to an Aux bus.

This is achieved by tapping the **'Change send positions'** button in the Contribution footer on the touchscreen or by pressing the '**Change all sends'** buttons between Pre-Fader & Post Fader on the 3rd row cells 8 & 9 of the Wild Assign panel, when viewing the contribution to the selected Aux bus.

There is also an options button in the dialogue box on the touchscreen that will change the default send position for all new paths to that set by the selected send position, see Fig 11.

FIG 11 - AUX CONTRIBUTION SEND POSITION DIALOGUE ON TOUCHSCREEN



Aux Sends on Faders

Fig 12 shows the bus contribution screen when an auxiliary bus is selected and the Show send levels on Faders mode is activated by pressing either the **'Show send levels on Faders'** button on the touchscreen or the **'Send level on faders'** button on the 3rd row cell 10 on the Wild Assign panel.

This puts all the selected auxiliary send levels (in this case to Aux 1) from the contributing paths onto their faders, as shown.

When an Aux is selected, the faders will change from displaying their channel or group path level, to showing the relevant send level from that channel or group to the selected destination, see Fig 12, where the Channel on fader 4 and the Group 1 on fader 9 are examples of this.

If the path on a fader is routable to the selected destination, but is not routed this is shown in the fader label display.

If the path is not routable to the selected destination then the not valid icon is shown in the fader label display.

An alternate graphic appears in the fader meter displays, to indicate to the user that the faders are showing the send levels, not path levels.

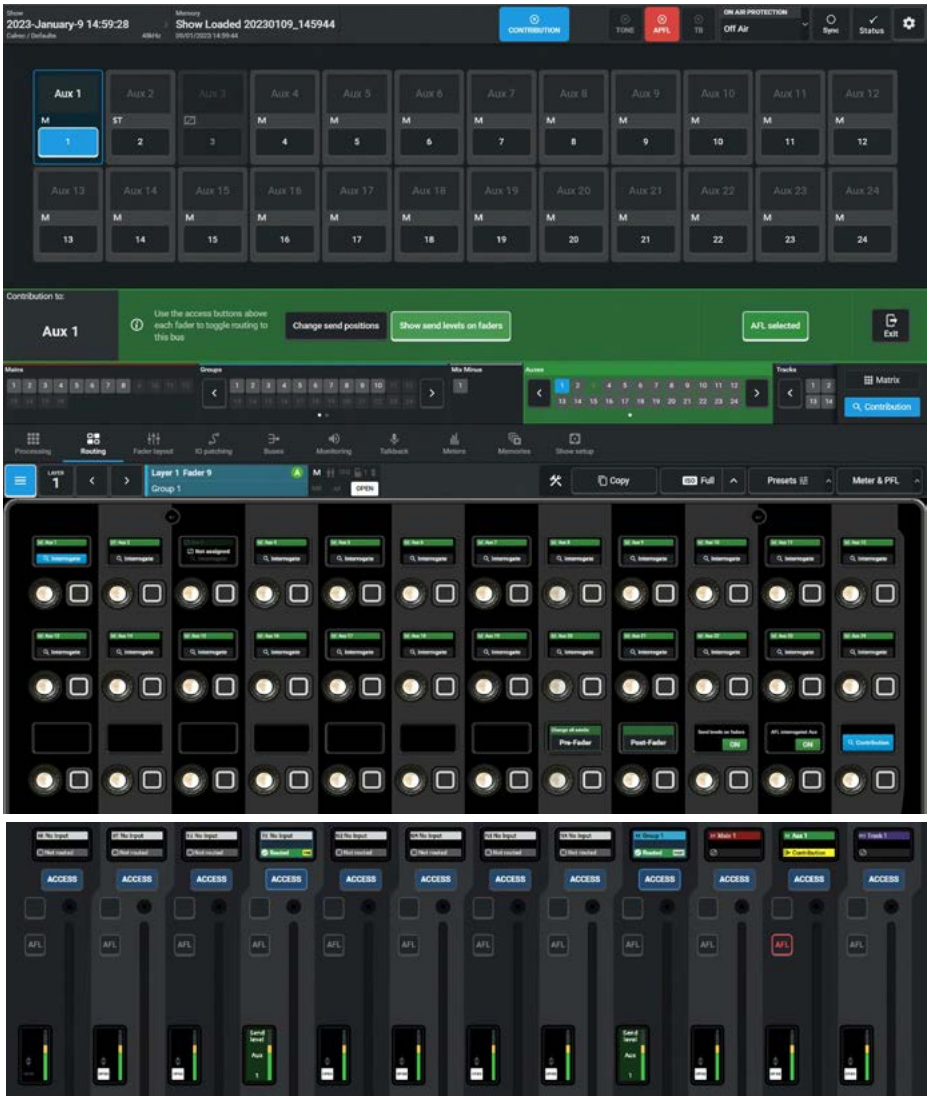
The fader display will show the routing and the send position of the sources contributing to that bus at the same time as shown in the path fader displays on faders 4 and 9 in Fig 12.

Note: when viewing bus contribution to Mains, Groups, Tracks or Mix minus, the faders will always display the channel or group path level.

Access AFL in Contribution Mode

When in contribution mode an Aux bus can be AFL'd by pressing the **'AFL Selected'** button and selecting the required bus on the screen or the AFL Interrogated Aux button on the Wild Assign Panel. This behaves like any other normal AFL.

FIG 12 -AUX CONTRIBUTION ON SCREEN, WILD ASSIGN & SENDS ON FADERS



Note: in Fig 12 the AFL button on Fader11 is turned on as the AFL selected button is active and the Aux 1 bus is selected.

The AFL can be turned off manually by pressing the AFL selected button again or toggling the AFL button on the fader bed if assigned or cancelled globally using the APFL clear button, it follows AFL level controls and other AFLs may be activated before or after this one.

Note: this uses the AFL system that the user section is set to. If another Aux, Track or Group bus is selected, the AFL on the previously selected Aux, Track or Group bus is turned off if active, and the AFL on the newly selected Aux, Track or Group bus is turned on.

When AFL is active and used in conjunction with the sends on faders option the user can listen to the selected Aux bus whilst adjusting the contribution levels being sent to it.

Leaving Contribution Mode

When the bus routing task is complete, the user can either touch the 'Exit' or 'Contribution' button again or tap on the Contribution button in the header of the Touch UI as shown in Fig 12, to return to the Routing page for the currently selected bus type.

Contribution on Monitor Panels

The dedicated monitor panel can also be put into Routing>Contribution mode by pressing the Contribution button shown next to the Routing/User Controls button cell on the second row and it should be noted that it works independently from the Contribution mode on the Touchscreen and Wild Assign combination to provide access to the contribution destination routing if required.

Fig 13 shows the Monitor panel selected to show Contribution to Groups and any one of up to 48 Group destinations can be selected to be the bus to contribute to. As can be seen from the image Group 8 has been selected and the Fader panels access buttons used to Route/Unroute their contribution to the chosen Bus.

Fig 14 shows the Monitor panel selected to show Contribution to the Mix Minus bus. As can be seen from the image Mix Minus has been selected and the Fader panels access buttons used to Route/Unroute their contribution to the chosen Bus.

Fig 15 shows the Monitor panel selected to show Contribution to Tracks and any one of up to 96 Track destinations can be selected to be the bus to contribute to. As can be seen from the image Track 1 has been selected and the Fader panels access buttons used to Route/Unroute their contribution to the chosen Bus.

The layout for Contribution is very similar to the Monitoring Sources on the Monitor panel in that the Destination selection types are in the 2nd column, up to 32 destinations of the selected type are shown in the middle of the top 2 rows and the 3rd & 4th column of the top row shows the various pages of destinations.

Also when contributing to tracks columns 9 & 10 on the top row show the Track Send split options and on the second row shows the active Contribution button.

Note: the lower half of the Monitor panel continues to provide monitoring controls.

FIG 13 - CONTRIBUTION MODE ON MONITOR PANEL FOR GROUPS

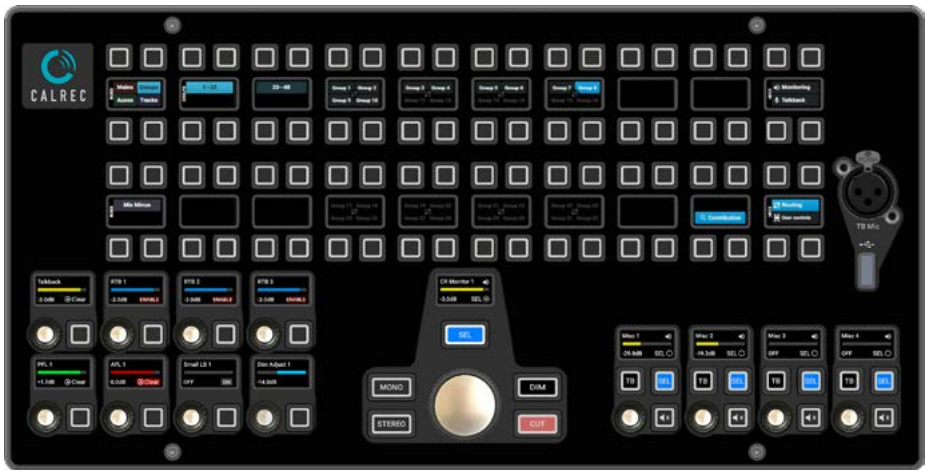


FIG 14 - CONTRIBUTION MODE FOR MIX MINUS ON MONITOR PANEL

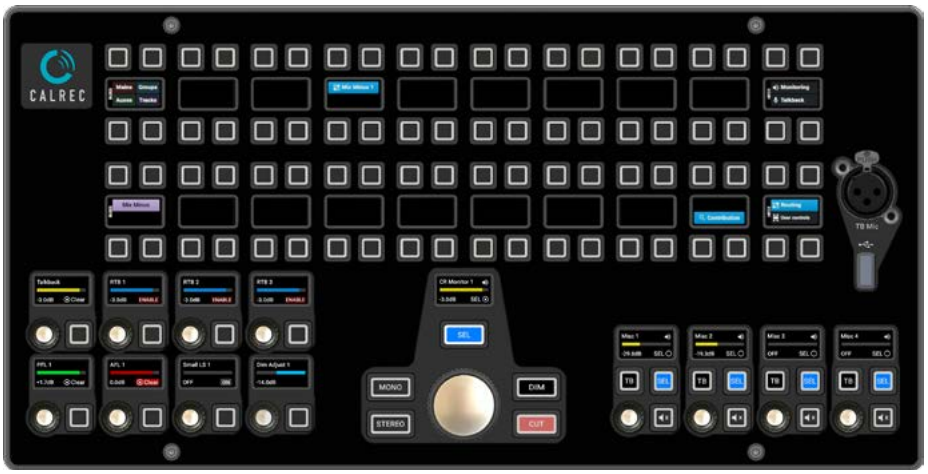
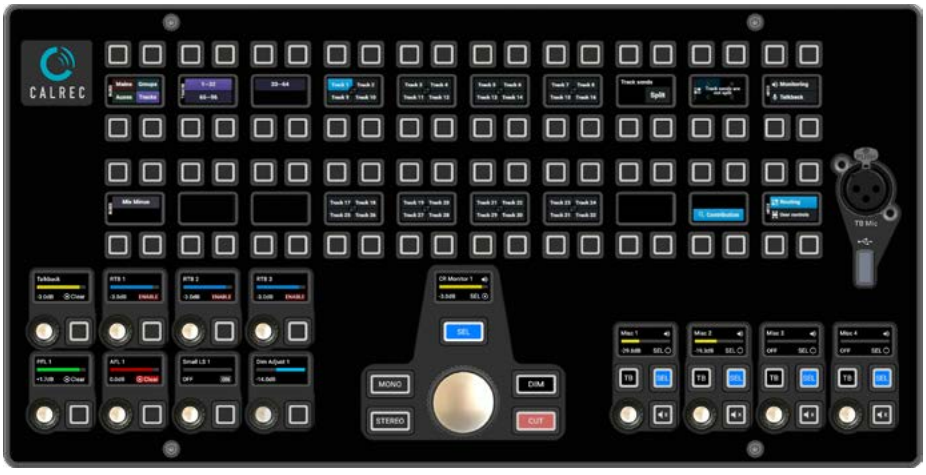


FIG 15 - CONTRIBUTION MODE FOR TRACKS ON MONITOR PANEL



ROUTING MATRIX

The purpose of the Routing Matrix is to simplify and speed up the routing Process. The screen is arranged in a tabular X-Y format where the Rows as identified on the left represents the sources to be routed and the Matrix to the right represents the crosspoints where the Destination Columns intersect the Source Rows.
Once the Matrix routing mode is accessed from either the Modes row of a fader panel by first tapping on the Modes Menu then the Matrix button as shown in Fig 1 or by tapping on the Matrix icon on the touchscreen, the touchscreen then displays/controls the routing in matrix format as shown in Fig 2.

Matrix Access

After tapping on the menu selection **Routing>Matrix**, the image in Fig 2 is displayed. The left side of the routing matrix shows the various source rows that are available in this show. The right side of the routing matrix shows the various destination columns that are available in this show. The crosspoint where source and destination intersect can be selected and then a route established between them. In the image above right, the highlighted blocks indicates that a route has already been made from the mono source channel on Layer 1A Fader 1 to the following bus destinations:- Main 1, Group 1, Aux 1, Mix Minus 1 and Track 1.

Note: to exit Matrix mode the user taps the 'Done' button on the bottom right of the Matrix page.

Routing Procedure

Routing and unrouting is a two stage process the user first selects the crosspoints to be connected and then taps on the now active **'Route'** button in the footer. In order to route a single source to a single destination the user selects the crosspoint by tapping on it, these selections are shown using an outline block, the user can then tap the Route button to action the selection.

If the user wishes to route a number of sources to a destination they can click (or touch) and drag vertically down to make their selection. If the user wishes to route a source to a number of destinations they can click (or touch) and drag horizontally across to make their selection, or drag out a block of selected crosspoints.

It is also possible to use control tapping to add crosspoints to the selections, say if a diagonal connection is to be made like routing channels to tracks on a one to one basis. Tapping a single selection again clears that single selection.

FIG 1 - MATRIX ROUTING MODE SELECT ON STANDARD FADER PANEL

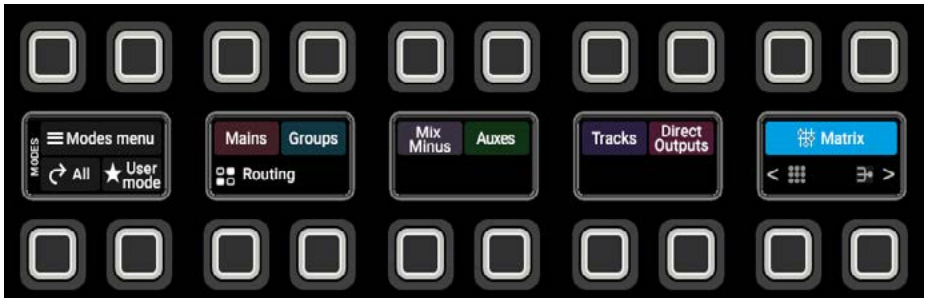


FIG 2 - ROUTING MATRIX DISPLAY

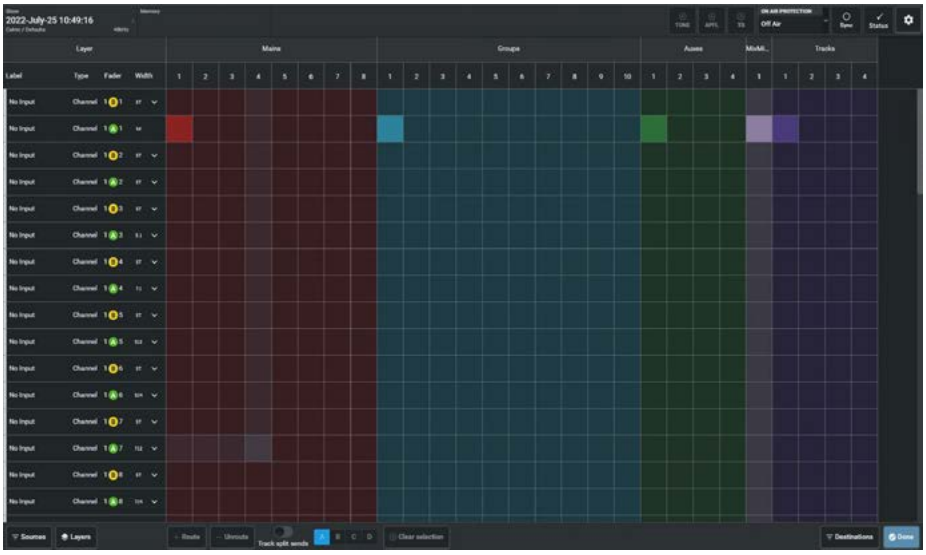
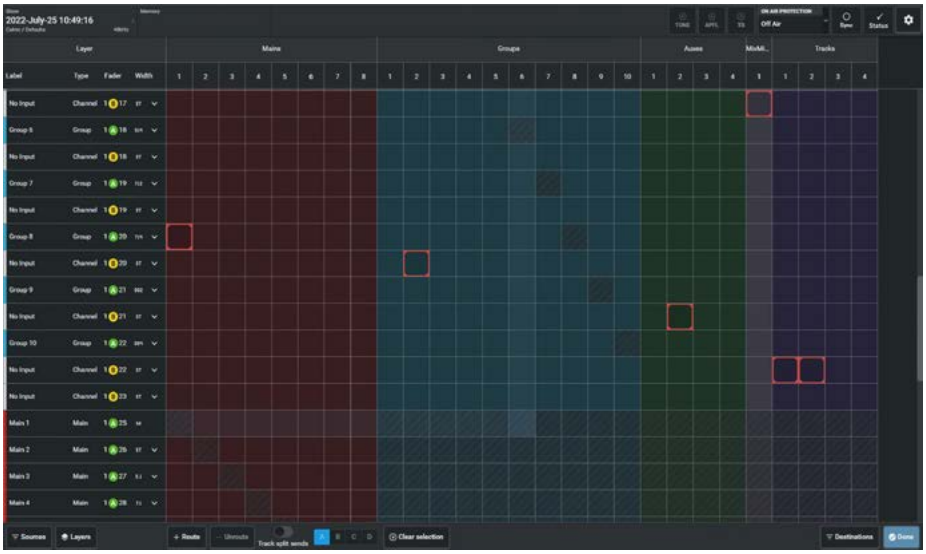


FIG 3 ROUTING/UNROUTING SELECTION



The outline blocks in Fig 3 on the previous page show the following crosspoint selections are ready to be routed:-

1. Fader L1F20A to Main 1
2. Fader L1F20B to Group 2
3. Fader L1F21B to Aux 2
4. Fader L1F17B to Mix Minus 1
5. Fader L1F22B to Tracks 1 & 2

The crosshatched squares in the matrix indicate that those crosspoints cannot be routed to, such as routing to itself or other invalid destinations for a particular source, once the selection is made the user clicks on the **'Route'** button in the footer.

Unrouting Procedure
Unrouting crosspoints is a similar method to routing except that the user selects the already highlighted routes and the outline block appears around it, once the required selection is made the user clicks on the now active **'Unroute'** button in the footer.

Clear selection
If the user has made a number of selections as shown in Fig 3 on the previous page, they can clear all the selections at the same time by tapping on the **'Clear selection'** button in the footer.

Sources Area
The following fields are displayed in the Sources Layer area as highlighted on the left side of the page:-

Label: The source label is shown here which can be a user label, bus label, port label or port number. If the path is a channel that has not yet been ported it appears as 'No Input' as shown in Fig 4.

Type: This defines the source path type in Argo the only paths that act as sources are Channels, Groups & Mains.

Fader: This field indicates the layer number that the source is associated with followed by the A or B sub-layer icon and the fader number. At the bottom of the source list which is scrolled to by either the vertical scroll bar on the right or by dragging the left source area, there are the buses that can be routed from which do not have a fader number but still act as sources, e.g. Main 1.

FIG 4 - SOURCES

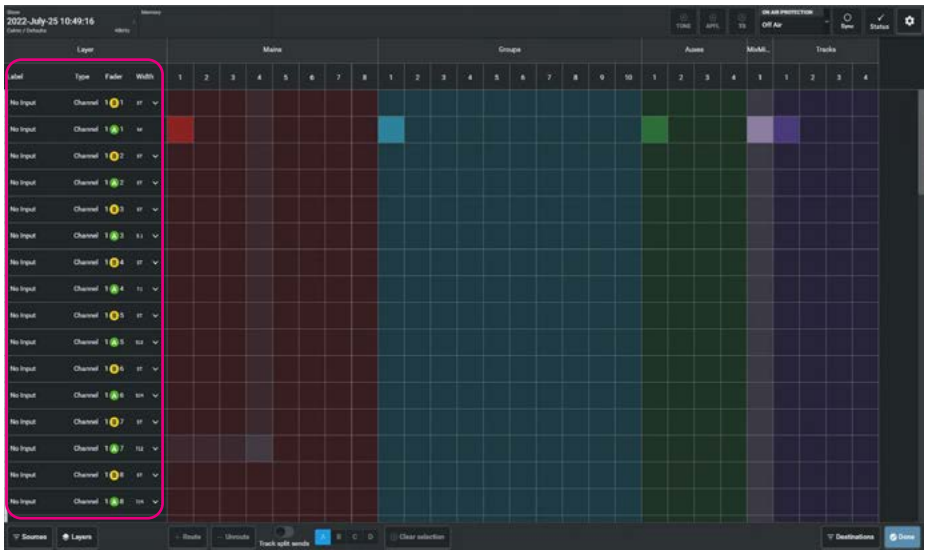
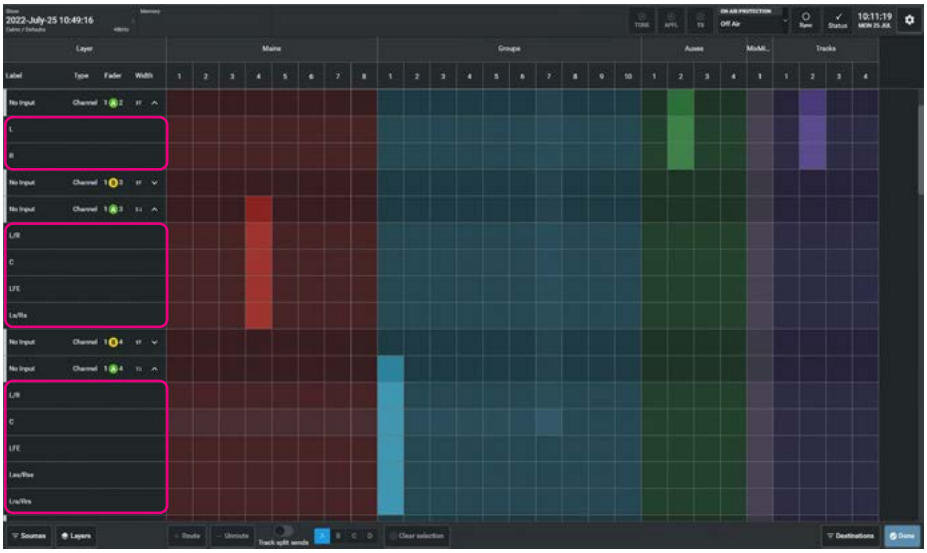


FIG 5 - ROUTING INDIVIDUAL SPILL LEGS OF SOURCES



Format: This defines the width of the source which can be mono M, stereo ST, surround 5.1, 7.1 or immersive 5.1.2, 5.1.4, 7.1.2, 7.1.4, 0.0.2 or 0.0.4.

Note: if a source appears in more than one place in the matrix such as the groups as shown in the images to the right then a 'Clone' symbol will appear.

v & ^ expansion arrows: An expansion arrow indicates that this path is either a stereo, surround or immersive source and tapping on the DOWN arrow '**v**' shows the individual legs of the path making them available for routing as shown for:-

Channel L1F2A Stereo (L & R),
Channel L1F3A 5.1 Surround
L/R, C, LFE & Ls/Rs)
Channel L1F5A 7.1 Surround
L/R, C, LFE, Lss/Rss, Lrs/Rrs
all as shown highlighted below right.
Tapping on the UP arrow '**^**' hides the individual spill legs back underneath the master path row as shown for the same Channels L1F2A, L1F3A & L1F5A immediately above each highlighted block as shown in Fig 5.

Generally as all the legs of a source would be routed to the destination, the default view is to show these paths closed up '**v**' as shown for the Channel L1A-F4 7.1 Surround path.

Source Filters: In order to simplify the view, various source filters can be applied.

Tapping on the **'Sources'** button on the left side of the footer opens the Source Filter Pop-up. A notification badge appears when a filter or number of filters are active as the filters can be used in combination allowing the user to tailor the sources shown in the routing matrix display.

Source Path filtering: The user can filter the view to only see Channels or Mains or Groups or any source paths in combination as shown in Fig 6.

Note: the default selection shows all source paths when the slider switches are all in the OFF position.

Source Format filtering: The user can filter the view to only see sources of certain width formats these are:- Mono, Stereo, 5.1 & 7.1 Surround and 5.1.2, 5.1.4, 7.1.2, 7.1.4, 0.0.2 & 0.0.4 Immersive formats or any source formats in combination as shown in Fig 7.

Note: the default selection shows all source formats when the slider switches are all in the OFF position.

Source Sub-Layers filtering: The user can filter the view to only show sources that have been placed on a Fader on Sub-Layer A or on Sub-Layer B or show all sources when the Sub-Layers A and B option is selected as shown in Fig 8.

Note: the default selection shows all sources when Show A & B is selected including paths not assigned to faders and also that if either Show A or Show B is selected, only sources that have been assigned to faders on Sub-Layer A or Sub-Layer B will be shown and therefore any Main or Group paths not assigned to faders will not be displayed with these filters active.

FIG 6 - SOURCE PATH FILTERING

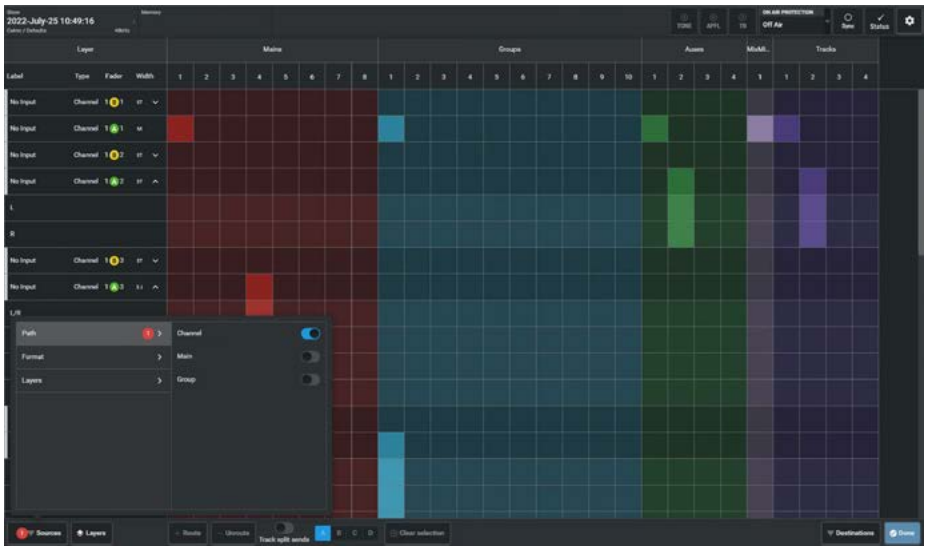


FIG 7 - SOURCE FORMAT FILTERING

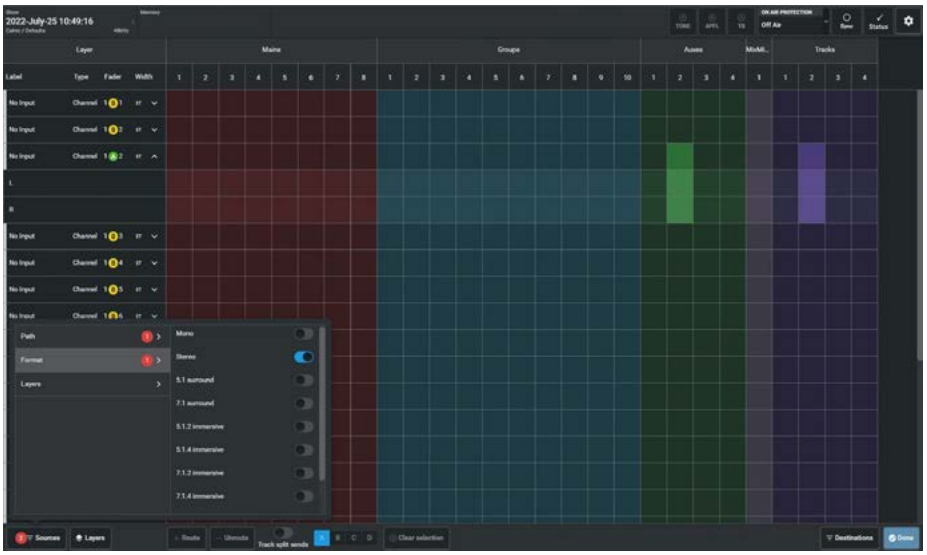
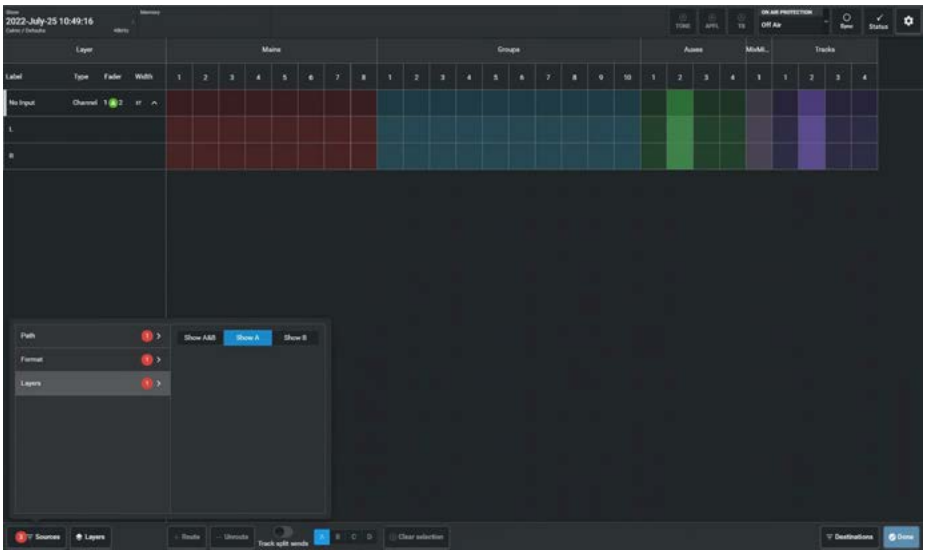


FIG 8 - SOURCE SUB-LAYER FILTERING

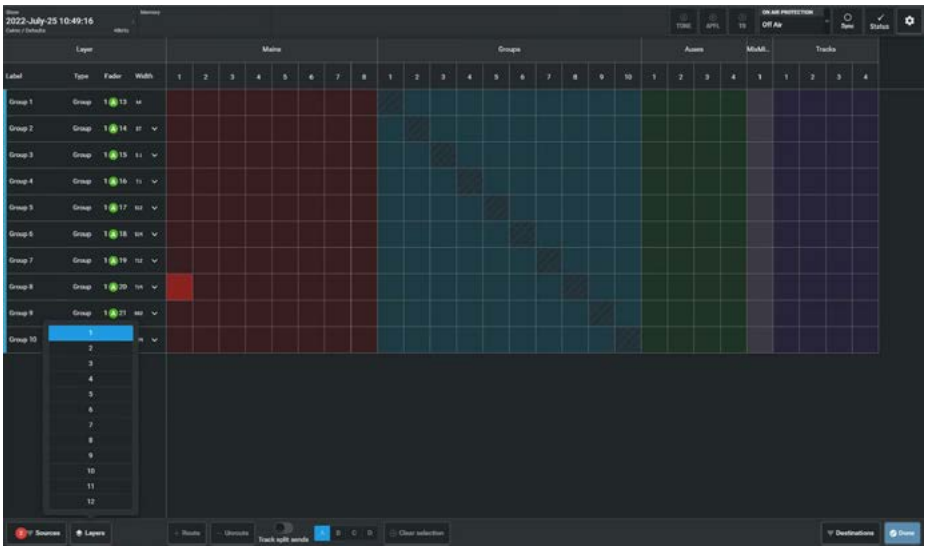


Source Layer Display Control is shown in Fig 9 above right. Tapping on the '**Layers'** button on the source side of the footer opens the Layer Control Pop-up.

From here the user can select any of the 12 Layers to display.

Note: this layer selection is independent from the actual current layer that the console is displaying.

FIG 9 - SOURCE LAYER DISPLAY CONTROL



Destination Area
The following buses are displayed in the Destination columns:-

Mains: This shows a number of Main columns which vary depending on the available Main buses.

Groups: This shows a number of Group columns which vary depending on the available Group buses.

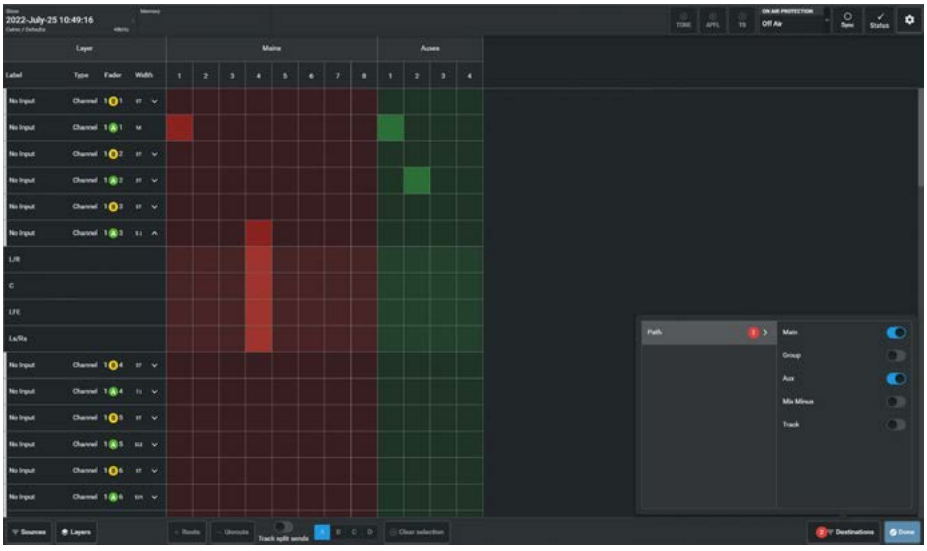
Auxes: This shows a number of Aux columns which vary depending on the available Aux buses.

Mix Minus: This shows the single Mix-Minus Bus column.

Tracks: This shows a number of Track columns which vary depending on the available Track buses.

If there are more buses available than can be displayed on the screen, a horizontal scroll bar will appear at the bottom of the matrix area that can be used to scroll to the required destination or the user can apply the destination filters as required.

FIG 10 - DESTINATION FILTERS



Destination Filters
Tapping on the **'Destinations'** button on the right side of the footer opens the Destination Filter pop-up which allows the user to filter the destination view by Main, Group, Aux, Mix Minus and Track bus type.

The image in Fig 10 shows that the destination filter for Main and Aux buses has been switched on which is why the display is only showing Main and Aux buses as destinations. The Group, Mix Minus and Tracks are hidden.

There is a slider switch provided for each bus type which when on displays that bus type. These can be used individually or in combination. A notification badge appears when a filter or number of filters are active in the footer buttons.

Note: the default selection shows all destination buses when the slider switches are all in the OFF position. Also note that Source & Destination filters can be used in combination to better manage the required routing.

Partial Leg Routing

If a stereo, surround or immersive path only has some of its legs routed the display shows this by displaying its master path with a corner cut off to show it is partially routed when the legs of the master path are not shown.

The image in Fig 11 above right shows that the Sub-Layer A only and Channel source filters and that the Main and Group destination filters are both on. Both complete and partial routed Stereo and 5.1 paths are being shown.

The stereo channel on Fader L1F2A is fully routed to Main 2, but only partially routed to Group 2 (L) & Group 3 (R).

The 5.1 channel on Fader L1F3A is fully routed to Group 1, but only partially routed to Group 4 (L/R), Group 5 (C), Group 6 (LFE) & Group 7 (Ls/Rs) and it is also routed to Main 4 (L/R), Main 5 (C), Main 6 (LFE) & Main 7 (Ls/Rs).

For partial routes the master path shows the corner cut off and when the legs are hidden underneath the master path, the corner cut off becomes an important indication of partial routing.

Partial Leg Unrouting

The image in Fig 12 below right shows what happens when all the master paths are unrouted. The complete routes are fully removed but the partial routes appear as unrouted with the corner cut off indication.

The partial routes are unrouted but are remembered allowing the user to easily restore partial routes by re-routing the master paths.

The image shows a couple of examples of partial leg unrouting:-

The 5.1 channel's L/R legs on Fader L1F3A has been unrouted from Main 4 & Group 4 and the LFE leg from Main 6, by selecting those crosspoints on the master path and unrouting them.

FIG 11 - PARTIAL ROUTED INDICATIONS

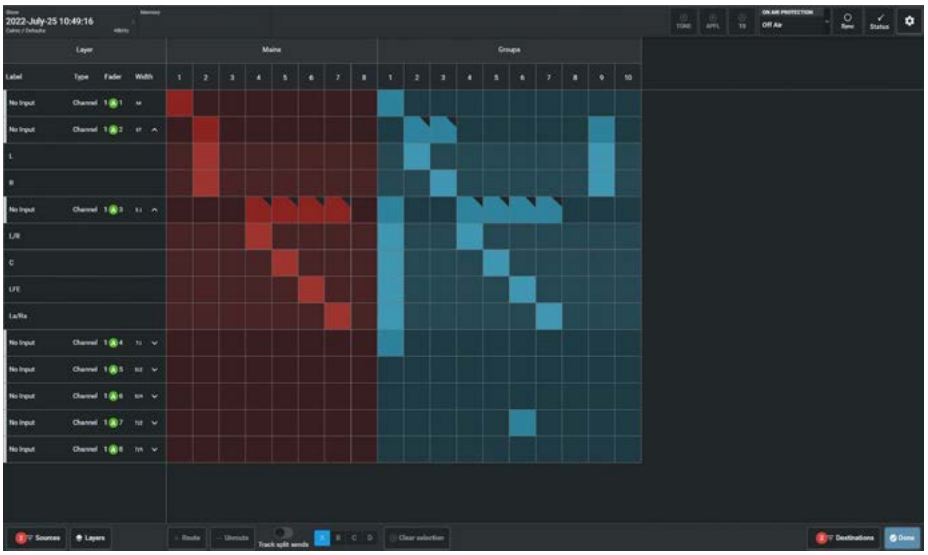
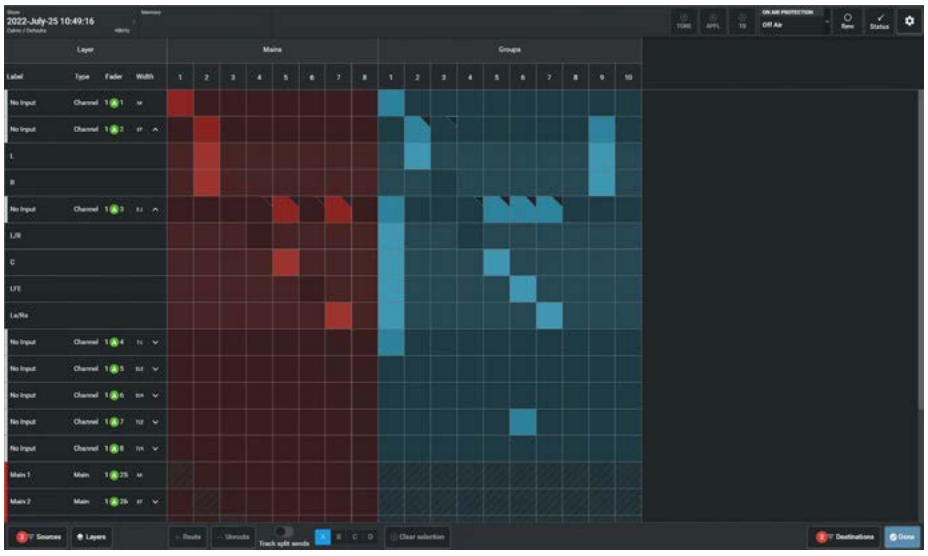


FIG 12 - PARTIAL UNROUTED INDICATIONS



However the routing matrix still displays the corner cut off as highlighted to remind the user that there are still potential partial routes that would be restored by re-routing the master paths.

The image also shows that the channel Fader L1F2A which has a (now hidden) partial route from the stereo channel's L leg to Group 2 has been selected.

This is ready to be unrouted with the **Unroute** button.

This will put it into the same state as that stereo channel's R leg on Fader L1F2A to Group 3 which has already been unrouted.

Note: in order to fully remove partial routes the user must first make those partial routes active again and then unroute all the legs directly.

Track and Split Track Sends Routing

In normal operation the Split Sends option accessed from the '**Split Track**' button in the destination side of the footer is turned off. Any track routes made behave just as the groups, mix minus, mains and auxes do including partial route indication.

There are four track sends from each path in Argo and if Split Sends is OFF (by default) then the routes are all made via track send A and as such do not require identification as to which of the four sends are being used.

However when Split Sends is turned on any existing track route will appear with a letter A in it to show which send it is routed from. Looking at just the tracks area of the matrix as shown in Fig 13 above right by switching on the Track Destinations filter, it can be seen that a number of routes have been made from a 7.1.4 Immersive Channel on Fader L1F8A to Tracks 1, 2, 3, 5, 6 & 7 respectively the channel to track routing is described below:-

Track 1 shows that complete routes have been made, via track send A, this could be made by routing the master path or routing all 7 legs individually. All the blocks show the track send A letter.

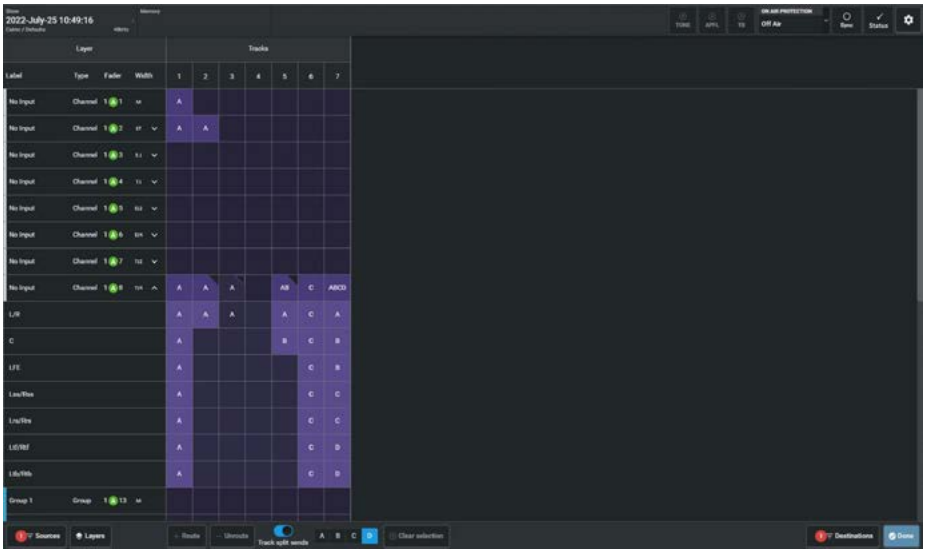
Track 2 is showing a partial route with just the left & right legs being routed via track send A. The master path and the L/R legs show the track letter.

Track 3 is showing an unrouted partial track send A route with the unrouted left & right legs remembered as being from track send A. The master path and the L/R legs show the track letter.

Track 5 was created by first partially routing the left & right legs via track send A with the letter A shown (just as Track 2 was), then the user selected the B button from the Split Send pop-up and routed the centre leg via track send B.

The letter B is then shown in the routing block for the centre leg and that the master path routing indicator which then

FIG 13 - TRACK AND SPLIT SENDS ROUTING



shows AB with the corner cut off, indicating that it is not only a partial route, but is also routed via two different track sends A & B.

This allows the track send A from the left & right legs and the track send B from the centre leg to be set to different levels by adjusting the track send A and B level controls. For instance a vocal on the centre leg may need to be louder than the audio on the left & right legs so track send B level can be increased in level without affecting the other leg levels.

Track 6 is a complete route from the channel via track send C. The user has selected the C button from the Split Send pop-up and routed the master path via track send C, which means that the output to that track is determined by the track send C level control from the channel. All the blocks show the track send C letter.

Track 7 is an extreme case of controlling all seven of the legs of a 7.1.4 channel from the four different track sends A, B, C & D, this is an unlikely routing arrangement but is shown here for completeness.

The various legs each show the A,B,C or D letters in their routing blocks to show which track send they are controlled from and the master path routing block shows as a complete route (as all legs are routed) with the ABCD letters shown.

It is important to note that routing and unrouting to and from tracks with the split sends option ON is affected by which send A, B , C or D has been selected.

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.

As an example:-
To completely unroute Track 5 then the C leg that has been routed via track send B can only be unrouted by selecting the split sends B button from the pop-up before the centre leg can be selected and then unrouted, otherwise that route would not be altered.

The user would then select the split sends A button from the pop-up before the left & right legs previously routed via track send A can be selected and then unrouted at which point Track 5 would be completely unrouted.

Note: if any route is made to any path via a send other than send A then it is not possible to turn off the split sends option.

When all the routes are only via track send A the user can then turn off the split sends slider and the remaining routes will remove their letter A identifiers.

ARGO
FADER LAYOUT

CALREC

FADER LAYOUT FROM TOUCHSCREEN

Fader/Path management is carried out from the Fader Layout page.
The **Fader Layout** screen provides a visual representation of all faders and all layers, showing the current path to fader assignment of the control surface. The on-screen display shows the type of path (if any) assigned to each fader, along with the input receiver/ fader label, and supporting indicators such as VCA group status, layer locks, memory isolates and cloned paths. Once the Fader Layout screen is accessed from either the Modes row of a fader panel by first pressing the Modes Menu button in button cell 4 of the Layers & Modes row and then tapping on the Fader Layout button as shown in Fig 1, or by tapping on the appropriate icons on the touchscreen as shown in Fig 2. The Wild Assign panel and Fader panel displays are not shown here as the configuration of the surface can be managed from the touchscreen. There are certain functions such as Path assignment and VCA groups creation that can also be controlled via the Access buttons on the console surface, these are described in the Fader Surface Management section of the manual, see **"Fader layout from the surface" on page 126.**

Configuring the Argo Fader Layout
When a show is loaded the fader layout screen is automatically populated as the loaded show becomes the active show. This screen can be accessed from the menu via the **Fader Layout** as described.

Fig 2 displays what the user would see when a new show is created.

Channels must be attached to faders to exist and faders can also be assigned to control bus outputs.

The Fader layout screen for Argo, shows the number of faders available on the console.

The empty fader layout is configured as shown in the **'Impulse Configuration Guide (926-290)'**.

The example shown is an Argo S and consists of 3, 12 fader sections with section 2 having an additional short 12 fader panel above the standard 12 fader panel.

The 48 faders are arranged as:- Faders 1A-48A and Faders 1B-48B for each of the 12 Layers available.

The fader sections are divided into blocks of 12 to emulate the physical Argo standard and short fader panels.

The fader layout displayed in Fig 2 shows:- the standard faders 1-24A & 1-24B in the first section, the short faders 25-36A & 25-36B in the second section above faders 13-24A &.13-24B and the standard faders 37-48A & 37-48B in the third section.

FIG 1 -FADER LAYOUT EXTENDED MODE SELECT ON STANDARD FADER PANEL

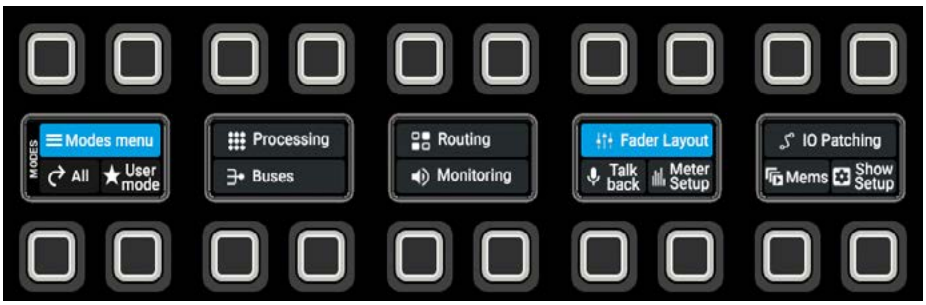
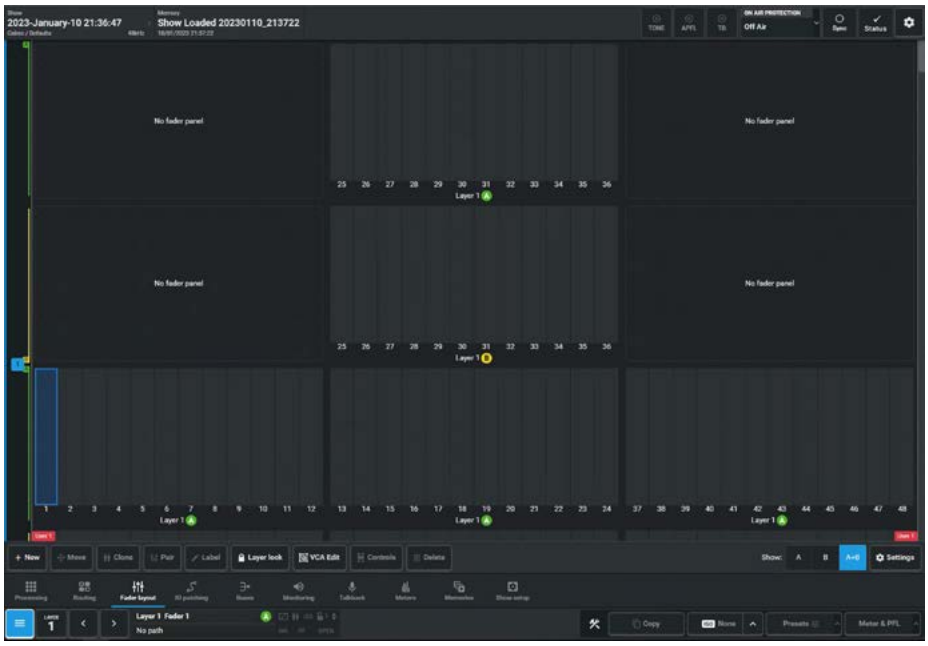


FIG 2 -EMPTY FADER LAYOUT SHOWING STRUCTURE OF SCREEN



Attaching a Path to a Fader

To attach a path to a single fader:

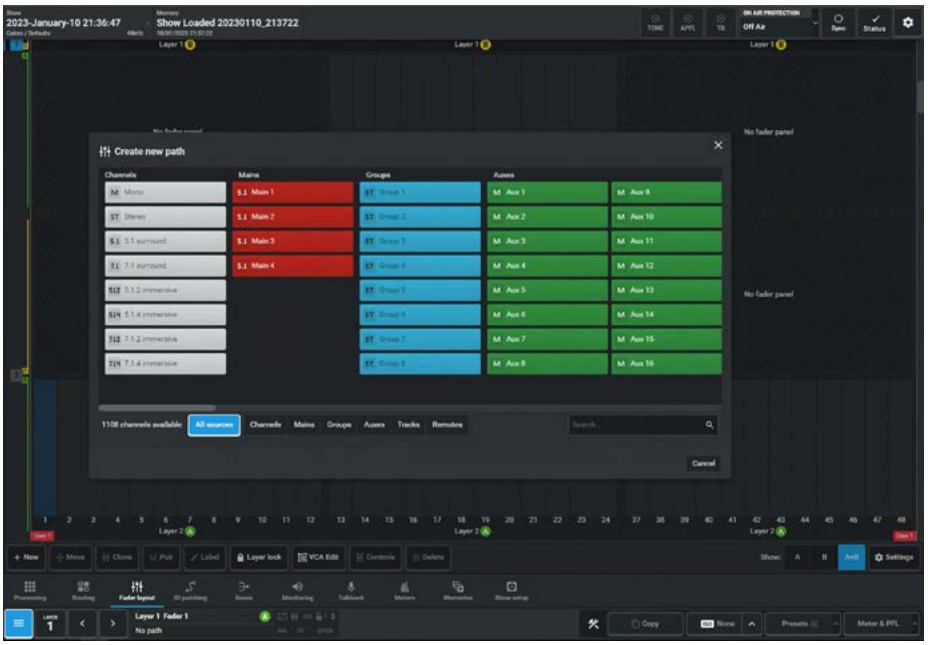
1. Tap on an empty fader space to select it, in this case L2-F1A.

2. Tap on '**New**' in the control screen footer. A pop-up opens to show the path options, for Channels, Mains, Groups, Auxes, Tracks and Remote Paths as shown in Fig 3.

3. Tap to select the desired width/type or use '**All sources**' in combination with the Search option if preferred.

4. Tapping on the chosen path(s) places the path on the fader, or tap on '**Cancel**' to return to the fader layout screen without making any changes.

FIG 3 -CREATE SINGLE NEW PATH ON TOUCHSCREEN



To attach paths to multiple faders:

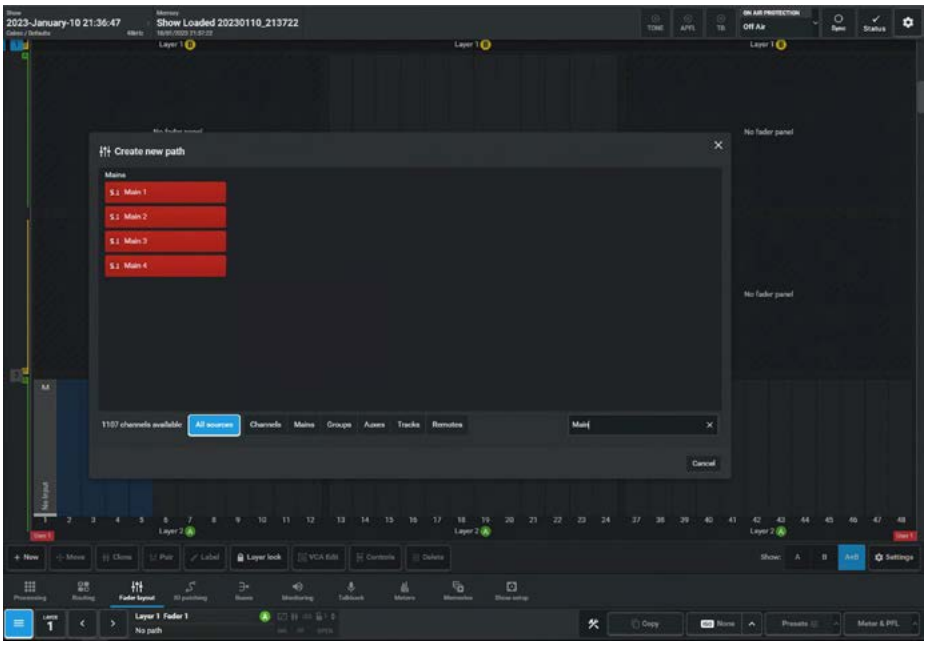
1. Tap and drag selection to select the desired range of faders in this case L2-F2A to L2-F5A.

2. Tap on '**New**' in the control screen footer. A pop-up opens to show the path options, for Channels, Mains, Groups, Auxes, Tracks and Remote paths as shown in Fig 4.

3. Tap on '**New**' and select your first path, the subsequent paths will fill the selection.

Note: just the Mains paths are shown in the pop-up box image in Fig 4, by typing the word "Main" into the search box.

FIG 4 -CREATE MULTIPLE NEW PATHS ON TOUCHSCREEN



Remote Production Options

It is possible to place remote paths from RP1 remote production units by selecting the Remotes option in the Fader Layout screen. This allows the user to map the remote faders and remote aux masters of multiple RP1 units on to the console surface.

The operation and integration of the RP1 remote production unit with the Argo console is the subject of a separate manual :- **Remote Production Manual Impulse Edition (926-308)** which can be downloaded from the Calrec Website.

In the RP1 manual is a chapter called 'Operation Via Host Console' which shows how to setup and operate the RP1 remote production unit paths via a host console connected to an Impulse core.

Populating the Fader Layout
All selected faders will then be populated with the chosen path type/width.

If an output bus is chosen, the selected faders will be populated with buses in numerical order.

For example, if the user selects 12 faders, and then chooses Aux 1 from the pop-up, the faders will be populated consecutively with Aux outputs 1 thru 12.

The image in Fig 5 shows the fader layout screen populated with various channels & buses on Layer 2.

FIG 5 -POPULATED FADER LAYOUT ON TOUCHSCREEN

Fader Label Editing
Once a path has been created, the user can edit its fader label and make it more meaningful see Fig 6.

To edit a fader label:

1. Select one or more faders and tap on '**Label**' in the screen footer.
2. The footer changes to display a text entry field & six buttons, Copy, Paste, Reset to default, Previous, Next and Done.
3. Enter fader labels using the keyboard.
4. Change the background colour of the label from the dropdown list.
5. Scroll through the fader label fields by tapping on them, or by tapping on '**Previous**' and '**Next**'.
6. Select a path and press '**Copy**' lets the user '**Paste**' labels to other paths.
7. Pressing **'Reset to Default'** clears the selected labels back to default.
8. Once you are happy with your changes, tap on '**Done**'.

Note: Selecting multiple labels before entering 'Label' edit will change the name and colour of all the selected labels. If the name field is left blank the label will revert to its system name.

FIG 6 -FADER LABEL EDITING ON TOUCHSCREEN

Label Display Options

Accessed from the Settings icon at the right hand side of the footer, the user can change the label displays for the Buses & Outputs between user and system labels.

Below this is shown a hierarchy of Fader labels available: from User Fader labels, Source labels,the Source transmitter channel to the Console receiver channel.

By default, the highest level of label in this hierarchy is displayed, but the user can choose to force this to show the preferred label.

External labels and Patchbay source labels are only shown if the **'Dynamic Channel Labels'** switch is active, else it follows the order shown bottom right of the touchscreen see Fig 7.

Surface options

There is a slider switch when active, enables the auto-navigation within the Fader Layout page. With this setting enabled, the Fader Layout page will jump to whichever fader is Accessed, on whichever layer. With this setting disabled, it will not.

The Fader label display buttons in Fig 7 can select just the current path label selection (A or B) as shown in Fig 7A or both A & B path labels shown in Fig 7B on the bottom TFT display row of a fader panel. Both of these label options are showing the same paths for label display comparison.

Note: As shown in Fig 6 the single and dual labels options can also be custom coloured by the user if preferred.

Moving Paths

To move paths to different faders as shown in Fig 8:

1. Select one or more faders, at least one of which must contain a path.
2. Tap on '**Move**' in the screen footer.
3. A pop-up appears in the footer asking the user to select where the first 'Move to' destination should be.
4. Green named pointers then appear under the destinations for empty paths, to show the intended move.
5. Tap on '**Move**' again to confirm.

FIG 7 -LABEL DISPLAY AND SURFACE OPTIONS ON TOUCHSCREEN

FIG 7A -LABEL SHOWS A OR B LAYERS

FIG 7B -LABEL SHOWS A AND B LAYERS

FIG 8 -MOVING PATHS ON TOUCHSCREEN

If the user selects a move destination that has existing paths on it the pointers appear red rather than green and they are presented with three options:

Swap: - swaps the original paths with faders on the chosen destination.
Overwrite: - replaces the destination path with the original selection and removes the destination paths from the surface. As channels don't exist once they are removed from a fader, a pop-up appears if there is an attempt to overwrite a channel, asking for confirmation.
Cancel: - cancels the move.

Cloning Paths
To create a clone of a path from a fader:

1. Select the fader or faders to be cloned which must contain path(s).

2. Tap on '**Clone**' in the screen footer.

3. A pop-up appears in the footer asking the user to select the destination where the first clone should appear.

4. Green Named pointers then appear under the destinations for empty paths, to show the intended move.

5. Tap on the '**Clone**' button in the pop-up to create the clone path(s) or tap on '**Cancel**' to return to the fader layout screen without change.

6. Once the clone has been created all clones of that path and the original will have the clone icon attached as shown in the example in Fig 9 on faders L1F4A and L1F7A.

If the user selects clone destinations that have existing paths on them, the pointers appear red rather than green and they are presented with a 'Clone & overwrite' option as shown in Fig 10 which first deletes the paths to be overwritten then places the clones on the empty paths.

Note: Pointers appear yellow if the path on the fader will be overwritten but not destroyed (e.g. bus paths).

FIG 9 -CLONING PATHS ON TOUCHSCREEN

FIG 10 -CLONE & OVERWRITE PATHS ON TOUCHSCREEN

Deleting Paths

To remove paths from the fader layout as shown in Fig 11:

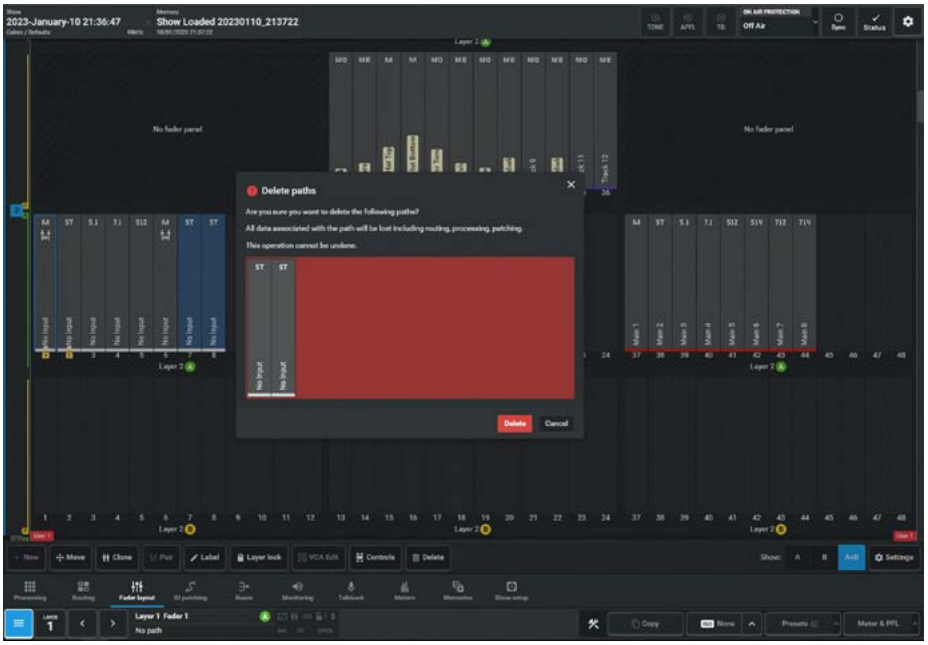
1. Select one or more faders, at least one of which must contain a path.

2. Tap on '**Delete**' in the screen footer.

3. A pop-up dialogue appears asking for confirmation that the selected paths are to be deleted and advising that **"This operation cannot be undone."**

4. Tap on '**Delete**' in the pop-up to remove the path from the fader layout or tap on '**Cancel**' to return to the fader layout screen without change.

FIG 11 -DELETING PATHS ON TOUCHSCREEN



Layer Lock

This allows the user to keep important faders to be always present on the fader surface, regardless of which Layer on sub-layer A or sub-layer B is selected and is locked or unlocked as follows:

1. Select one or more faders (with or without paths attached).

2. Tap on '**Layer lock**' in the screen footer. A padlock symbol appears on the locked paths as shown in Fig 12 on Faders L2F1A & L2F2A.

3. To unlock the locked path(s) with the padlock icon(s) select them and tap '**Layer lock**' in the screen footer.

FIG 12 -LAYER LOCK ON TOUCHSCREEN

Pair Faders
This allows the user to pair two faders together as shown in Fig 13. The pair operate like a Link, where moving either fader moves them both by the same amount, but note it only pairs the faders and cut/on switches. This is primarily designed to pair Argo faders with RP1 Faders.

To pair two faders together:
1. Select the first fader to be paired which must have a path attached.

2. Tap on '**Pair**' in the screen footer.

3. Select the second fader to be paired

4. Click 'Pair' in the Pair Footer pop-up.

5. The Pair icon appears on both faders as shown on Faders 1 & 6.

To unpair a fader pair:
1. Select either of the paired faders.

2. Tap on '**Unpair**' in the screen footer.

3. This will unpair the faders and the pair symbol will be removed.

Note: if one of the pair is deleted from the Fader Layout the Pairing connection is also deleted.

VCA Edit Mode
This allows the user to create, add, edit and remove VCA groups from the **Fader Layout>VCA Edit** page.

This process is normally carried out on a physical fader surface using access buttons, however the system may be headless with virtual faders so a method of setting up VCA groups is required.

A VCA group consists of a VCA master fader and a number of VCA slave faders.

Adjusting the level of the VCA master fader allows all the VCA slave fader levels to be adjusted maintaining the balance of the sound without having to adjust them all individually.

FIG 13 -PAIR FADERS ON TOUCHSCREEN

FIG 14 -VCA EDIT MODE ON TOUCHSCREEN

Entering VCA Edit Mode
The image in Fig 14 on the previous page shows a simple example:-

Fader L1-F1A is an unassigned path and faders L1-F2A & L1-F3A assigned as mono Mic channels that the operator wants to control from a VCA group master fader.

The first step is to select the path that will become the VCA Master Fader. Clicking or tapping on the required fader on the fader layout page highlights it and the user then clicks on the VCA Edit button on the right side of the footer.

Changing the selected fader
The image in Fig 15 shows that Fader L1-F1A is the selected fader for the VCA Edit page.

If another fader is to be set as the selected fader the user can tap or click on the currently selected fader again and the highlight will be removed showing that it is deselected with the Footer showing that there is no selected fader, see the VCA edit footer with no selected fader as shown in Fig 16.

The user then chooses the required fader and clicks upon it to change its status to that of selected fader.

FIG 15 -VCA EDIT FOOTER WITH SELECTED FADER ON TOUCHSCREEN

FIG 16 -VCA EDIT FOOTER WITH NO SELECTED FADER ON TOUCHSCREEN

Creating a VCA Group
With fader L1-F1A being the selected fader the user selects the faders to be in the VCA group, as shown in Fig 17.

In this case just fader L1F2A has been added as a VCA slave and the green '**SL**' Icon has been appended to it along with a green border placed around the path. The selected fader L1F1A now has a label appended as VCA Master of the group and has the red '**MR**' Icon appended to it along with a dashed red border placed around the path. The current path status window in the footer also shows the red '**MR**' icon.

The VCA **MR**, **SL** & **MS** icons appear in the Fader Surface page and on the physical surface fader panels if any.

Also note that fader L1F1A is displaying an empty path icon at the top to show that there isn't a path on the same fader i.e. a VCA master without a path.

A VCA master with a path can be created by choosing a selected fader with a path already assigned to it, in which case the path icon will show the width of the path M, ST, 5.1, 7.1, 5.1.2, 5.1.4, 7.1.2, 7.1.4, 0.0.2 or 0.0.4 as determined by its width.

Note: the path underneath will also become a VCA slave of the VCA master on top of it.

Exiting VCA Edit Mode
At this point, if the user has finished creating the VCA group, the user taps on '**Done**' in the footer to return to the normal Fader Layout page function, the VCA group icons remain but the borders which are used to identify the 'selected' VCA group are removed, see Fig 18.

Adding or Removing VCA Slaves
If the user wants to add or remove VCA slaves to/from a VCA group, the user can re enter the VCA Edit mode if they have exited it, choose the selected path and simply click on any available path to add it to the VCA group. The image in Fig 18 shows that fader L1F3A has now been added to the VCA group.

Note: any fader that is not available for addition to the group is shaded or greyed out.

FIG 17 -VCA GROUP CREATED ON TOUCHSCREEN

FIG 18 -ADDING VCA SLAVES TO AN EXISTING GROUP ON TOUCHSCREEN

To remove individual VCA slaves from the group the user can click again on the paths with the associated '**SL**' icons and those paths will return to their assigned path only state i.e. '**SL**' icon and border colour removed. If the user removes the last VCA slave from the group then the VCA group and the VCA master status entry is also removed. If it was a VCA master without a path it becomes unassigned or if it was a VCA master with a path then it will return to an assigned path only state.

Remove all slaves
When VCA Edit mode is active, there is a button labelled **'Remove all slaves'** in the VCA Edit footer, which becomes active when a valid path is selected.

If the user selects a primary, intermediate or simple VCA master and taps on this button all the direct VCA slaves belonging to the selected master will be removed.

For primary VCA masters this also means that all intermediate VCA masters are converted to simple VCA masters.

For intermediate VCA masters this also means that as all their VCA slaves have been removed they become the selected VCA slave of their primary VCA master.

Note: if the primary, intermediate or simple VCA master does not have a path underneath when 'Remove all slaves' is actioned it's entry will be removed.

Adding a second VCA group
The image in Fig 19 shows that a second VCA group has been added.

The Selected fader was changed to fader L1F1B which has a path underneath. This became the second VCA master when fader L1F2B was added to it.

The VCA group here consists of the VCA master and two VCA slaves on faders L1F2B and L1F1B which is the path underneath the VCA master.

Note: the second VCA group members have borders around then to show that they are all members of the same group.

Creating a VCA Intermediate Master and VCA Primary Master
Going beyond a simple VCA group structure, it is possible to create intermediate VCA group masters which allow sub groups to be controlled from an overall Primary VCA Master.

A practical example of this may be in an orchestra setting where a "Strings" VCA group of say 8 different instruments which are already balanced in terms of relative gain and a "Brass" VCA group of another set of different instruments is created but the director want to have overall control of both VCA groups from a single fader so that the balance is retained between the VCA groups.

The image in Fig 20 shows that the two VCA groups have been combined.

With fader L1F1A as the selected fader, the user clicks/taps on another VCA master fader L1F1B which becomes a VCA intermediate master and its icon changes to '**MS**'.

FIG 19 -ADDING ANOTHER VCA GROUP ON TOUCHSCREEN

FIG 21 -VCA INTERMEDIATE MASTER CREATED ON TOUCHSCREEN

This is to show that it is still a VCA master to its own VCA slaves but is itself a VCA slave to the Primary VCA master.

At this point the fader L1F2B is now greyed out because it is a direct VCA slave to fader L1F1B which is now an intermediate VCA master.

A VCA slave cannot have 2 VCA masters, therefore it cannot also be a direct VCA slave to the selected primary master on fader L1F1A.

Note: the green border colours around the paths that are directly controlled from the primary VCA master and the fact that fader L1F2B is both greyed out and does not have a border colour.

Adding or Removing VCA Slaves to/ from a VCA Intermediate Master

If the user wants to add or remove VCA slaves to/from the VCA intermediate master then as shown in Fig 21, the user would deselect fader L1F1A and select fader L1F1B, the VCA intermediate master then becomes the selected fader.

Note: the VCA intermediate master shows a red border around it and its directly connected faders are bordered VCA slaves in green, but in this case its VCA primary master is also directly connected, which is why it is bordered in red although greyed out.

The user can then click/tap on any available path to add it to the intermediate VCA master's group or click on any existing VCA slave belonging directly to the VCA intermediate master (as shown by the green border) to remove it.

FIG 21 -ADD/REMOVE VCA SLAVES FOR VCA INTERMEDIATE MASTER

Removing a VCA Intermediate Master

If the user removes the last VCA slave from the VCA intermediate master then its group is also removed and the VCA intermediate master and simple VCA master statuses are removed.

This can result in two states for the former VCA intermediate master:-

1. If it was a VCA master with a path underneath it becomes a direct VCA slave of the VCA master on Fader L1F1A.

This is what has happened in the image in Fig 22.

The intermediate VCA master became a selected VCA slave.

Clicking or tapping on any of the available paths in this state will turn the selected VCA slave fader back into an intermediate VCA master again.

Deselecting the selected VCA slave will return the VCA layout to normal with the master on L1F1A showing its VCA slaves on faders L1F2A, L1F3A and now L1F1B.

FIG 22 - VCA INTERMEDIATE MASTER REMOVED

2. If it was a VCA master without a path underneath, its entry in fader layout will be removed.

Note: a VCA intermediate master can return to being a separate VCA master, if the Primary VCA master is set to be the selected fader and then the user clicks on the VCA intermediate master.

VCA Edit display example
The example in Fig 23 is showing multiple VCA groups with a VCA primary master, four VCA intermediate masters to this primary master and three separate simple VCA masters.

The Primary VCA master shown with a dashed red border, has been selected to show all its intermediate masters shown with a green solid border.

In addition the other VCA masters and paths that are not part of any VCA structure remain available for VCA grouping to the selected path, whilst the paths that are not available to the selected path are greyed out.

The images show the following multiple VCA structures created in VCA Edit:-

Fader L1F1A: Primary VCA master (without path) including own VCA slaves highlighted and they are:-
Fader L1F3A: Intermediate VCA master (without path) of a VCA slave fader L1F4A, which is a mono channel.
Fader L1F5A: Intermediate VCA master (without path) of a VCA slave Fader L1F6A, which is a mono channel.
Fader L1F1B: Intermediate VCA master (with mono group path) of VCA slave faders L1F1B, L1F2B & L1F3B, which are Group buses 1, 2 & 3.
Fader L1F4B: Intermediate VCA master (with 7.1 group path) of VCA slave faders L1F4B, L1F5B & L1F6B, which are Group buses 4, 5 & 6.

Fader L1F8A: VCA master (without path) of VCA slave faders L2F25A, L2F26A & L2F27A, which are Main outputs 1, 2 & 3.

Fader L1F10A: VCA master (without path) of VCA slave faders L1F12A, through to L1F16A, which are 5 immersive channels.

Fader L1F11A: VCA Master (without path) of VCA slave faders L2F33A & L2F34A, which are Aux Outputs 1 & 2.

FIG 23 - VCA GROUPS DISPLAY EXAMPLE IN VCA EDIT

FIG 24 - VCA GROUPS DISPLAY EXAMPLE AFTER EXITING VCA EDIT

VCA display example in Fader Layout when not in Edit mode
The image in Fig 24 shows the same VCA display example when not in VCA Edit mode. The outline coloured border displays have been removed after exiting. The VCA **MR** master icons, **SL** slave icons and **MS** intermediate master icons remain for each fader entry in the Fader Layout and are also shown in the Fader Surface.

Filtering the Fader Layout View
The fader layout view can be altered to show just the A layer paths, just the B layer paths or both A+B layer paths by changing the Show selection option in the bottom right of the fader layout page as highlighted in Fig 25 on the next page.

User Controls Editor

The standard Argo fader panel has 2 x 4 button control button cell rows placed just above the faders Cut/On button. The lower row of these cells as highlighted in Fig 25 can be configured to display a user defined set of controls.

This is carried out by first selecting the path to have its 4 button user control cell configured from the Assist Fader layout. This then makes the Controls option available in the footer of the fader layout page. Selecting this option opens the user controls editor as shown in Fig 26.

On the right side of the editor is shown the 4 button layout with the currently undefined user controls shown in the display in the centre. Tapping on any of the 4 buttons in the display or any of the 4 Add buttons under button functions, opens the Customise button menu with the Input Control page shown.

The following pages detail the extensive set of control options that each of the 4 buttons for the selected path can be customised to perform.

In order to simplify some of these selections, 3 filter sets are provided:-

- Global Functions: these controls are console wide.
- Path Functions: these controls apply to the selected path.
- Bus Functions: these controls apply to buses only.

The sliders Include/Exclude that type of function in the control option lists.

The user taps on '**OK**' once the selection is made or **'Cancel'** to exit unchanged.

FIG 25 - IU6576 - ARGO STANDARD 12 FADER PANEL

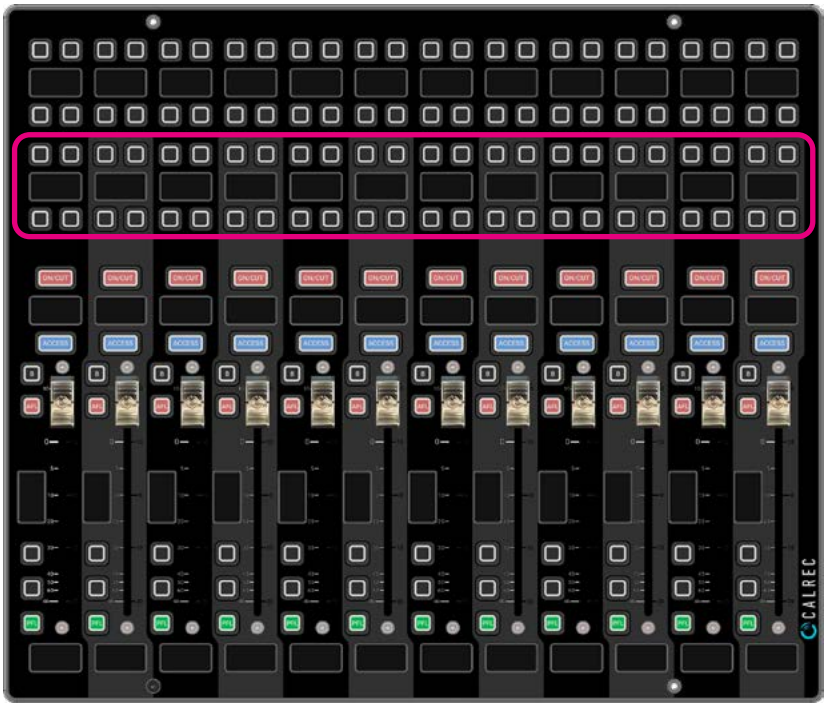
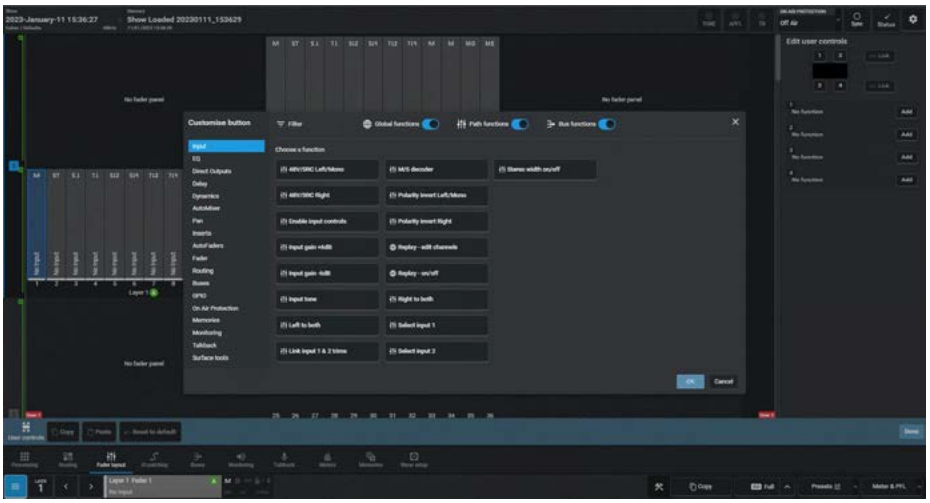
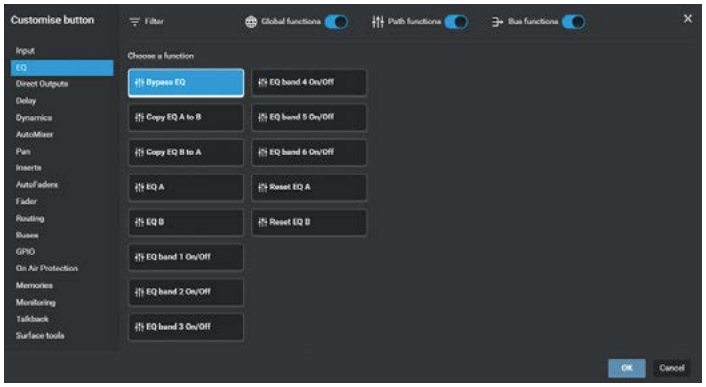


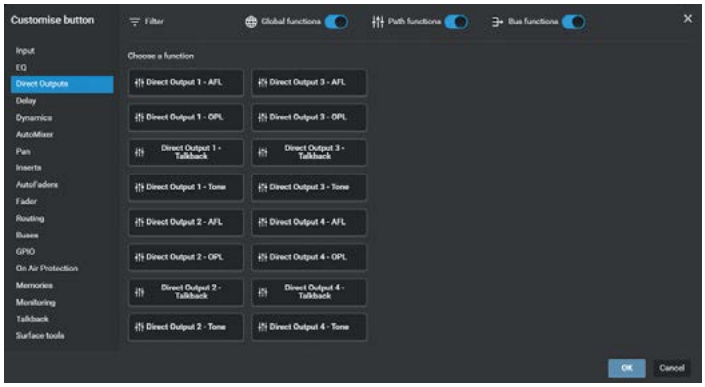
FIG 26 - FADER LAYOUT - USER CONTROLS EDITOR FOR PATHS - INPUT



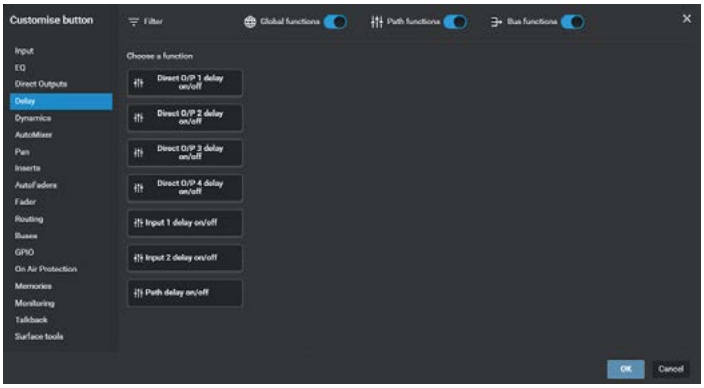
FADER LAYOUT CONTROLS - EQ



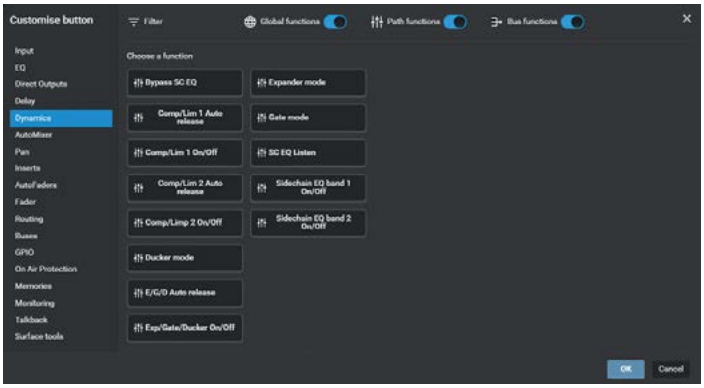
FADER LAYOUT CONTROLS - DIRECT OUTPUTS



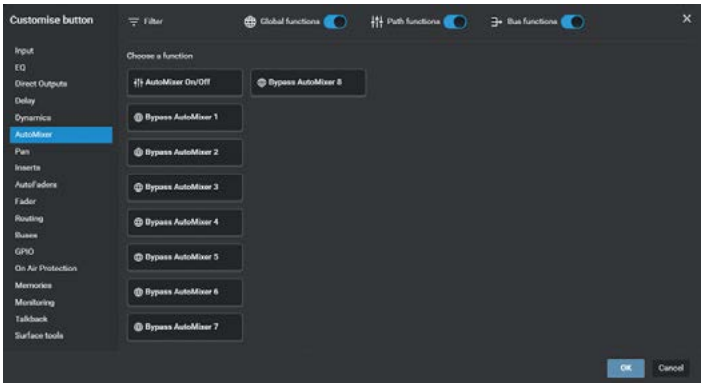
FADER LAYOUT CONTROLS - DELAY



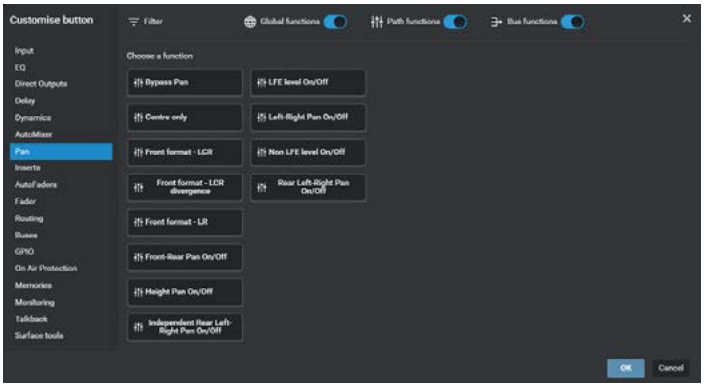
FADER LAYOUT CONTROLS - DYNAMICS



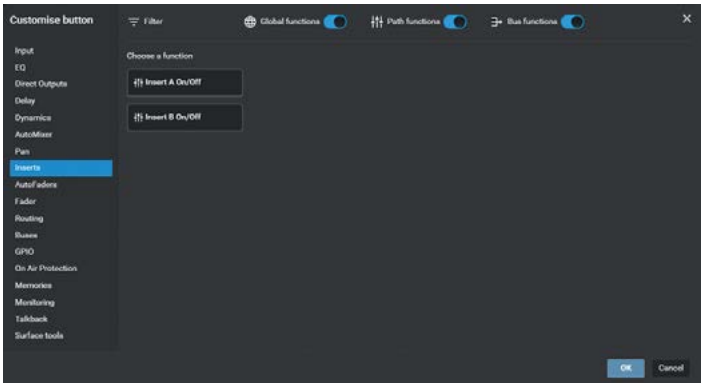
FADER LAYOUT CONTROLS - AUTOMIXER



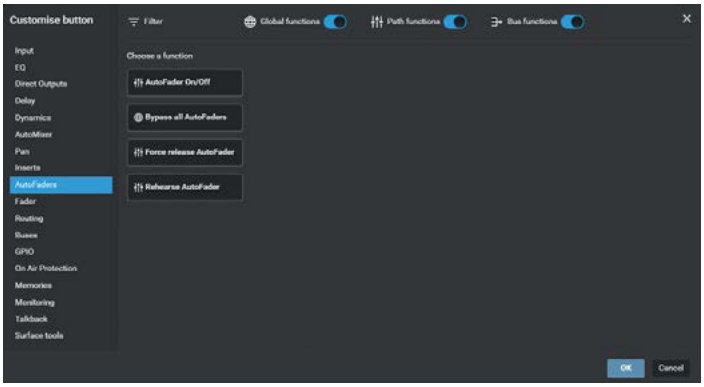
FADER LAYOUT CONTROLS - PAN



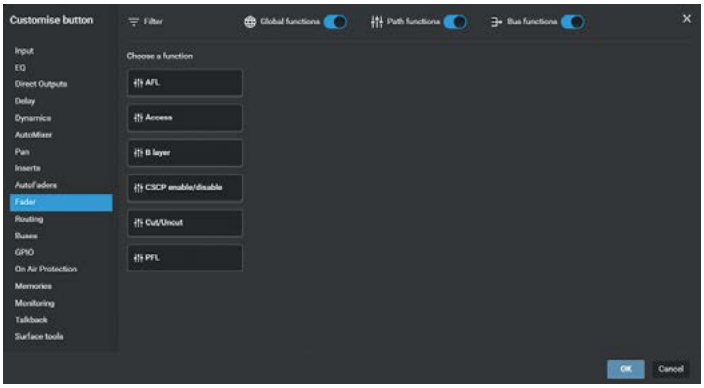
FADER LAYOUT CONTROLS - INSERTS



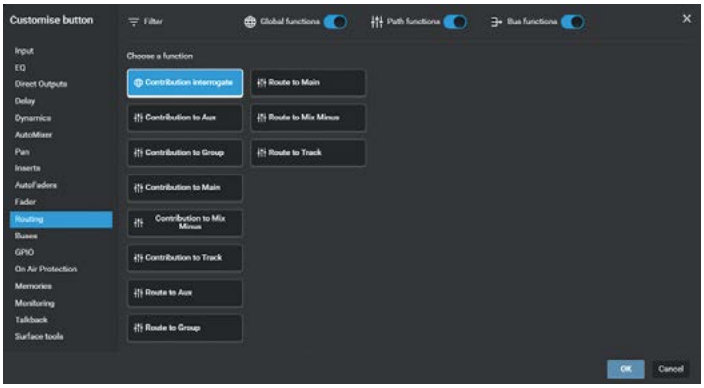
FADER LAYOUT CONTROLS - AUTOFADERS



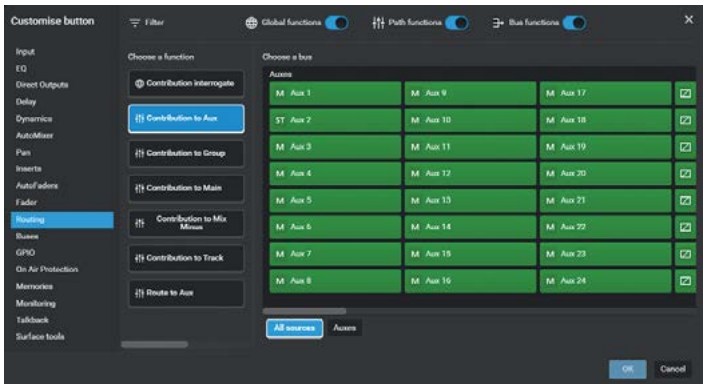
FADER LAYOUT CONTROLS - FADER



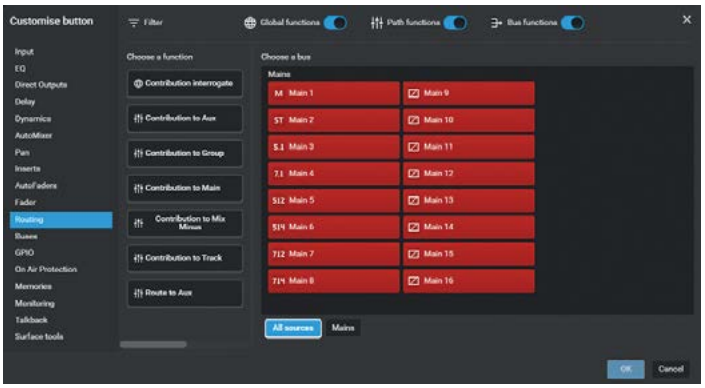
FADER LAYOUT CONTROLS - ROUTING -CONTRIBUTION



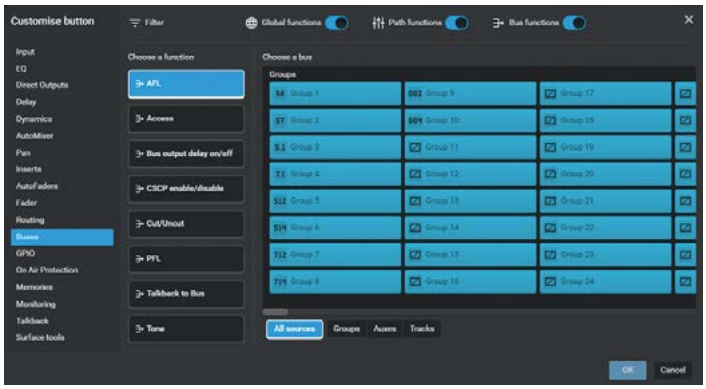
FADER LAYOUT CONTROLS - ROUTING - CONTRIBUTION AUX



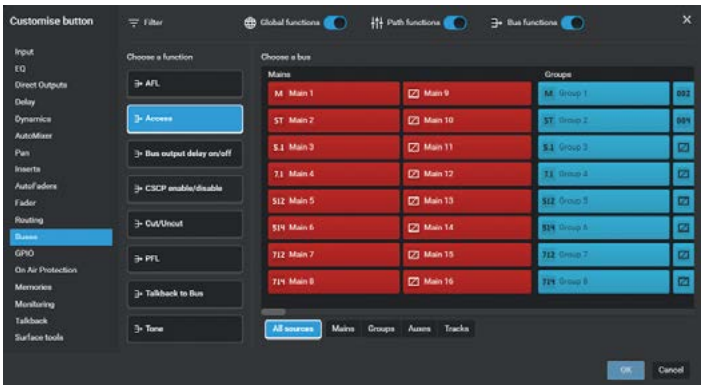
FADER LAYOUT CONTROLS - ROUTING - ROUTE MAIN



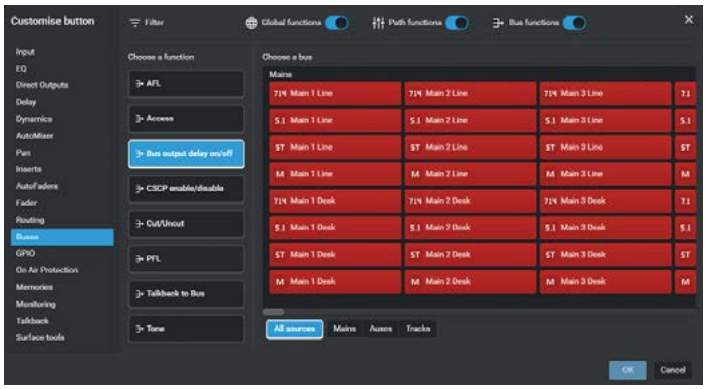
FADER LAYOUT CONTROLS - BUSES - AFL



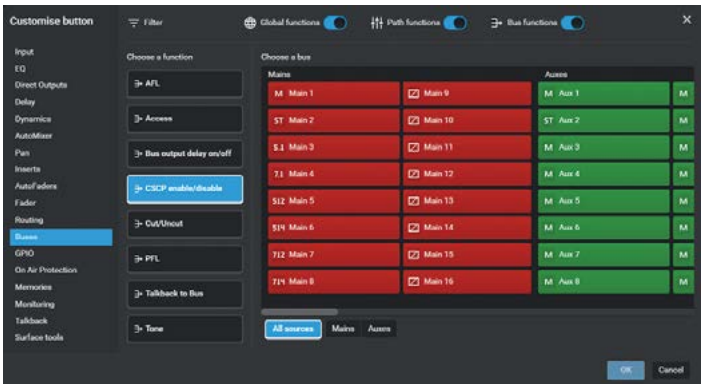
FADER LAYOUT CONTROLS - BUSES - ACCESS



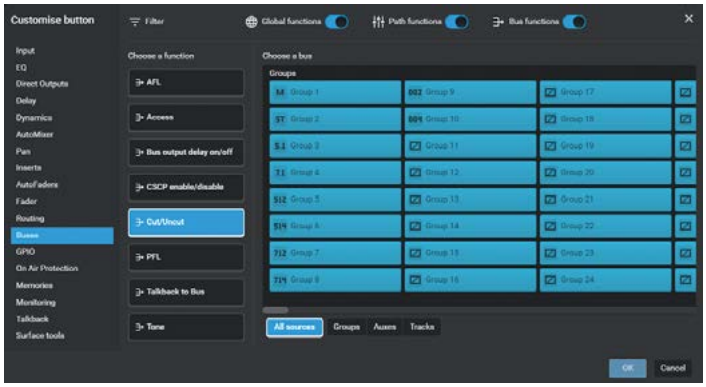
FADER LAYOUT CONTROLS - BUSES - BUS OUTPUT DELAY



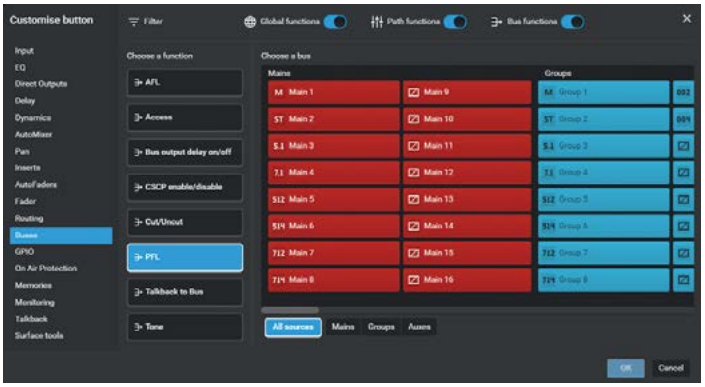
FADER LAYOUT CONTROLS - BUSES - CSCP ENABLE



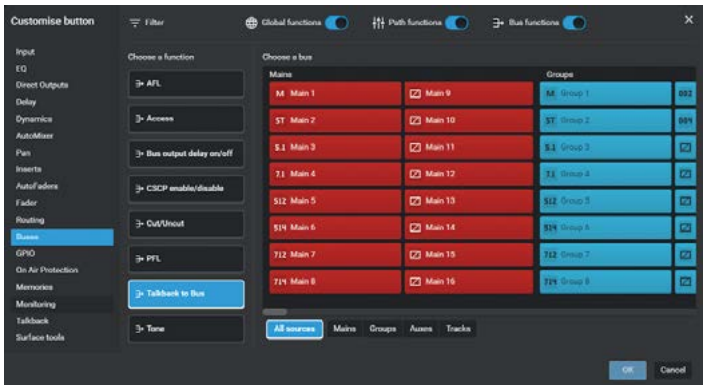
FADER LAYOUT CONTROLS - BUSES - CUT/UNCUT



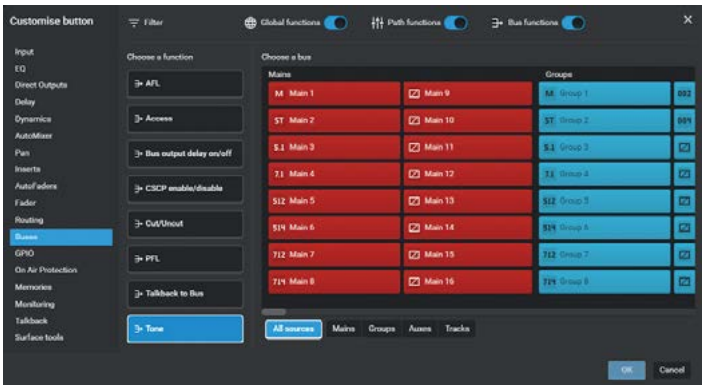
FADER LAYOUT CONTROLS - BUSES - PFL



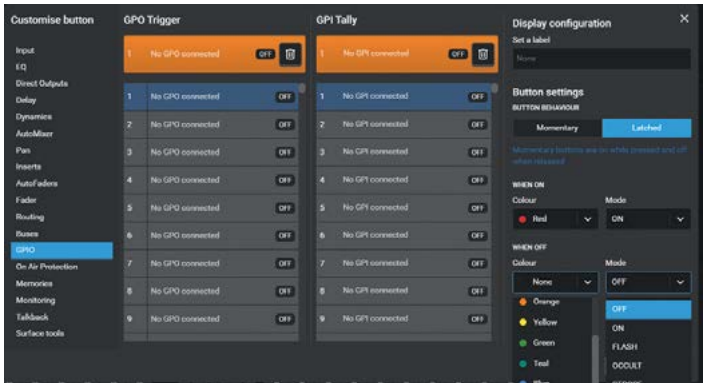
FADER LAYOUT CONTROLS - BUSES - TALKBACK TO BUS



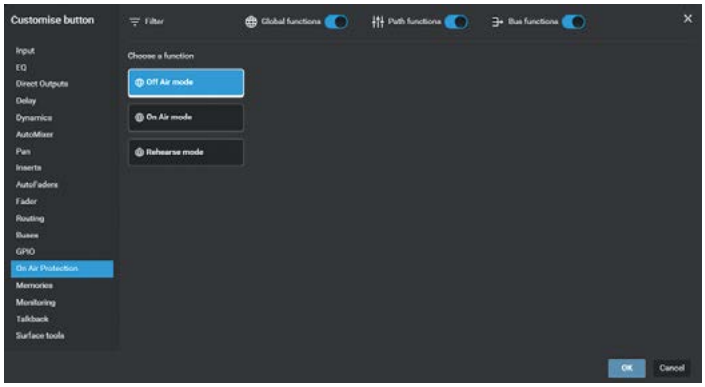
FADER LAYOUT CONTROLS - BUSES - TONE



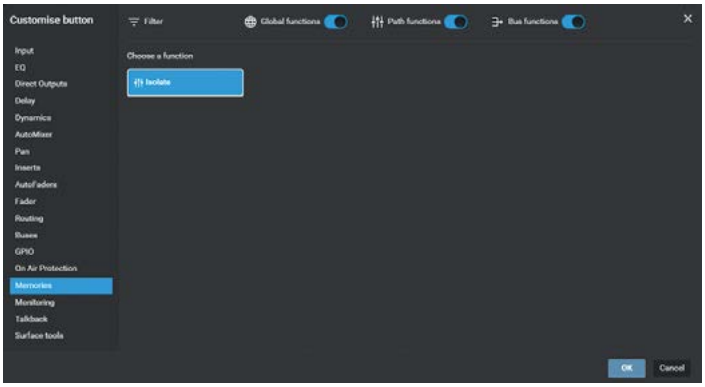
FADER LAYOUT CONTROLS - GPIO TALLY & TRIGGER



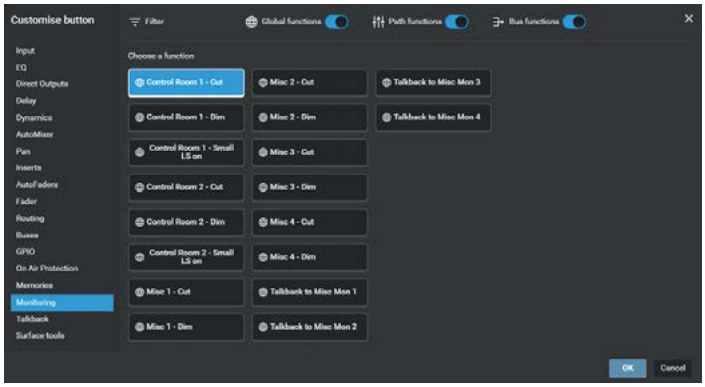
FADER LAYOUT CONTROLS - ON AIR/REHEARSE/OFF AIR



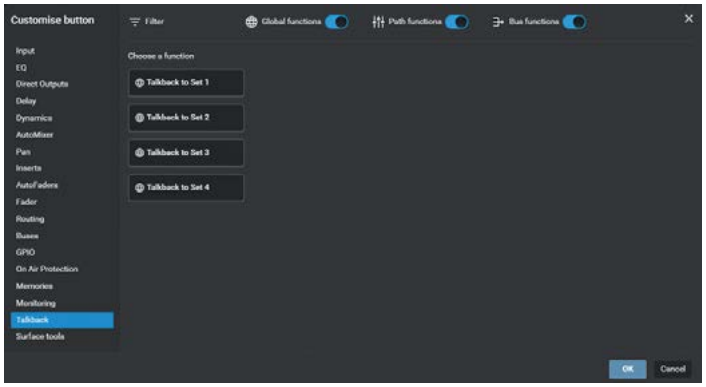
FADER LAYOUT CONTROLS - MEMORIES - ISOLATE



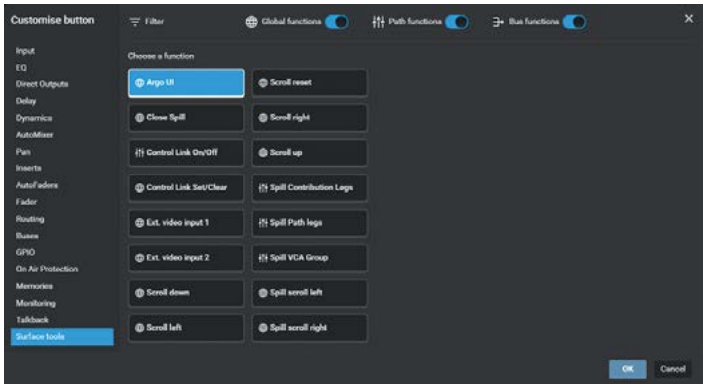
FADER LAYOUT CONTROLS - MONITORING



FADER LAYOUT CONTROLS - TALKBACK SETS



FADER LAYOUT CONTROLS - SURFACE TOOLS



The image in Fig 27 shows that the buttons 1 & 2 for the selected path have been defined as '**Input 1**' & '**Input 2**' respectively.

Buttons 3 & 4 have been linked together by tapping on the '**Link**' button as shown so that either button actions the control which in this case is **'Link Input Trim'**.

The selected controls also appear under the Button functions list along with an **'Edit'** button which allows the user to change the control assignments again, as required.

These functions are shown in the display and also on the Argo surface.

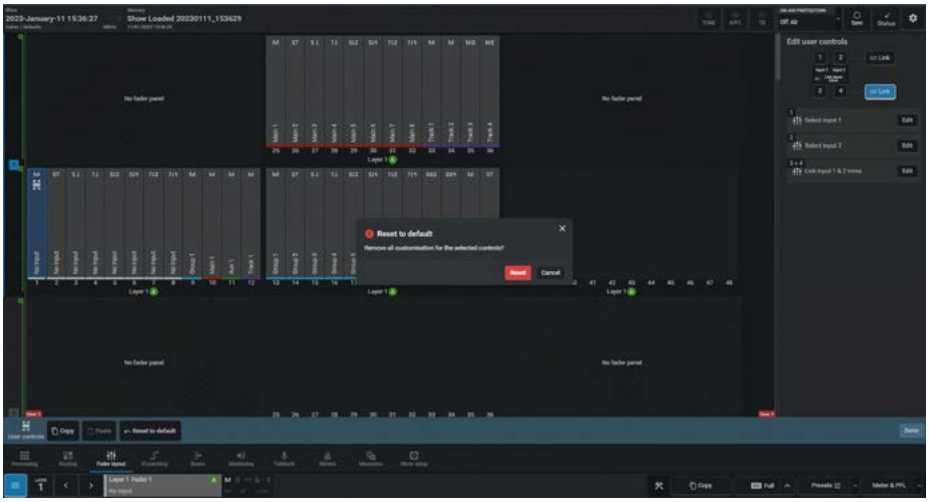
The path in the fader layout area now shows the User Controls Icon as highlighted, this button configuration can be copied and pasted to other paths if they require similar customised controls using the '**Copy**' & '**Paste**' buttons in the footer of the User Controls dialogue.

Selecting the '**Reset to default**' button opens a confirm dialogue box as shown in Fig 28, asking if they want to **"Remove all customisation for the selected controls?**', pressing **'Reset'** clears all the custom controls from the 4 button cell reverting the controls back to their defaults which are defined in **System Settings>Default Controls**.

Once all the User Control editing has been completed the user taps on '**Done**' to return to the Fader Layout sub-menu page which it came from.

FIG 27 - FADER LAYOUT - USER CONTROLS EDITOR FOR PATHS - DEFINED

FIG 28 -FADER LAYOUT - USER CONTROLS EDITOR - RESET TO DEFAULT



ARGO
FADER SURFACE MANAGEMENT

CALREC

FADER LAYOUT FROM THE SURFACE

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.

The user is free to configure this pool of mono resources as required. Simply assigning any path type to a fader (mono, stereo, surround or immersive) automatically allocates the required number of DSP resources available.

A mono channel path uses a single DSP resource, a stereo channel path uses two mono resources, a 5.1 surround channel path uses six mono resources and a 7.1.4 immersive channel uses twelve mono resources.

Assigning channels to faders

For an Input path to be directly controlled, processed and routed, it must be attached to a fader on the surface. Input Channels and Output buses need to be patched to input and output audio signals in order for audio to pass through the system.

In order to assign a channel to a fader from the surface the user selects the required layer from the 12 A/B layers available and selects a blank fader by pressing its Access button (A layer) or its Access button then B button (B layer) to make it the currently accessed path - the focus of assignable controls. In this case Fader 10 on Layer 1 has been chosen see in Fig 1.

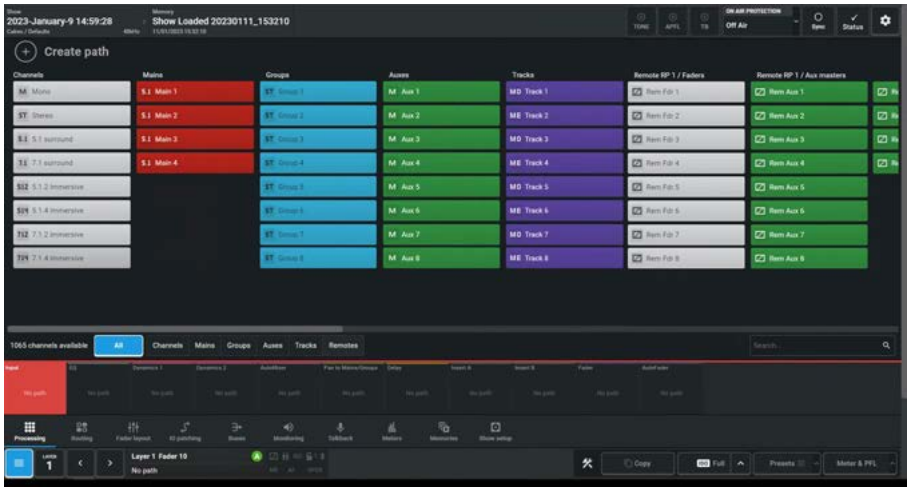
For an unassigned path the touchscreen appears as shown in Fig 2, but only when in Processing or Routing mode. The user then taps on the required width of input channel to allocate to the fader – 7.1.4, 7.1.2, 5.1.4, 5.1.2, 7.1, 5.1, Stereo or Mono. Once selected, a DSP input channel of the chosen width is instantly allocated to the accessed fader and its label display is updated accordingly.

Paths of the same width can quickly be assigned to multiple faders by creating a temporary link of blank faders to allocate the channels to then selecting the required channel width from the touchscreen.

Note: the Temporary Link can be created by pressing two Access buttons at the same time to create a Linked range.

FIG 1 - ASSIGNING PATHS TO FADERS VIA ACCESS BUTTONS

FIG 2 - CREATE PATH FADERS SELECTION FROM TOUCHSCREEN



Once a fader has a signal path on it, the path type or width cannot be changed, the path must first be removed before a different path can be allocated.

When assigning input channels to paths in this way, a new input channel is allocated to each fader from the available DSP resource pool. DSP resources are quoted in mono channel legs. When a stereo channel is allocated, 2 mono paths are used from the resource pool, and 6 are used to create a 5.1 surround channel.

Note: this Path placement method can also be used to place Remote Faders and Remote Aux Masters from RP1 units as shown in Fig 2.

Assigning buses to faders

Main Output buses, Group buses, Aux buses and Track buses that have been configured can also be allocated to faders if required using the same method as for the channels as shown in Fig 1 for Fader 9 where Main 1 has been placed.

Selecting a Bus will place that DSP path on the currently accessed fader as long as the fader is unassigned. Unlike input channels which are configured as they are allocated to faders, the buses need to already be configured from the **Buses>Edit Buses** screen.

Each numbered Bus is a unique bus signal path so if the same main, group, aux or track bus, e.g. 'Main1' is allocated to more than one fader, each fader is controlling the same bus path and adjustment of any of them will be reflected by the others. Cloning bus faders in this way can be useful to provide access to a bus from different physical locations or different fader layers.

Note: Inserting blanks, Deleting paths, Locking a path to a fader, Cloning Channels, Moving & Swapping existing paths are all currently only carried out from the Fader Layout screen.

FADER SURFACE TOOLS

In order to manage various surface functions, a set of Surface tools can be placed on the buttons in the customisable area of the standard fader panel. This section of the manual covers those tools but first they must be placed on the panels.

The procedure for this is described in **Show setup>Customise Panels** see **"Customise panels" on page 234.**

Fig 1 shows an empty custom controls area, consisting of 2 pages of 12 buttons in button cells 10, 11 & 12. These buttons can be configured with various custom button functions including those from the Surface tools template as shown in Fig 2.

The surface tool layouts shown in Fig 3 have been customised as an example and allow access to the surface tool functions described in this section of the manual.

Surface Tool layouts

Fig 3 shows the customised button sets to access the Surface tools, here they are arranged in two pages but it's up to the user to decide how they want to configure the custom area to meet their needs.

Page 1 has been configured to manage:-

- Control Link SELect/CLeaR/ReSTore in button cell 10.
- Display selection on the Touchscreen between the Argo UI (the default) and either of the 2 external video inputs in button cell 11.
- Button cell 12 is left unused.

Page 2 has been configured to manage:-

- Surface scrolling in button cell 10.
- Spill scrolling in button cell 11 along with a Reset Scroll button.
- The various Spill modes for Path, Contribution and VCA management in button cell 12 along with a Clear Spill mode button.

Note: the following pages describe these surface management tools in detail.

FIG 1 -CUSTOM CONTROLS AREA ON STANDARD FADER PANEL-EMPTY

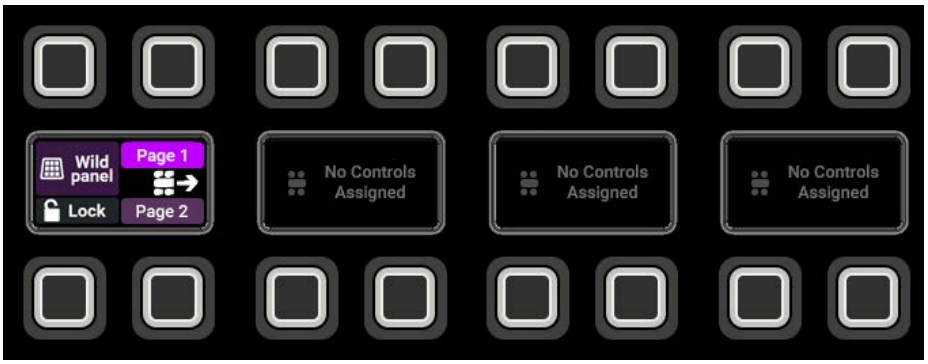


FIG 2 -CUSTOMISING BUTTONS WITH SURFACE TOOLS SELECTIONS

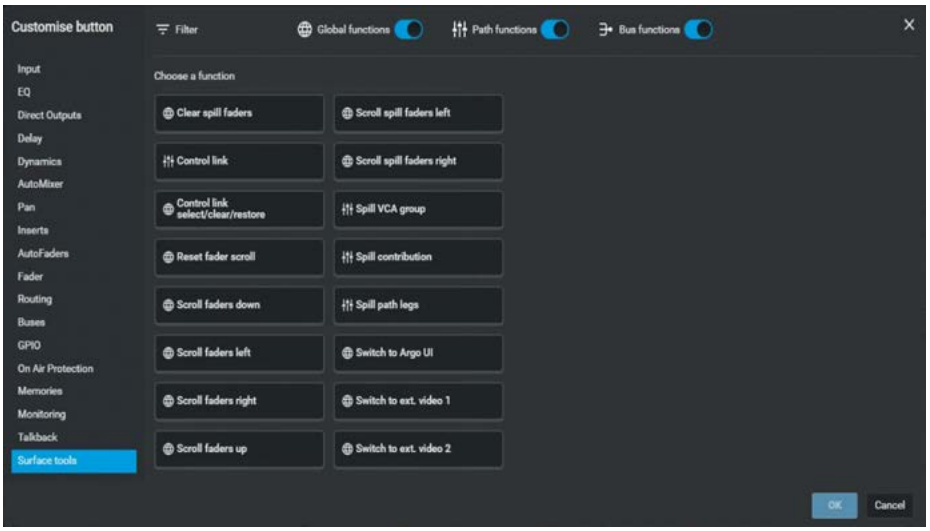
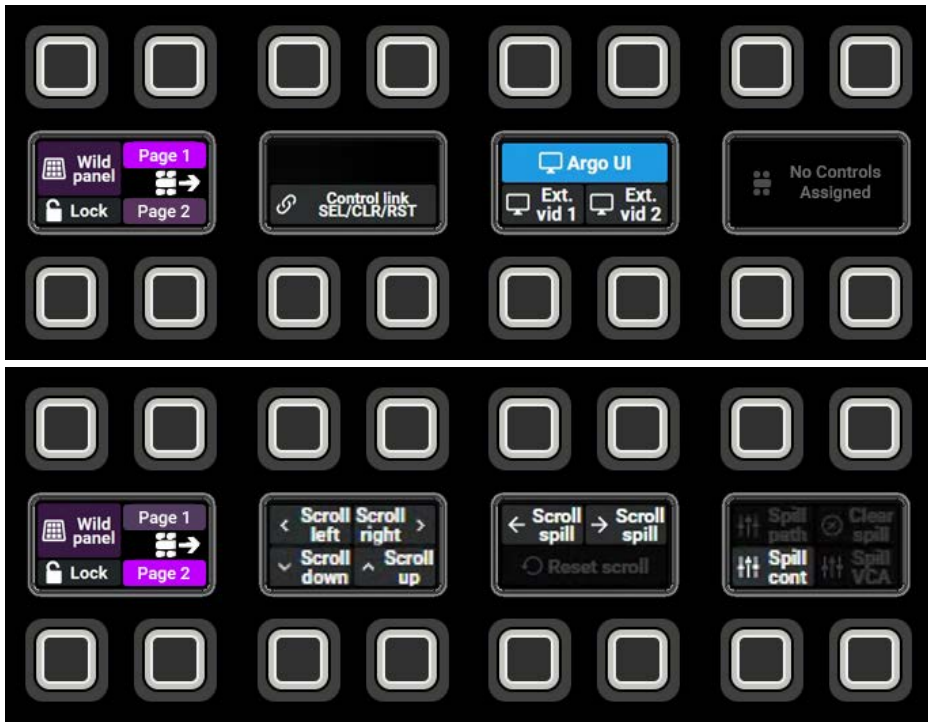


FIG 3 -CUSTOMISED PAGE 1 & PAGE 2 CONTROLS ON STANDARD FADER PANEL



CONTROL LINKING

Control Links are a temporary way to apply control adjustments to a number of paths at the same time. Adjustment of variable controls such as faders/levels are relative to each other, adjustment of controls such as switches are absolute, in that all of the linked paths get set to the same state as each other. Control Links are constrained within user splits. There may be one control link active per user split, so up to 3 Control links may be active across the console.

There are a number of ways to manage Control Links, either from a 'Control Link Set/Clear/Restore' button placed in the Custom button area of a Standard Fader panel to manage a number of links and/or individual 'Control Link' buttons which can be placed on each fader path on one of the Custom buttons. Typically the Control Link function would be assigned to one of the custom buttons adjacent to the fader. The 'Control Link Set/Clear/Restore' button and individual 'Control Link' buttons can be used in combination.

Assigning the Control Link buttons

To use the 'Control link SEL/CLR/RST' function it need to be placed on one of the Custom buttons such as the one shown in Fig 1 where it is shown in **Clear** mode. The procedure for this is described in **Show setup>Customise Panels** see **"Customise panels" on page 234.**

To use the individual 'Control link' function it needs to be placed on the Custom buttons adjacent to each fader, the procedure for this is described in **System settings>Default Controls** see **"Setting Default Strip Controls" on page 269**. The 'Control Link' buttons in this case have been placed on button 2 next to the fader as this button is common to both Standard and Short fader panels.

Fig 2 shows the location of the individual 'Control Link' buttons with Faders L1F1A and L1F2A shown as linked paths. Also note that the background colour of the 'Control link SEL/CLR/RST' button changes to show that it is in **Restore** mode and that a Control Link is in active on the console/user area.

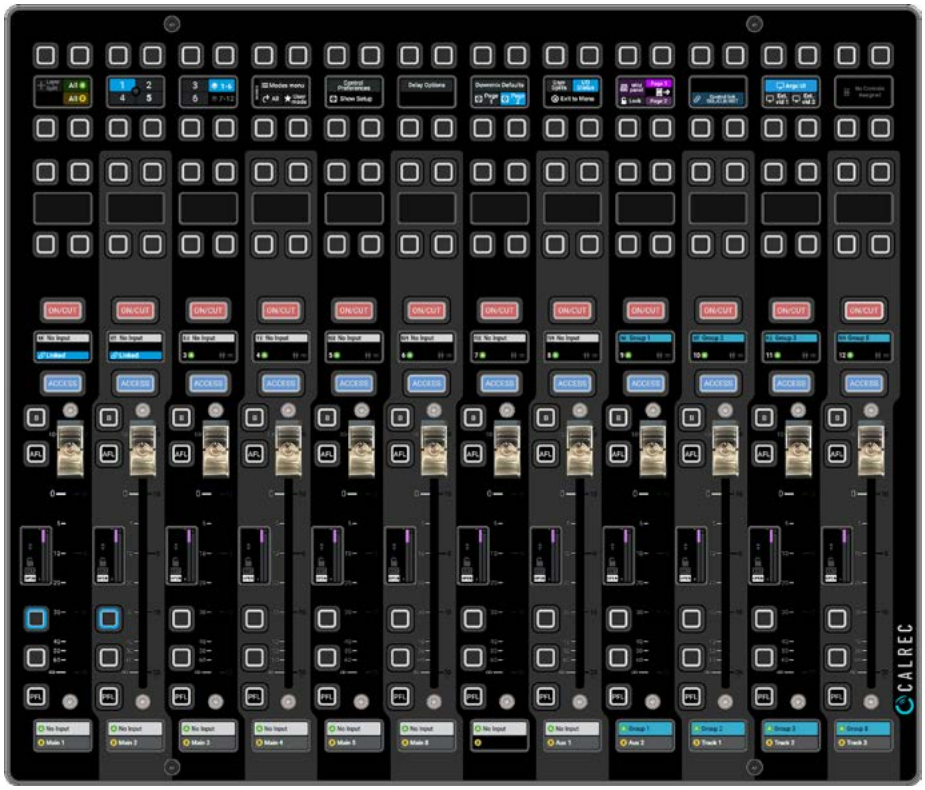
Using Control Link buttons

Once the Control link buttons have been placed on each fader as highlighted in Blue on Fig 2, a Control link can be formed by simply toggling each control link button on/off to add/remove them from the control link.

In addition to using the Control Link button to select faders one at a time, users can also select a range of faders to add to a control link, by pressing down the Access key on two different faders at the same time to form a control link between those two paths, and all the faders that are physically between them. Once the range of faders is set the user can add or remove faders individually if they want to.

FIG 1 -CONTROL LINK SEL/CLR/RST CLEAR MODE ON STANDARD FADER PANEL

FIG 2 -FADER LINKING VIA INDIVIDUAL CONTROL LINK BUTTONS



Using the Control Link SCR button
The Control Link Select/Clear/Restore button is shown in a held down mode in Fig 3 to show it is in **Select** mode, when held down this allows the user to create Control Links using the Access buttons.

This button, offering three functions on a single button – Select, Clear and Restore.

If there is no control link currently in place, users can press and hold down the 'Control link SCR' button, then **Select** the faders they want to add to the link by pressing their Access buttons.

The user can release the 'Control link SCR' button and the link remains in place. Whilst a link is in place, the user can press and hold the 'Control link SCR' button again to add or remove faders by pressing their Access buttons.

Fig 4 shows the addition of faders L1F3A and L1F6A using the Access buttons as highlighted to toggle the faders into or out of the Control link.

When a Control Link is active, a short press of the Control Link button will **Clear** it and the Linked indicators will be hidden.

Note: If the user presses a Control Link button when the 'Control link SCR' button is in Clear mode then any of the previous temporary control links will be removed and a new Control Link started.

When there is no Control Link currently active, a short press of the Control Link button will **Restore** the last link (if there is one), and the Linked indicators will be shown once again. Fig 5 shows the Control Link SCR button in **Restore** mode.

While a control link is in place, users can switch layers/sub-layers and choose to add or remove faders on different layers/sub-layers to/from the existing control link.

Note: Control links are applied to the software/virtual fader, so if the user scrolls faders left/right, or flips them between rows, the linked state will follow the fader as it moves (as it does when fader layer or sub-layer is changed).

FIG 3 -CONTROL LINK SEL/CLR/RST SELECT MODE ON STANDARD FADER PANEL

FIG 4 -FADER LINKING VIA CONTROL LINK SEL/CLR/RST & ACCESS BUTTONS

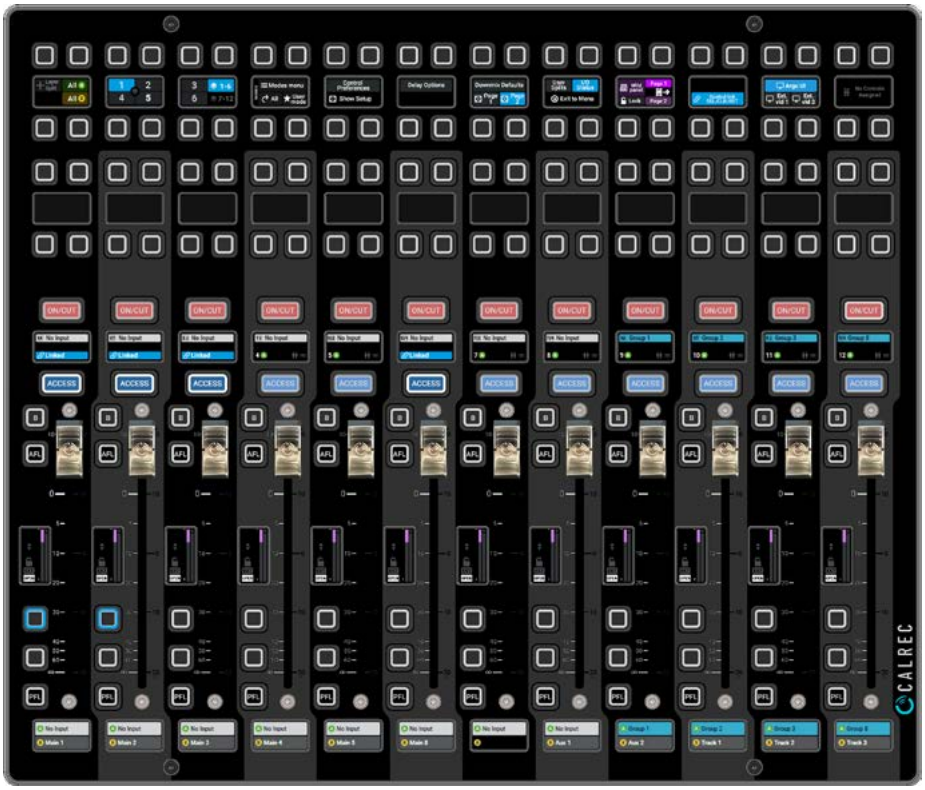


FIG 5 -CONTROL LINK SEL/CLR/RST RESTORE MODE ON STANDARD FADER PANEL

FADER SURFACE SCROLLING

Fader surface scrolling allows users to move their faders left and right across physical Standard Fader panels in sets of 12 faders i.e. a panel at a time. In addition Argo supports smaller 12 fader panels known as 'Short Fader panels' which can be placed above the Standard Fader panels. The fader paths on the short fader panels can be scrolled down and up so that they can be exchanged with the faders on the standard fader panels in order to position the faders most important to the user in the 'sweet spot'. The Short Fader doesn't have to be in the 'sweet spot' its faders can be scrolled into that area there and flipped into the Standard Fader panel.

Assigning the Scrolling buttons

To use the Scrolling functions the **Scroll Left**, **Scroll right**, **Scroll down, Scroll up** and **Reset scroll** buttons from the Surface Tools template are placed on to the Custom buttons such as those shown in Fig 1 on the Standard Fader panel.

The procedure for this is described in **Show setup>Customise Panels** see **"Customise panels" on page 234.**

Fig 2 shows the Normal or Reset Scroll position of the faders on a 36 fader Argo surface made up of 3 fader sections:

Section 1 in the left section contains a Standard Fader panel (Faders 1-12).
Section 2 in the middle section contains a Standard Fader panel (Faders 13-24) and a Short Fader panel (Faders 25-36) above.
Section 3 in the right section contains a Standard Fader panel (Faders 37-48).

Normal Operation

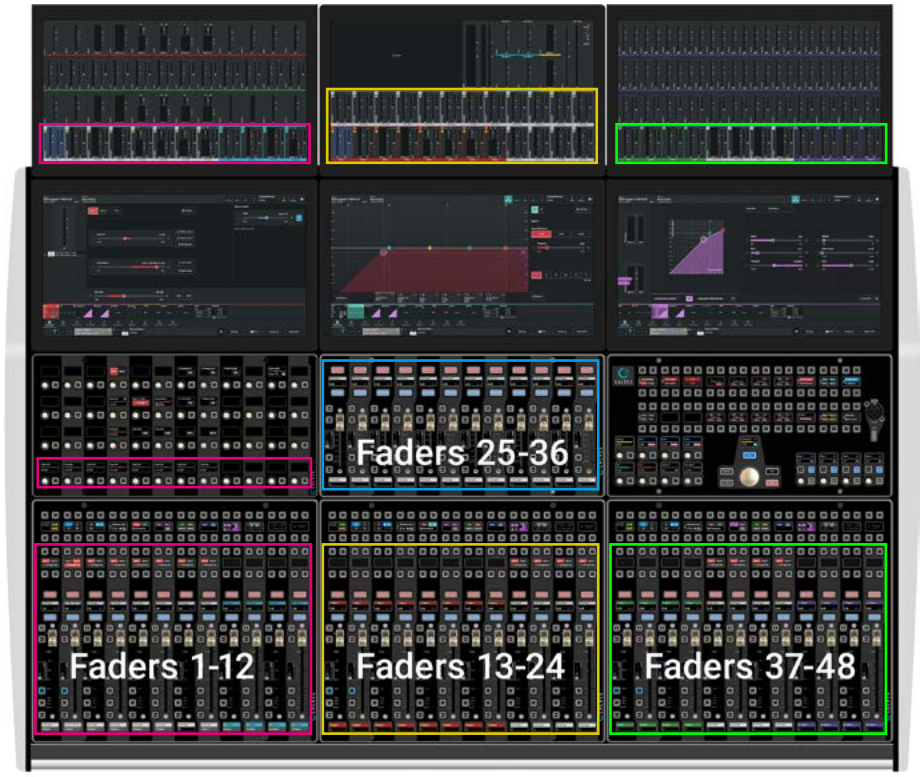
For the purpose of this description, 'Normal operation' is when all faders (within a user split if any are in place) are performing their primary task of presenting their allocated path, even if they are in a temporary mode that changes their display and control behaviour such as Contribution mode or Replay Edit.

Fader scroll does not change behaviour during Spill actions. While a spill is active (e.g. path spill), if you scroll the faders, the spilled faders will move along the fader bed with everything else. If Spill-in-place is in use, the spilled faders will not scroll along with others, they will stay where they are.

During normal operation, pressing a scroll button will move all faders (within a user-split if any are in place) across the physical faders on the surface left or right in sections of 12. As faders disappear from one end of the surface, they reappear at the other end.

FIG 1 -SCROLLING CONTROLS ON STANDARD FADER PANEL

FIG 2 -48 FADER ARGO S CONSOLE IN THE RESET SCROLL POSITION



All the elements that can scroll are highlighted in different coloured sections in Figs 2, 3 & 4 to show what is scrolling.

Result when scrolling Left -Right

When the user presses the scroll left or scroll right button, the faders cycle round, so as they disappear off one side of the surface or user-split, they reappear at the opposite side of the surface.

Note: there are elements that scroll with the faders and other elements that stay where they are.

Things that Scroll:
Faders move to the adjacent fader panel either left or right depending on the scroll direction, 12 faders at a time.

The User button row below the Layers and Modes Row can have strip controls from the **Fader Layout>Controls** option assigned to them, when scrolled these controls move with their associated fader.

The 4th Row of Wild Assign panels show controls that are Strip related, when scrolled these controls move with their associated fader.

The Meter Upstand display typically shows the fader meters associated with the faders below them, i.e fader meters labelled 1-12 in the top left corner usually display the meters for faders 1-12, but when faders are scrolled to the left the meters labelled 1-12 will then display the meter data from faders 13-24.

Fig 3 shows the result when the scroll left button is pressed once, paths that were originally on the short fader panel faders 25-36 have now become hidden under Section 1 as there is no short Fader panel in that location. In addition as there are no fader paths in the short fader panel area in Section 2 it appears blank.

If the user wishes to see Faders 25-36 in Section 1, then they would have to press the scroll up or scroll down buttons from that section.

Fig 4 shows the result when the scroll left button is pressed twice, paths that were originally on the short fader panel faders 25-36 have now become hidden under Section 3 as there is no short Fader panel in that location. In addition as there are no fader paths in the short fader panel area in Section 2 it appears blank.

If the user wishes to see Faders 25-36 in Section 3, then they would have to press the scroll up or scroll down buttons from that section.

The Fader Meter layouts do not change as the paths are scrolled into them so in Fig 3 for instance, physical fader meters 1-12 display the meter data for faders 13-24 and the fader meters for 25-36 which show the paths on the short fader will show no meters in Figs 3 & 4 when scrolled as there are no active paths to display.

FIG 3 -48 FADER ARGO S CONSOLE IN SCROLL LEFT ONCE POSITION

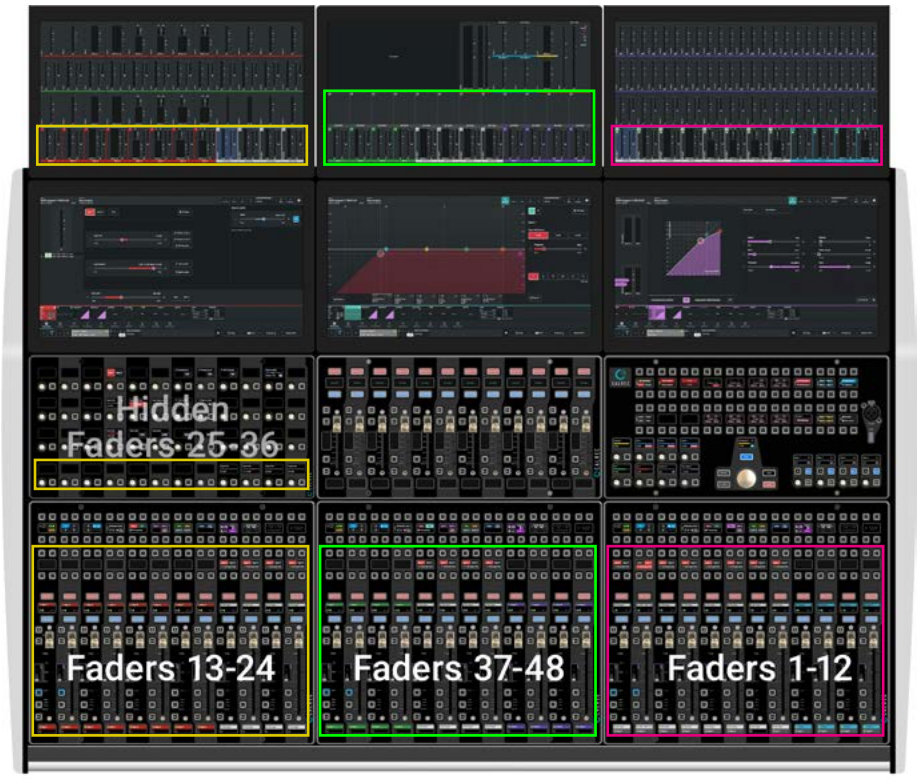
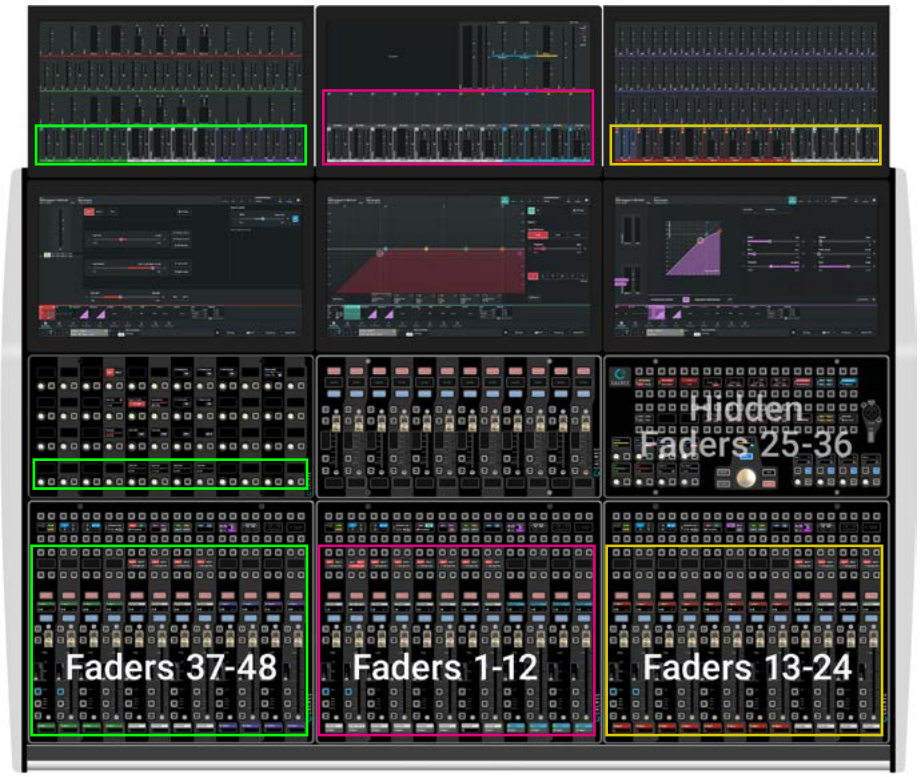


FIG 4 -48 FADER ARGO S CONSOLE IN SCROLL LEFT TWICE POSITION



Things that don't scroll:
The Layers/Modes row on standard fader panels stays as is.

The top 3 rows of the Wild Assign panel don't change as they are displaying controls for the currently accessed path.

The Touchscreens don't change as they are displaying controls for the currently accessed path.

Note: any Meters that are not Fader Meters stay where they are, i.e. Bus Meters such as Mains, Groups, Auxes, Tracks, Monitors, AFLs, PFLs, APFLs, Misc Mons, User Meters,External Inputs and other paths not on a Fader meter.

Scrolling Up and Down:
In addition to faders moving to the adjacent fader panel either left or right, if there are any Short Fader panels in the layout, then it is also possible to scroll the section down or up in order to place the paths from a Short Fader panel on the Standard Fader panel below or vice-versa depending on the scroll direction.

The image in Fig 5 shows that Section 2 has exchanged positions of Faders 13-24 and 25-36 using the Scroll Down or Scroll up controls in that section.

Note: on an Argo Q surface it is possible to have 3 fader panels in a section which can be scrolled down or up to place the required faders on the Standard fader panel position.

Once a section with a short fader panel has been scrolled down, then any user controls that were defined from the **Fader Layout>Controls** option assigned to them will appear, when scrolled these controls move with their associated fader.

In the example in Fig 6, the Faders 25-36 which are now shown on the Standard Fader panel have subsequently been scrolled to the left and appear under a Wild Assign panel. As a consequence the 4th Row will show those controls that are Strip related to those paths.

FIG 5 -48 FADER ARGO S CONSOLE WITH SECTION 2 SCROLLED DOWN

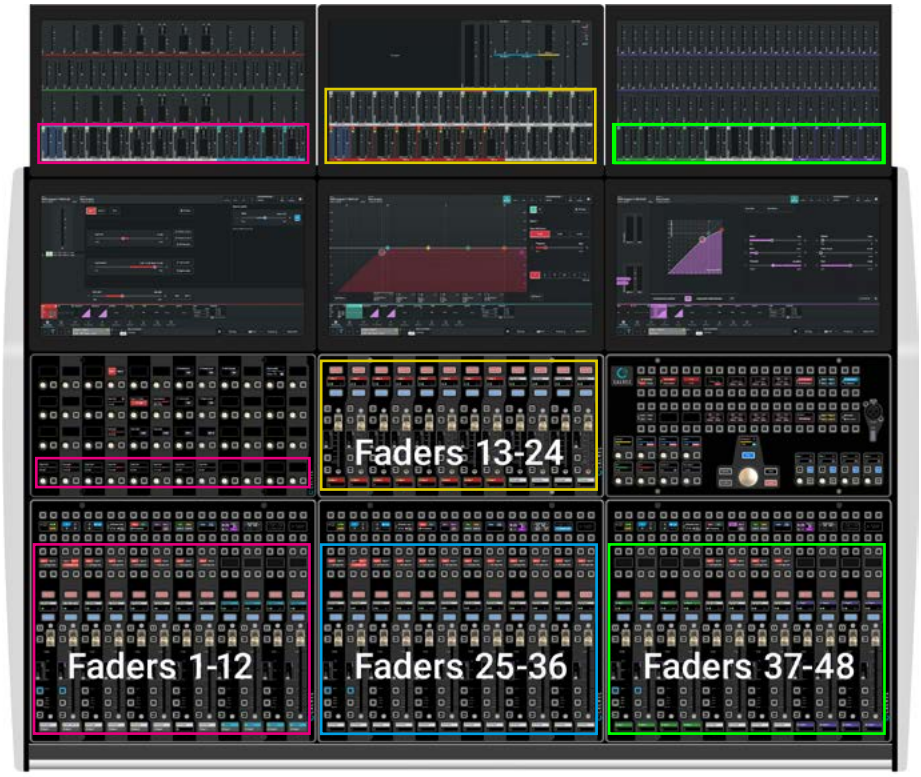


FIG 6 -48 FADER ARGO S CONSOLE SCROLLED DOWN AND LEFT ONCE

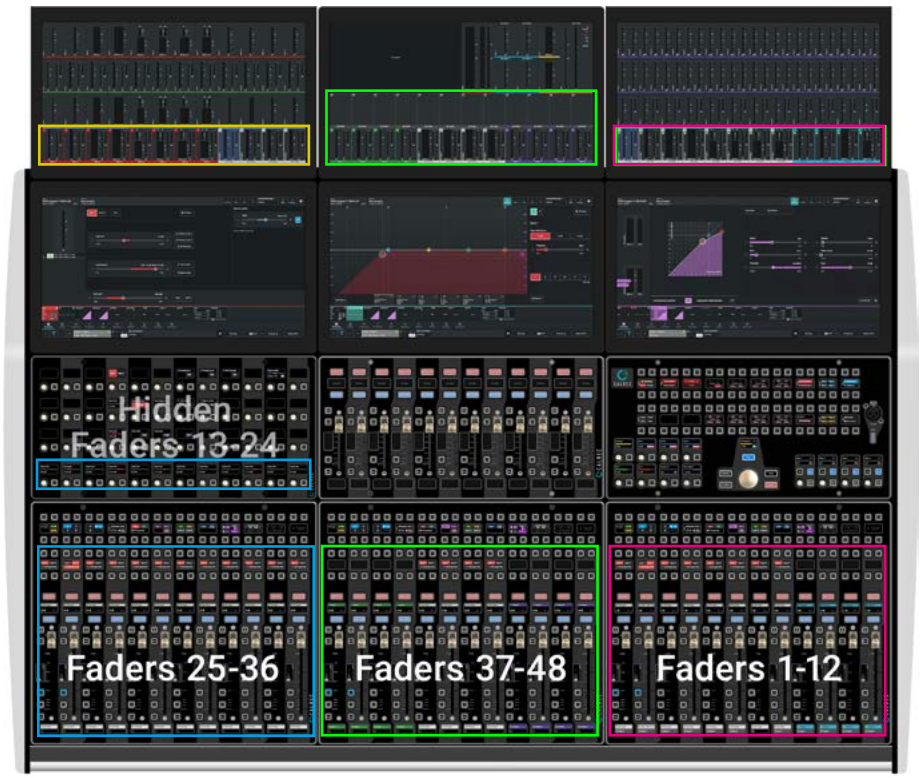


Fig 6 shows a similar arrangement to Fig 3, but in this case the user scrolls the surface to the left with faders 13-24 and Faders 25-36 exchanged.

Faders 13-24 are now hidden under Section 1 and Faders 25-36 are shown in the first section's Standard Fader panel.

If the user wishes to see Faders 13-24 in Section 1, then they would have to press the scroll up or scroll down buttons from that section.

In Fig 7, the Faders 25-36 which are now shown in the Standard Fader panel have been scrolled to the left again and will show a similar arrangement to Fig 4, but in this case the user scrolls the console to the left again with faders 13-24 and faders 25-36 exchanged.

Faders 13-24 are now hidden under Section 3 and faders 25-36 are shown in the third section's Standard Fader panel.

Note: If the user wishes to see Faders 13-24 in Section 3, then they would have to press the scroll up or scroll down buttons from that section.

FIG 7 -48 FADER ARGO S CONSOLE SCROLLED DOWN AND LEFT TWICE

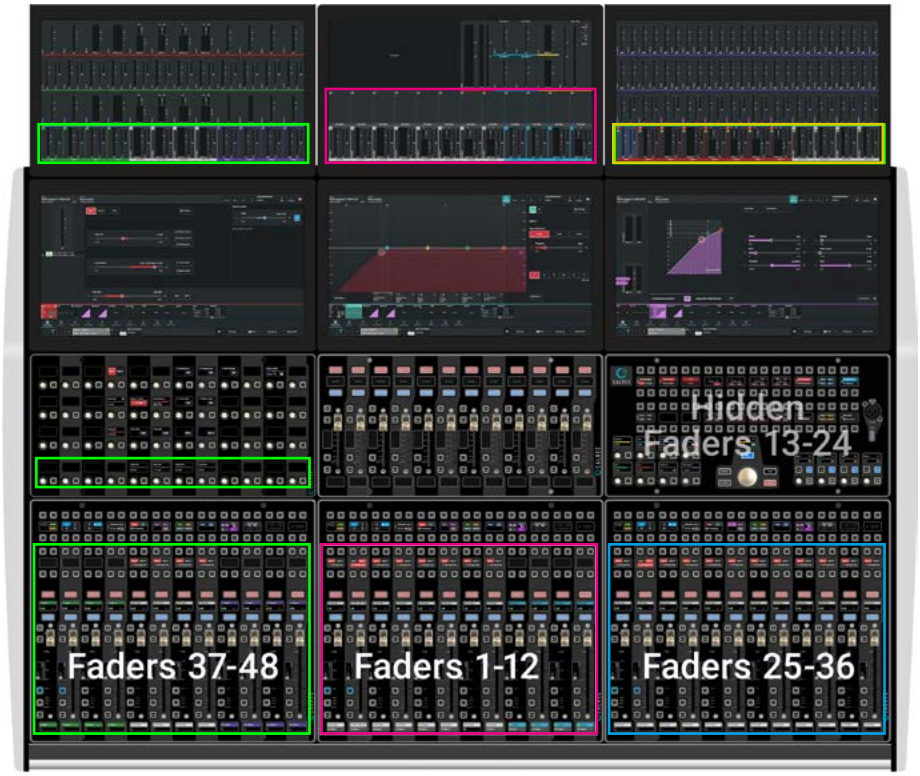


Fig 8 Shows the Custom button panel area of a Standard Fader panel with the **'Reset Scroll'** button active. Pressing this will reset all the scroll positions back to Normal and the User Controls, Strip controls on the Wild Assign panels and Fader meter displays will all return to their default reset positions The user can also reset scroll from the header on the Touch UI. This is useful if the Reset Scroll button function has not been allocated to user buttons.

FIG 8 -RESETTING THE SCROLL ON STANDARD FADER PANEL

SPILL PATHS ON SURFACE

Spilling Paths in Place/On a Panel
Apart from the 2 methods shown to control Spill Path Faders, i.e. on the Touchscreen or on a Wild Assign panel, as shown in the **Processing>Faders** section, see **"Spill Faders" on page 75,** it is also possible to either allow the Spill path faders to appear next to the master path fader on the fader bed this method is known as 'Spill-in-Place' (the default) or the user can dedicate a part of or all of a separate fader panel to be used as a fixed 'Spill panel' as previously provided on Apollo and Artemis consoles.

In order to define part or all of a dedicated Spill fader panel, the user has to first go to **Show setup>Control Preferences** as shown in Fig 1 and tap on the button 'Set Spill Faders' this opens a dialogue box asking for the Start and End fader number to be used, tapping on the 'Save & enable' button will set the 'Spill on Panel' function.

Note: the range can be edited by clicking on the 'Edit' button shown in Fig 2 or the user can return to the default by tapping on the 'Use Spill-in-Place' button.

In order to call the Spill fader function so that the selected path (except Mono) is spilled out either to the adjacent faders or on a separate 'Spill panel' the user presses the Custom '**Spill Path**' button which is usually placed on one of the button cells to the right of the Layers and Modes row area (button cells 10, 11 & 12) on any standard fader panel in that user area.

The method for setting up this is described in the Fader Surface Tools section of this manual using the Surface Tools template.

The highlighted image in Fig 3 shows that '**Spill path**' button is active in the top left of button cell 12 on Page 2 of a standard fader panel e.g. Faders 1-12.

The 7.1.4 fader on Layer 1 Fader 1B shown has been spilled out in place with the spill legs placed to the right of the master fader (which stays where it is) on faders 2-8.

FIG 1 - SHOW SETUP>SPILL FADERS-IN-PLACE CHANGING TO ON A PANEL

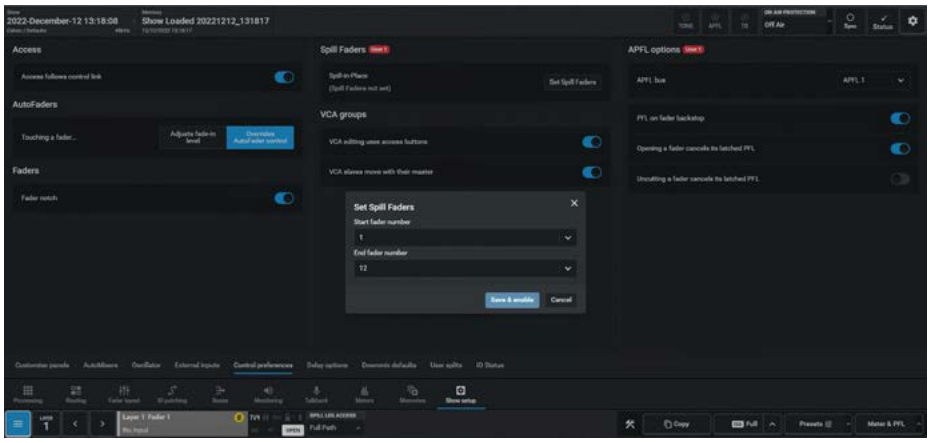


FIG 2 - SHOW SETUP>SPILL FADERS ON A PANEL

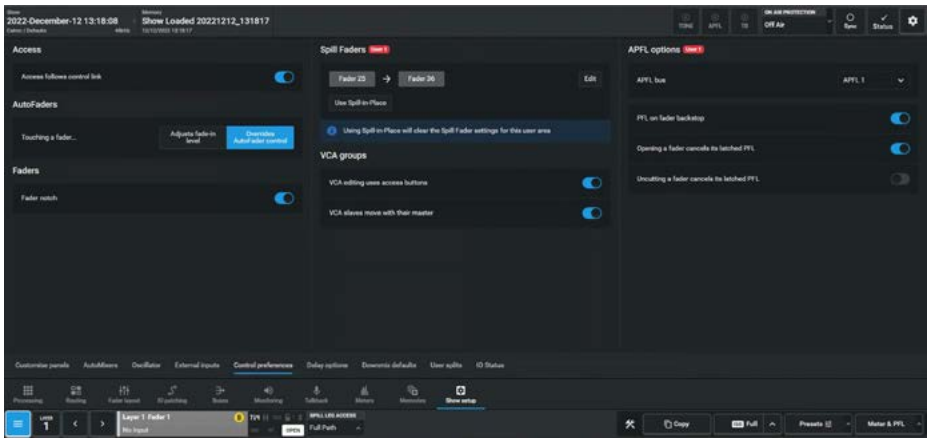


FIG 3 - FADER 1B A 7.1.4 PATH SPILLED-IN-PLACE ON FADERS 2-8

The fact that they are spill faders is denoted by the hash lines at the bottom of each TFT leg display and the names of each leg also appears in the label display at the bottom.

Once the Spill is no longer required the user presses the 'Clear Spill' button in the top right of button cell 12 as shown in Fig 5.

Note: any other fader paths that were placed on the paths now displaying the spill legs are hidden until the 'Spill path' button is released and that if the "Spill-in-Place method is used and the width of the spill to the right needs more faders than are available e.g. at the right end of the surface or user section, then the spill will appear to the left of the master fader.

The image in Fig 4 shows that same path with the 'Spill path' button active but placed on a dedicated short Fader panel in this case on faders 25-36, with the spill legs placed to the right of the master fader on faders 25-32 with the last four fader unused.

The dedicated spill panel doesn't have to be the whole panel it is just arranged like this in this example, to emulate an Apollo or Artemis like spill panel which always places the spill legs on the same panel.

If the maximum width of the paths used in the show is say 5.1 then only 5 faders are needed i.e. Master, L/R, C, LFE and Ls/Rs so only faders 25-29 would be required and the other 7 faders would show their normal path assignments.

If the width of the spilled path is wider than the width of the Spill Panel area then the 'Scroll Spill' left and right buttons shown in button cell 11 are activated as shown in the customised area in Fig 5.

These buttons scroll the Spill legs to the left or right in order to show them within the spill panel area. The master path is placed to the left of the Spill legs and does not scroll so that it is always available for overall control. Fig 6 shows the same 7.1.4 path being spilled onto faders 25-29, with faders 30-36 showing other paths.

FIG 4 - SHORT FADER WITH A 7.1.4 PATH ON 'SPILL PANEL' FADERS 25-32 OF 36

FIG 5 - CUSTOM BUTTON AREA SHOWING SCROLL SPILL BUTTONS ACTIVE

FIG 6 - 7.1.4 PATH ON 'SPILL PANEL' SHORT FADERS 25-29 USING SCROLL SPILL

As the spill panel area is smaller than the width of the spilled path only 4 of the 7 spill legs are shown, pressing the scroll spill left or right buttons allows the user to scroll the 7 legs within the window area.

The user has scrolled the spill legs one step to the right allowing them to see and control the Lrs/Rrs spill leg and as a consequence the L/R spill leg is no longer shown.

SPILL CONTRIBUTION PATHS ON SURFACE

Spilling Contribution Paths in Place/ On a Spill Panel

In order to call the Spill Contribution paths so that the selected Contribution bus and all the paths contributing to it are spilled out either to the adjacent faders or on a separate 'Spill panel', the user presses the Custom '**Spill Contribution**' button which is usually placed on one of the button cells to the right of the Layers and Modes row area (button cells 10, 11 & 12) on any standard fader panel in that user area. To set this up see **"Fader surface tools" on page 127.**

Fig 1 shows a typical fader panel in Contribution mode showing that 3 input channel paths on L1F1B, L1F3B, L1-F5B and Group 1 on L1F1A are contributing to (are routed to) Main 1 which is placed on L1F7A. Contributing paths may be located on any of the A/B faders and on any of the 12 Layers of the surface. For convenience they are shown with Main 1 on the same fader section.

For more information on the use of Contribution or Reverse interrogation as it is sometimes known go to the **Routing>Contribution** section see **"Contribution Mode" on page 93.**

The Spill Contribution feature allows the user to bring all those contributing paths together next to the contribution bus.

Note: to use the Spill Contribution feature from the surface, the Contribution bus has to be assigned to a physical fader on the surface.

The highlighted image in Fig 2 shows that 'Spill cont' button is active in the bottom left of button cell 12 on Page 2 of a standard fader panel e.g. Faders 1-12. The Main 1 bus and it's contributors have been spilled out in place with the contributing paths placed to the right of the Main 1 fader (which stays where it is) on faders 7-11.

The fact that they are spill contribution paths are denoted by the routed indicators and the contribution bus is identified by the yellow 'Contribution' label on the Main 1 fader L1F7A.

FIG 1 - FADER PATHS SHOWN IN CONTRIBUTION MODE TO MAIN 1

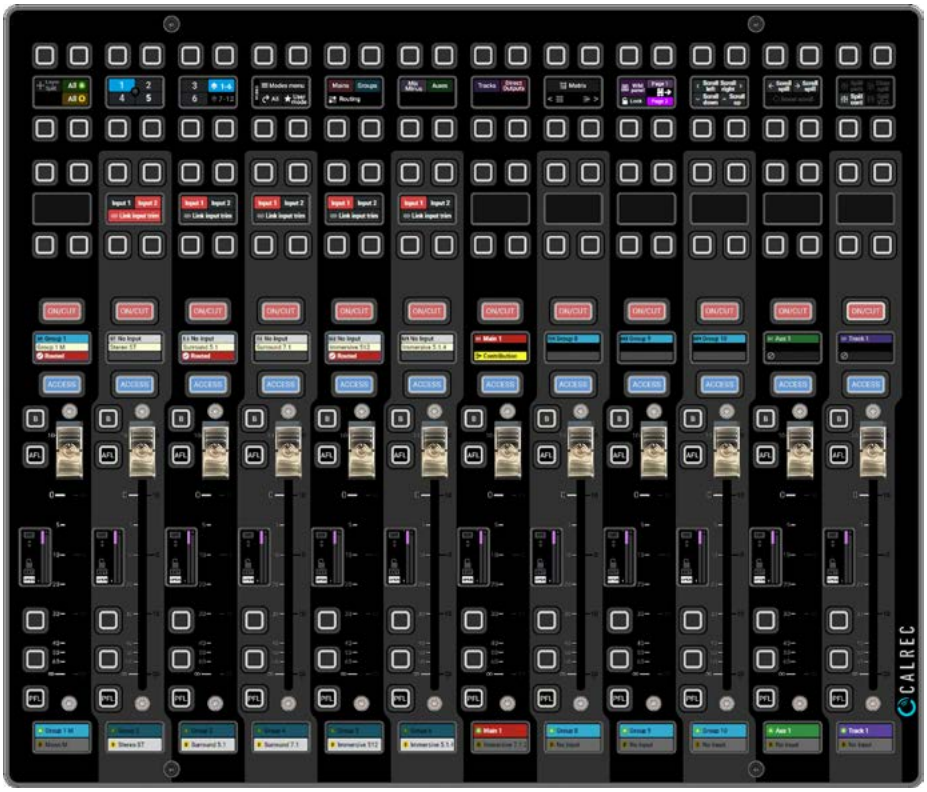


FIG 2 - FADER 7A MAIN 1 CONTRIBUTION SPILLED-IN-PLACE ON FADERS 7-11

Once the Spill Contribution is no longer required the user presses the 'Clear Spill' button in the top right of button cell 12 as shown in Fig 3.

Note: any other fader paths that were placed on the paths now displaying the spill contributors are hidden until the 'Spill cont' button is released and that if the "Spill-in-Place" method is used and the width of the spill to the right needs more faders than are available e.g. at the right end of the surface or user section, then the spill will appear to the left of the Contribution bus.

The image in Fig 4 shows that same Contribution set with the 'Spill cont' button active but placed on a dedicated Short Fader panel with the contributors placed to the right of the Main 1 fader on faders 25-29 with the last 7 faders showing other paths not in the spill.

The dedicated spill panel doesn't have to be the whole panel it is just arranged like this in this example, to emulate an Apollo or Artemis like spill panel which always places the spill on the same panel.

If the maximum number of contributing paths is say 4 then only 5 faders are needed i.e. Main 1 and the 4 contributing paths.

If the number of contributors to the contribution bus is more than the width of the Spill Panel area then the 'Scroll Spill' left and right buttons shown in button cell 11 are activated in the customised area, see Fig 3.

These buttons scroll the Spill contributors to the left or right in order to show them within the spill panel area.

The contribution bus is placed to the left of the contributing paths and does not scroll so that it is always available for overall control.

Fig 5 shows the same Contribution bus being spilled onto faders 25-28, to show limited contributing paths, and the scroll spill in action with faders 29-36 showing other non contributing paths.

FIG 3 - CUSTOM BUTTON AREA SHOWING SCROLL SPILL BUTTONS ACTIVE

FIG 4 - MAIN 1 BUS & CONTRIBUTORS ON 'SPILL PANEL' FADERS 25-29 OF 36

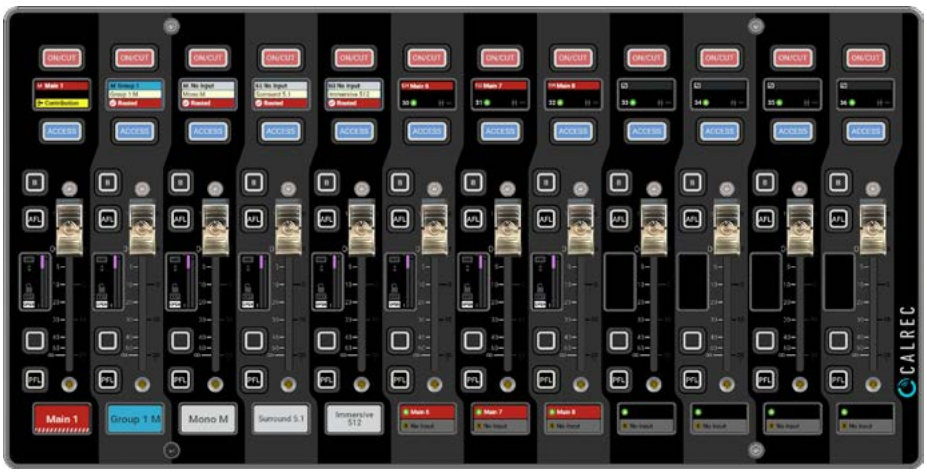
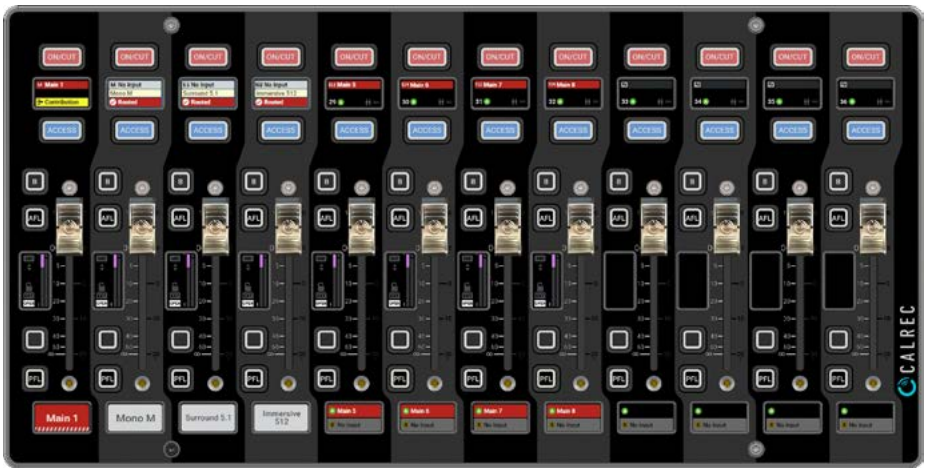


FIG 5 - MAIN 1 BUS & CONTRIBUTORS ON 'SPILL PANEL' WITH SCROLL SPILL



As the spill panel area is smaller than the number of contributors only 3 of the 4 contributing paths (of which there could be more) are shown, pressing the scroll spill left or right buttons allows the user to scroll the contributing paths within the window area.

The user has scrolled the spill legs one step to the left right allowing them to see and control the Immersive 512 contribution path and as a consequence the Group 1 contribution on Fader 1A is no longer shown, but of course still contributing.

EDIT VCA GROUPS FROM THE SURFACE

Argo has moving fader VCA groups to provide control over fader level, cut status and APFL status.

Creating and dissolving VCA groups

To set up a VCA group, from the surface, first choose a fader to be master and then assign a number of other faders for it to control as slaves. To do this push and hold the master fader's access button, then press the access buttons of any paths which are to become slaves, or press again to remove. Slaves can only have one master.

Group hierarchy

Argo provides up to three levels of group hierarchy. A master can have slaves but can also be made a slave of another master. Fig 1 illustrates the hierarchy. When the full hierarchy is in place, the slave master is known as the intermediate or 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 vertical fader display is used to show information about its VCA fader status as shown in Fig 2.

- No VCA indication if the fader is not part of any VCA group.
- 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.

FIG 1 - GROUP HIERARCHY

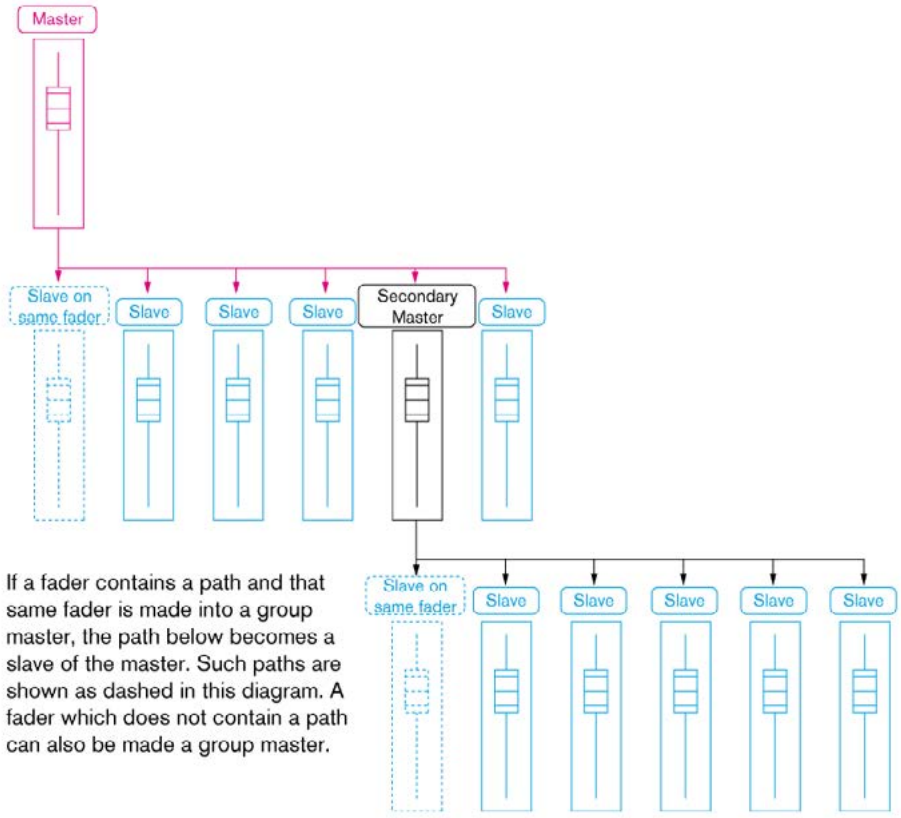


FIG 2 - VCA FADER STATUS

Fader 1 is illuminated RED to show that it is a Primary VCA Master (**MR**)

Fader 2 is illuminated RED/GREEN to show that it is a Secondary VCA Master (**MS**)

Fader 3 is illuminated GREEN to show that it is a VCA Slave (**SL**)

Fader 4, Fader 5 and Fader 6 (which is the current ACCESS path in this example) are not illuminated as they are not part of a VCA Group.

VCA group interrogation

Interrogation works in a similar way to the routing interrogation feature. It provides a clear way of indicating VCA group assignment using the path access buttons. As with creating a VCA group from the surface, interrogation is performed by holding down the access button of the path to be interrogated.

A number of different situations exist:

- The interrogation of a primary master will illuminate all the access buttons of its slaves. If there is a path underneath the Primary Master it will illuminate as a slave see fader 1 in Fig 3. If any secondary masters exist which are controlled by the selected primary master, their access buttons will strobe slowly and the slaves of the secondary masters intermediate will be greyed out and a 'No Access Icon will appear see fader 3 in Fig 3. This is also indicating that it is not possible to add those paths to the currently selected VCA group primary master as it already belongs to the secondary master.

- The interrogation of a secondary master will illuminate all the access buttons of its slaves and the access button of its primary master will strobe quickly. See Fig 4.

- The interrogation of a slave of a secondary master will strobe the secondary master's access button slowly and its primary master's access button quickly. See Fig 5.

- Interrogating a slave of a master will cause the master's access button to strobe quickly. This is a simplified case similar to Fig 4 where there is only one VCA level of control in place.

While holding an access button, only the access buttons relevant to the VCA group will illuminate or strobe. The rest will be greyed out and a 'No Access Icon will appear as shown for faders 4, 5 & 6 in Fig 5. This is also indicating the it is not possible to add those paths to the currently selected VCA group master.

FIG 3 - VCA GROUP INTERROGATE - PRIMARY MASTER

FIG 4 - VCA GROUP INTERROGATE - SECONDARY MASTER

FIG 5 - VCA GROUP INTERROGATE - SLAVE

Masters & slaves on the same fader
Masters can be created on a faders which do 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 access button is held down, then the changes will apply to the slave beneath the master.

If the fader is accessed but the button 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 doesn't apply to VCA groups.

Fader level indicator
Touching a fader will display its level. 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.

Preserving low level slave balance
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 indicators on the slaves will illuminate.

Surround & immersive spill legs
If a surround or immersive 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.

VCA group protection
Within the **Show Setup>Control Preferences>VCA Groups** options there is a slider switch labelled '**VCA editing uses Access buttons**'.

The default status of this option is On but it can be switched Off to stop any changes being made to VCA groups.

VCA groups created before this option is turned off will still be operational but changes to the VCA group organization will not be possible as the Access buttons will no longer have access.

VCA Slaves move with VCA Masters
By default slave and secondary master faders move along with their masters to show their individual, relative levels. This feature can be disabled if preferred: Within the main application, navigate to **Show Setup>Control Preferences> VCA Groups**

The last option is to enable or disable **'VCA Slaves move with VCA Masters'**.

If the feature is disabled (slider switch off), slaves and secondary master faders will no longer move in-line with their masters but their nulling indicators will light appropriately to show whether the actual level is above or below that being shown by the fader position.

VCA operation with RP1 units
The existing mechanism for creating VCA groups has been extended to allow VCA control of Remote Faders on an RP1 unit by selecting a path or blank fader on the host console as the VCA Master, pressing and holding down its access button on the console surface and then pressing the access buttons of those Remote Fader paths that are to be VCA slaves to that VCA master.

There are rules about connecting Remote faders that differ from the normal VCA system. The detailed operation and integration of the RP1 remote production unit with the Impulse based console range is the subject of a separate manual '**Remote Production Manual Impulse Edition (926-308)**' which is downloadable from the Calrec website.

In that manual, is a chapter called 'Operation Via Host Console' which shows how to setup and operate the RP1 remote production unit via a host console.

SPILL VCA GROUPS ON SURFACE

Spilling VCA Groups in Place/ On a Spill Panel

In order to call the Spill VCA paths so that the selected Master and all the paths that are part of the VCA group associated with it are spilled out either to the adjacent faders or on a separate '**Spill panel**', the user presses the Custom '**Spill VCA**' button which is usually placed on one of the custom button cells to the right of the Layers and Modes row area (button cells 10, 11 & 12) on any standard fader panel in that user area. To set this up see **"Fader surface tools" on page 127.**

Fig 1 shows a typical fader panel with a VCA Group on Faders: with the Primary Master's Access button held down:- Channel Inputs on the A Layer:- L1F1A (Slave to Primary Master), L1F3A (Secondary Master), L1F4A (Slave to Secondary Master) and an audio Group 1 on the B Layer:- L1F2B (Slave to Primary Master) which are all controlled from the Fader on L1F6A (Primary Master) on the A Layer.

Primary Masters, Secondary Masters and Slaves may be located on any of the A/B faders and on any of the 12 Layers of the surface. For convenience they are shown here on the same fader section.

For more information on the use of VCA Groups see **"Edit VCA groups from the surface" on page 138** or go to the **Fader Layout>VCA Edit** section see **"VCA Edit Mode" on page 114**.

The Spill VCA feature allows the user to bring all the members of the VCA group together next to their Master. The highlighted image in Fig 2 shows that '**Spill VCA**' button is active in the bottom right of button cell 12. The Primary Master on Fader L1F6A and the other members of the VCA Group have been spilled out in place with their paths placed to the right of the Primary Master (which stays where it is) on faders 6-10.

Note: Spilling the Primary Master only shows the immediate slaves and secondary masters if any.

FIG 1 - FADER PATHS SHOWN IN VCA GROUP (PRIMARY MASTER ON FADER 6A)

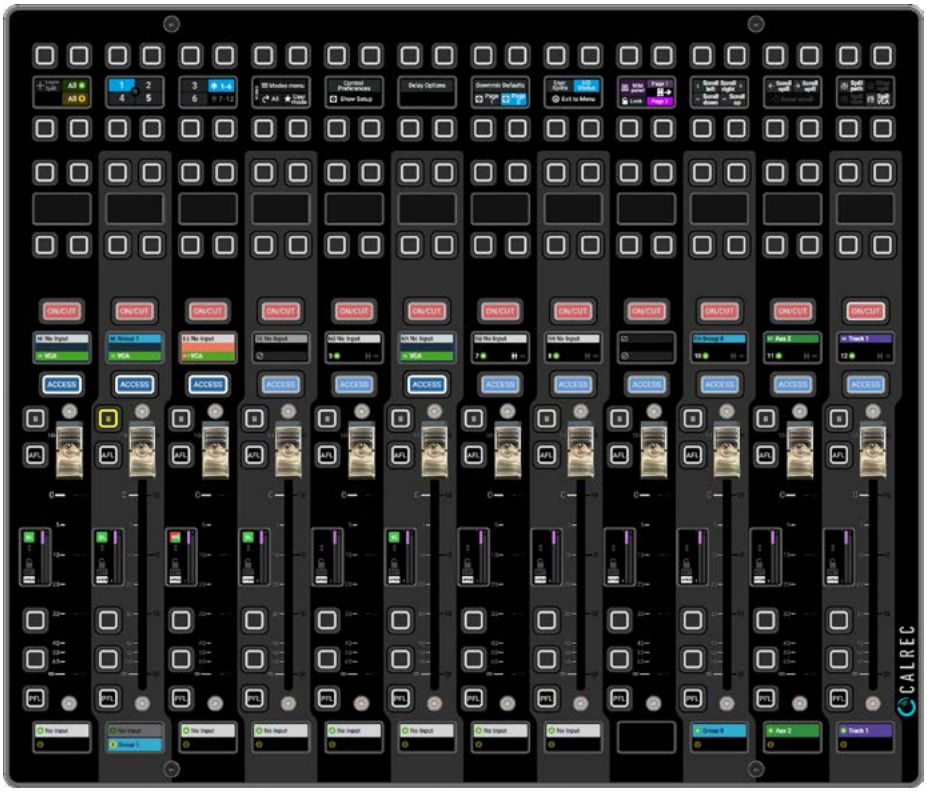
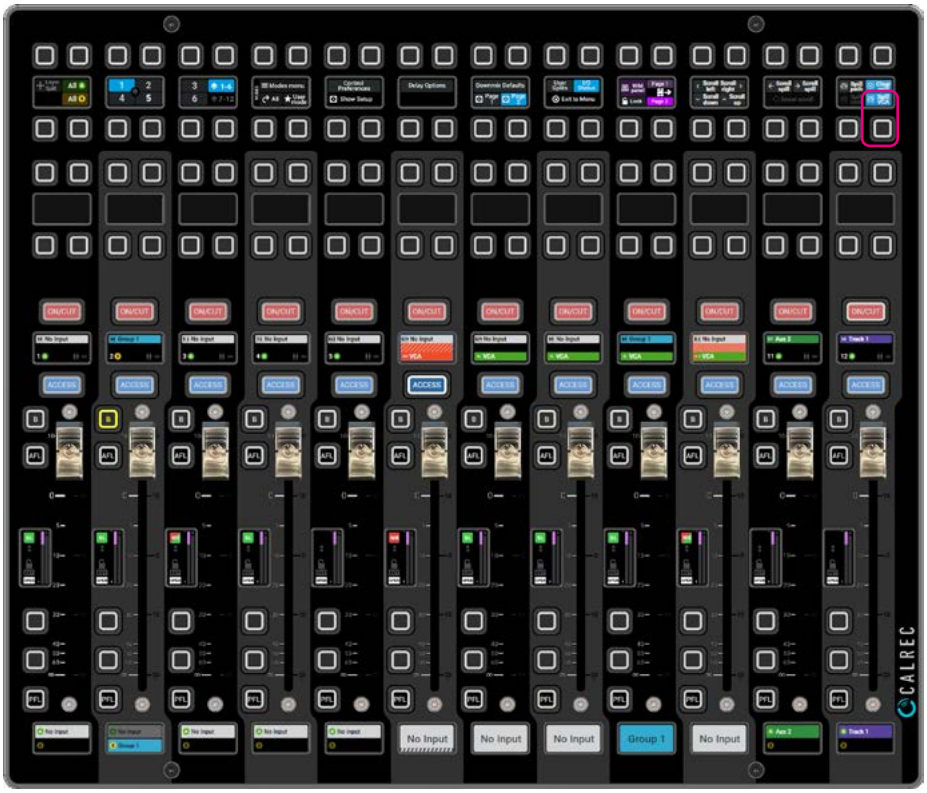


FIG 2 - PRIMARY MASTER VCA GROUP SPILLED-IN-PLACE ON FADERS 6-10



The fact that they are spilled VCA Group paths are denoted by the path indicators, and the VCA Indicators in the vertical Fader TFT displays as shown.

Once the Spill VCA is no longer required the user presses the 'Clear Spill' button in the top right of button cell 12 as shown in Fig 5 on the next page.

Note: any other fader paths that were placed on the paths now displaying the spill VCA Group members are hidden until the 'Spill VCA' button is released.

If the "Spill-in-Place" method is used and the width of the spill to the right needs more faders than are available e.g. at the right end of the surface or user section, then the spill will appear to the left of the accessed VCA master.

Fig 3 shows that 'Spill VCA' button is active in the bottom right of button cell 12 and a Secondary Master on Fader L1A-F3 and the other members of the VCA Group have been spilled out in place with their paths placed to the right of the Secondary Master (which stays where it is) on faders 3-5.

Note: Spilling the Secondary Master only shows the immediate slaves.

Fig 4 shows the Primary Master VCA Group with the 'Spill VCA' button active, but placed on a dedicated Short Fader panel and the other members of the VCA Group have been spilled out with their paths placed to the right of the Primary Master fader (which stays where it is) on faders 25-29 with the last 7 faders showing other paths not in the spill.

The dedicated spill panel doesn't have to be the whole panel it is just arranged like this in this example, to emulate an Apollo or Artemis like spill panel which always places the spill on the same panel.

FIG 3 - SECONDARY MASTER VCA GROUP SPILLED-IN-PLACE ON FADERS 3-5

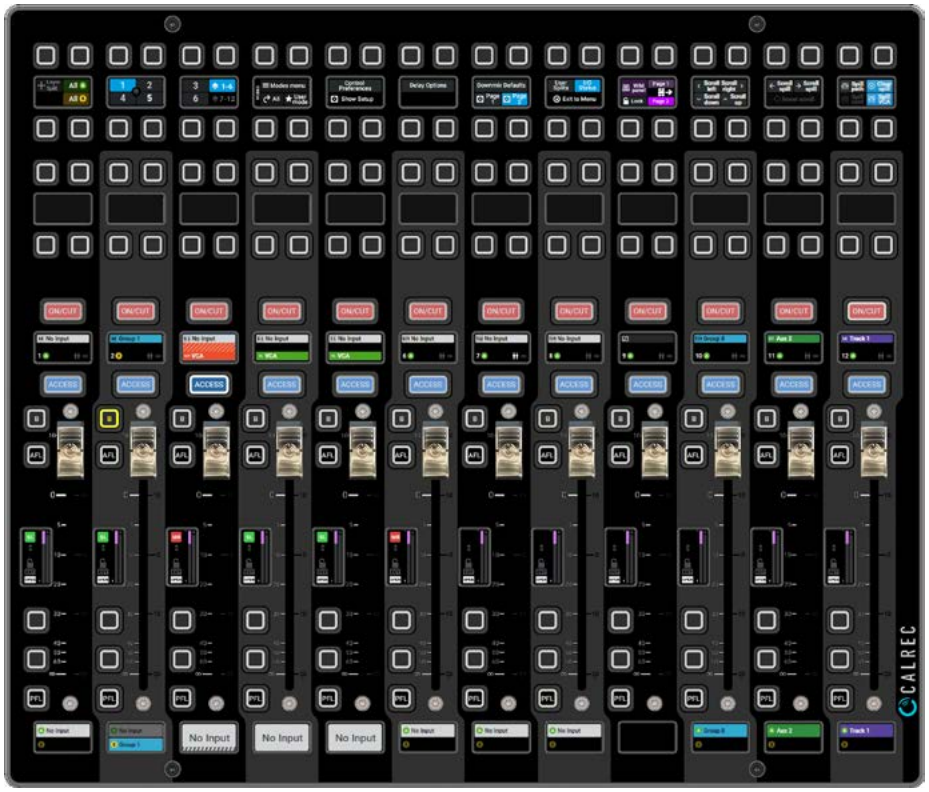


FIG 4 - PRIMARY MASTER VCA GROUP ON 'SPILL PANEL' FADERS 25-29 OF 36

If the maximum number of VCA Group Members is say 4 then only 5 faders are needed e.g. Primary Master, 3 Slaves (including 1 slave hidden underneath the Primary Master) and Secondary Master.

If the number of contributors to the VCA Group bus is more than the width of the Spill Panel area, then the 'Scroll Spill' left and right buttons shown in button cell 11 are activated in the customised area of the standard fader panel, see Fig 5.

The ‘Scroll Spill’ buttons scroll the Spilled members of the VCA Group to the left or right in order to show them within the spill panel area.

The accessed Master is placed to the left of the VCA Group and does not scroll so that it is always available for overall control.

Fig 6 shows the same VCA Groups being spilled onto faders 25-28, to show limited contributing paths, and the scroll spill in action with faders 29-36 showing other paths not in the spill.

As the spill panel area is smaller than the size of the VCA Group, e.g. only 3 of the 4 members of the VCA Group (of which there could be more) are shown, pressing the scroll spill left or right buttons shown in Fig 5, allows the user to scroll the contributing paths within the window area.

In Fig 6, the user has scrolled the spill one step to the left right allowing them to see and control the Secondary Master and as a consequence the Slave that was shown on Fader 26 is no longer shown but of course still being affected.

Fig 7 shows the Secondary Master VCA Group with the ‘Spill VCA’ button active, but placed on a dedicated Short Fader panel and the other members of the VCA Group have been spilled out with their paths placed to the right of the Primary Master fader (which stays where it is) on faders 25-27 with the last 9 faders showing other paths not in the spill.

Note: as the Secondary Master VCA Group shown here is smaller than the available spill panel area, the Scroll Spill buttons are not activated.

FIG 5 - CUSTOM BUTTON AREA SHOWING SCROLL SPILL BUTTONS ACTIVE

FIG 6 - PRIMARY MASTER VCA GROUP ON ‘SPILL PANEL’ WITH SCROLL SPILL

FIG 7 - SECONDARY MASTER VCA GROUP ON ‘SPILL PANEL’ NO SCROLL NEEDED

ARGO UI/EXT-VID 1/EXT VID 2 SELECT

Display Options on Touchscreen
The TFT touchscreen in each section normally displays the graphical user interface as shown in Fig 2, however each fader section has 2 external Video Inputs via SFP on the back of the console, which can be used to interface to alternate video streams on the TFT touchscreen. In addition there is a Touchscreen output on a USB-B connector also on the back of each fader section allowing a connected video source to be controlled via the Touchscreen in the console such as a laptop computer.

For further technical information on this please refer to 'Surface Components' in the **Argo Installation Manual (926-312)**

In order to access these options the user can add some Custom controls into the Custom buttons area of each Standard fader, Wild assign panel or Monitor panel. Fig 1 shows these button options have been added to the Standard fader custom button area from the Surface Tools template see **"Custom Controls - Fader Panels" on page 234** and Fig 7 on page 229 which shows the Surface Tools template options shown which include: ARGO UI, Ext Video 1 & Ext Video 2.

The default selection is ARGO UI but if the External Video 1 or 2 is accessed the Argo UI button or toggling the 'Ext Vid 1' or 'Ext Vid 2' buttons, returns the display to the ARGO UI function.

Fig 3 shows that the user has selected **'Ext Vid 1'** which passes the video input being received on the Ext Vid 1 SFP interface through to the TFT touchscreen.

Fig 4 shows the External Video 1 input signal on the touchscreen. In this case no signal is being received.

The **'Ext Vid 2**' display has the same functionality as the external video 1 input except that it is being fed from the external video 2 SFP input.

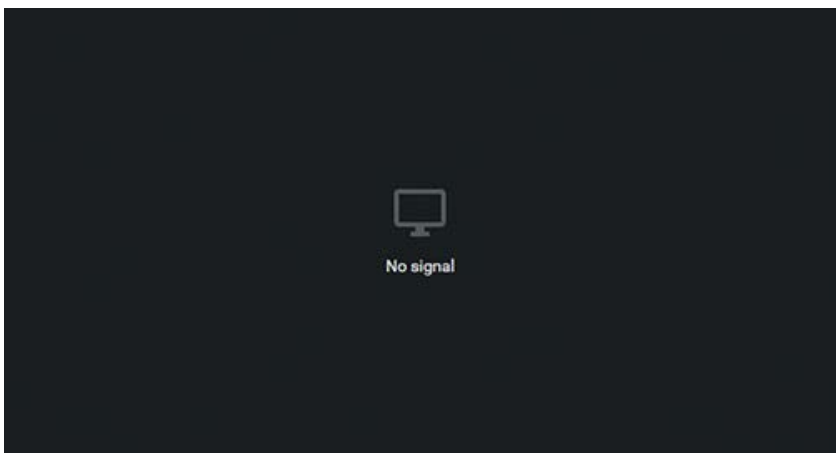
Note: each fader section has the 2 external video inputs thus allowing a number of video sources to be shown in different areas of the console.

FIG 1 - CUSTOM BUTTON AREA SHOWING ARGO UI SELECTED

FIG 2 - NORMAL UI DISPLAY ON TOUCHSCREEN

FIG 3 - CUSTOM BUTTON AREA SHOWING EXT VIDEO 1 OR 2 SELECTED

FIG 4 - EXTERNAL VIDEO DISPLAY 1 OR 2 ON TOUCHSCREEN



ARGO
IO PATCHING

CALREC

DEVICE TRANSMITTERS & CORE RECEIVERS

For AoIP based systems such as Argo on Impulse, the physical I/O is contained in separate I/O devices with AoIP interfaces which allows them to pass audio over ethernet based networks, using AoIP/ST2110 protocols.

This is managed by a web based application called '**Connect**'.

The Connect application provides the user with all the facilities needed to provide the view and management of AoIP streams and devices. These can be connections to and from Calrec AoIP Devices (or other 3rd party AoIP streams from V1.0).

This application is fully described in the **Connect Guide (926-292)** and as such won't be repeated here but the basic workflow is as follows:-

From the Devices Menu in Connect:-

- Select an AoIP device from the devices list.
- Select/Add & Configure a transmitter for the AoIP Device, see Fig 1.
- Select the Impulse Core from the devices list, shown as '**calrec system**'.
- Select/Add & Configure a receiver for the AoIP Impulse core, see Fig 2.
- Connect the Audio Inputs from the AoIP devices to its transmitter channels, see Fig 3.

From the Network Menu in Connect:-

- Connect the AoIP device transmitter to the AoIP Impulse core receiver, see Fig 4.

Once the AoIP device transmitters have been connected to the Impulse core receivers, all the available audio Inputs appear in the IO patching pages on the Argo TFT Touchscreens accessed by either the IO Patching button found on the Extended Control Panel Modes row of the Standard fader panels or from the IO Patching menu entry on any of the TFT touchscreens.

FIG 1 - DEVICES>AOIP DEVICE TRANSMITTERS

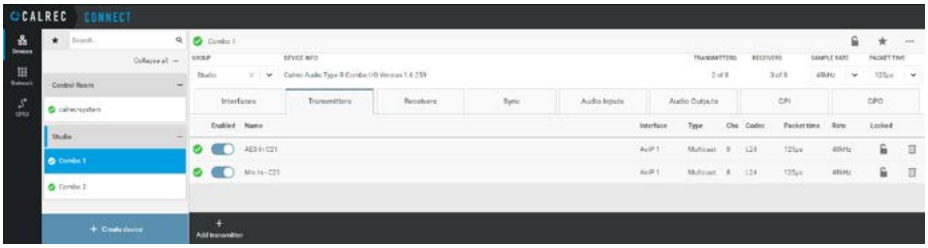


FIG 2 - DEVICES>AOIP IMPULSE CORE RECEIVERS

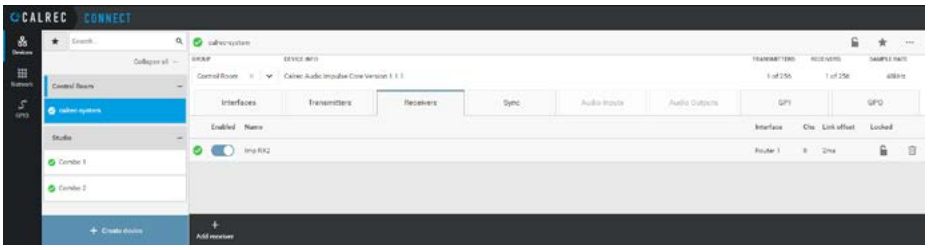


FIG 3 - DEVICES> CONNECT AUDIO INPUTS TO DEVICE TRANSMITTERS

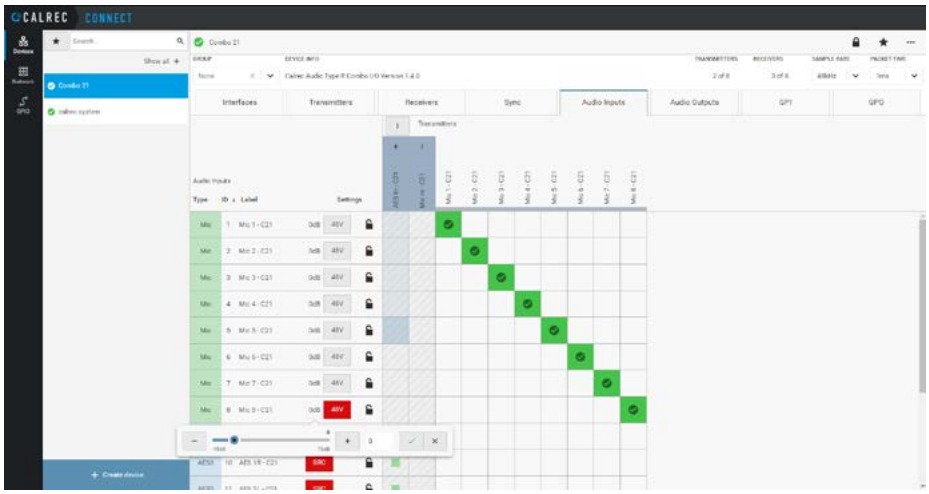
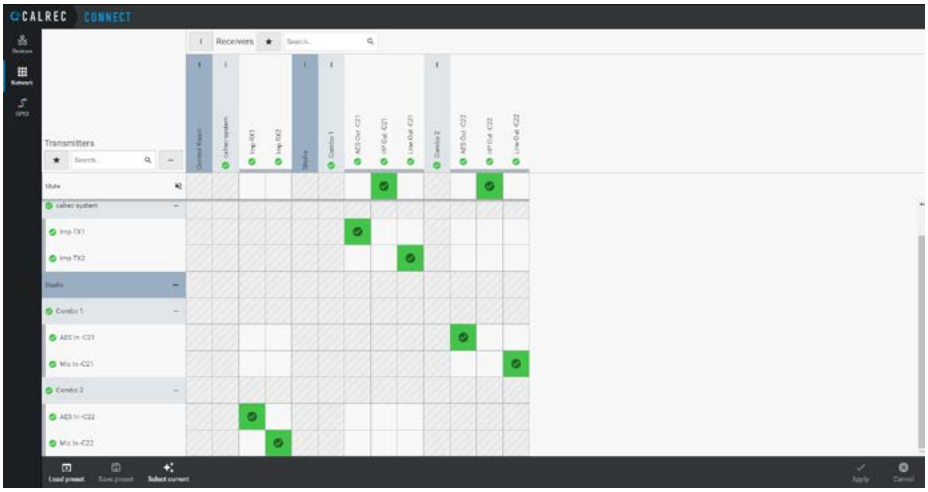


FIG 4 - NETWORKS>CONNECT TRANSMITTERS TO RECEIVERS



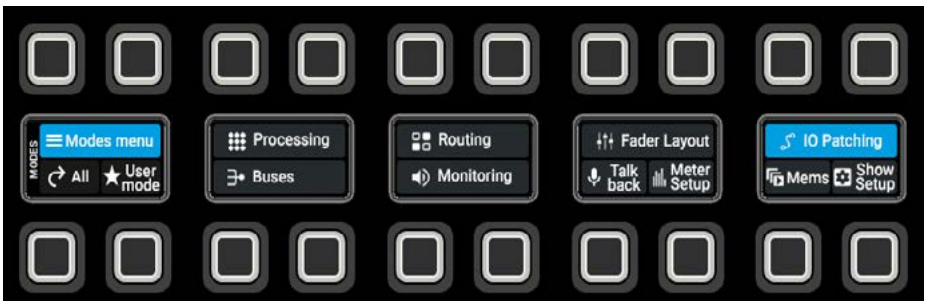
INPUT AND OUTPUT PATCHING

Argo IO Patching connects Sources to Destinations in any combination. **Input sources may take the form of:-DSP outputs from the same console, Audio input receivers via streams, Virtual patchbay outputs from other consoles on the same Impulse core, or Virtual patchbay inputs the sources of which can be switched remotely by 3rd party controllers. DSP outputs including Mains, Tracks, Auxes, Direct Outputs etc, can be patched to AoIP device output transmitters, Virtual Patchbays, or back into channel inputs of the same console.**

The **IO Patching** screen provides a visual representation of sources displayed on the left side of the screen and destinations shown on the right side of the screen.

The user selects a Source and a Destination then taps on the 'Connect' button in the middle to patch them together.

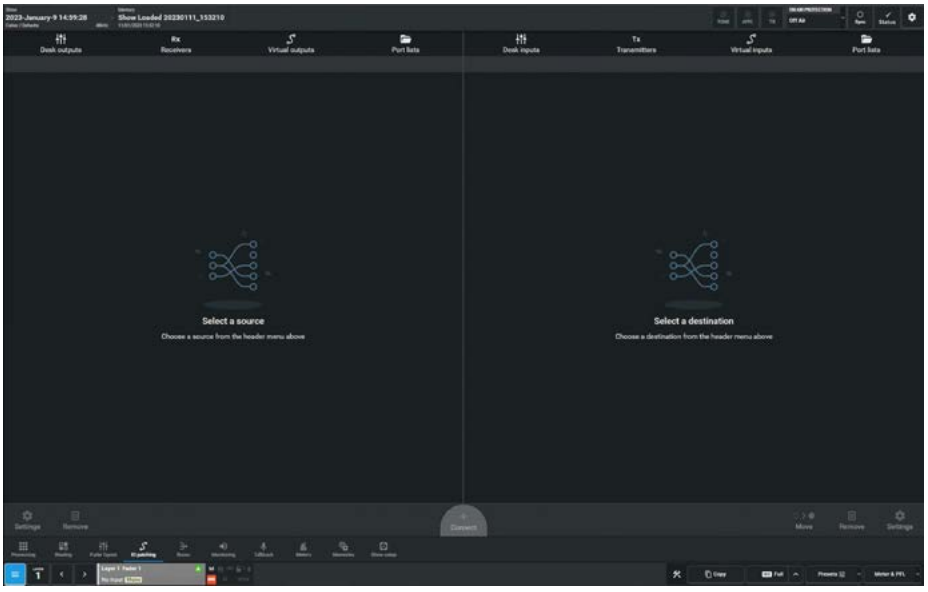
FIG 1 - IO PATCHING EXTENDED MODE SELECT ON STANDARD FADER PANEL



Accessing the IO Patching Screen

The Fader Layout screen is accessed from either the Modes row of a fader panel by first pressing the Modes Menu button in button cell 4 of the Layers & Modes row and then tapping on the IO Patching button as shown in Fig 1, or by tapping on the appropriate icons on the touchscreen as shown in Fig 2.

FIG 2 - IO PATCHING SCREEN SELECTED FROM TOUCHSCREEN



The Wild Assign panel and Fader panel displays are not shown here as the IO Patching of sources to destinations is managed from the touchscreen.

Each source can be patched to multiple destinations but a destination can only have one source.

When patching an input port via an RX receiver to multiple input channels it is important to remember that phantom power (48V), input gain and sample rate conversion are all set within the source.

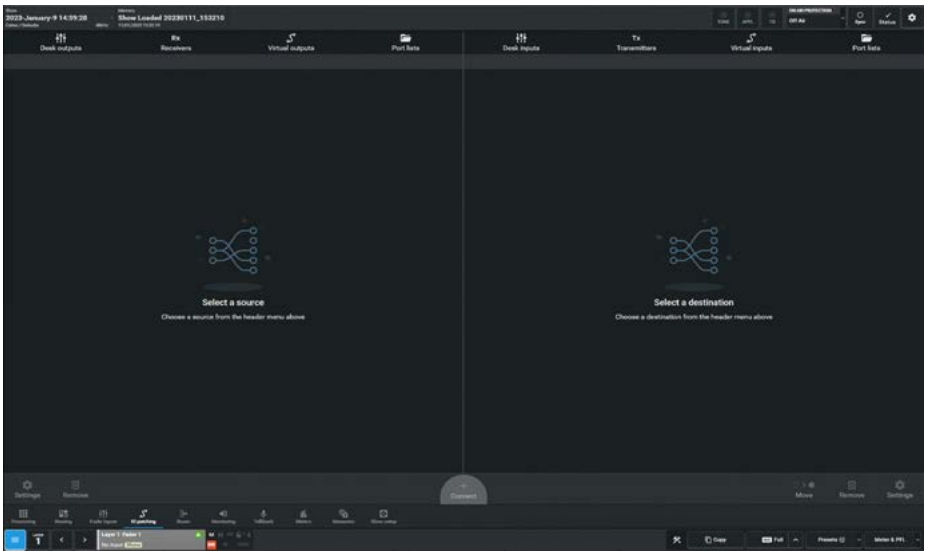
Altering these controls from any point on the surface will affect that feed for every instance of it across the surface and across the AoIP network.

The IO patching Screen Layout
The IO patching screen is accessed via the **IO Patching** menu entry as shown in Fig 3 and is split into two halves, sources are displayed on the left and destinations on the right.

Each side has a set of tabs running along the top for the user to select which source/destination type they wish to access.

The image shown in Fig 4 is the Empty IO patching screen shown on first entry before any source or destination has been selected.

FIG 3 - EMPTY IO PATCHING ON TOUCHSCREEN SHOWN ON FIRST ENTRY

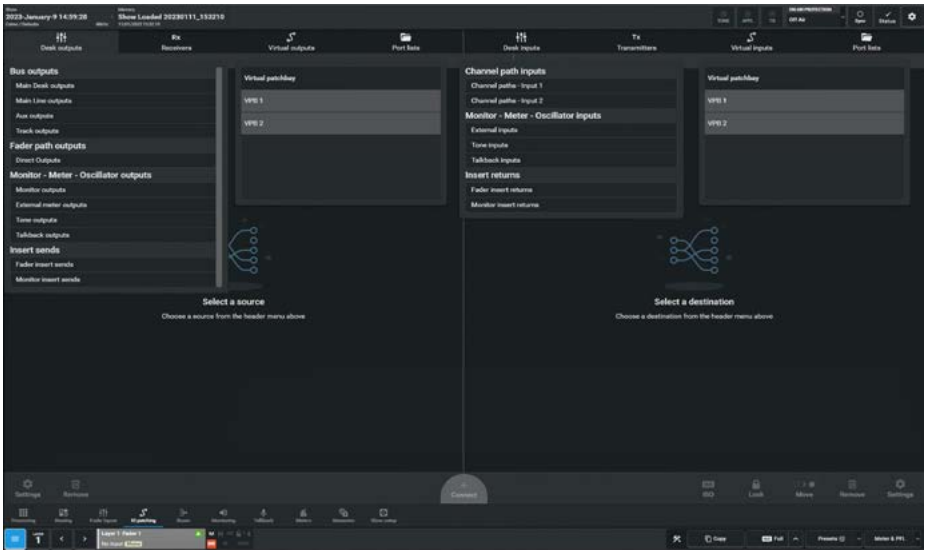


Selecting Sources and Destinations

Selecting Desk Outputs & Inputs:
Tap on a source or destination selection button and a dropdown reveals all available options of that type, as sets of buttons within a table.

The images in Fig 4 show the various Desk output/input & Virtual output/input type dropdowns available.

FIG 4 - DESK OUTPUT/INPUT & VIRTUAL OUTPUT/INPUT DROPDOWNS



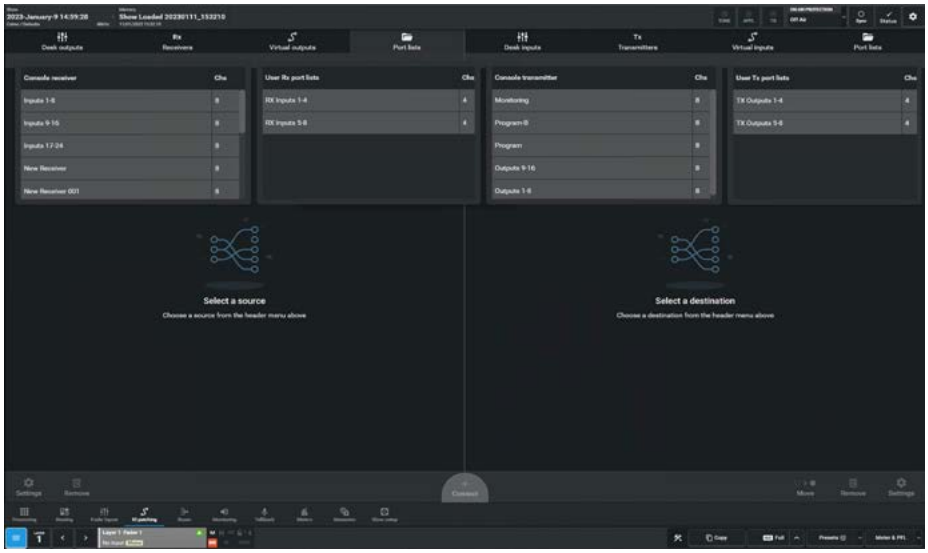
Selecting Receivers & Transmitters:
The images in Fig 5 show the various Console receiver/transmitter & User Rx/Tx port list type dropdowns available.

Note: only one dropdown will appear at a time in Assist, but have shown all types here that are available.

Tapping on an entry in each dropdown list makes that the source or destination selection to be used for IO patching.

Note: As with many of the list and table entries in the touchscreen application the scrollbar shown is an indicator of the current position in a list and the primary scrolling method is to use the two finger “swipe” method by using two fingers in contact with the Multi-touchscreen.

FIG 5 - RX RECEIVER/TX TRANSMITTER & PORT LIST I/P & O/P DROPDOWNS



AoIP Receiver to Desk Input
This is one of the two basic patching requirements to get received audio signals from an external IO interface box into DSP input channels on the console.

The image in Fig 6 shows that a source from Rx Receiver>Inputs 1-8 containing 8 mics has been selected as the source list and that Mic1 has been patched to a mono input channel on fader L1F4A which was selected from the Desk Inputs>Channel paths-Input 1 by selecting source and destination and clicking or tapping on the **'Connect'** button at the bottom.

The Connected destination and Connected source column entries confirm that this patch has been made.

Note: the current source and current destination type tabs are highlighted.

Desk Output to AoIP Transmitter
This is the another of the basic patching requirements to get the DSP output buses out of the console into transmitted audio signals to an external IO interface box. The image in Fig 7 shows that a source from Desk Outputs>Main Desk Outputs has been selected as the source list and that a 5.1 Main output (Main3) has been patched to 6 output channels on Ch-03 to Ch-08 which was selected from Tx Transmitters>Outputs 1-8 by selecting source and destination then clicking or tapping on the **'Connect'** button.

The 6 Connected destinations and the 6 Connected source column entries confirm that this patch has been made.

Note: that another patch from Main 2 to Ch-01 & Ch-02 is ready to connect.

AoIP Receiver to AoIP Transmitter
The image in Fig 8 shows I/O inputs being patched directly to I/O outputs from the source Rx Receiver>Inputs 9-16 to the destination Tx Transmitters>Outputs 9-16.

This can be useful for format conversion where the user may want to bring in an AES port and send it back out to an Analogue port without it passing through a console DSP process.

FIG 6 - INPUT PATCHING AOIP RX RECEIVERS TO DESK INPUTS

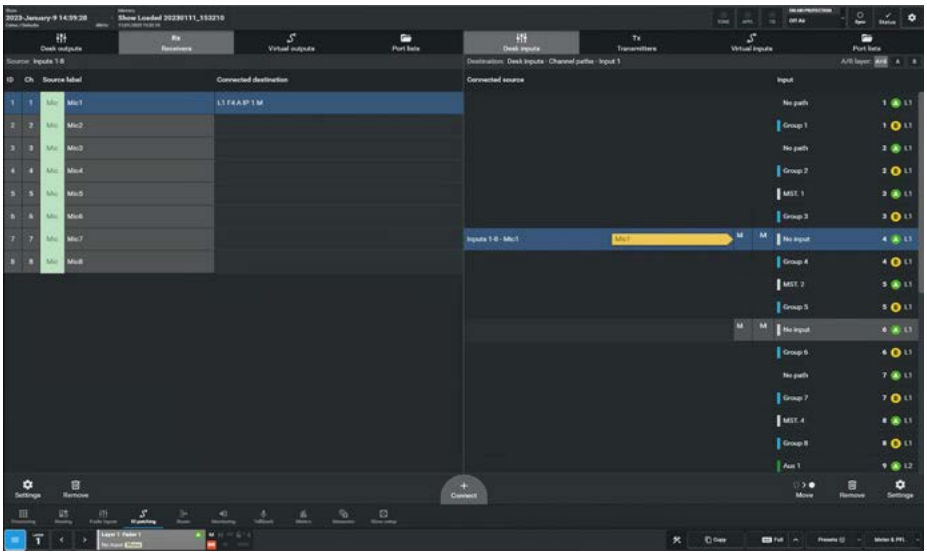


FIG 7 - OUTPUT PATCHING FROM DESK OUTPUTS TO AOIP TX TRANSMITTERS

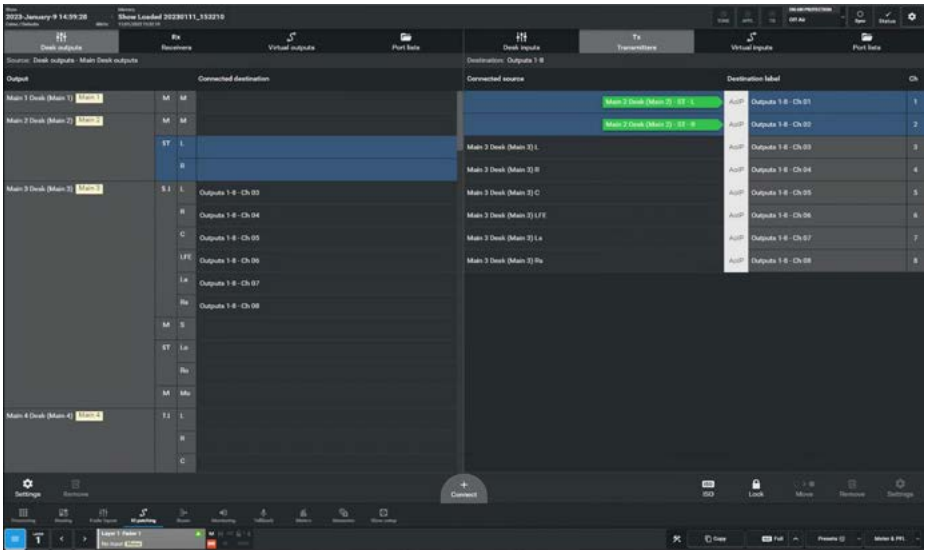
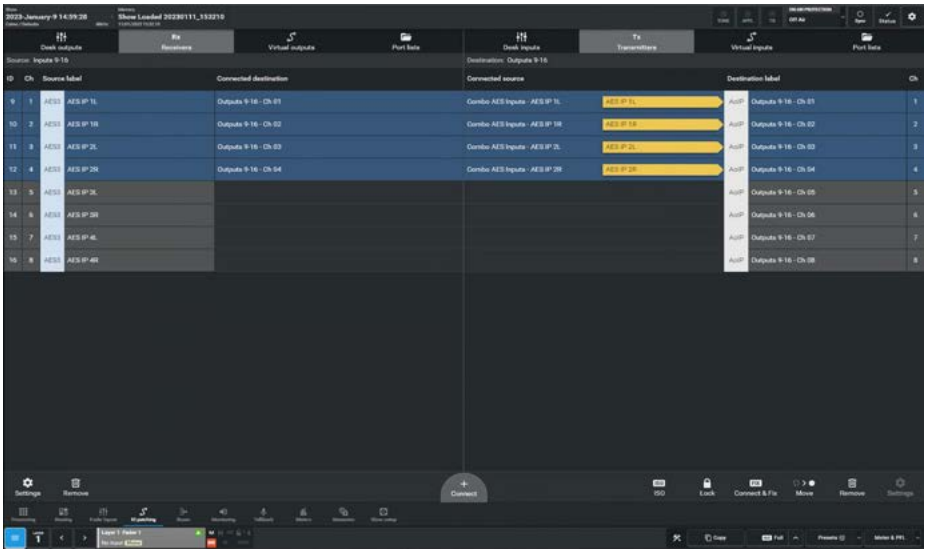


FIG 8 - PATCHING AOIP RX RECEIVERS TO AOIP TX TRANSMITTERS



Desk Output to Desk Input

The image in Fig 9 shows Desk Outputs that have been patched directly to Desk Inputs in this case, which is a stereo Aux Bus Output patched into a stereo channel input in this case on fader L1F2A.

This can be useful when further signal processing is required, for instance applying further EQ signal processing to an Aux bus output without having to send the audio signal out of the console to an output port and then use a cable to return the audio signal back to a channel on the console via an input port.

The channel can then be used to apply EQ to the Aux output and then subsequently be sent back out on say a Direct output from the channel.

Within the IO patching screen, sources and destinations have separate setting options, which are accessible from the left and right of the patching screen footer. The available settings vary depending on which connection type is in view.

Source Settings

If more than one destination is connected to a source, there is a **'Settings'** button on the bottom left side of the footer which opens a pop up, allowing the user to compact the view as shown in Fig 10, or expand the view of the connected destinations column as shown in Fig 11.

Destination Settings

When viewing fader specific paths, such as channel inputs, layer view options will be available. There is a **'Settings'** button on the bottom right hand side of the footer which opens a pop up, allowing the user to select faders to view on the surface layer, layers 1-12, sub-layer A only, sub-layer B only as shown in Fig 10, or both A & B sub-layers as shown in Fig 11.

Surface Interaction

Also in the destination footer pop-up is the '**Fader selection follows fader access**' button. When this function is selected pressing the Fader Access buttons automatically scrolls the patching table to the correct desk input selection.

FIG 9 - PATCHING - DESK OUTPUTS TO DESK INPUTS SELECTION

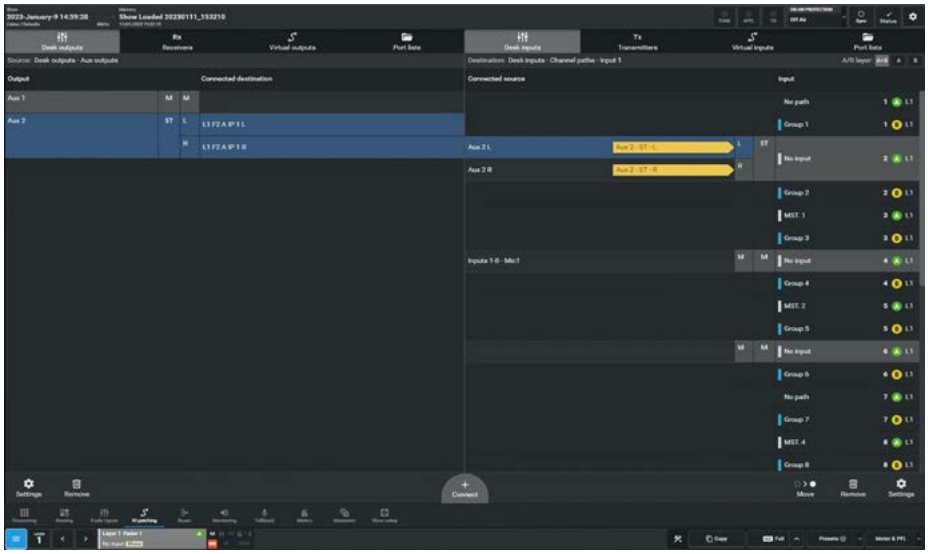


FIG 10 - SOURCE & DESTINATION VIEWS 1

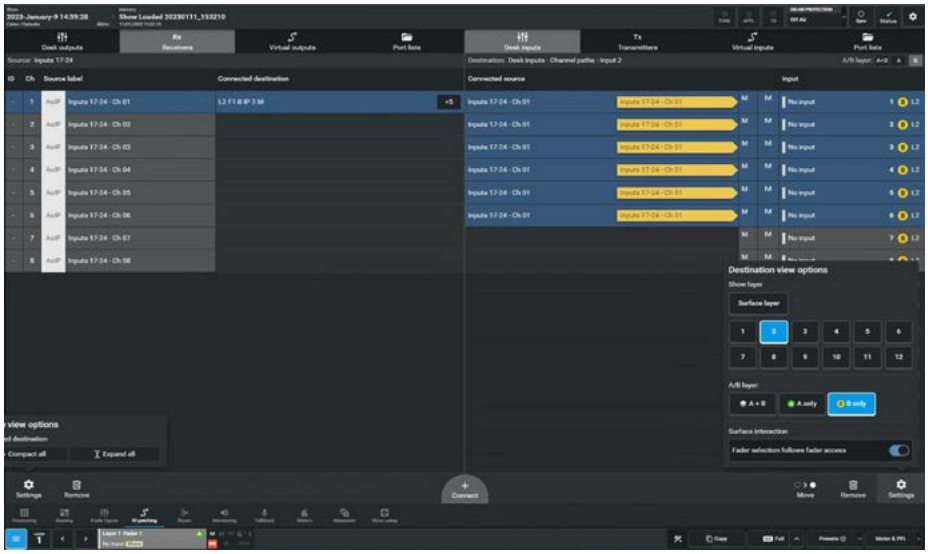
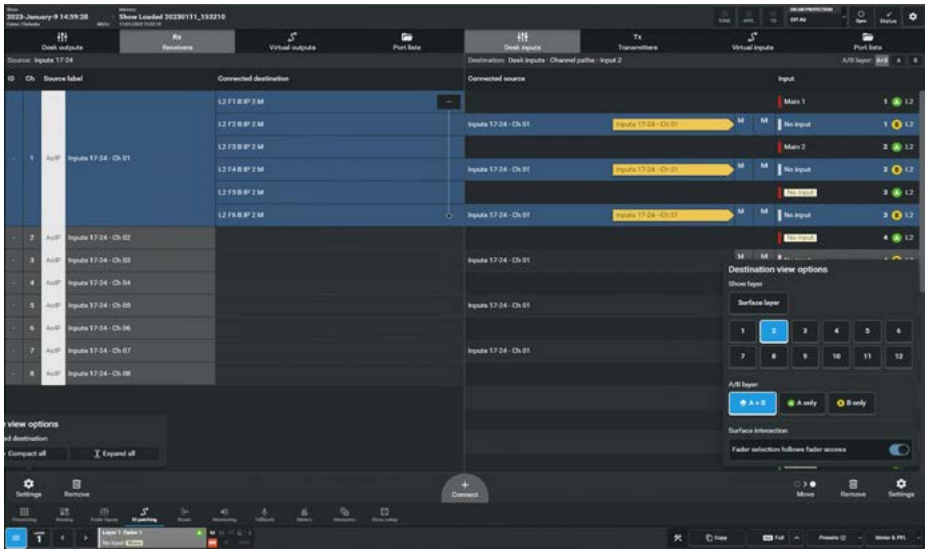


FIG 11 - SOURCE & DESTINATION VIEWS 2



Virtual Patchbays
VPBs are virtual patchbays within the Impulse core. Like physical patchbays, VPBs are used for signal re-routing and distribution. VPBs have a number of input patchpoints which are 'hard wired' to output patchpoints. For further information, see **"Virtual Patchbays" on page 158.**

For patching purposes, virtual patchbay inputs are destinations and virtual patchbay outputs are sources, these appear as Virtual inputs and Virtual outputs tabs shown in the header along with the other destinations and sources as shown in all the IO Patch pages.

When a source is patched to a virtual input, it immediately becomes available at the corresponding virtual output. For example, if a console operator patches a direct output to a virtual input, it becomes available to all users on the same core (who have been granted access), at the corresponding virtual output.

Virtual Patchbay Inputs & Outputs
The image in Fig 12 shows two Virtual Patchbay sets showing the available outputs of VPB1 which has 8 channels and appears on the sources side and the available inputs of VPB2 which has 16 channels on the destination side of the IO patching page.

Note: as shown here the VPB outputs of a VPB can be routed to the inputs of other VPB inputs in order to rearrange/ reroute signals and distribute them accordingly.

AoIP Receivers to VPB Inputs
The image in Fig 13 shows the patching of an AoIP Rx Receiver labelled "New Receiver" which is an 8 channel input stream to a local VPB input set labelled "VPB 1" which is an 8 channel virtual patchbay

VPB Outputs to AoIP Transmitters
The image in Fig 14 shows the patching of a local VPB output set labelled "VPB 2" which is a 16 channel virtual patchbay patched to an AoIP Tx Transmitter labelled "Program" which is an 8 channel output stream.

FIG 12 - VIRTUAL PATCHBAYS AS SOURCES & DESTINATIONS

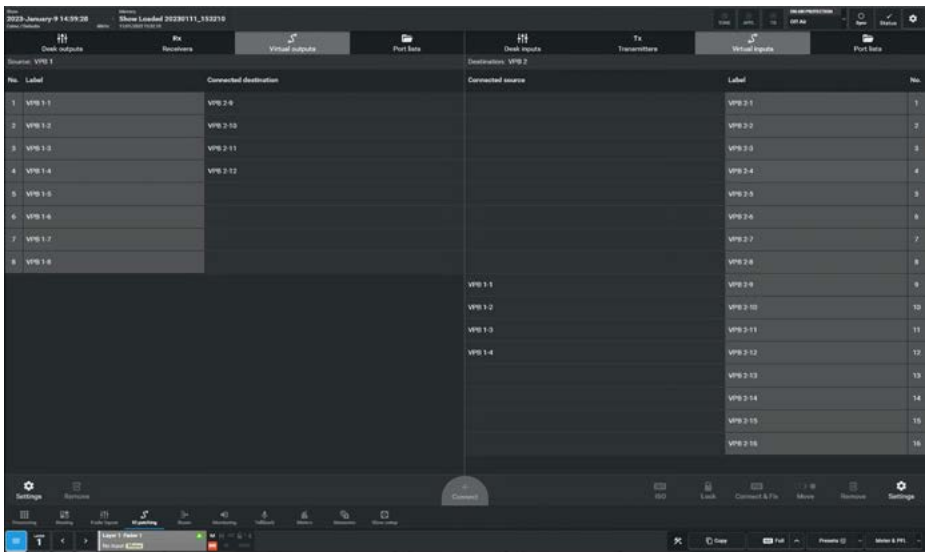


FIG 13 - PATCHING AOIP RECEIVERS TO VIRTUAL PATCHBAY INPUTS

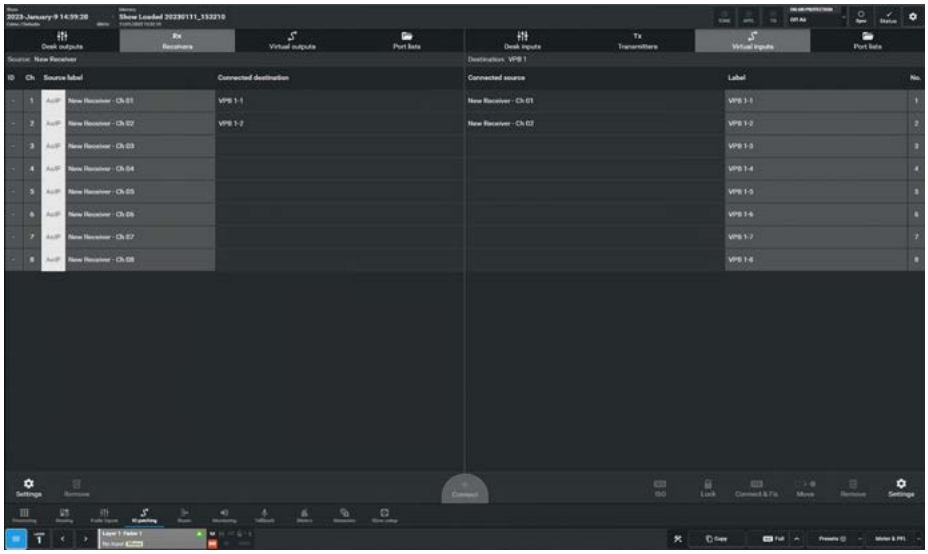
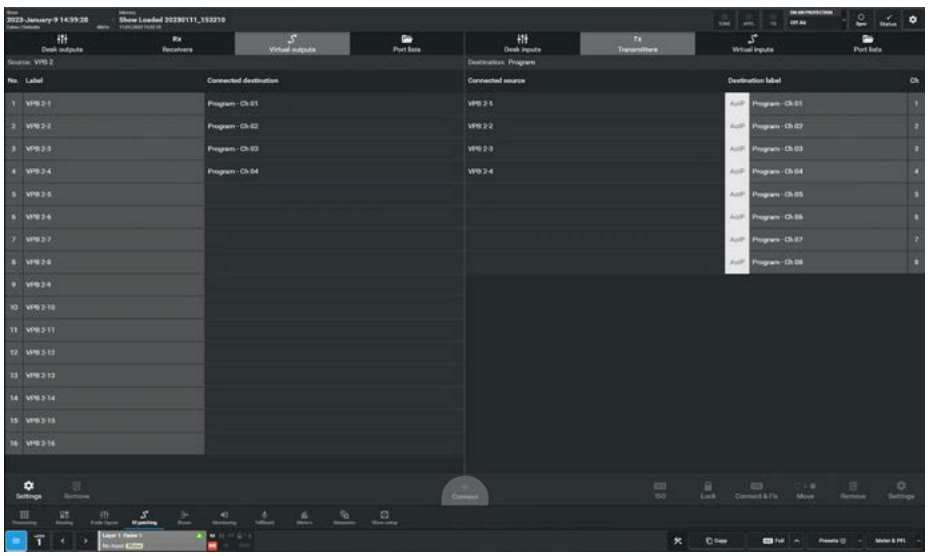


FIG 14 - PATCHING VIRTUAL PATCHBAY OUTPUTS TO AOIP TRANSMITTERS



Port Lists
Ports can be assigned to user port lists There are 2 kinds of port lists:- the Receiver or Transmitter Port Lists which contain complete streams and appear in the Rx Receivers and Tx Transmitters tabs for patching and User Rx and User Tx Port Lists that can be created from the Rx Receiver and Tx Transmitter streams to provide a customised set of ports.

This provides a way of filtering and ordering the information shown when patching ports. The user can put a specific set of ports into their own list, rather than having to search through the hundreds of ports inside each receiver and transmitter list that may be available, when patching.

For more information on Port Lists see **"Port Lists" on page 284.**

Port List Inputs & Outputs
The image in Fig 15 shows 2 Port List sets, one called 'RX Inputs 1-4' , showing its 4 inputs on the sources side and the other showing its 4 outputs for a port list called 'TX Outputs 1-4' appearing on the destination side of the IO patching page.

Note: as shown here the inputs of an Rx port list can be patched directly to the outputs of other Tx port lists in order to rearrange/reroute signals accordingly.

Port List Rx Inputs to Desk Inputs> Channel Paths Input 2
The image in Fig 16 shows a group of 3 violin mics labelled Mic6, Mic7 & Mic8 on the 'Violins' Rx Port List being patched to 3 mono channel input 2 connections for faders 1B, 2B & 3B on Layer 2 .

Desk Outputs>Monitor Outputs to Port List Tx Outputs.
The image in Fig 17 shows the Monitor 1 Control Room LS which is a 5.1 monitor set being patched to a Tx Port List labelled '5.1 Monitors' containing a set of 6 outputs.

Arranging ports like this makes the task of patching simpler as searching for the required Receiver and Transmitter streams can be time consuming.

FIG 15 - PORT LISTS AS SOURCES AND DESTINATIONS

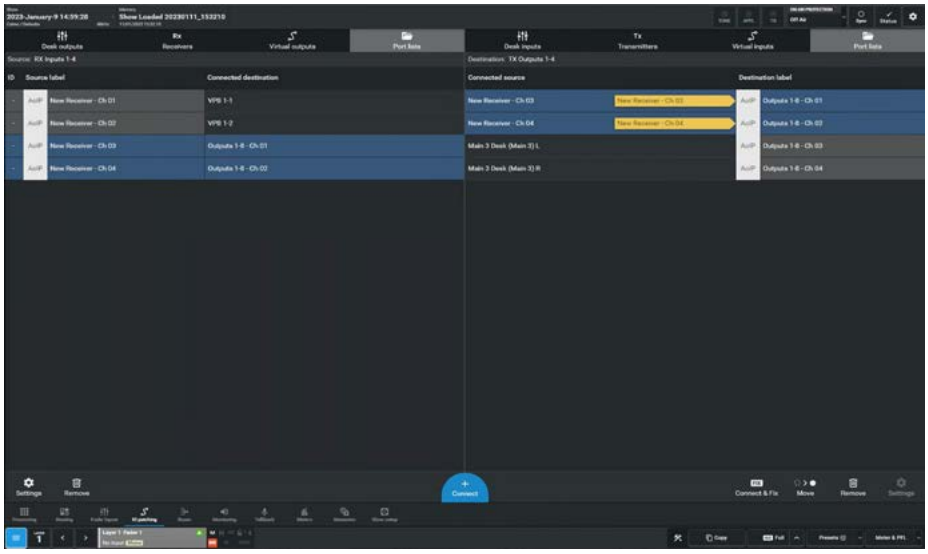


FIG 16 - PATCHING RX RECEIVER PORT LIST ENTRIES TO CHANNEL INPUTS-2

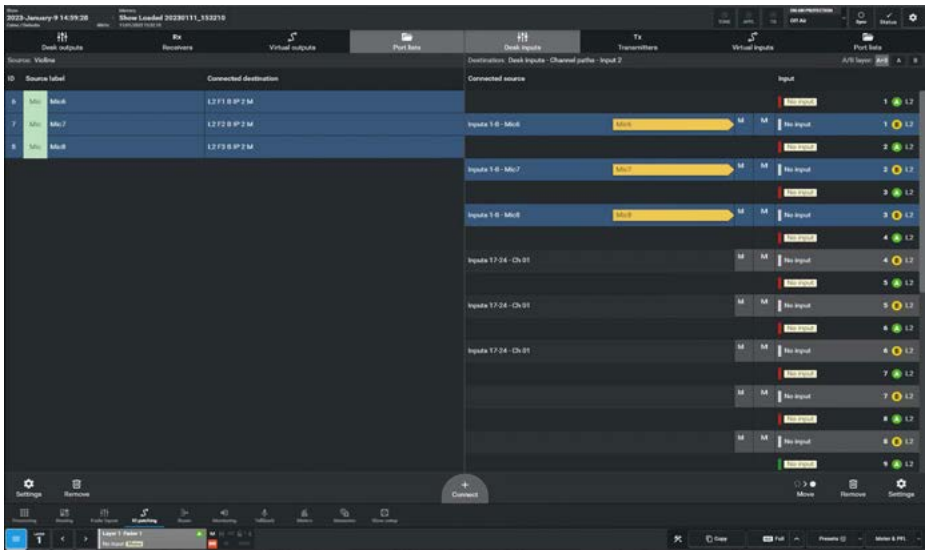


FIG 17 - PATCHING MONITOR OUTPUTS TO TX TRANSMITTER PORT LIST ENTRIES

Footer functions
The remaining functions in the source and destination sides of the footer are described below:-

Connected Destination/Sources
The user can view connected destinations from sources and view connected sources from destinations. Both are displayed within the centre columns.

Viewing and Sorting
Ports are displayed within sortable tables. The sorting options vary between port types:

- AoIP receivers/transmitters can be sorted by name or number.
- Desk connections can only be sorted by resource number e.g. Aux 1 to 4.

Making a Patch
To patch a source to a destination:

1. Select a source type from the source screen header.
2. Select a destination type from the destination screen header.
3. Tap to select a source.
4. Tap to select a destination.
5. Tap on **'Connect'**.

Moving a Destination
Once a patch has been made, the destination can easily be changed as shown in Fig 18:

1. Select a destination.
2. Tap **'Move'** in the screen footer.
3. Select an alternative destination, (at this point you can also select a new destination type).
4. Tap on **'Move'** once more.

Isolating a Patch
Isolating a patch protects it from changes due to memory loads, but it differs from patch fixing in that patch isolation only relates to actions performed locally.

Isolated patches can still be over-patched by other users and by snapshot loads on other consoles on the network.

To isolate a patch:

1. Select one or more patches on the destination side.

FIG 18 - MOVING A SOURCE TO A DIFFERENT DESTINATION

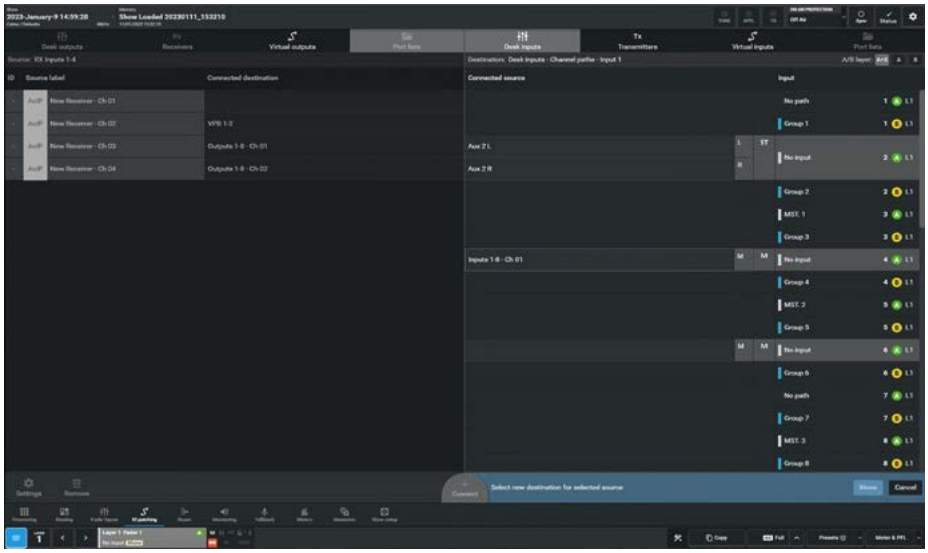
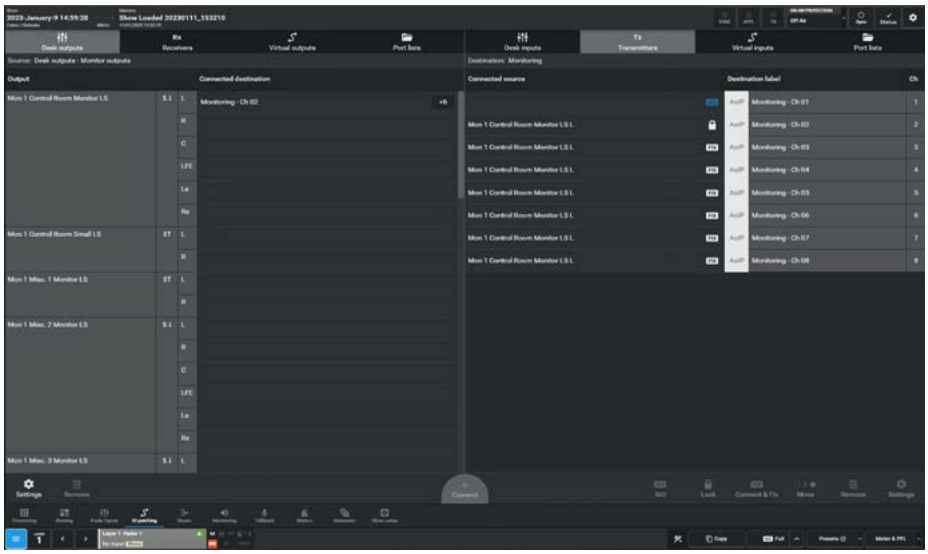


FIG 19 - ISOLATE LOCKED AND FIX STATUS ICONS



2. Tap on 'ISO' in the screen footer. The ISO icon is displayed against the patch entry as shown in Fig 19.

3. To de-isolate the patch, tap on **'ISO'** again.

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 Transmitters list then touch the **'Lock'** button below. Repeat the process to unlock the ports again. Locked ports are indicated by padlock symbols on both source & destination as shown in Fig 19.

Protect a Patch from Memory Loads
Patches can be 'Fixed', isolating them from snapshot load changes. Fixed patches are also protected under the port protection system in the same way as ports which are in use by multiple network users.

To Fix a patch:

1. Select one or more patched destinations.
2. Tap **'Connect & Fix'** in the footer. The 'Fix 'icon appears against the fixed patches as shown below right.
3. To un-fix the patch, tap on **'Connect & Fix'** again.

Removing Patches

To remove patches from the system:

1. To remove connected sources from a destination, select one or more of the connected sources from the destination side on the right.

2. Tap on **'Remove'** in the right side of the footer. The patches are automatically removed as shown in Fig 20.

Removing Multiple Patches

3. If sources are connected to a number of destinations then they can all be removed by selecting the sources from the source side on the left.

4. Tapping on the **'Remove'** button on the left side of the footer will remove all patches from the selected sources to all the connected destinations as shown in Fig 21.

Inputs 1 and 2

Every channel has two inputs, labelled Input 1 and Input 2, to which two entirely separate feeds can be patched.

Input 2 is generally used for patching a back-up microphone so that if the feed to input 1 fails, you can quickly switch to use input 2, which has exactly the same processing, routing and output patching applied to it as input 1.

Patching Outputs to Inputs

Desk outputs & buses can be connected directly back into channel inputs.

Note: this method of control is different to just attaching a console output to a fader, which just uses the fader as the bus output level rather than patching it into a channel input as a source.

FIG 20 - REMOVING PATCHES FROM THE DESTINATION SIDE

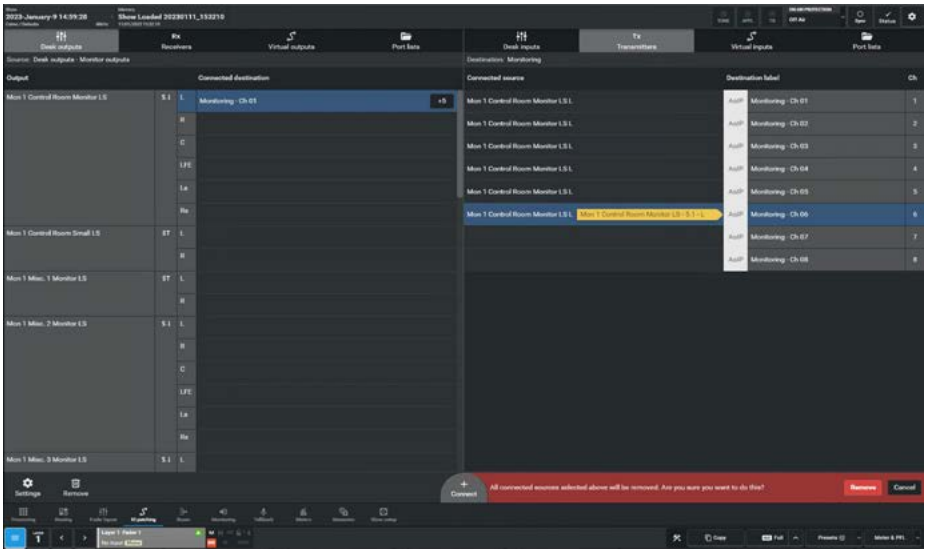
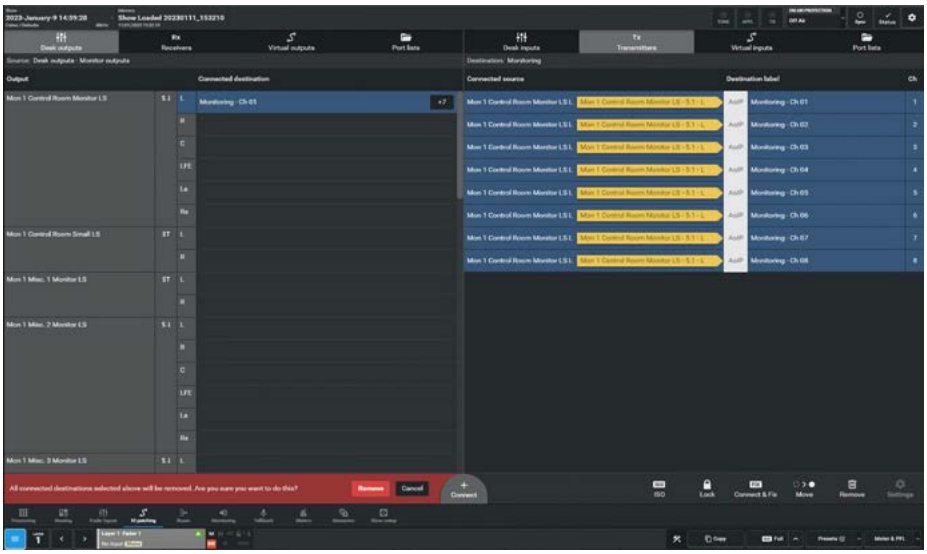


FIG 21 - REMOVING PATCHES AND MULTIPLE PATCHES FROM THE SOURCE SIDE



Desk Output Types

The following output types appear in the Desk Outputs dropdown:-

Bus outputs:
Main Desk outputs for up to 16 mains
Main Line outputs for up to 16 mains
Aux outputs for up to 48 aux outputs.
Track output for up to 96 track outputs.

Fader path outputs:
Up to 4 Direct outputs per channel/group.

Monitor-Meter-Oscillator outputs:
Monitor outputs
External meter outputs
Tone outputs
Talkback outputs.

Insert sends:
Fader insert sends
Monitor insert sends.

Desk Input Types

The following inputs types appear in the Desk Inputs dropdown:-

Channel path inputs:
Channel paths Input 1
Channel paths Input 2.

Monitor-Meter-Oscillator inputs:
External inputs
Tone inputs
Talkback inputs.

Insert returns:
Fader insert returns
Monitor insert returns.

INPUT AND OUTPUT PORT PROTECTION

Calrec Impulse, Type-R and their various companion AoIP based I/O products provide a scheme to protect against changes to physical audio input port settings & patches to destinations that already have sources patched by other users.

Input Port Protection States
Audio input sources can be shared by all consoles connected on the same audio network. All operators can control a shared input using their own console's input controls, but no operator has direct control of the shared input's Mic Gain, phantom power (48V) or SRC. To help avoid unwanted or accidental changes, these critical input controls can be placed in 1 of 3 states which are set using the 'Connect' application:-

Unlocked:- When an Input port is unlocked it's settings can be changed by any network user and operates on the basis of the last control change received.
Protected:- When an Input port is protected, users can change its settings, but they have to make this a conscious operation, they are made aware that the port is marked as protected and have to make an extra step to change settings.
Locked:- When an Input port is locked, its settings (Input gain & phantom power for Mic/Line inputs, SRC for AES3 inputs) cannot be changed by any network user.

The image in Fig 1 shown in Light mode) shows these three highlighted states as set in the 'Connect' application. Mic 3 is Unlocked as shown by the open padlock, Mic 4 is Protected as shown by the shield and Mic 5 is Locked as shown by the closed padlock.

Figs 2, 3, 4 & 5 (shown in light mode), display the various indications that appear on the **Processing>Input** page for Unlocked, Protected Overwritten, Protected and Locked for the 3 Mic channels in turn.

Note: Mic 4 has been set as protected and its Input port controls are greyed out, but pressing the 'Enable temporary control' button makes those controls available, however Mic 5 has been set as locked and its Input port controls are greyed out and cannot be adjusted.

FIG 1 - SETTING INPUT PORT PROTECTION IN CONNECT

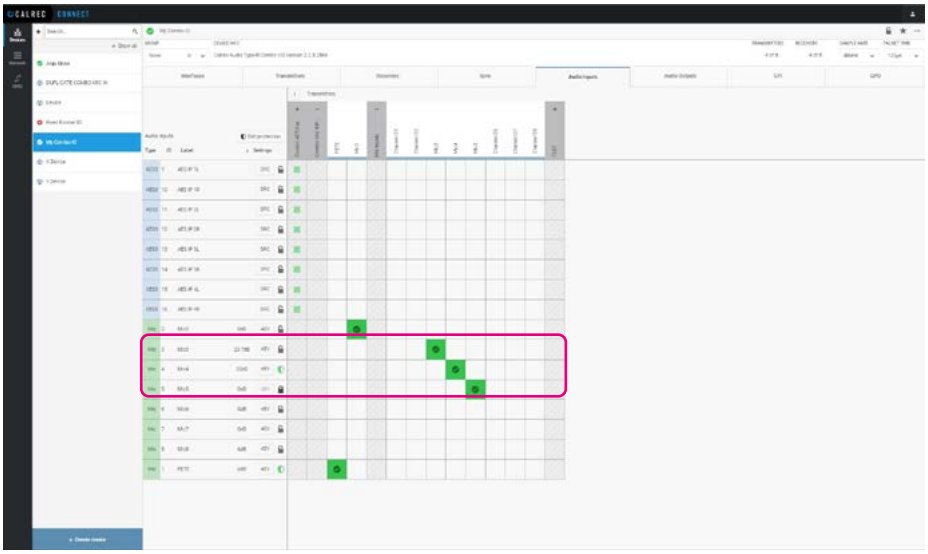


FIG 2 - MIC 3 UNLOCKED PORT SHOWN ON INPUT PAGE

FIG 3 - MIC 4 PROTECTED PORT SHOWN ON INPUT PAGE

FIG 4 - MIC 4 PROTECTED PORT OVERWRITTEN SHOWN ON INPUT PAGE

FIG 5 - MIC 5 LOCKED PORT SHOWN IN INPUT PAGE

Loading Shows/Memory Files
There are also implications for protected and locked inputs' Mic Gain, 48V and SRC settings during the process of loading shows and user memories. If memories are loaded which affect protected and locked inputs, a pop-up appears on the touchscreen, see Fig 6.

This pop-up contains an information table to help in deciding which protected input settings, if any, need to be overwritten. All protected/locked inputs are listed with their current settings and potential overwrite settings. Both Mic 4 & Mic 5 have different values in the memory being loaded as shown in the pop-up, Mic 4 can be overwritten, Mic 5 is locked and cannot be changed. The left hand check box column is used to choose which settings to overwrite. Initially all changes are de-selected.

Once selections have been made, the **'Overwrite selected'** button can be pressed to accept the selected changes and prevent changes that are deselected. the **'Keep current'** button will prevent any changes to settings. In both cases the protected/locked input sources will still be patched to the desired console paths, it is changes to Mic Gain, 48V and SRC that are being protected.

Remember to ensure you know what the effect of the memory load will be before selecting 'Overwrite selected' as this will alter the protected input sources for all operators!

The port protection pop-up may have 2 steps - Input Protection and Output Protection. This indicates that the memory to be loaded also contains changes to outputs which are in use by other operators, see Fig 7 for input settings and Fig 8 for output settings.

FIG 6 - OVERWRITE INPUT PORT PROTECTION DIALOGUE

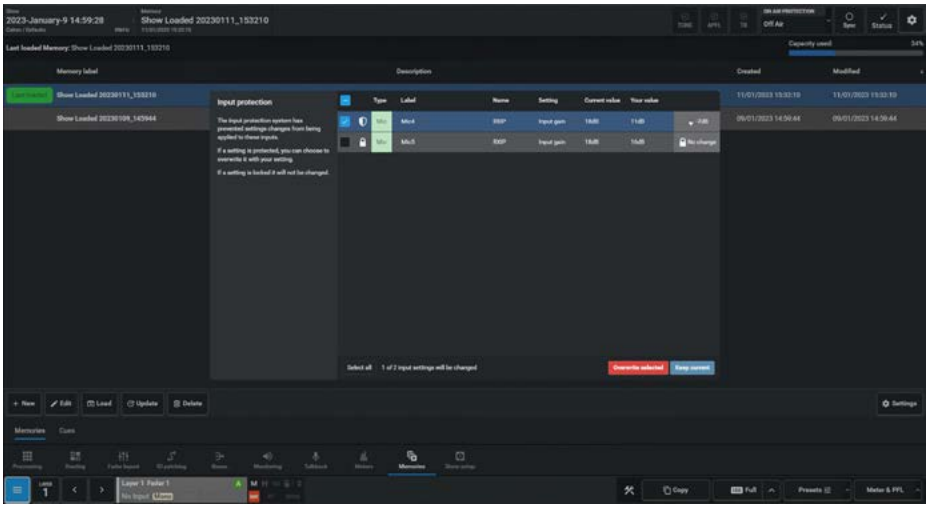


FIG 7 - INPUT & OUTPUT PORT PROTECTION 2 STEP DIALOGUE - STEP 1

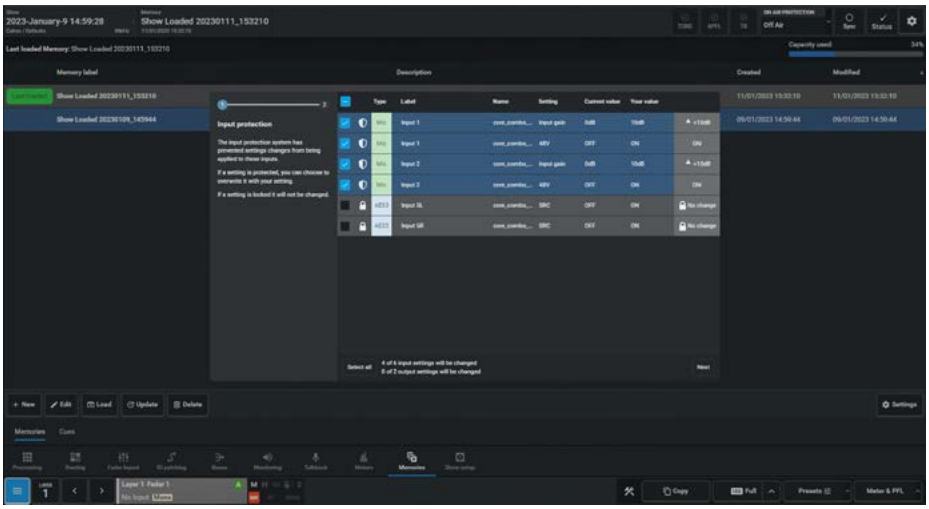
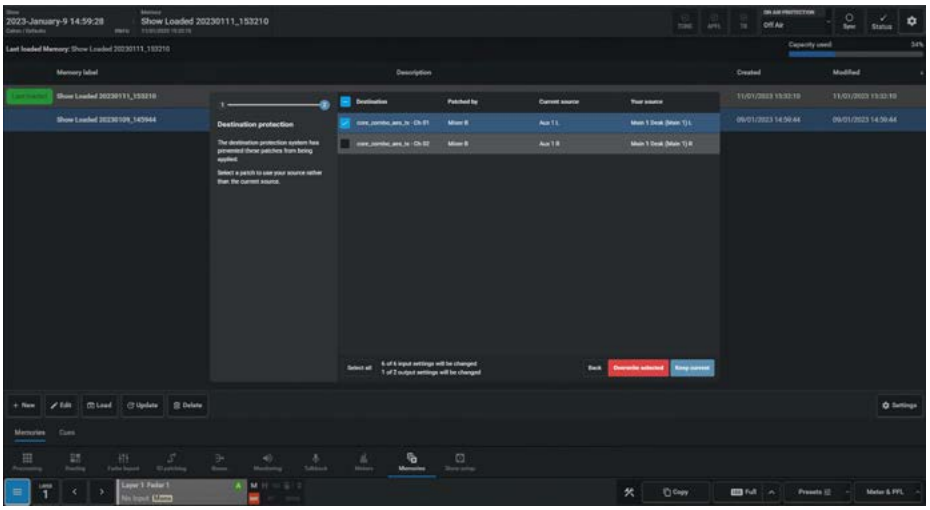


FIG 8 - INPUT & OUTPUT PORT PROTECTION 2 STEP DIALOGUE - STEP 2



Output Port Protection States

Output port protection/locking is a system that notifies operators, when they are attempting to patch to outputs that are already in use by other people elsewhere on the network and provides information to aid in deciding whether to go ahead with each patching decision for protected outputs and advise when an output port is locked and therefore cannot be changed.

Output protection/locking does not directly relate to the audio outputs of AoIP I/O boxes, rather it relates to destinations in I/O patching screens. This provides the functionality to protect/lock output patches. This prevents users accidentally changing or removing the source that is patched to protected/locked destinations.

There are both manual and automatic port protection facilities provided:-

The image in Fig 9 shows the states of the destinations to the TXOP transmitter. Selecting a connected source/destination output enables the Isolate & Lock buttons in the footer ready to be **manually** protected.

In this case TXOP channels 7 & 8 are locked with Aux 4L & Aux 4R patched to them, any attempt to overpatch them is prevented. TXOP channels 5 & 6 are locked without any patches made and reserving them. The attempt to patch the Aux 5M output to the locked TXOP channel 5 displays a RED arrow indicating the patch cannot be made.

The image (shown in light mode) in Fig 10 shows that the Aux1 L/R connections from Mixer A have been patched to two AES ports and the shield icons show that these output ports are **automatically** protected.

The image in Fig 11 shows that Mixer B has loaded a memory that had previously patched the Main 1 Desk L/R outputs to the same two AES ports, which are now used by Mixer A and as such the port protection dialogue has been triggered.

The mechanism for selection and either overwriting or keeping the current settings from the port protection dialogue box is the same as that shown for input port protection.

FIG 9 - MANUAL OUTPUT PORT PROTECTION PADLOCKS IN IO PATCHING

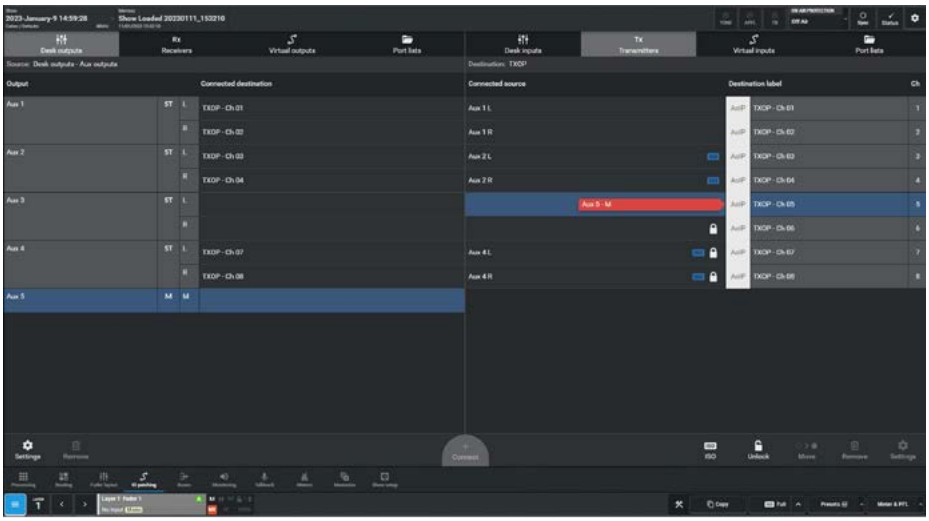


FIG 10 - AUTOMATIC OUTPUT PORT PROTECTION SHIELDS WITH 'HOVER' ID

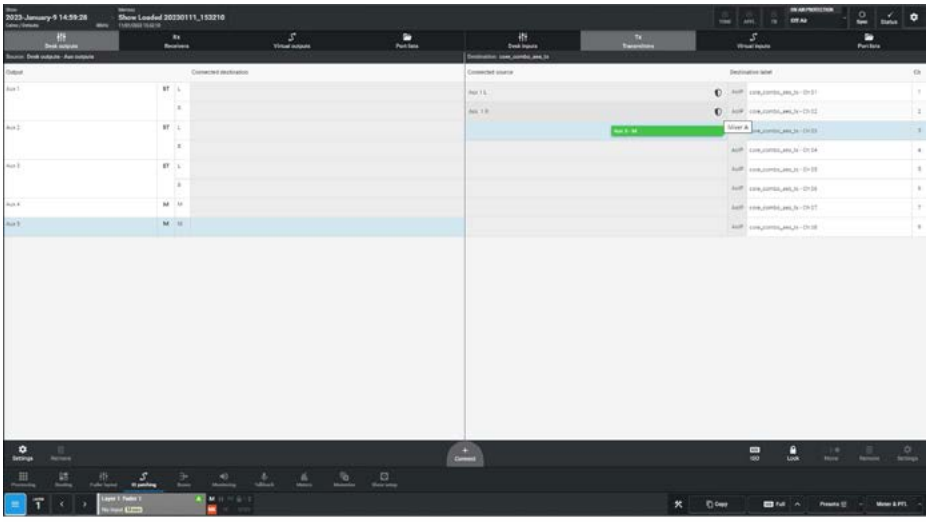
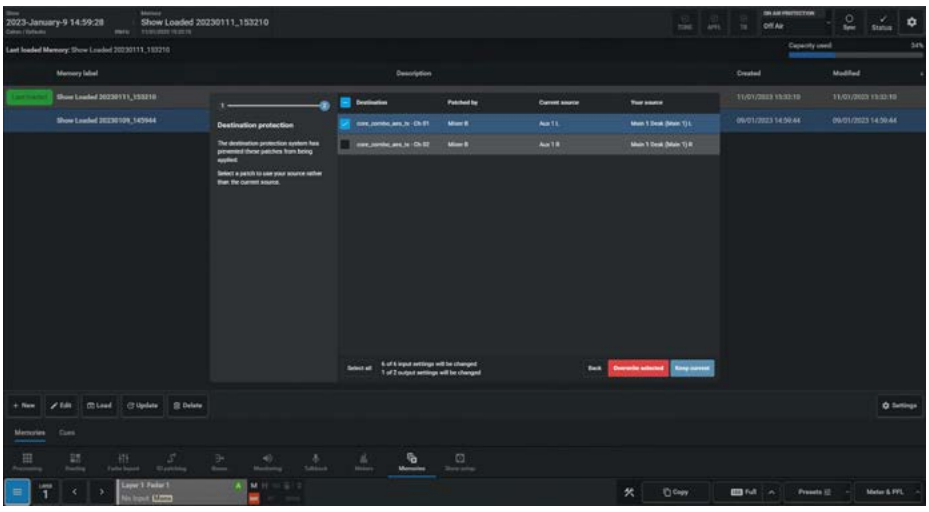


FIG 11 - INPUT & OUTPUT PORT PROTECTION 2 STEP DIALOGUE - STEP 2



When loading shows or user memories, it is likely that **both** protected outputs and shared inputs will be affected by the memory load, and as such the two step protection dialogue box will appear.

VIRTUAL PATCHBAYS

Virtual patchbays (VPBs) allow console operators to make selected DSP audio outputs available on the Impulse core. This allows other users on that core to access them, as well as allowing input sources and output feeds to be changed remotely.

VPBs are virtual patchbays within the Impulse core. Like physical patchbays, VPBs have a number of input patchpoints which are 'hard wired' to output patchpoints.

For patching purposes, virtual patchbay inputs are destinations and virtual patchbay outputs are sources, see Fig 1.

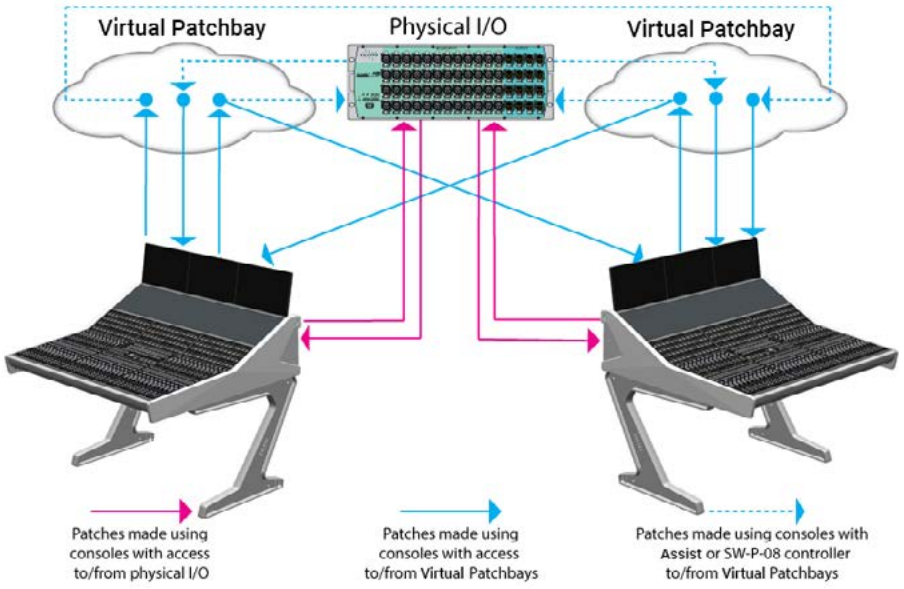
When a source is patched to a virtual patchbay input, it immediately becomes available at the corresponding virtual patchbay output. For example, if a console operator patches a direct output to a virtual patchbay input, the Direct Output feed becomes available to all users on the same core (who have been granted access), as the corresponding virtual patchbay's output.

Virtual patchbays are available to the console that they have been created for, plus 3rd party controllers via SW-P-08. These virtual patchbays can also be made available to all consoles on the same core, who have been granted access, plus 3rd party controllers via SW-P-08.

Consoles can patch signals to their virtual patchbay inputs in the same way they patch to physical output transmitters. Virtual patchbays allow network administrators to patch console inputs and outputs (which have been patched to virtual patchbay ports) to physical I/O receivers/transmitters.

Users can choose physical input receivers to connect to console's virtual patchbay inputs, and output transmitters to connect to console's virtual patchbay outputs. This allows them to choose and change console feeds and output destinations.

FIG 1 - VIRTUAL PATCHBAYS BETWEEN CONSOLES ON THE SAME CORE



External routers supporting the SW-P-08 protocol can also have access to virtual patchbays enabling 3rd party control over console patching.

Virtual patchbays are created from the Configure user interface, please refer to the **Impulse Configure Application Guide (926-290)** for details on configuring virtual patchbays.

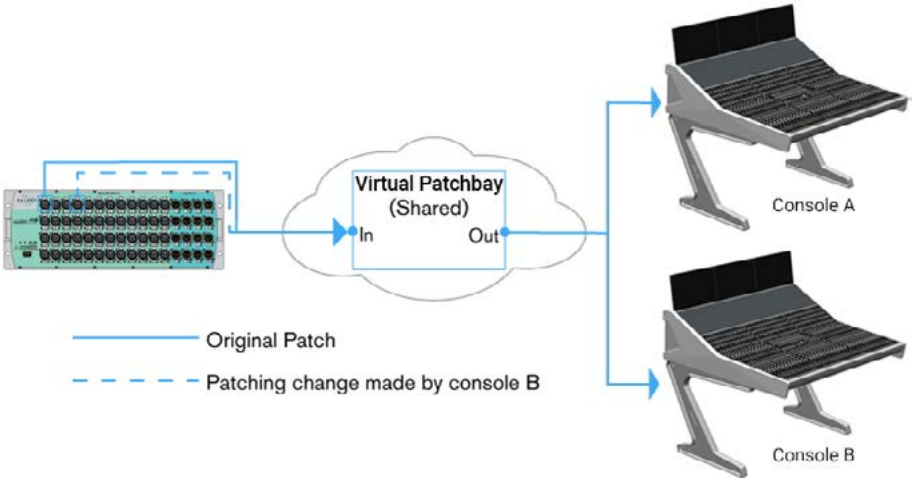
Port Sharing

Input and output protection works as normal when dealing with virtual patchbays for both Console & Assist use.

In situations when two or more consoles on the same core are using the same feed from a virtual patchbay, see Fig 2. It is possible for one console to change the patching of the other by changing the patchpoint which is feeding the shared virtual patchbay input, either through a memory load, or through changing the individual patch.

In these circumstances it is important that the console operator understands the contents of the Input/Output protection dialogue before accepting any changes, as these changes directly affect other network users.

FIG 2 - VIRTUAL PATCHBAY - CONSOLE PATCHING CHANGE WITHIN A CORE



ARGO
BUSES

CALREC

MAIN BUSES

The purpose of this screen is to configure and control the Main output buses. It provides the user with a screen of controls related to up to 16 configurable main buses. On which they can:- set it as the accessed path, change its name, width, output level, pre fader listen outputs, talkback and tone settings.
Once the required bus type is accessed from either the Modes row of a fader panel by first tapping on the Modes Menu then the Buses button and then tapping on the Mains bus type selector as shown in Fig 1, or by pressing on the Buses icon on the Touchscreen and then the Main bus type in the lower display area as shown in Fig 2. The surface displays/controls the related information on both the touchscreen and a Wild Assign panel shown immediately below. The user then selects the bus to access it's output controls.

Main Bus Output Controls
After tapping on the menu selection **Buses>Mains**, the image in Fig 2 is displayed and the buses are arranged in a block showing their name, width and current level.

Tapping on any of the bus entries in the upper area of the screen allows the user control access for that bus in the lower area of the screen. Argo has up to 16 Main buses displayed in a block which can be labelled on the Buses page.

The controls for buses can be adjusted in a number of ways:-

From the Touchscreen
- Dragging the sliders left and right for continuous controls.
- Using the On-Screen buttons to select switch functions e.g. On/Off.

The resultant numerical values are shown in the top right hand of each control area.

From the Wild Assign Panel
- Moving the Rotary controls round to the left or right to change levels.
- Using the button next to the rotary control to switch functions On or Off.

The resultant numerical values & bargraph are shown in each individual TFT on the Wild Assign Panel.

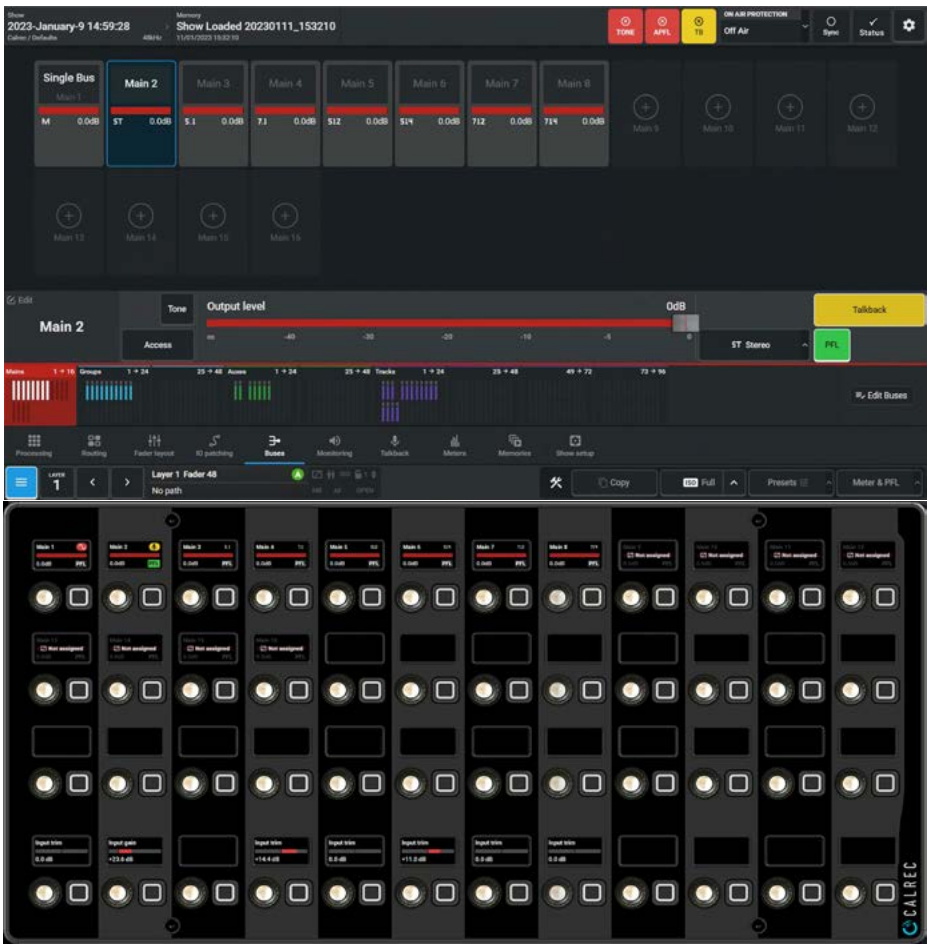
The following controls are available:-
From the Touchscreen

Width dialogue box: Clicking/tapping on an empty entry in the upper window such as Main 9, opens this box and lets the user choose the width of the 'New' main bus to be added to as Mono, Stereo, 5.1, 7.1, 5.1.2, 5.1.4, 7.1.2 or 7.1.4 as shown in Fig 3 on the next page.

Bus Outputs Pool:
There is a pool of bus output legs that are shared between mains and groups which can be arranged to provide various bus width combinations. The dialogue box shown in Fig 3 shows the number of main/group resources remaining in terms of Mono legs at the bottom.

FIG 1 - MAIN BUSES MODE SELECT ON STANDARD FADER PANEL

FIG 2 - MAIN BUSES ON TOUCHSCREEN & WILD ASSIGN PANEL



Label window: Clicking on the Edit icon allows the bus to be edited with a user label using the on-screen keyboard as shown in Fig 4 for Main 1.

Access button: Lets the user call the selected main to the access screens as shown in Fig 5.

Tone: Select to inject tone into the main output, replacing the main output feed with the correct tone for the path width. A tone button applies a tone signal to that output as shown in Fig 5.

Main Output Level: Slide the level control to alter the output level between 'off' & 0dB as shown in Fig 5.

Change Width Pop-up button: This shows the current width of the existing selected bus. As shown in Fig 5 the user has selected the stereo Main 2 bus. The highlighted button opens a pop-up as shown which allows the user to change the width to any of the widths shown.

Note: this pop-up also has the 'No Path' option at the top allowing the user to remove the bus from the system.

PFL: The user can listen to the individual buses' PFL (pre fader listen) using the PFL button as shown in Figs 2 & 5.

Talkback: Replaces the main output feed with whatever is routed to the talkback input. A talkback button allows the user to talk to that output as shown in Fig 2.

Note: a talkback input should be setup in the **IO patching** screen for this to work.

From the Wild Assign Panel
The top two rows on the wild assign panel as shown in Fig 2 on the previous page, are used to control the bus output levels via the rotary controls & the PFL On/Off button controls for up to 16 Main buses.

Note: in Fig 2 Main 1 has Tone enabled and Main 2 has PFL and Talkback enabled as shown in the first 2 rotary control cells on the wild assign panel.

FIG 3 - MAIN BUSES - SET WIDTH FOR NEW MAIN BUS 9

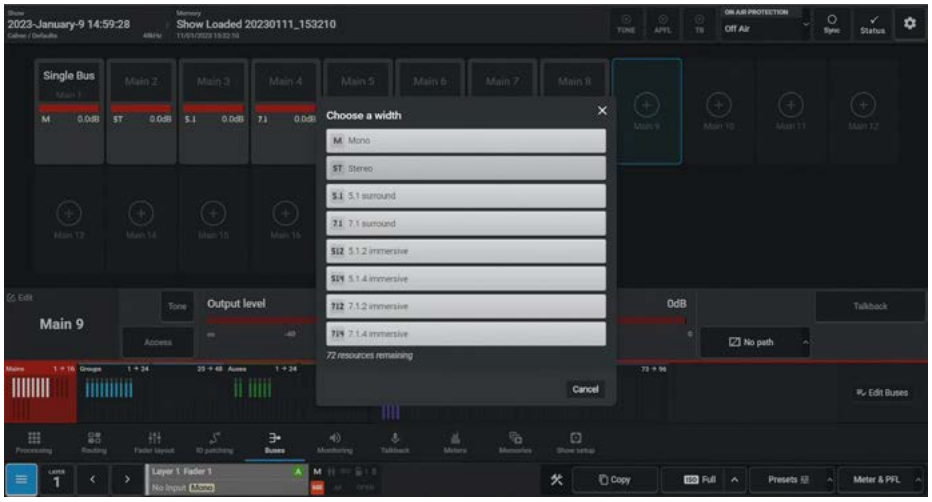


FIG 4 - MAIN BUSES - SET USER LABEL USING ON-SCREEN KEYBOARD

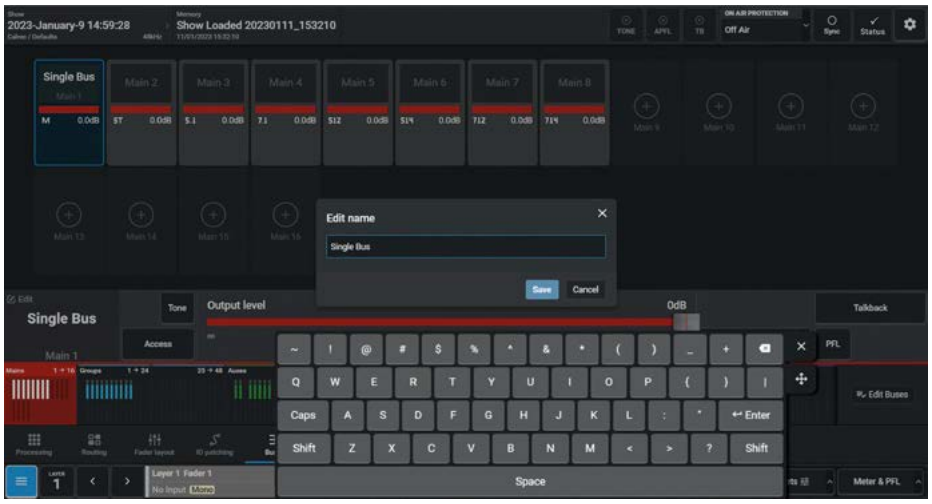
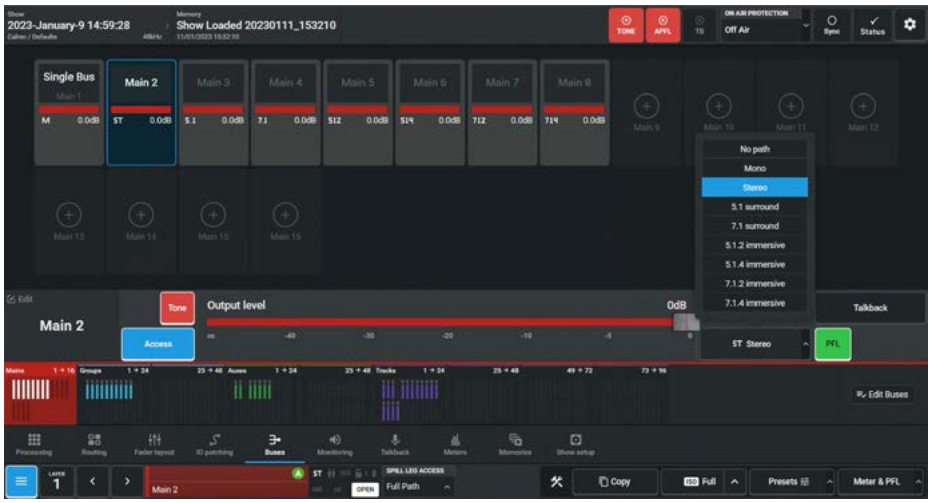


FIG 5 - MAIN BUSES - CHANGE WIDTH FOR EXISTING MAIN BUS 2



GROUP BUSES

The purpose of this screen is to configure and control the Group buses. It provides the user with 2 pages of controls related to up to 48 configurable group buses. On which they can set it as the accessed path, change its name, width, bus level, cut, various listen outputs, talkback and tone settings.
Once the required bus type is accessed from either the Modes row of a fader panel by first tapping on the Modes Menu then the Buses button and then tapping on the Groups bus type selector as shown in Fig 1, or by pressing on the Buses icon on the touchscreen and then the Groups bus type in the lower display area as shown in Fig 2. The surface displays/controls the related information on both the Touchscreen and a Wild Assign panel shown immediately below. The user then selects the required block of Groups then the required Group bus in that block to access it's output controls listed above.

Group Bus Controls
After tapping on the menu selection **Buses>Groups**, the image in Fig 2 is displayed and arranged in 2 blocks showing their name, width & current level.

Tapping on any of the bus entries in the upper area of the screen allows the user control access for that bus in the lower area of the screen. Argo has up to 48 Group buses displayed in 2 blocks of up to 24 Groups and each bus can be labelled on the Buses page.

The following controls are available:- From the Touchscreen

Width dialogue box: Clicking/tapping on an empty entry in the upper window such as Group 11, opens this box and lets the user choose the width of the 'New' group bus to be added to as Mono, Stereo, 5.1, 7.1, 5.1.2, 5.1.4, 7.1.2, 7.1.4, 0.0.2 or 0.0.4, as shown in Fig 3 on the next page.

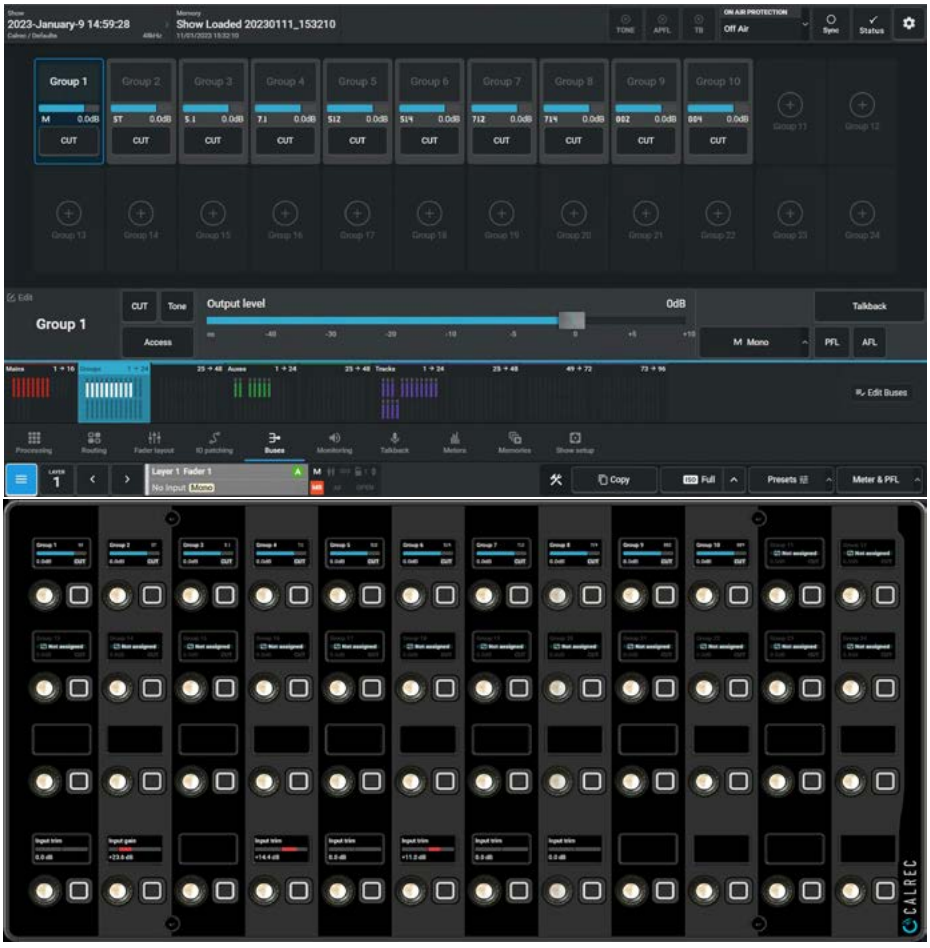
Bus Outputs Pool:
There is a pool of bus output legs that are shared between mains and groups which can be arranged to provide various bus width combinations. The dialogue box shows the number of main/group resources remaining in terms of Mono legs at the bottom.

Label window: Clicking on the Edit icon allows the bus to be edited with a user label using the on-screen keyboard as shown in Fig 4 for Group 1.

Access button: Lets the user call the selected group to the access screens as shown in Fig 5.

FIG 1 - GROUP BUSES MODE SELECT ON STANDARD FADER PANEL

FIG 2 - GROUP BUSES SCREEN ON TOUCHSCREEN & WILD ASSIGN PANEL



Tone: Select to inject tone into the group bus, replacing the group bus feed with the correct tone for the path width. A tone button applies a tone signal to that bus as shown in Fig 5.

Group Cut: Tap this button to Cut/Mute the output of this group bus, see Fig 5.

Group Bus Level: Slide the level control to alter the bus level between 'off' & 0dB.

Change Width Pop-up button: This shows the current width of the existing selected bus. As shown in Fig 5 the user has selected the stereo Group 2 bus. The highlighted button opens a pop-up as shown which allows the user to change the width to any of the widths shown.

Note: this pop-up also has the 'No Path' option at the top allowing the user to remove the bus from the system.

PFL & AFL: The user can listen to the individual buses' PFL (pre fader listen) or AFL (after fader listen) using the PFL or AFL buttons as shown in Fig 5.

Talkback: Replaces the group bus feed with whatever is routed to the talkback input. A talkback button allows the user to talk to that bus.

Note: a talkback input should be setup in the **IO patching** screen for this to work.

From the Wild Assign Panel
The top two rows on the wild assign panel as shown in Fig 2 on the previous page, are used to control the bus levels via the rotary controls & the Cut On/Off button control for up to 2 screens of 24 Group buses.

FIG 3 - GROUP BUSES - SET WIDTH FOR NEW GROUP BUS 11

FIG 4 - GROUP BUSES - SET USER LABEL USING ON-SCREEN KEYBOARD

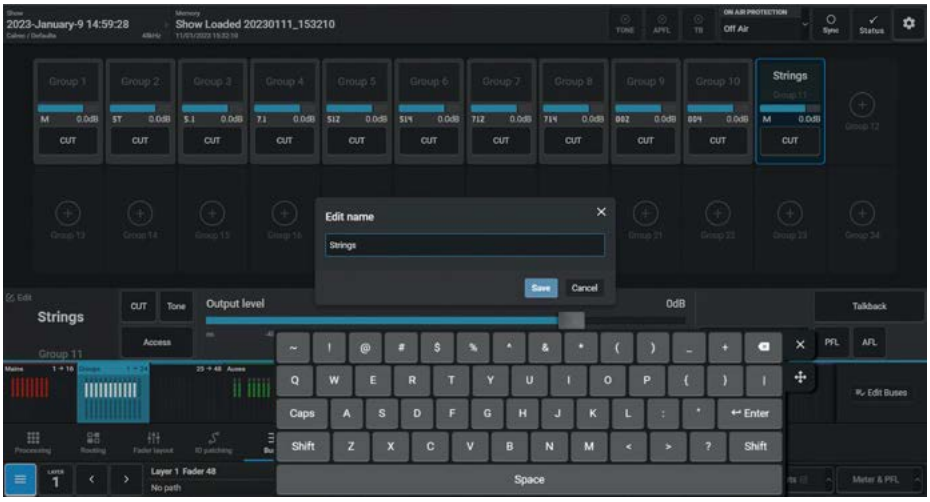
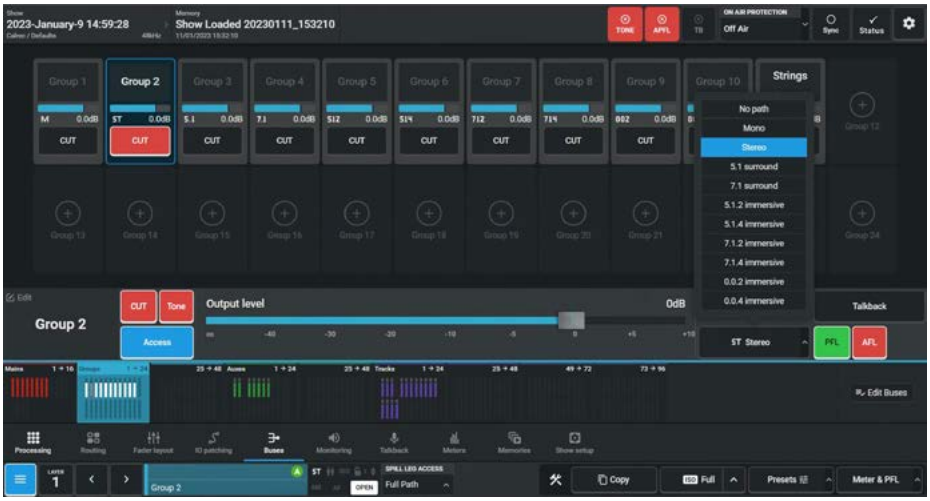


FIG 5 - GROUP BUSES - CHANGE WIDTH FOR EXISTING GROUP BUS 2



AUX BUSES

The purpose of this screen is to configure and control the Auxiliary output buses. It provides the user with 2 pages of controls related to up to 48 configurable aux buses. On which they can:- set it as the accessed path, change its name, width, output level, cut, various listen outputs, talkback, tone settings and Pre-fader aux send cut options.
Once the required bus type is accessed from either the Modes row of a fader panel by first tapping on the Modes Menu then the Buses button and then tapping on the Aux bus type selector as shown in Fig 1, or by pressing on the Buses icon on the touchscreen and then the Aux bus type in the lower display area as shown in Fig 2. The surface displays/controls the related information on both the Touchscreen and a Wild Assign panel shown immediately below. The user then selects the required block of Auxes then the required Aux bus in that block to access it's output controls listed above.

Aux Bus Output Controls
After tapping on the menu selection **Buses>Auxes**, the image in Fig 2 is displayed & arranged in 2 blocks showing their name, width and current level.

Tapping on any of the bus entries in the upper area of the screen allows the user control access for that bus in the lower area of the screen. Argo has up to 48 Aux buses displayed in 2 blocks of up to 24 Auxes and each bus can be labelled on the Buses page.

The following controls are available:-
From the Touchscreen

New Bus Width dialogue box: Clicking or tapping on an empty entry in the upper window opens this box and lets the user choose the width of the 'New' Aux bus to be added to as Mono or Stereo as shown for Aux 24 in Fig 3 on the next page.

Bus Outputs Pool:
There is a pool of up to 48 bus output legs that can be configured as Mono or Stereo. The dialogue box shows the number of Aux resources remaining in terms of Mono legs at the bottom.

Label window: Allowing the aux to be edited with a user label. The procedure for this is the same as shown for Main & Group busses on the previous pages.

Access button: Lets the user call the aux to the access screens, See Fig 4.

Tone: Select to inject tone into the aux output, replacing the aux output feed with the correct tone for the path width. The tone button applies a tone signal to that output, see Fig 4.

Aux Cut: Tap this button to Cut/Mute the output of this aux bus, see Fig 4.

FIG 1 - AUX BUSES MODE SELECT ON STANDARD FADER PANEL

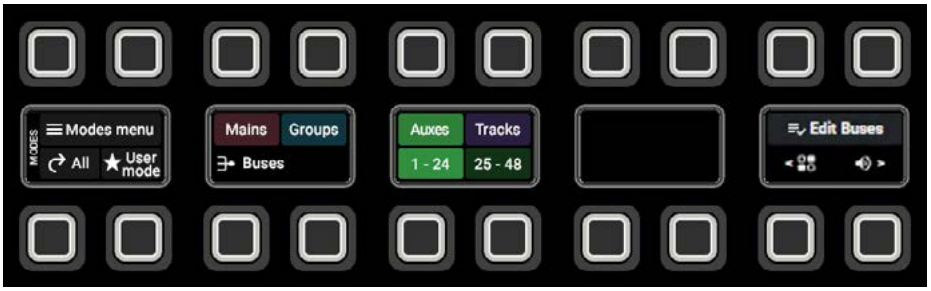
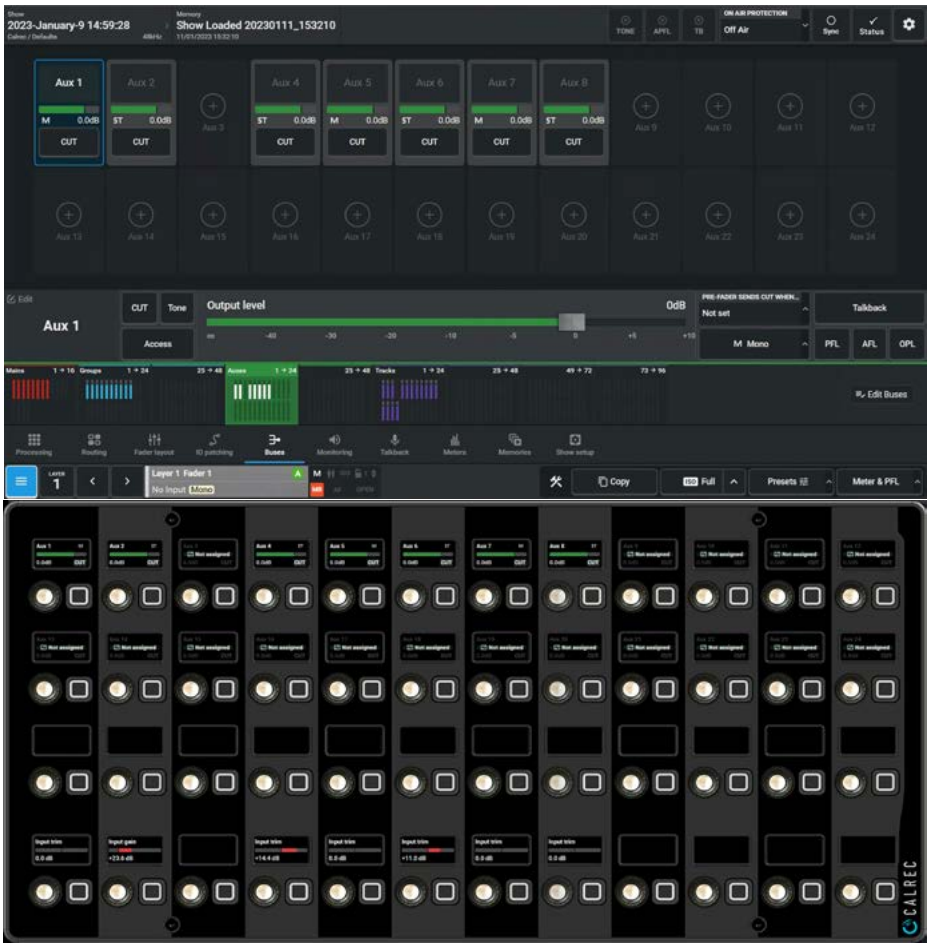


FIG 2 - AUX BUSES SCREEN ON TOUCHSCREEN & WILD ASSIGN PANEL



Aux Output Level: Slide the level control to alter the output level between 'off' & +10dB.

Change Width Pop-up button: Lets the user change the current width of the selected aux bus to be either 'No path' (to remove it), Mono or Stereo.

PFL & AFL: The user can listen to the individual buses' PFL (pre-fader listen) or AFL (after-fader listen) using the PFL or AFL buttons, see Fig 4.

Output Listen (OPL): Similar to AFL but the feed is taken post output delay, as shown in Fig 4.

Talkback: Replaces the aux output feed with whatever is routed to the talkback input. A talkback button allows the user to talk to that output.

Note: a talkback input should be setup in the IO patching screen for this to work.

From the Wild Assign Panel
The top two rows on the wild assign panel as shown in Fig 2 on the previous page, are used to control the bus output levels via the rotary controls & the Cut On/Off button control for up to 2 screens of 24 Aux buses.

Pre-fader send cut options
Path sends to Aux output buses can be configured to cut under certain conditions, such as the send path's fader being open/closed and/or the path being cut.

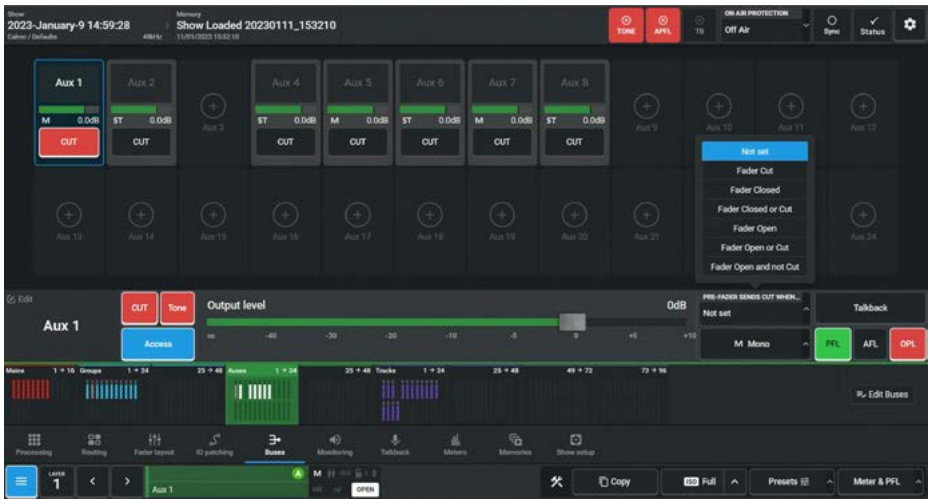
These options are set from the 'Pre fader sends cut when' pop-up as shown on the right hand side of the image in Fig 4.

The options are set on an output basis, but it is the send from each path feeding the outputs that are independently cut depending on the status of each path routed to the aux output.

For example, if pre-fader send cut When '**Fader Closed**' is selected for Aux output 1, the pre-fader sends from each path routed to Aux 1 will be muted whilst their fader is closed.

FIG 3 - AUX BUSES - SET WIDTH FOR NEW AUX BUS 24

FIG 4 - AUX BUSES - SET PRE-FADER SEND CUT OPTIONS



As soon as the fader is opened, the path will send audio to the aux at pre-fader level.

Pre-fader sends whose faders are open, as well as any paths feeding post fader will still be passing audio to Aux 1.

The available options for Pre-fader send cut to each aux output are:-

- Not Set
- 'Fader Cut' (or not 'on' if fader have path On buttons rather than cuts).
- 'Fader Closed'
- 'Fader Closed or Cut'
- 'Fader Open'
- 'Fader Open or Cut'
- 'Fader Open And Not Cut' - the send is active only if fader closed, or path cut (or not 'on' if on buttons fitted rather than cuts).

The pre-fader send cut when fader cut option can be selected in combination with either the cut when fader open or fader closed options, however other combinations would conflict with each other and as such, selecting one will cancel others.

TRACK BUSES

The purpose of this screen is to configure and control the Track output buses. It provides the user with 4 pages of controls related to up to 96 configurable track buses. On which they can:- set it as the accessed path, change its name, width, output level, cut, various listen outputs, talkback and tone settings including Global track options.
Once the required bus type is accessed from either the Modes row of a fader panel by first tapping on the Modes Menu then the Buses button and then tapping on the Tracks bus type selector as shown in Fig 1, or by pressing on the Buses icon on the touchscreen and then the Tracks bus type in the lower display area as shown in Fig 2. The surface displays/controls the relevant information on both the Touchscreen and a Wild Assign panel shown immediately below. The user then selects the required block of Tracks then the required Track bus in that block to access it's output controls listed above.

Track Bus Output Controls
After tapping on the menu selection **Buses>Tracks**, the image in Fig 2 is displayed and arranged in 4 blocks showing their name, width & current level.

Tapping on any of the bus entries in the upper area of the screen allows the user control access for that bus in the lower area of the screen. Argo has up to 96 Track Buses displayed in 4 blocks of up to 24 Tracks and each bus can be labelled on the Buses page.

The following controls are available:-
From the Touchscreen

New Bus Width dialogue box: Clicking on an empty entry in the upper window opens this box and lets the user choose the width of the 'New' Track bus to be added to as Mono or Mono Odd if an odd numbered track and Mono or Mono Even if an even numbered track as shown for Track 24 in Fig 3 on the next page.

Bus Outputs Pool:
There is a pool of up to 96 bus output legs that can be configured as Mono Odd, Mono Even or Mono. The dialogue box shown in the image above right shows the number of Track resources remaining in terms of Mono legs at the bottom.

Label window: Allowing the track to be edited with a user label. The procedure for this is the same as shown for Main & Group busses on the previous pages

Access button: Lets the user call the track to the access screens, see Fig 4.

Tone: Select to inject tone into the track output, replacing the track output feed with the correct tone for the path width. A tone button applies a tone signal to that output. See Fig 4.

FIG 1 - TRACK BUSES MODE SELECT ON STANDARD FADER PANEL

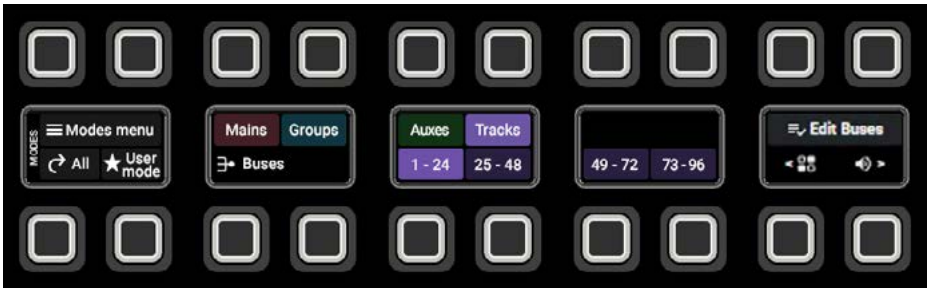
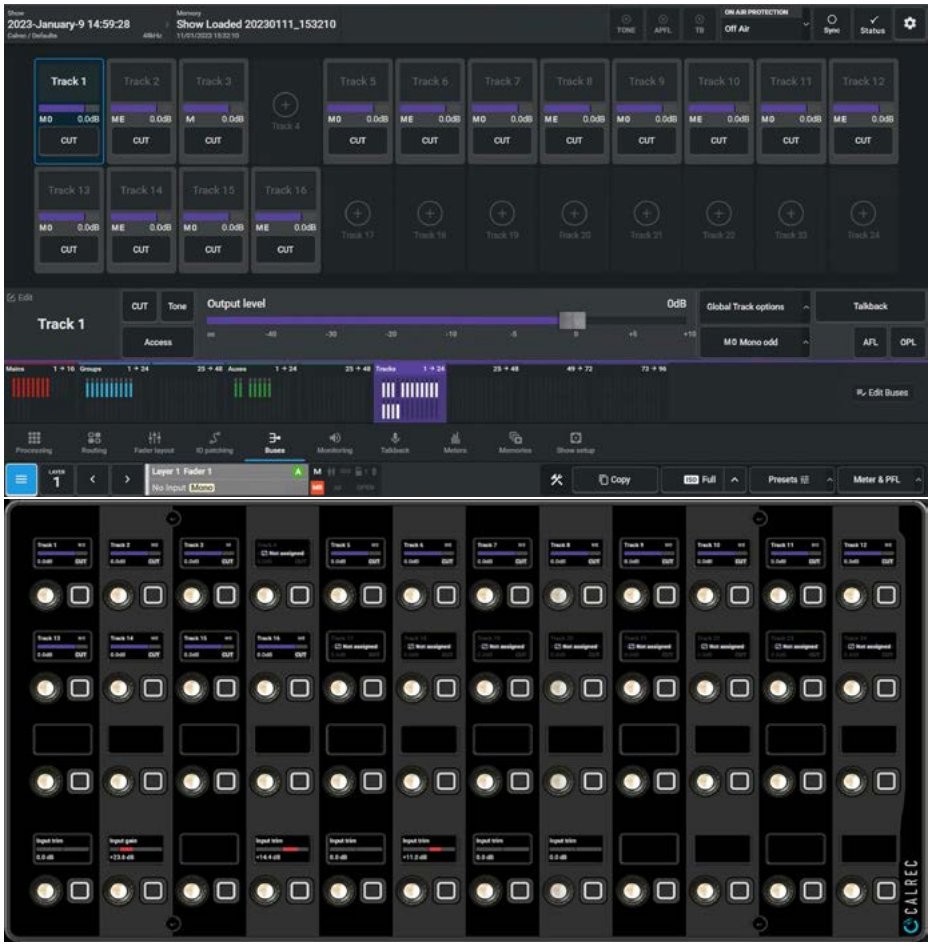


FIG 2 - TRACK BUSES SCREEN ON TOUCHSCREEN & WILD ASSIGN PANEL



Track Cut: Tap this button to Cut/Mute the output of this aux bus, see Fig 4.

Track Output Level: Slide the level control to alter the output level between 'off' & +10dB.

Change Width Pop-up button: This shows the current width of the selected bus. As shown in Fig 2 the user has selected the Track 1 bus which is 'Mono Odd', tapping on that pop-up will allow the user to change any odd numbered track between 'No Path', 'Mono' or 'Mono Odd' and any even numbered track such as Track 2 which is currently 'Mono Even', between 'No Path', 'Mono' & 'Mono Even'.

Note: the 'No Path' option allows the user to remove the bus from the system.

AFL: The user can listen to the individual buses' AFL (after-fader listen) using the AFL buttons. See Fig 4.

Output Listen: Similar to AFL but the feed is taken post output delay.

Talkback: Replaces the track output feed with whatever is routed to the talkback input. A talkback button allows the user to talk to that output.

Note: a talkback input should be setup in the **IO patching** screen for this to work.

From the Wild Assign Panel
The top two rows on the wild assign panel as shown in Fig 2 on the previous page, are used to control the bus output levels via the rotary controls & the Cut On/Off button control for up to 1 screens of 24 Track buses.

Global track options
In addition to the above there are a number of controls which can be applied to all the tracks simultaneously which appear in the Global track options pop-up as shown in the image in Fig 4.

FIG 3 - TRACK BUSES - SET WIDTH FOR NEW TRACK BUS 24

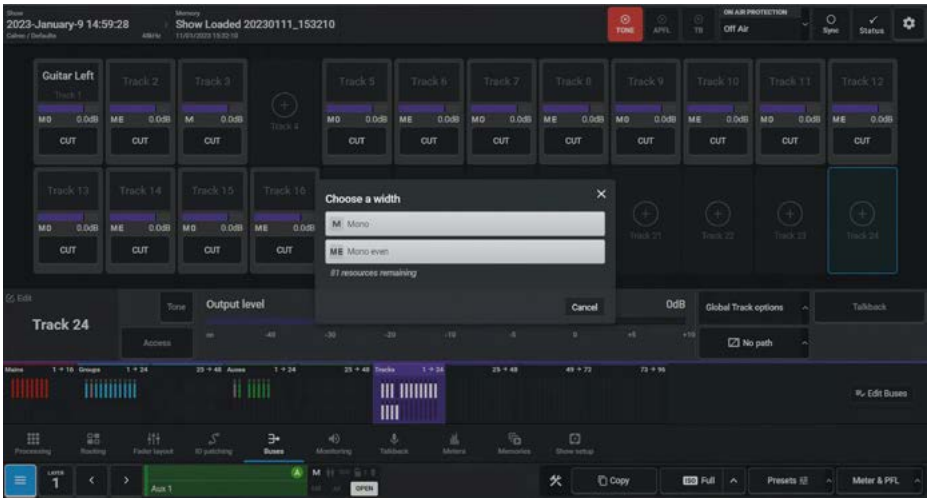
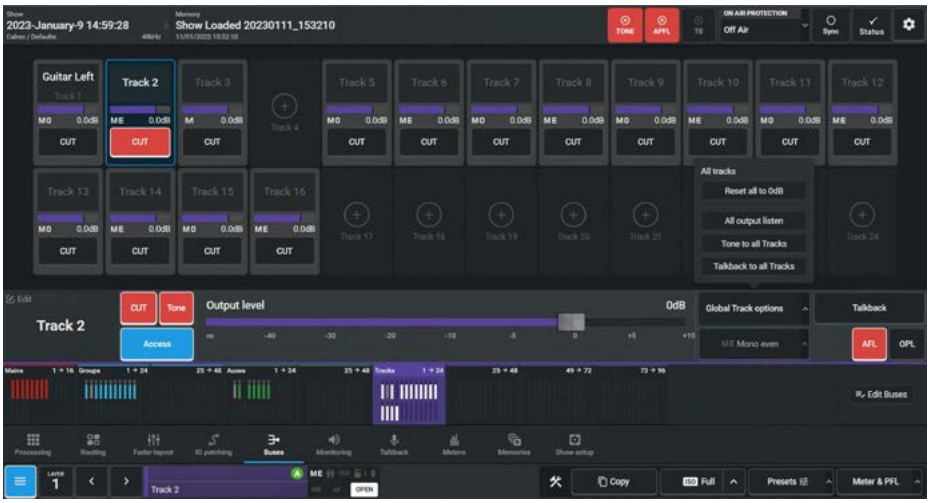


FIG 4 - TRACK BUSES - SET GLOBAL TRACK OPTIONS



All output Listen: Listens to all the tracks with the feeds taken post output delay.

Tone to all Tracks: This switch allows the user to apply tone to all the track outputs at the same time.

This is used as a 'lineup' facility with all the track outputs being fed with tone at the same output level rather than turning each individual tone switch on for all the tracks.
This is sometimes called Tone Omni.

Talkback to all Tracks: Replaces the track output feed for all the tracks with whatever is routed to the talkback input. This is sometimes called Talkback Omni.

EDIT BUSES

The Edit Buses pages allows the user to quickly add or remove buses of that type, define the width of the selected bus or buses, lock the bus widths and label the buses.
Once the Edit buses mode is accessed from either the Modes row of a fader panel by first tapping on the Modes Menu then the Buses button and then tapping on the Edit buses button as shown in Fig 1, or by pressing on the Buses icon on the touchscreen and then the Edit buses button as highlighted on the Touchscreen in the lower right display area of a buses screen as shown in Fig 2. The surface then displays/controls the relevant information.
Note: the Wild Assign & Fader panels function are not altered when Edit faders mode is accessed and as such are not shown here.

Accessing the Edit Buses mode

After tapping on the **Buses** menu selection, a button labelled '**Edit Buses**' is shown highlighted in magenta at the bottom of the buses screen as shown in Fig 2. Tapping on this opens one of the 4 edit buses pages as shown in Figs 3,4,5 & 6. These 4 pages provide edit configuration controls for Mains , Groups, Auxes and Tracks.

Editing Main Buses

The image in Fig 3 shows the current state of each of the 16 Main buses.

The user can select the Main buses for editing in a variety of ways:- clicking or tapping on or dragging down the table of buses will highlight them.

The highlighted buses will have a "tick" placed in the first column and this allows the user to edit all the selected buses together in one step. At the top of the column is a header "tick" box, when there are any selected entries in the table a minus sign appears in the header "tick" box. Tapping on this will deselect all the selected entries and all the "ticks" will be removed. In addition tapping an empty header "tick" box will select all the buses on that page.

The image in Fig 3 shows that Main 1 has been selected and the panel on the right of the page shows Main 1 has had its width locked using the '**Lock Width**' button as indicated by the locked padlock. This prevents the user from accidently changing the width for the selected bus on this or any other page in Assist by greying out the Bus Width controls.

Also note that tapping in the label area for each bus opens the Label editor allowing the user to provide a unique label/name for the bus using the On-screen keyboard.

FIG 1 - TRACK BUSES MODE SELECT ON STANDARD FADER PANEL

FIG 2 - MAIN BUSES SCREEN HIGHLIGHTING ACCESS TO EDIT BUSES MODE

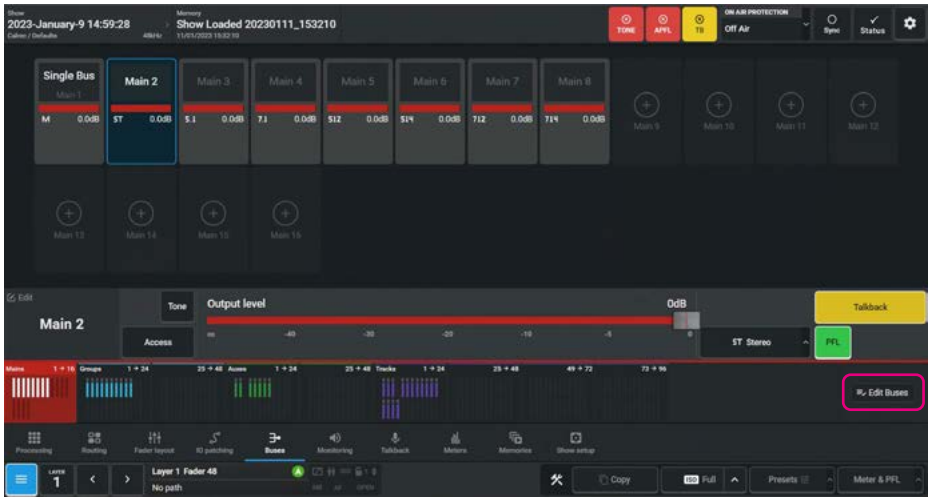
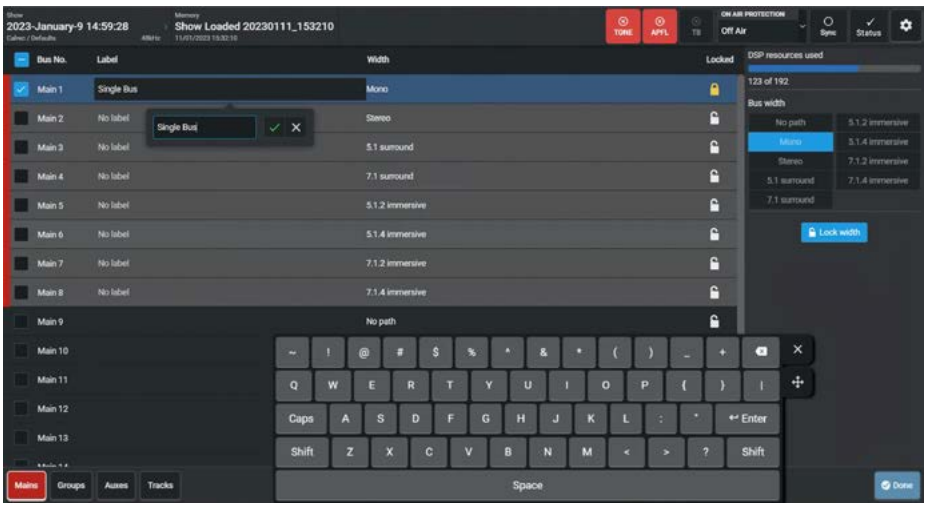


FIG 3 - EDIT MAIN BUSES SHOWING BUS LABELLING ON ON-SCREEN KEYBOARD



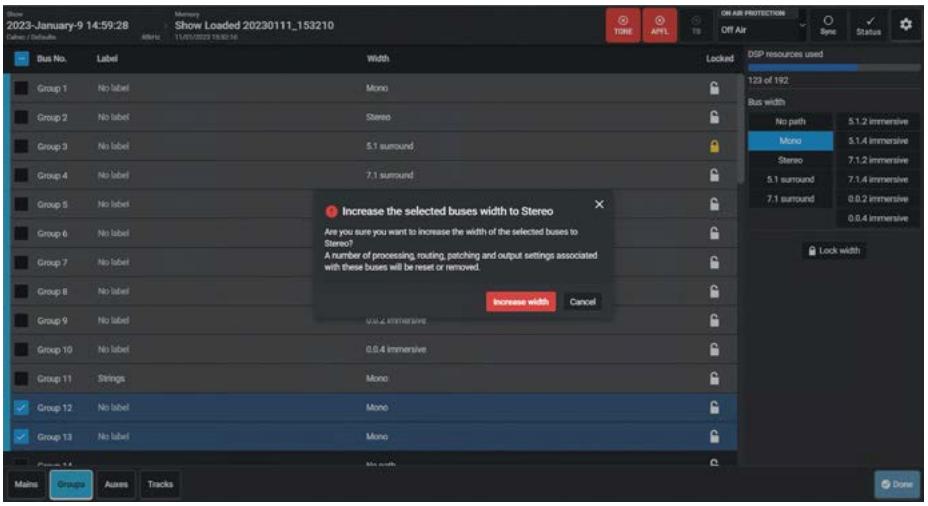
Editing Group Buses

The image in Fig 4 shows the current state of each of the 48 Group buses.

As there are more entries than the page can contain the fact that there are higher numbered buses are indicated via a scroll bar to show the current position in the buses list. To access other sources in the buses list swipe up/down the buses list using two finger contact on the Multi-touchscreen.

The user can select the Group buses for editing in a variety of ways:- clicking or tapping on or dragging down the table of buses will highlight them.

FIG 4 - EDIT GROUP BUSES SHOWING INCREASED WIDTHS



As described for the Main buses the highlighted buses will have a "tick" placed in the first column allowing the user to edit all the selected buses in one step. Group buses 12 & 13 have been selected, are currently set as Mono paths and the user tapped the '**Stereo**' width to be applied to these Groups.

A confirmation dialogue box appears before increasing the selected buses width to the chosen width advising that:-

"Are you sure you want to increase the width of the selected buses to Stereo?
A number of processing, routing, patching and output settings associated with these buses will be reset or removed."

At the top right of each page is shown the amount of DSP resources used and for Mains & Groups is a shared pool of 192 mono legs.

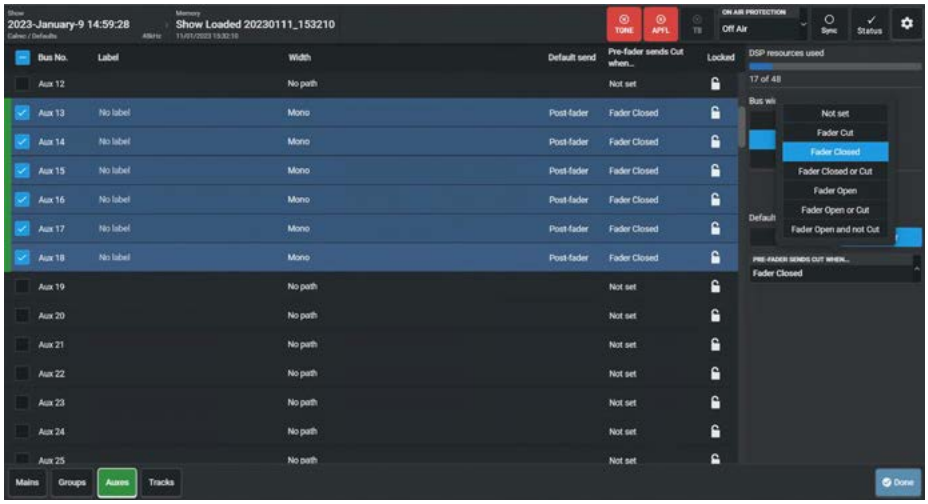
Editing Aux Buses

The image in Fig 5 shows the current state of each of the 48 Aux buses.

As there are more entries than the page can contain the fact that there are higher numbered buses are indicated via a scroll bar to show the current position in the buses list. To access other sources in the buses list swipe up/down the buses list using two finger contact on the Multi-touchscreen.

The user can select the Aux buses for editing in a variety of ways:- clicking or tapping on or dragging down the table of buses will highlight them.

FIG 5 - EDIT AUX BUSES SHOWING PRE FADER SENDS OPTION



As described for the Main buses the highlighted buses will have a "tick" placed in the first column allowing the user to edit all the selected buses in one step. Aux buses 13, 14, 15, 16, 17 & 18 have been selected and can be set to either 'Stereo' or a 'No path' state using the same method as shown for Mains & Groups. In addition the Aux buses have an extra set of conditions that can be applied to cut the Pre fader sends of the Aux, this is shown in the panel on the right hand side of the page.

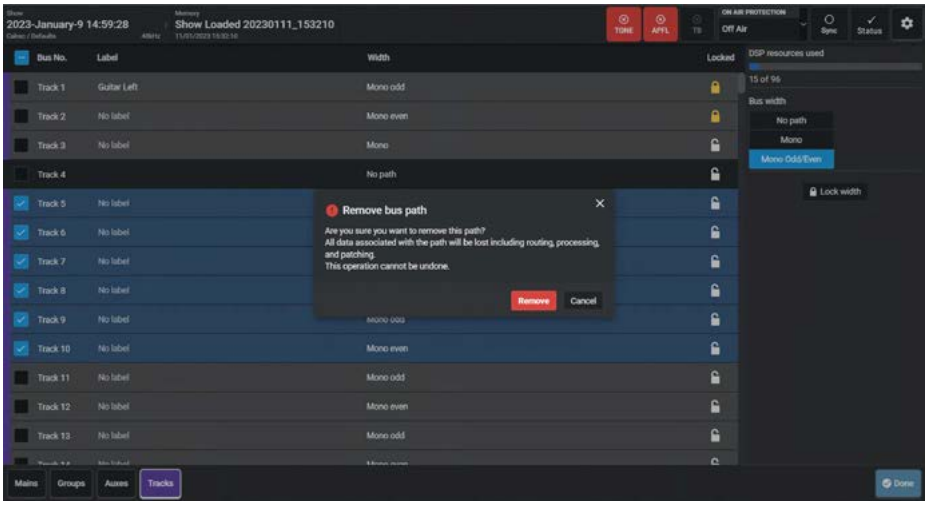
At the top right of each page is shown the amount of DSP resources used and for Auxes is a pool of 48 mono legs.

Editing Track Buses
The image in Fig 6 shows the current state of each of the 96 Track buses.

As there are more entries than the page can contain the fact that there are higher numbered buses are indicated via a scroll bar to show the current position in the buses list. To access other sources in the buses list swipe up/down the buses list using two finger contact on the Multi-touchscreen.

The user can select the Track buses for editing in a variety of ways:- clicking or tapping on or dragging down the table of buses will highlight them.

FIG 6 - EDIT TRACK BUSES SHOWING REMOVE BUS PATH



As described for the Main buses the highlighted buses will have a "tick" placed in the first column allowing the user to edit all the selected buses in one step.

Track buses 5, 6, 7, 8, 9 & 10 have been selected and in this case the user selected the '**No path**' option from the Bus width selection shown in the panel on the right hand side of the page.

When a 'No Path' option is chosen a "Remove bus path" dialogue box appears before removing the bus paths advising that :-

"Are you sure you want to remove this path?
All data associated with the path will be lost including, routing, processing and patching" and "this operation cannot be undone."

It should be pointed out that if the user has selected a bus with a locked width or a set of buses containing one or more buses with locked widths and then tries to set it or them to **'No Path'**, this is not allowed. Paths that did not have locked widths in the selection will be removed. This prevents the user from accidently changing the width for the selected bus on this or any other page by greying out the Bus Width controls for that bus.

At the top right of each page is shown the amount of DSP resources used and for Tracks is a pool of 96 mono legs.

Exiting Edit Buses mode
Once the user has finished using the Edit Buses pages, tapping on the '**Done**' button at the bottom right corner of the page will close the page returning the user to the previous Buses sub-menu page it came from.

ARGO
MONITORING

CALREC

MONITORING ON ARGO

Argo offers extensive monitor controls which can select the various sources to be listened to and control the level and formats of the various monitor outputs from a number of control panels. There is a dedicated monitor panel MY6574 which provides the Argo S/Argo Q with full control of the various monitoring outputs of the console. Generally one of these panels is fitted per console although more than one can be fitted for multi- user/monitor operation and it should be noted that the monitor panel works independently from the Monitor mode on the console to provide continuous access to the monitoring. There is also a Monitoring mode for the Touchscreen & the Wild Assign panel which in combination offers both touch and physical control of all the monitor parameters available from every section of the console.
In the case of the Monitoring mode, this operates as follows:- The required monitor type is either accessed from either the Modes row of a fader panel by first tapping on the Modes Menu then the Monitoring button and then tapping on the CR1 (for example) selector as shown in Fig 1, or by pressing on the Monitor icon on the touchscreen and then the Monitor 1 selector in the lower display area as shown in Fig 2. The surface displays/controls the relevant information on both the Touchscreen and a Wild Assign panel shown below.

Monitor Controls

After tapping on **Monitoring>CR 1** from the menu selection the image in Fig 2 is displayed and the screen is arranged into 4 areas as highlighted.-

Area 1 in the lower part of the screen provides access to various monitor systems

Control room monitors

This sub-menu area is arranged into two pages, each page representing a different monitor related to the Control Room:-

Monitor 1 LS is the main monitor loudspeaker set in the control room.

Monitor 2 LS is the alternative monitor loudspeaker set in the control room which could be a domestic surround system or may be used for a second operator when the console has User Splits applied.

Miscellaneous monitors

This sub-menu area is arranged into four pages, each page representing a different monitor related to the Misc Monitors:-

Misc monitors 1-4 are general monitoring outputs which can be used for a variety of purposes such as headphone outputs.

User meters

This sub-menu area is arranged into four pages, each page representing a different monitoring/metering related function:-

User Meters 1-4 allows the user to select sources to be made available to the four user meters which can be output externally.

FIG 1 - CR1 MONITOR MODE SELECT ON STANDARD FADER PANEL

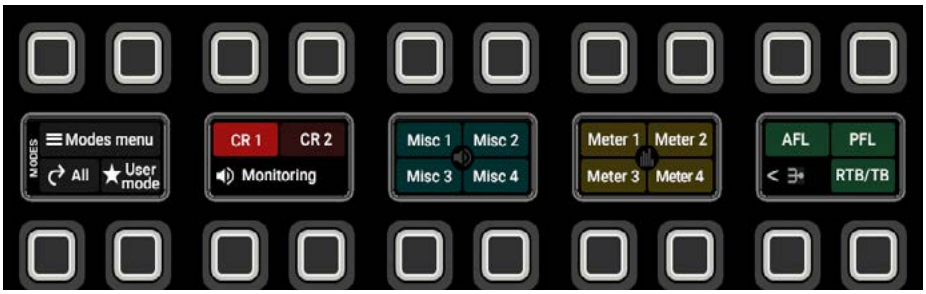
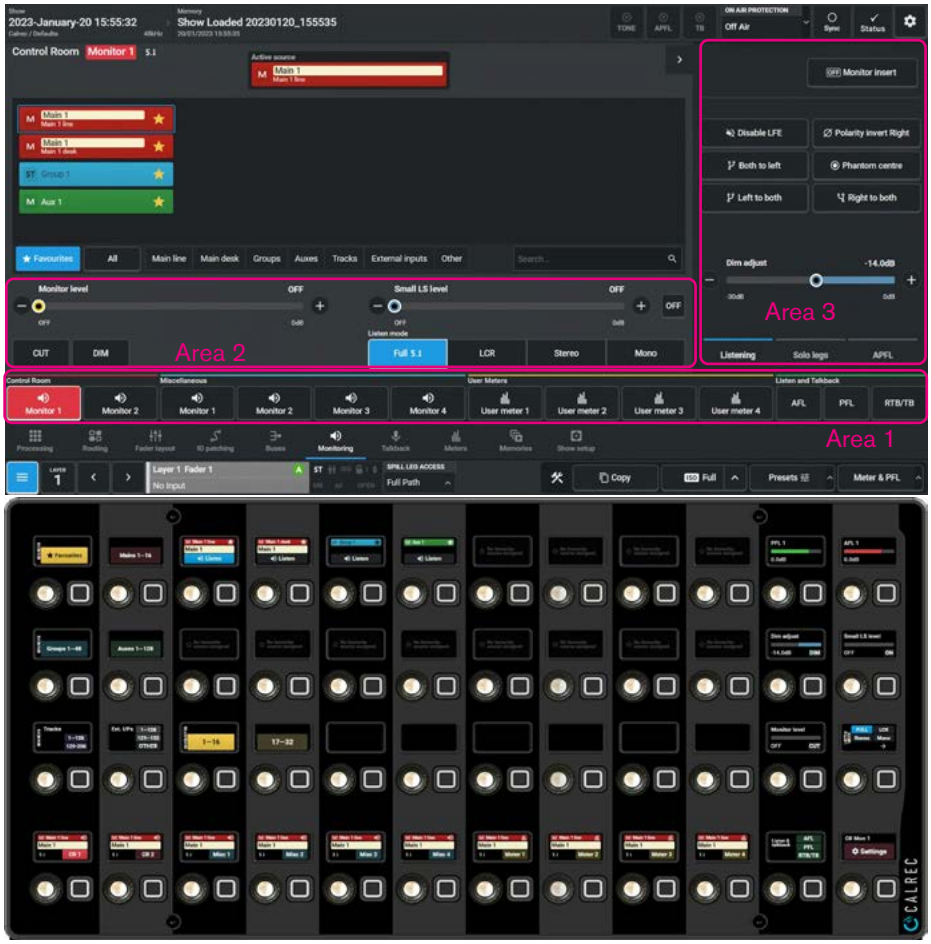


FIG 2 -CR1 MONITOR SCREEN ON TOUCHSCREEN & WILD ASSIGN PANEL



Listen and talkback
This sub-menu area is arranged into three pages, each page representing a different monitoring related function:-

AFL sets the system levels of the three AFL monitors.

PFL sets the system levels of the three PFL monitors.

RTB/TB sets the system levels of the three Return Talkbacks and the Console Talkback.

Control Room Monitoring Controls
After selecting Monitor 1 from the **Monitoring>Control Room** area of the Menu, the screen shown in Fig 2 appears.

Area 2 in the middle of the screen area contains the monitor output controls which can be adjusted a number of ways-

From the touchscreen
- Dragging the sliders left and right
- Using the + and - buttons at the end of the sliders.
- Using the On-Screen buttons to select switch functions e.g. On/Off.

The resultant numeric values are shown in the top right hand corner of each control:-

From the Wild Assign Panel
- Moving the Rotary controls round to the left or right to change levels.
- Using the button next to the rotary control to switch functions On or Off.

The resultant numerical values & bargraph are shown in each individual TFT on the Wild Assign Panel.

The following controls are available for both Monitor 1 LS & Monitor 2 LS:-

Monitor Level: Controls the level of the monitor outputs between 'off' & 0dB.

Cut and Dim buttons: Cuts or dims the monitor output.

Small LS Level: With the Small LS active this provides control over the level of the secondary speakers between 'off' & 0dB.

Small LS On: When tapped this switches the monitoring over from the Monitor 1 or Monitor 2 loudspeakers to a secondary set of loudspeaker, usually to hear how the programme sounds on a small set of domestic speakers in the home.

Listen modes
These allow the operator to listen to the selected source at various widths and is shown at the bottom left of Area 2 and are as described below.

Full - sends the full immersive/surround signal out to the speakers. It removes any speaker solos that may be in place.

5.1 - downmixes the monitored signal to L, R, C, Lfe, Ls & Rs surround.

Note: this only applies when the monitored source is wider than a 5.1 signal such as a 7.1.4 signal.

LCR - downmixes the monitored signal to LCR stereo.

Stereo - performs a stereo downmix when monitoring an immersive/ surround signal, or outputs the full signal and removes any speaker solos when monitoring a stereo signal.

Mono - performs a mono downmix on the monitored signal.

These in turn are based on the monitor width which is shown at the top left of Area 4 and it's width is defined in **System Settings>Monitor Widths.**

Area 3 on the right side of the screen is the monitor options panel this is subdivided into 3 sections.

Note: Area 3 can be hidden or revealed by tapping on the arrow shown in the top right corner of Area 4.

FIG 3 - MONITOR LISTEN OPTIONS

Monitor Listening Options
as shown in Fig 3: above-

Dim Adjust Level: Alters how much the dim button changes the monitor level between -30dB & 0dB, with a default set at -14dB.

Leg monitoring option details
Areas 2 & 3 of the touchscreen contains controls over individual legs and downmixes of the signals sent to the monitoring outputs as described below:

Disable LFE - mutes the Lfe signal to the speakers.

Polarity Invert Right - reverses the polarity/phase of the right speaker.

Both to Left - toggles the sending of both left and right signals to the left speaker.

Phantom Centre - mutes the centre speaker and sends the centre information to the left and right speakers to create a phantom centre image.

Left to both - sends the left signals to both the left speaker and right speaker.

Right to both - sends the right signals to both the left speaker and right speaker.

Monitor Insert: This button switches in the monitor insert which is typically connected to an encoder/decoder for reference listening.

Both console Monitor 1 and Console Monitor 2 systems have insert points to allow the console selectors to route audio to an external unit and to bring it back into the signal path.

To patch a monitor insert for use go to:- **IO patching** and tap the 'Desk outputs' source button then choose 'Monitor insert sends'.

Then touch the 'TX Transmitters' button and select the transmitters to be used as the insert send outputs, e.g. AES ports and touch '**Connect**' to confirm as shown in Fig 4.

For the Monitor Insert Returns go back to the Sources list and choose the RX Receiver ports to be used as the insert return inputs.

Then tap the 'Desk Inputs' destination button and select the Monitor Insert returns entry from the list and touch '**Connect & Fix**' to confirm as shown in Fig 5.

The width of the Monitor 1 Insert can be set independently to that of the width of Monitor 1 if required and can be set to widths up to 7.1.4 for an immersive insert.

This is shown in Fig 6 where the Monitor 1 insert is set to a 7.1.4 width in **System Settings>Monitor widths.**

Note: the Monitor 2 Insert is currently fixed at a width of 5.1.

FIG 4 - MONITOR 1 INSERT SEND PATCHING

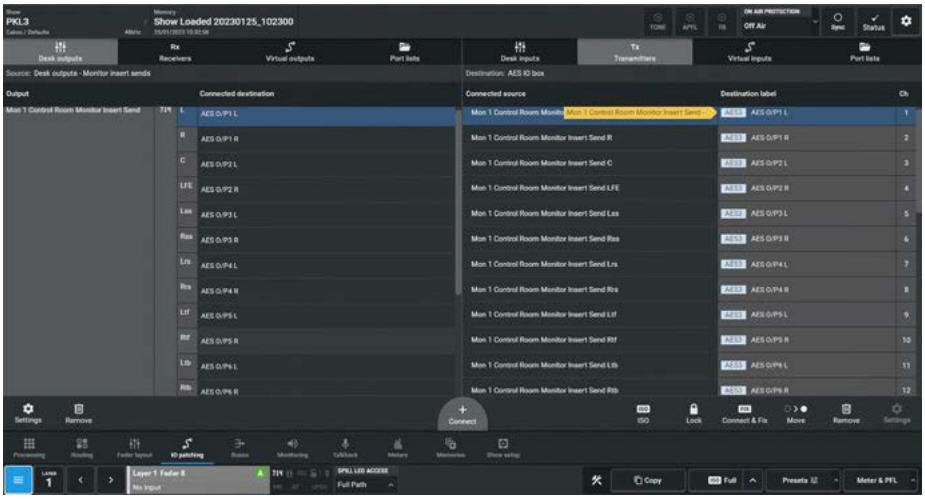


FIG 5 - MONITOR 1 INSERT RETURN PATCHING

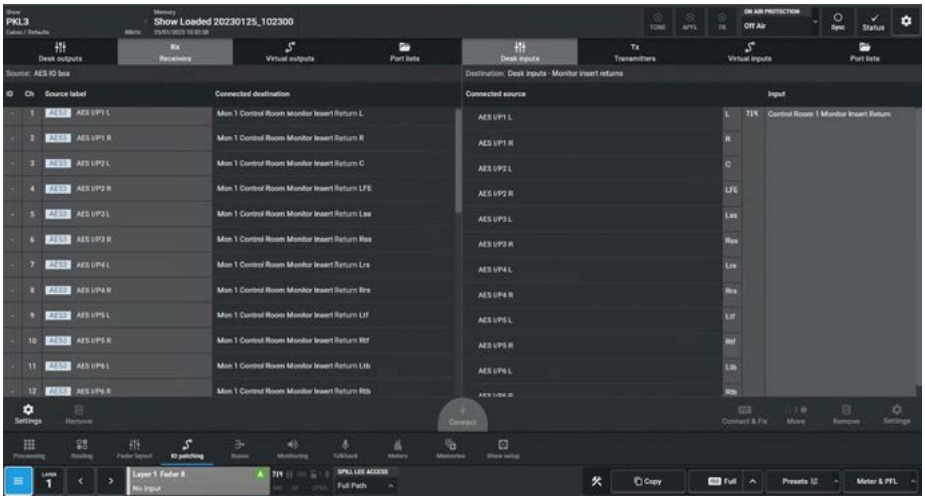
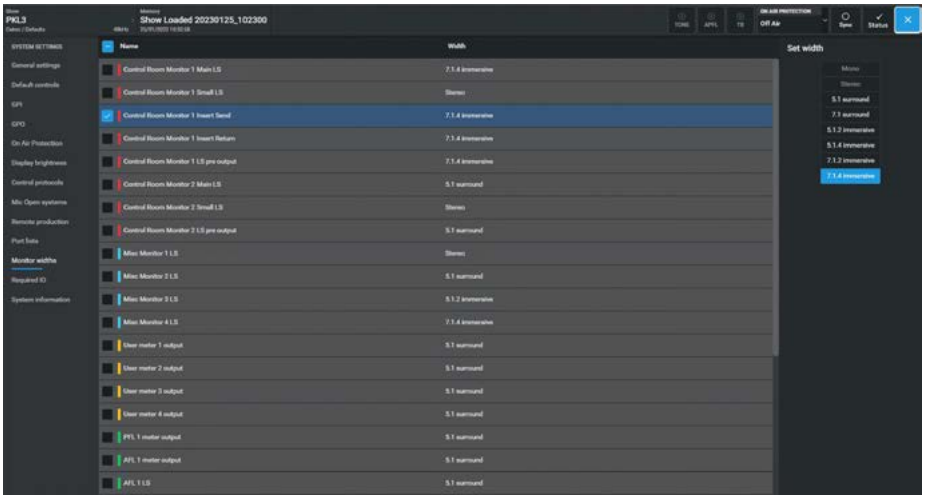


FIG 6 - MONITOR 1 INSERT WIDTH SET TO 7.1.4



Monitor Solo legs Options as shown in Figs 7 & 8:-

Each leg of the monitor has its own Solo button tapping any of these, Solos that monitor output leg, so each leg can be auditioned individually or in combination.

Fig 4 shows the Solo options for a 5.1 Surround Monitor with the Centre soloed and Fig 5 shows the extended Solo options for a full 7.1.4 Immersive Monitor arrangement with the Left and Right soloed.

A 'Clear all solos' button is provided for quick solo deselection.

Note: the number of solo legs available depends on the listening mode used. and the width of the monitor which is set in **System Settings>Monitor widths**

FIG 7 - MONITOR SOLO LEGS FOR 5.1

FIG 8 - MONITOR SOLO LEGS FOR 7.1.4

Monitor APFL Options as shown in Fig 9:-

APFL bus select: When tapped this lets the user select the required APFL Bus to monitor with.

AFL and PFL with multiple users
When working with multiple user splits across the surface, each split can use an individual APFL system. The choice of which is set using the Monitor APFL Options dialogue box.

Select APFL 1,2 or 3 from the APFL system Dropdown to set the active APFL system for that monitor system, as shown above and repeat this process in each user split.

PFL to Mon: When tapped this sends the PFL signal to the console monitor rather than to a dedicated PFL speaker.

PFL System Level: Adjusts the selected PFL monitor level between 'off' & 10dB.

AFL System Level: Adjusts the selected AFL monitor level between 'off' & 10dB.

PFL from GPI
PFL's can be remotely activated from GPI, by sliding the switch labelled PFL from GPI shown in Fig 9. GPI PFL selections are input port based, firing the PFL of whichever path the GPI input is patched to.

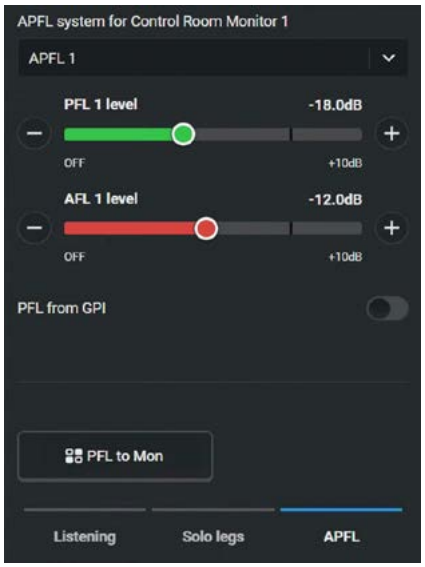
See **"GPI" on page 270** for details on patching GPIs to surface functions.

Note: that if the PFL is only activated from GPI, the APFL clear button will not light up.

It is not possible to deactivate a GPI PFL from the desk, this can only be achieved by deactivating the GPI Opto itself. The PFL from GPI switch can be used to quickly regain control of any channels which are set to have their PFL activated from GPI.

For example for APFL 1, if a GPI has activated a channel PFL and you wish to deactivate the PFL from the control room, simply slide the 'PFL 1 from GPI' switch to the Off position.

FIG 9 - MONITOR APFL OPTIONS



Note: that until this is reactivated the PFL 1 from GPI for all channels using APFL system 1 will not work.

CONTROL ROOM MONITORING

Control Room Source Selection
Area 4 at the top half of the screen is for source selection which consists of:-
Active source: Current monitored source is shown at the top of the source list.

Favourites: The user can configure a number of sources by marking them with a star. Favourites to be monitored are shown in Fig 1 allowing quick selection. A different set of favourites can be configured for each monitor destination and the Favourites button accesses this set. The image shows Monitor 1 is listening to the 7.1 Group 4 bus. In order to create a Favourite the user taps on the empty Star symbol of the source in the source lists to create a Favourite entry, or clicks on the full Star symbol to remove it from the Favourites set for that monitor.

Source List: The source list display, this contains all the sources available to the monitoring. In order to listen directly to any source in the list the user can tap on the required source. A blue outline box appears around the current entry. To change the monitor source from the list, the user can simply select it from the 'All' sources list or use the source filters.

Source Filters: At the bottom of the source list area are a number of filters used to filter the source list to make the monitor source selection easier. There are many sources available including:- 16 Main line & 16 Main desk sources each of which can have up to 3 downmix versions i.e. 64 Main line & 64 Main desk outputs, 48 Groups, 48 Auxes, 96 Tracks 152 External Inputs and various Tone Outputs and Follow Mon options in 'Other'. The user selects which source type they require with the filter buttons at the bottom of the source list. Once selected, a number of pages of that source type appear just above the filter buttons. Tapping on a page range e.g. 1-16 will show the sources numbered 1-16 of that source type with Groups 1-16 as shown for Monitor 2 in Fig 2 & Aux 1-16 in Fig 3.

Note: it is also possible to use the search box at the bottom right of the source list to find system labels such as 'Aux 1' or user labels such as 'IFB 1'.

FIG 1 - CR MONITOR 1 SHOWING FAVOURITES AS SOURCE SELECTIONS

FIG 2 - CR MONITOR 2 SHOWING GROUPS AS SOURCE SELECTIONS

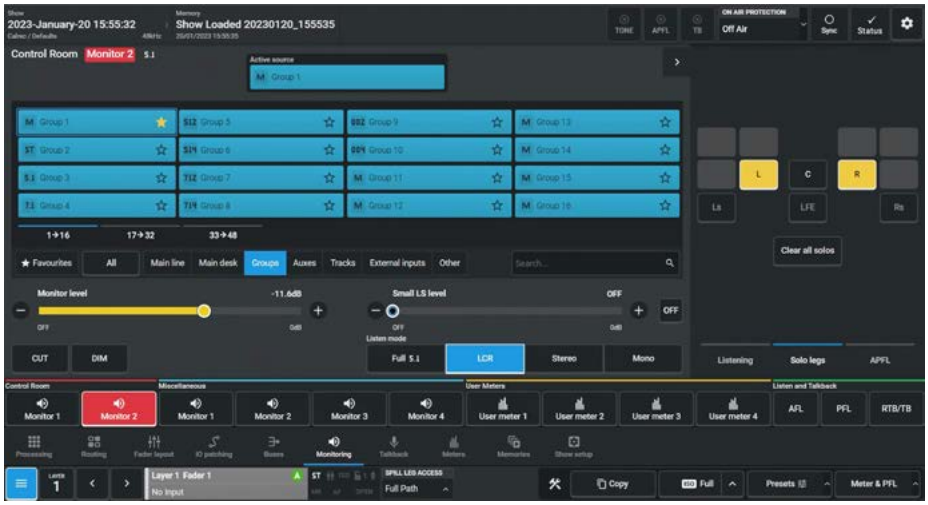


FIG 3 - CR MONITOR 2 SHOWING AUXES AS SOURCE SELECTIONS.

MISCELLANEOUS MONITORING

Misc Monitoring Controls
After selecting the Misc Monitor 1 button from the **Monitor>Miscellaneous** section of the Menu, the screen shown in Fig 1 appears. The upper half of the screen shows the currently active source for this monitor just above the Select Source List which is available to all the monitors. The Favourites Set, Source List and the Source filters operate in the same way as described for the Control Room monitors described on the previous pages. The lower half of the screen shows the controls available to Misc Monitors 1-4 which all operate in the same way.

The following controls are available:-
Monitor Level: Controls the level of the monitor outputs between 'off' and 0dB.
Cut and Dim buttons: Cuts or Dims the monitor output.

Note: The Dim level for the Misc Mons is fixed at -30dB.

Talkback: This allows the user to talkback to the misc outputs from the Operator Talkback mic.
Listen modes: These allow the operator to listen to the selected source at various widths based on the width of the monitor width which is shown at the top left of the page or the possible downmix levels.

Note: For more detail on these options see **"Listen modes" on page 173.**

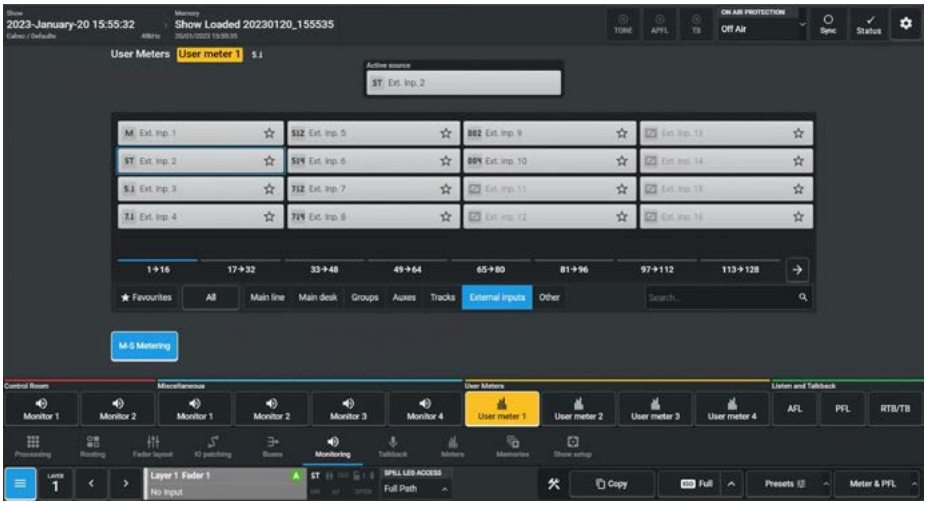
Listening Settings
The right side of the screen shows the various listening options available to the Misc Monitors 1-4:-
Leg monitoring options: Disable LFE, Polarity Invert Right which reverses the polarity of the right speaker signal, Both to Left, Left to Both, Right to Both, and Phantom Centre which routes centre monitor feed to left & right speakers.

Note: For more detail on these options see **"Leg monitoring option details" on page 173.**

User Meter Controls
After selecting the User Meter 1 button from the **Monitor>User Meters** section of the Menu, the image in Fig 2 appears.

FIG 1 - MISC MONITOR 1

FIG 2 - USER METER CONTROLS



The upper half of the screen shows the currently Active source for this monitor, in this case 'Ext. Inp 2' above the Select Source List. The lower half of the screen is blank as no controls are required.

Note: that there is an optional setting under the select source list filter buttons labelled 'M-S metering' which changes the stereo meter output to M-S format.

Tone & Follow Options - Monitor/ Meters
If the user requires to apply tone to a Monitor output or User meters they can select the tone source to send from the 'Other' option in the source list as shown in Fig 1.

The method of source selection for the 'Other ' Sources for the User meters is the same as for Misc Monitors via the source list.

Apart from the option to send Tone to the selected destination at any selected width from Tone Mono through to Tone 7.1.4, there is a further set of options which allow the selected monitor/meter to follow the monitoring selection for Monitor 1 or 2 with or without their associated APFL buses.

Note: CR Monitor 1 can only be set to folllow CR Monitor 2 and Vice-versa.

LISTEN AND TALKBACK SETTINGS

In order to access the Listen and Talkback settings for the monitors the user selects the AFL, PFL or RTB/TB function from the Modes row of a fader panel by first tapping on the Modes Menu then the Monitoring button and then the user selects the AFL, PFL or RTB/TB button as shown in Fig 1.

Alternatively the user can access the same screen by tapping on the Monitor icon on the touchscreen and then the AFL, PFL or RTB/TB button selector in the lower display area as shown in Fig 2.

The surface displays/controls the relevant information on both the Touchscreen and a Wild Assign panel as described later in this section of the manual.

Listen and Talkback Controls

AFL Controls
After selecting the **AFL** button from the **Monitor>Listen and Talkback** section of the Menu, the screen in Fig 2 appears.

The following controls are available:-
AFL 1 Level: Controls the level of the AFL 1 LS output between 'off' & 10dB.
AFL 2 Level: Controls the level of the AFL 2 LS output between 'off' & 10dB.
AFL 3 Level: Controls the level of the AFL 3 LS output between 'off' & 10dB

Note: AFL 2 & AFL 3 are dependent on having APFL systems 2 & 3 active.

PFL Controls
After selecting the **PFL** button from the **Monitor>Listen and Talkback** section of the Menu, the screen in Fig 3 appears.

The following controls are available:-
PFL 1 Level: Controls the level of the PFL 1 LS output between 'off' & 10dB.
PFL 2 Level: Controls the level of the PFL 2 LS output between 'off' & 10dB.
PFL 3 Level: Controls the level of the PFL 3 LS output between 'off' & 10dB

Note: PFL 2 & PFL 3 are dependent on having APFL systems 2 & 3 active.

FIG 1 - AFL/PFL/RTB-TB MONITOR MODE SELECT ON STANDARD FADER PANEL

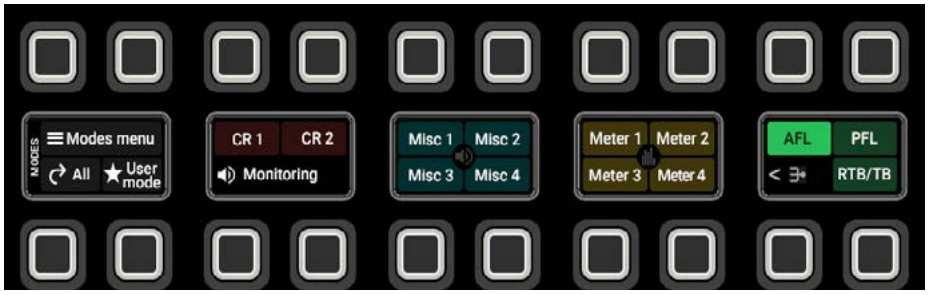


FIG 2 - AFL CONTROLS ON TOUCHSCREEN

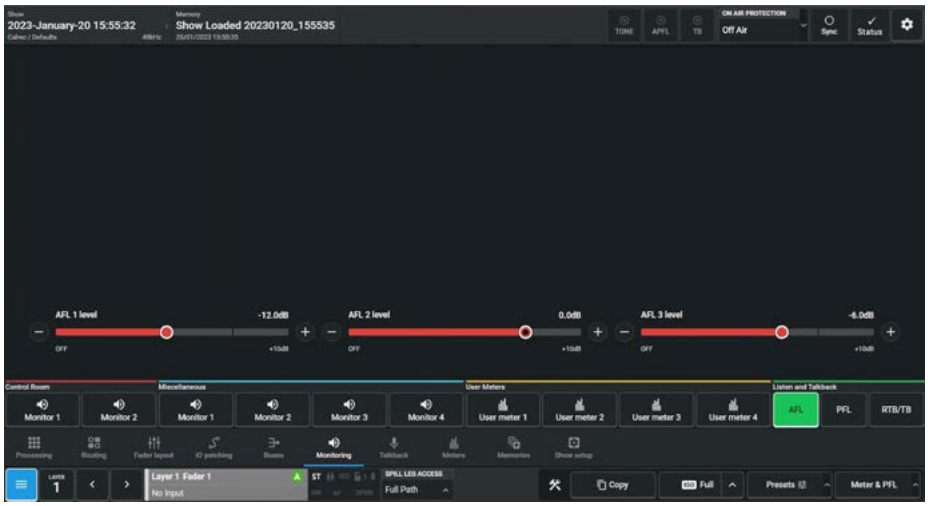
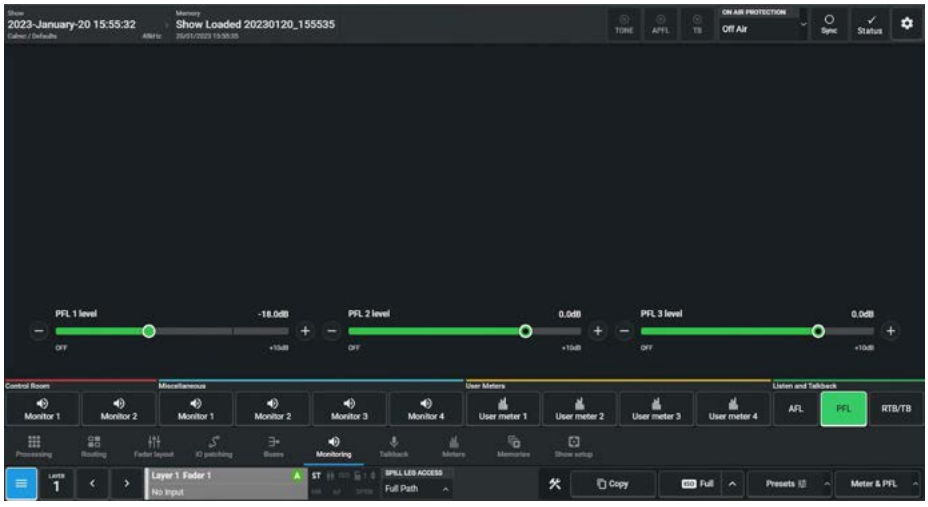


FIG 3 - PFL CONTROLS ON TOUCHSCREEN



RTB/TB Controls
After selecting the **RTB/TB** button from the **Monitor>Listen & Talkback** section of the Menu, the screen in Fig 4 appears.

The following controls are available:-
RTB 1-3 Trim Level: Alters the RTB trim level of each of the 3 RTBs feeding into the PFL LS output between 'off' and 0dB.

RTB 1-3 Enable buttons: These buttons enable the audio from the RTB 1-3 buses to be mixed into all three of the PFL buses. If not enabled that RTB bus output is CUT e.g if RTB 1 is not enabled then it cannot be mixed into the PFL1, PFL2 and PFL3 bus outputs.

Talkback Level: Alters the Talkback trim level between 'off' and 0dB.

Note: the Talkback level is applied after the input gain, but is independent of any input trim, if also sent to a channel.

Monitoring for multiple users
Two main monitor outputs are available to patch to output transmitters, Monitor 1 & Monitor 2. Sections selected to monitor mode can switch between controlling monitor 1 and monitor 2 from Area 1 as described previously see **"Control room monitors" on page 172.**

Changing between CR Monitor 1 and 2 on the touchscreen is independent of the dedicated monitor panel.

The source selection display on the dedicated monitor panel, displays which of the two monitor outputs it is controlling across the centre of the display, i.e. CR1 Monitor or CR2 Monitor.

This allows for 2 operators on the same surface (one of the monitor outputs could be patched to a headphone feed), to have their own set of monitoring controls, either from dedicated monitor panels or from Wild Assign panels in Monitor mode.

If user splits are also in place to demarcate sections of faders for use by each operator, each user area can be set so that the AFL and PFL output of their paths are routed to separate AFL & PFL buses which in turn can be selected to feed the two main monitors.

FIG 4 - RTB 1-3 & TB CONTROLS ON TOUCHSCREEN

FIG 5 - APFL BUS WIDTH SELECTION IN SYSTEM SETTINGS>GENERAL SETTINGS

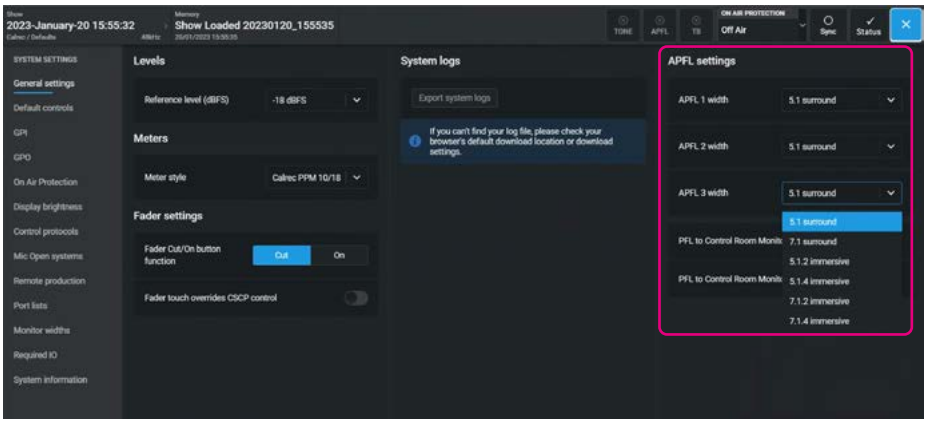
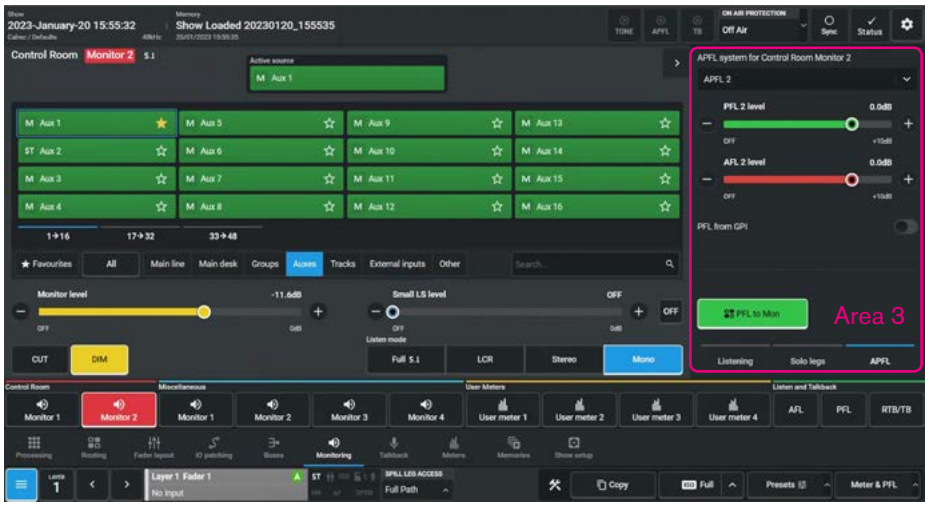


FIG 6 - CR MONITOR 2 SHOWING APFL BUS SELECTION IN AREA 3.



The APFL buses used by the faders in each user area can be selected from the APFL page in Area 3 as shown above in Fig 6 for the CR Monitors.

Note: the widths of the 3 AFL/PFL output systems can be altered to match the speaker systems available and each APFL system can be set to 5.1, 7.1, 5.1.2, 5.1.4, 7.1.2 or 7.1.4 in the **Show Setup>Control Preferences** page as highlighted in Fig 5.

WILD ASSIGN PANEL IN MONITORING MODE

Monitor Controls On Wild Assign
After tapping on **Monitoring>CR 1** from the menu selection the image in Fig 1 is displayed on the Wild Assign panel and the panel is arranged into 4 areas as highlighted.

These areas are the same areas shown on the touchscreen and follow the same settings, so that selections made on the touchscreen follow the Wild Assign panel and vice-versa with a few exceptions, the main one being that the selection of Favourites for each monitor output are only configured on the Touchscreen.

Area 1 on the panel provides access to various monitor systems as described in the earlier part of this section of the manual.

The following outputs are shown from left to right along the bottom of the Wild Assign panel in the same order as on the Touchscreen:-

Control Room Monitors
CR 1 Monitor 1 is the main monitor loudspeaker set in the control room.

CR 2 Monitor 2 is the alternative monitor loudspeaker set in the control room.

Miscellaneous Monitors
Misc Monitors 1-4 are general monitoring outputs which can be used for a variety of purposes such as headphone outputs.

User Meters
Meters 1-4 allows the user to select sources to be shown on the four user meters which can be output externally.

Each of the above cells for each Monitor system shows its current source and the width of the monitor output. The button on the bottom right shows the name of the monitor and when the button is pressed it selects that monitor system to the panels to be controlled.

Listen and talkback
AFL sets the system levels of the three AFL monitors.

PFL sets the system levels of the three PFL monitors.

RTB/TB sets the system levels of the three Return Talkbacks and the Console Talkback.

FIG 1 - FAVOURITE SOURCES - CR MONITOR 1 ON WILD ASSIGN PANEL

FIG 2 - MAIN OUTPUT SOURCES - CR MONITOR 1 ON WILD ASSIGN PANEL

FIG 3 - GROUP BUS SOURCES - CR MONITOR 1 ON WILD ASSIGN PANEL

Area 2 on the panel provides access to various monitor outputs as described earlier in this section of the manual.

The following controls are available for both CR Monitor 1 & CR Monitor 2 from the Wild Assign panel:-
Monitor Level: Controls the level of the monitor outputs between 'off' & 0dB.

Cut and Dim buttons: Cuts or dims the monitor output.

Small LS Level: With the Small LS active this provides control over the level of the secondary speakers between 'off' & 0dB.

Small LS On: When tapped this switches the monitoring over from the Monitor 1 or Monitor 2 loudspeakers to a secondary set of loudspeaker, usually to hear how the programme sounds on a small set of domestic speakers in the home.

Listen modes: These allow the operator to listen to the selected source at various widths and is shown at the bottom right of Area 2.

This in turn is based on the monitor width which is shown in the selected Monitor system in Area 1 whose it's width is defined in **System Settings>Monitor Widths.**

Note: For more detail on these options see **"Listen modes" on page 173.**

Area 3 on the panel provides access to all the available sources. The area is arranged with the 6 source type cells on the left including the favourites, up to 16 cells in 2 rows of 8 cells for individual source selection from the source type and a 3rd row of 8 cells to select up to 8 pages of 16 sources. Fig 1 shows that the favourites source type is selected and up to 32 favourites, arranged in 2 pages of 16 sources can be listened to.

For example CR Monitor 1 is listening to Favourite source 9 which is 'Group 1' as indicated by the highlighted **'Listen'** bar and shown as the CR1 currently active source in Area 1's leftmost cell.

FIG 4 - AUX OUTPUT SOURCES - CR MONITOR 1 ON WILD ASSIGN PANEL

FIG 5 - TRACK OUTPUT SOURCES - CR MONITOR 1 ON WILD ASSIGN PANEL

FIG 6 - EXTERNAL INPUT SOURCES - CR MONITOR 1 ON WILD ASSIGN PANEL

Figs 2, 3, 4, 5, 6, & 7 are each displaying a different single source type for Mains, Groups, Auxes, Tracks, External Inputs and Other sources respectively with the sources in those source types arranged in pages of up to 16 entries.

Area 4 on the panel provides access to the monitor options when selected and is accessed by pressing the settings button for the selected monitor system at the bottom right of the Wild Assign panel. This is subdivided into 3 sections as shown in Fig 8 for Control room Monitor 1.

Listening:- right side of Area 4
Dim Adjust Level: Alters how much the dim button changes the monitor level between -30dB & 0dB.

Monitor Insert: Switches in the monitor insert which is typically connected to an encoder/decoder for reference listening.

Leg monitoring options: LFE Disabled, Polarity Invert Right which reverses the polarity of the right speaker signal, Both to Left, Left to Both, Right to Both, and Phantom Centre which routes centre monitor feed to left & right speakers.

Note: For more detail on these options see **"Leg monitoring option details" on page 173.**

Solo legs:- left side of Area 4 in Fig 8
As shown on the left side of the area, each leg of the monitor has its own Solo button tapping any of these 'Solos' that monitor output leg, so each leg can be auditioned individually or in combination.

A **'Clear solos'** button is provided for quick solo deselection.

Note: the number of solo legs available depends on the width of the monitor and the listening mode used.

APFL:- top right row of Area 4
APFL bus select: When tapped this lets the user select the required APFL Bus to monitor with.

PFL to Mon: When tapped this sends the PFL signal to the console monitor rather than to a dedicated PFL speaker.

Miscellaneous functions:
Clear APFL, Clear AFL or Clear PFL also a PFL from GPI enable button.

FIG 7 - OTHER SOURCES - CR MONITOR 1 ON WILD ASSIGN PANEL

FIG 8 - CR MONITOR 1 SETTINGS - CR MONITOR 1 ON WILD ASSIGN PANEL

FIG 9 - FAVOURITE SOURCES - MISC MONITOR 1 ON WILD ASSIGN PANEL

PFL System Level: Adjusts the PFL monitor level between 'off' & 10dB.

AFL System Level: Adjusts the AFL monitor level between 'off' & 10dB.

Note: the layout of CR Monitor 2 (CR2) has exactly the same as the layout for CR Monitor 1 and the settings button then accesses the CR2 monitor settings.

Misc Monitor Controls:- Fig 9 shows the monitoring Sources for Misc Monitor 1 which is one of Misc Monitors available.

Areas 1 & 3 still apply to Misc Monitors in that Area 1 still selects the Monitor System to be controlled and Area 3 provides the full set of Sources to be selected in exactly the same way as for the Control Room Monitors.

Area 2 offers the Monitor Level & Cut, a fixed Monitor Dim, the ability to listen to the selected source at various widths and also provides Talkback to Misc Monitor for each of the 4 Misc Monitor systems.

Note: For more detail on these options see **"Listen modes" on page 173.**

Misc Monitor Settings:- Fig 10 shows the Monitoring Settings page for Misc Monitor 1 and is accessed by pressing the settings button for the selected monitor system at the bottom right of the Wild Assign panel.

Area 4 still applies to Misc Monitors in that it provides just the following Leg monitoring options for each of the 4 Misc Monitors.

Leg monitoring options: LFE Disabled, Polarity Invert Right which reverses the polarity of the right speaker signal, Both to Left, Left to Both, Right to Both, and Phantom Centre which routes centre monitor feed to left & right speakers.

Note: For more detail on these options see **"Leg monitoring option details" on page 173.**

Meters 1-4:- Fig 11 shows the Sources for User Meter 1 which is one of four User Meters available. Areas 1 & 3 still apply to User Meters in that Area 1 still selects the Monitor System to be controlled and Area 3 provides the full set of Sources to be selected in exactly the same way as for the Control Room Monitors.

There is an M-S metering option available that converts the audio meters from A-B to M-S which can be sent to an external port.

FIG 10 - MISC MONITOR 1 SETTINGS - MISC MONITOR 1 ON WILD ASSIGN PANEL

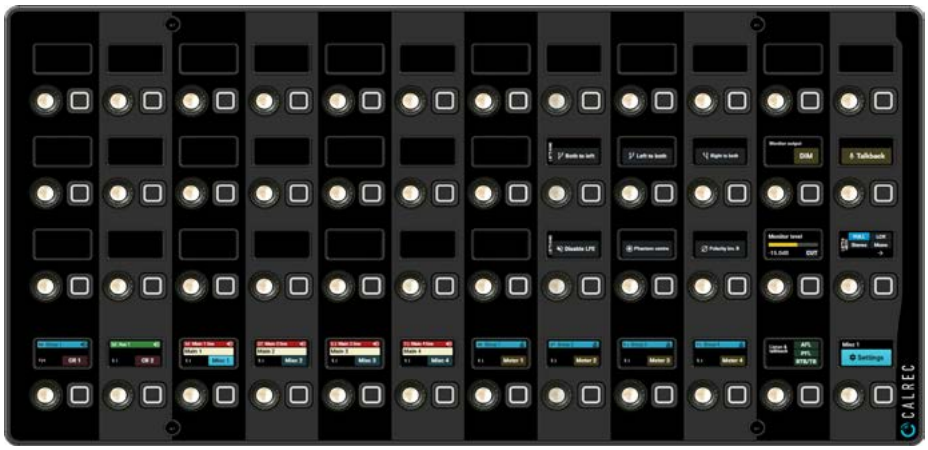
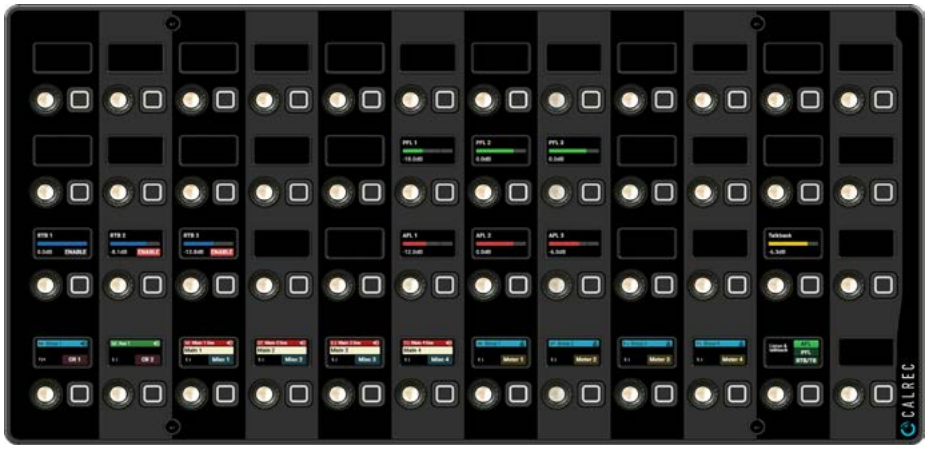


FIG 11 - FAVOURITE SOURCES - METER 1 ON WILD ASSIGN PANEL

FIG 12 - AFL, PFL & RTB/TB SETTINGS - APFL-RTB/TB ON WILD ASSIGN PANEL



Listen and Talkback:- Fig 12 shows the level controls for AFL buses 1-3, PFL buses 1-3, Return Talkbacks 1-3 and their Enable buttons, & the Console Talkback level. Area 1 still selects the Monitor System to be controlled.

DEDICATED MONITOR CONTROLS

Monitor Controls On Monitor Panel
The MY6574 Monitor panel provides the Argo S/Argo Q full control of the various monitoring outputs of the console.

Generally one of these panels is fitted per console although more than one can be fitted for multi-user/monitor operation.

Note: the controls available on these panels are described in the Monitoring via Touchscreen section of this manual.

The panel can also operate in a number of other modes apart from monitoring, the two 4-button cells on the right side of the panel allows the user to switch between:

- **Monitoring:** See below for details
- **Talkback:** See **"Talkback on Monitor Panels" on page 197.**
- **Routing:** See **"Routing on Monitor Panels" on page 92** & **"Contribution on Monitor Panels" on page 100.**
- **User Controls**: See **"Custom Controls - Monitor panels" on page 238**

The Monitor panel is arranged into 4 areas as highlighted and described below:-

Area 1 on the panel in Fig 1, provides access to various monitor systems source selection as described in the earlier part of this section of the manual.

The following outputs are shown and have the same labels as those on the on the Wild Assign panel and the Touchscreen:-

Control Room Monitors
CR 1 Monitor 1 is the main monitor loudspeaker set in the control room.
CR 2 Monitor 2 is the alternative monitor loudspeaker set in the control room.

Miscellaneous Monitors
Misc Monitors 1-4 are general monitor outputs which can be used for a variety of purposes such as headphone outputs.

FIG 1 - FAVOURITE SOURCES - CR MONITOR 1 ON MONITOR PANEL

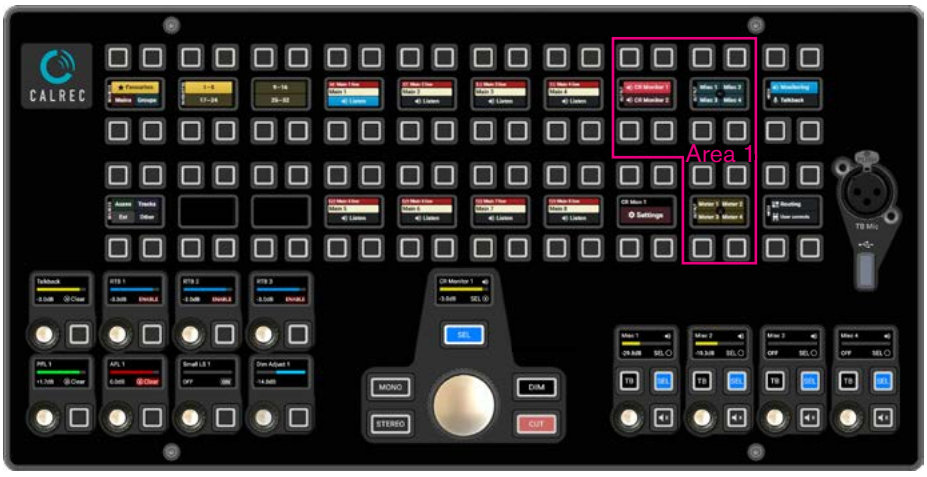


FIG 2 - MAIN OUTPUT SOURCES - CR MONITOR 1 ON MONITOR PANEL

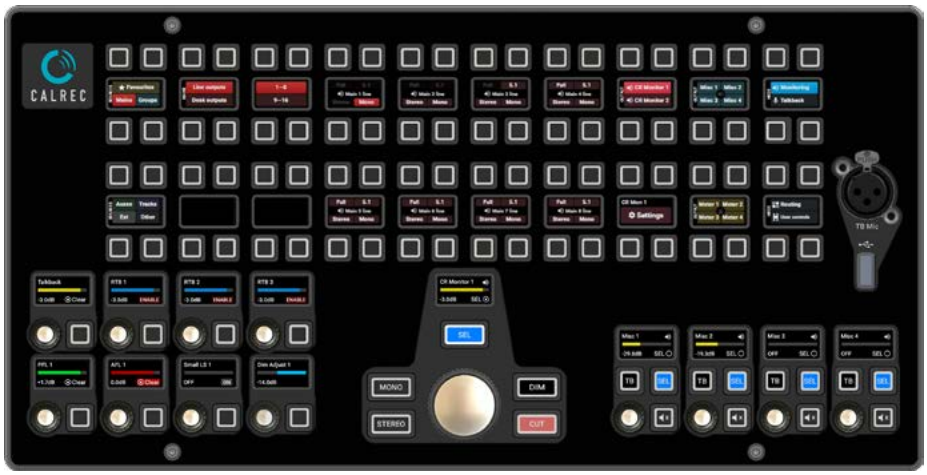


FIG 3 - GROUP BUS SOURCES - CR MONITOR 1 ON MONITOR PANEL

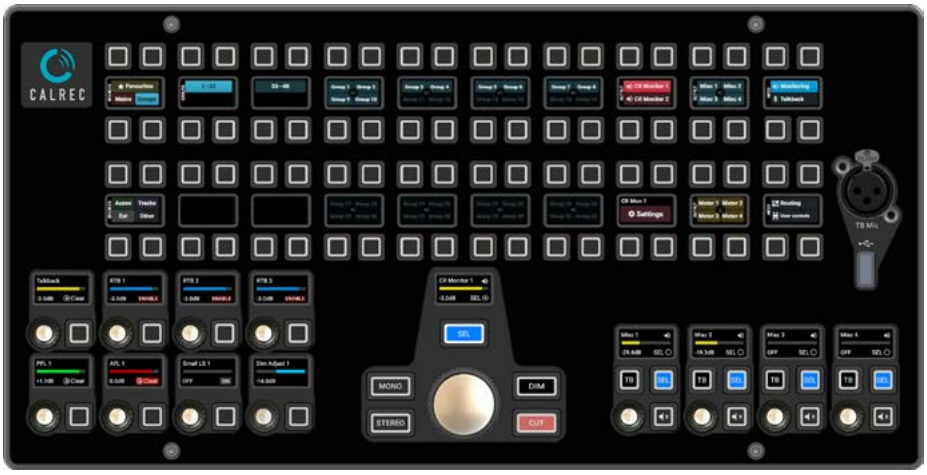


Fig 1 shows that the favourites source type is selected and up to 32 favourites, arranged in 4 pages of 8 sources can be listened to. For example CR Monitor 1 is listening to Favourite source 1 which is 'Main 1 Line' as indicated by the highlighted **'Listen'** bar and shown as the CR1 currently active source in Area 1's leftmost cell.

User Meters

Meters 1-4 allows the user selects sources to be shown on the four user meters which can be output externally.

Note: The RTB/TB controls are always made available on this panel even though they are generally shown as part of Area 4 as described later in this section.

Area 2 on the panel provides access to various monitor outputs as described in the earlier part of this manual section.

The following controls are available for both CR Monitor 1 & CR Monitor 2 from the centre of the Monitor panel:-

Small LS Level: With the Small LS active this provides control over the level of the secondary speakers between 'off' & 0dB.

Small LS On: When tapped this switches the monitoring over from the Monitor 1 or Monitor 2 loudspeakers to a secondary set of loudspeaker, usually to hear how the programme sounds on a small set of domestic speakers .

Dim Adjust Level: Alters how much the dim button changes the monitor level between -30dB & 0dB.

Stereo & Mono Listen modes: These allow the operator to listen to the selected source at various widths and is shown at the bottom of Area 2 for the selected CR Monitor system from Area 1 whose width is defined in **System Settings>Monitor Widths.**

Monitor Level: Controls the level of the CR monitor outputs between 'off' & 0dB.

SEL button: This allows access to the chosen monitors' Source selection. The currently active **SEL** button is indicated by being illuminate and also in the display with a filled circle or an empty circle when not the active **SEL**.

Note: Toggling the **SEL** button on the currently selected Control Room Monitor output switches it's display to show the Current source and its User label as shown and highlighted in Fig 6 for the CR Monitor 1 SEL.

FIG 4 - AUX OUTPUT SOURCES - CR MONITOR 1 ON MONITOR PANEL

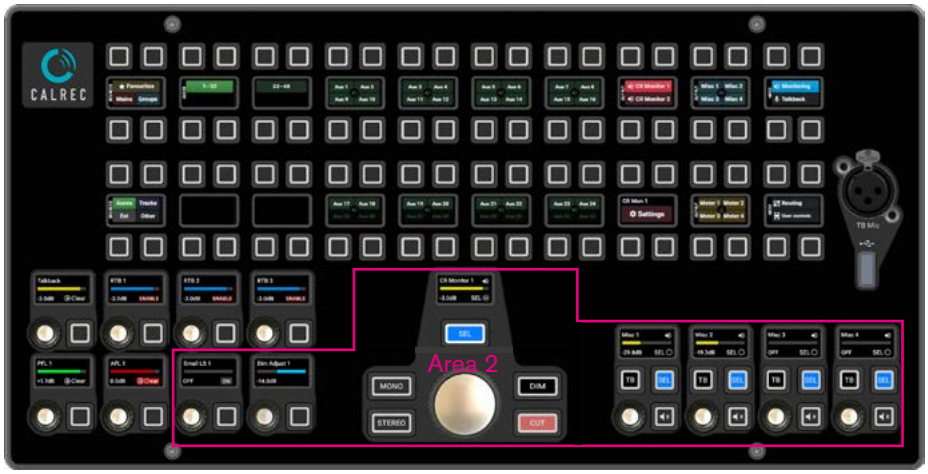


FIG 5 - TRACK OUTPUT SOURCES - CR MONITOR 1 ON MONITOR PANEL

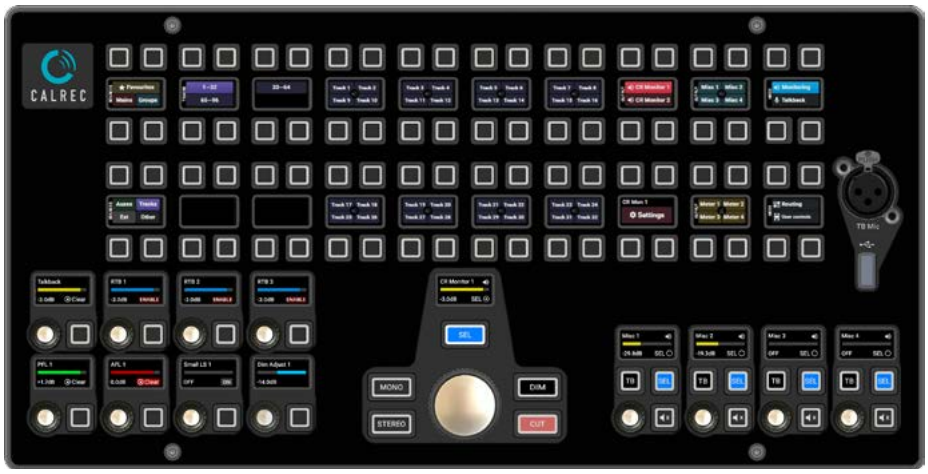
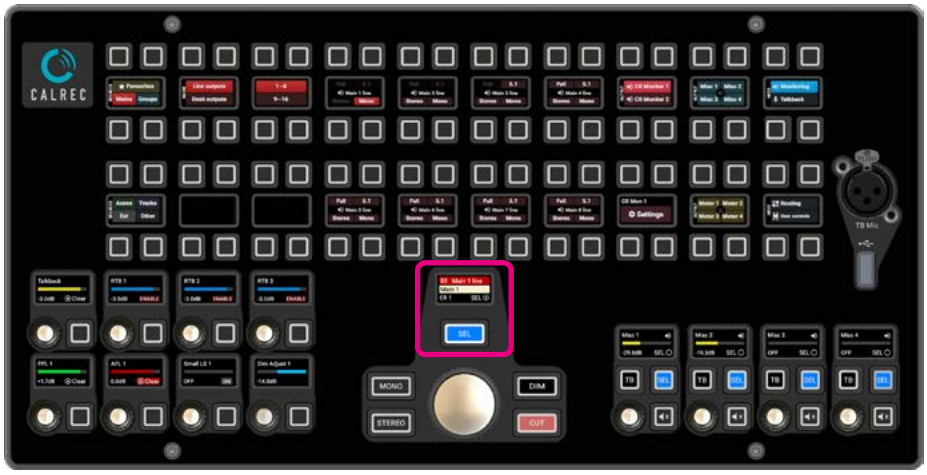


FIG 6 - CR MONITOR 1 - SEL BUTTON SHOWING SOURCE AND USER LABEL



Misc Monitors 1-4: are controlled from the 4 x (Rotary & 3 Button cells) on the lower right of the panel, each of these cells contains the **Misc Monitor Level**, **Mute** button which can be set from the User Controls to be either a Cut or Dim, **Talkback** button to allow the user to talk to any of the Misc Mon outputs and a **SEL** button, which allows access to the chosen Misc Monitors' Source selection. **Cut and Dim buttons**: Cuts or dims the monitor output.

Area 3 on the panel provides access to all the available sources. The area is arranged with the 7 source type cells on the left including the favourites, up to 32 selections in 2 rows of 8 x 4 button cells for individual source selection from the source type and a set of 3 cells to select up to 6 pages of 32 sources.

Note : Figs 2, 3, 4, 5, 7, & 8 are each displaying a different single source type for Mains, Groups, Auxes, Tracks, External Inputs & Other sources.

Area 4 on the panel provides access to the monitor options when selected by pressing the settings button for the selected monitor system middle right of the Monitor panel.

Listening:- upper middle row of Area 4
Monitor Insert: Switches in the monitor insert which is typically connected to an encoder/decoder for reference listening.

Leg monitoring options: Disable LFE, Polarity Invert Right which reverses the polarity of the right speaker signal, Both to Left, Left to Both, Right to Both, and Phantom Centre which routes centre monitor feed to left & right speakers.

Note: For more detail on these options see **"Leg monitoring option details" on page 173.**

Listen modes: These allow the operator to listen to the selected source at various widths. This in turn is based on the monitor width which is shown in the selected Monitor system in Area 1 whose width is defined in **System Settings>Monitor Widths.**

Note: For more detail on these options see **"Listen modes" on page 173.**

Solo legs:- middle of top row of Area 4 in Fig 9. As shown on the left side of the area, each leg of the monitor has its own Solo button. Tapping any of these, 'Solos' that monitor output leg, so each leg can be auditioned individually or in combination.

FIG 7 - EXTERNAL INPUT SOURCES - CR MONITOR 1 ON MONITOR PANEL

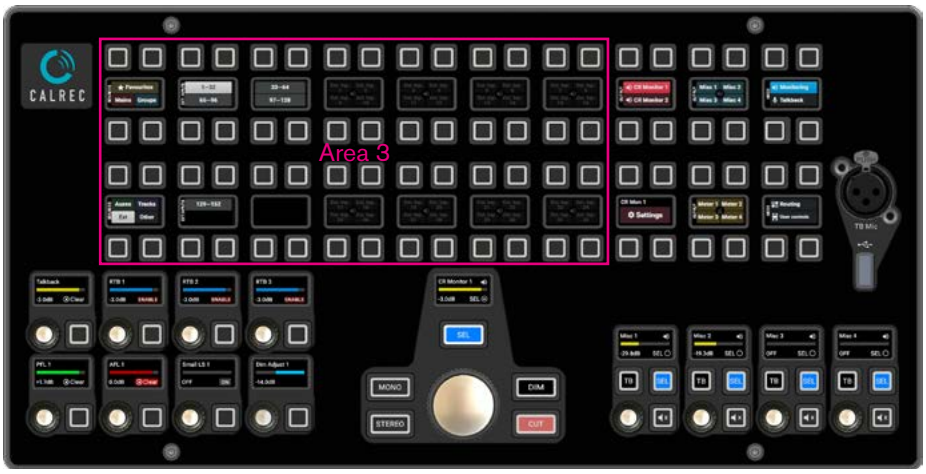


FIG 8 - OTHER SOURCES - CR MONITOR 1 ON MONITOR PANEL

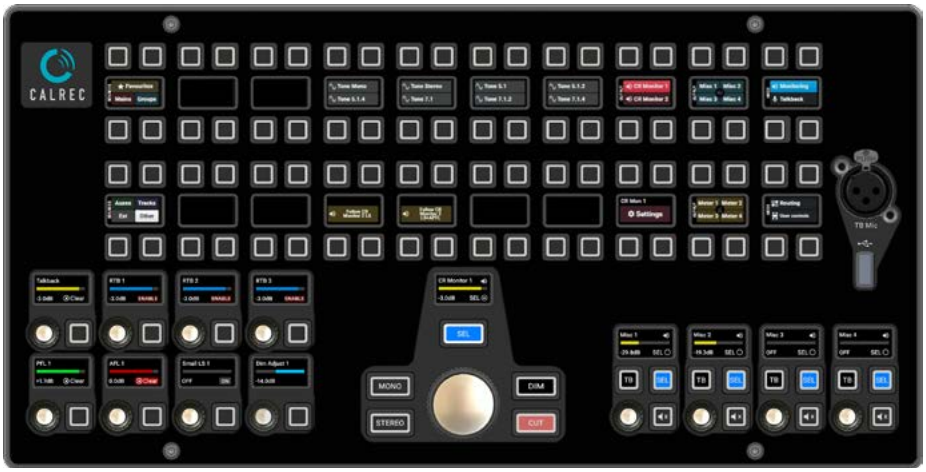
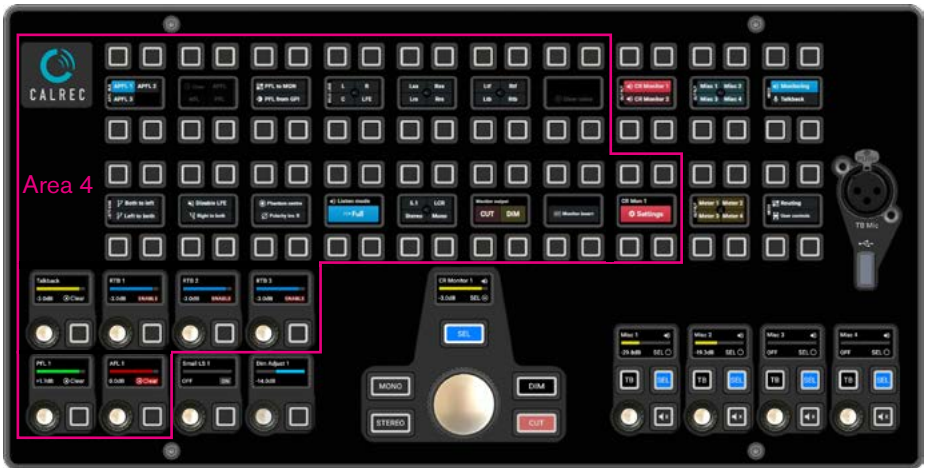


FIG 9 - CR MONITOR 1 SETTINGS - CR MONITOR 1 ON MONITOR PANEL



A **'Clear solos'** button is provided right of the solo legs for quick solo deselection.

Note: the number of solo legs available depends on the width of the monitor and the listening mode used.

APFL:- left of top row of Area 4
APFL bus select: When tapped this lets the user select the required APFL Bus to monitor with.

PFL to Mon: When tapped this sends the PFL signal to the console monitor rather than to a dedicated PFL speaker.

Miscellaneous functions:
Clear APFL, Clear AFL or Clear PFL also a PFL from GPI enable button.

AFL/PFL:- left of bottom row of Area 4
PFL System Level: Adjusts the PFL monitor level between 'off' & 10dB.

AFL System Level: Adjusts the AFL monitor level between 'off' & 10dB.

Return Talkback 1-3 & Talkback:- lower middle row of Area 4
Return Talkback Levels 1-3 & Enables: 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 in a range between 'off' & 0dB.

Talkback level: The level of the talkback may be adjusted using the TB control in a range between 'off' & 0dB.

Note: the layout of CR Monitor 2 (CR2) has exactly the same as the layout for CR Monitor 1 and the settings button then accesses the CR2 monitor settings.

Misc Monitor Controls:- Fig 10 shows the monitoring Sources for Misc Monitor 1 which is one of Misc Monitors available.

Areas 1 & 3 still apply to Misc Monitors in that Area 1 still selects the Monitor System to be controlled and Area 3 provides the full set of Sources to be selected in exactly the same way as for the Control Room Monitors.

FIG 10 - FAVOURITE SOURCES - MISC MONITOR 1 ON MONITOR PANEL

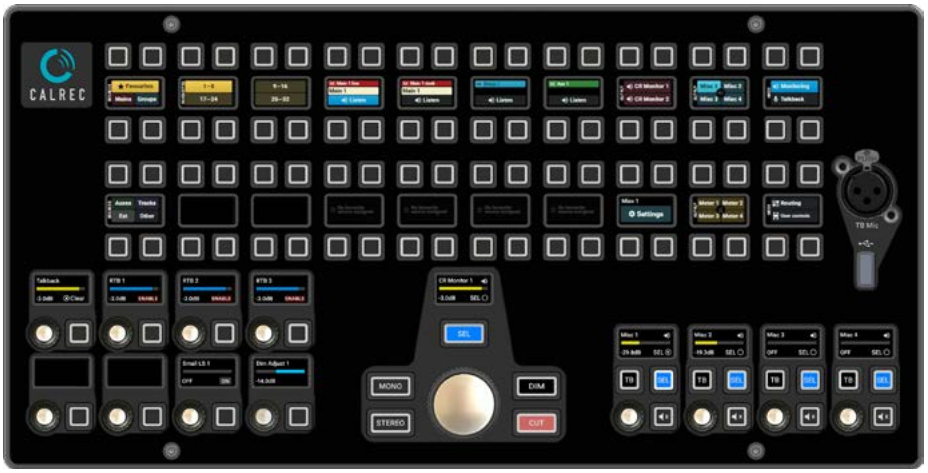
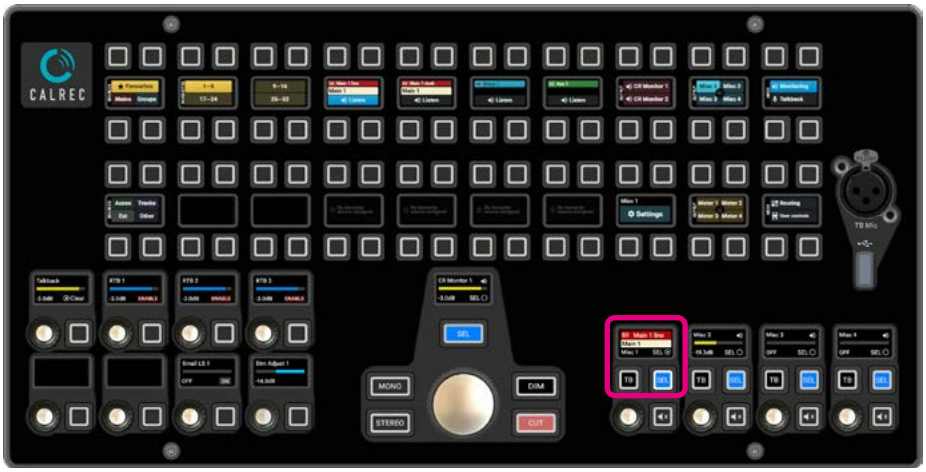


FIG 11 - MISC MONITOR 1 - SEL BUTTON SHOWING SOURCE AND USER LABEL



Area 2 as described earlier still offers the **Misc Monitor Level** & **Mute** button, the **SEL** buttons which allows access to the chosen Misc Monitor for Source selection, and provides a **Talkback** button to Misc Monitor for each of the 4 Misc Monitors.

Note: Toggling the **SEL** button on the currently selected Misc Monitor output switches it's display to show the Current source and its User label as shown and highlighted in Fig 11 for the Misc Monitor 1 SEL.

Misc Monitor Settings:- Fig 12 shows the Monitoring Settings page for Misc Monitor 1 and is accessed by pressing the settings button for the selected monitor system middle right of the Monitor panel. Area 4 still applies to Misc Monitors in that it provides the following: Leg monitoring, Listen Modes, Monitor output CUT/DIM selection and Talkback options for each of the 4 Misc Monitors.

Leg monitoring options: Disable LFE, Polarity Invert Right which reverses the polarity of the right speaker signal, Both to Left, Left to Both, Right to Both, and Phantom Centre which routes centre monitor feed to left & right speakers. For more detail see **"Leg monitoring option details" on page 173.**

Listen modes: These allow the operator to listen to the selected source at various widths. This in turn is based on the monitor width, which is shown in the selected Monitor system whose width is defined in **System Settings>Monitor Widths.**

Note: For more detail on these options see **"Listen modes" on page 173.**

Monitor Output CUT & DIM: These buttons allow the operator to Cut or Dim the current Monitor system or switch between Cut & Dim rather than Cut and On, from the settings page.

Talkback: A button is provided to talkback to the currently selected Misc Monitor.

Meters 1-4:- Fig 13 shows the Sources for User Meter 1 which is one of four User Meters available.

Areas 1 & 3 still apply to User Meters in that Area 1 still selects the Monitor System to be controlled and Area 3 provides the full set of Sources to be selected in exactly the same way as for the Control Room Monitors.

FIG 12 - MISC MONITOR 1 SETTINGS - MISC MONITOR 1 ON MONITOR PANEL

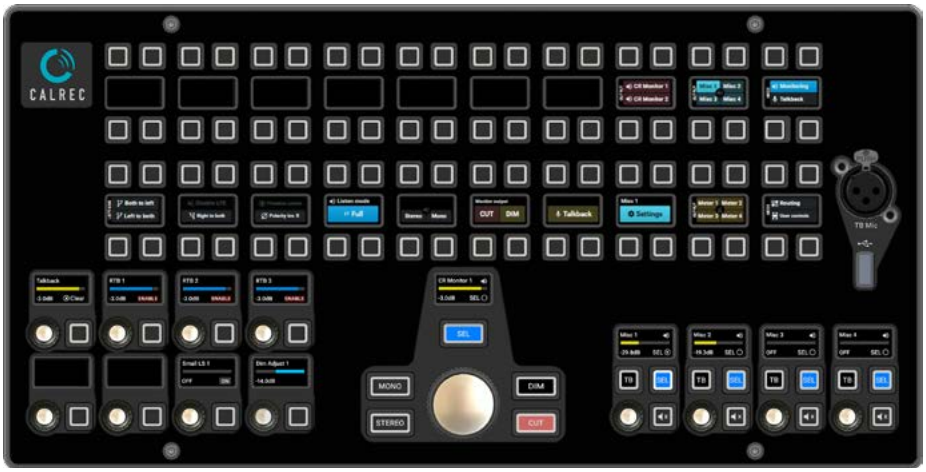
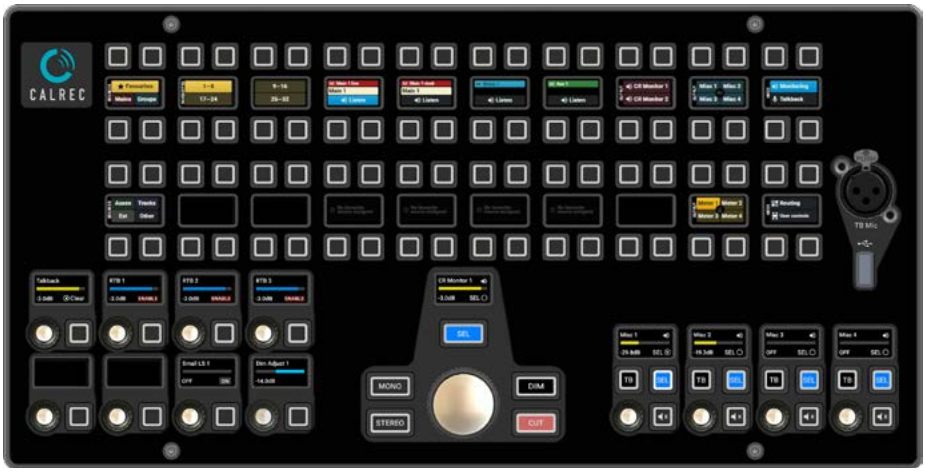


FIG 13 - FAVOURITE SOURCES - METER 1 ON MONITOR PANEL



AFL, PFL AND OUTPUT LISTENING

Argo consoles have a comprehensive multi-user AFL, PFL and Output Listen system.

AFL

Selecting an AFL - 'After Fader Listen', replaces the output of the control room monitor with the post fader audio of the path being AFL'd. AFL provides a 'non-destructive solo'. Only the control room monitor output is affected, no paths are cut, and mixes to all other buses and outputs are unaffected, allowing users to quality-check selected paths whilst maintaining all mixes.

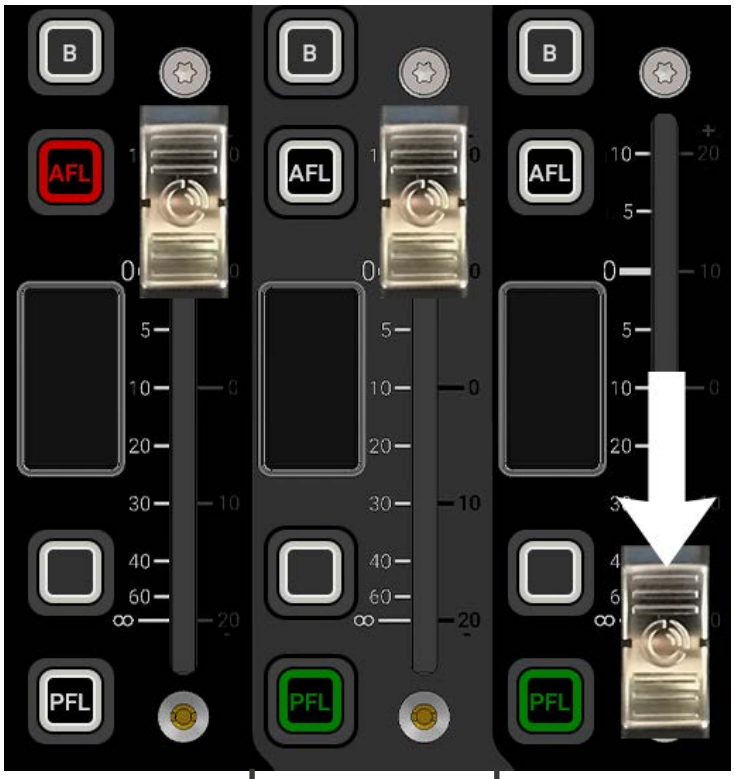
Whilst in AFL mode, the control room monitor selection display will indicate as AFL. When all AFLs are switched off, or globally cancelled, the monitoring will revert to outputting its previously selected source.

PFL & RTB

Selecting a PFL - 'Pre Fader Listen' sends the associated feed, by default, to a dedicated PFL/RTB LS output (RTB is 'Reverse Talkback' which allows for signals to be mixed with PFL for listening on the PFL/RTB output e.g for use with producer/director hot-mics).

Multiple paths can be PFL'd or AFL'd at the same time, creating a summed mix of pre or post fader path solos.

FIG 1 - FADER AFL & PFL BUTTONS - LATCHING & MOMENTARY



Latching or Momentary AFL using the AFL button.

Latching or Momentary PFL using the PFL button.

Overpress PFL pushes the fader lower than the normal backstop to activate PFL

Output Listen (OPL)

Mains, Tracks, Auxes and Direct Outputs all have an OUTPUT LISTEN (OPL) option. Like AFL, this provides a non-destructive solo, but output listen takes the feed after the addition of output delay, directly before the feed leaves the console.

Access from faders

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

By default, PFL is automatically cancelled when a fader is opened e.g if a fader is in the OFF position whilst PFL is activated, PFL will deactivate when the fader reaches -90dB.

This feature can be disabled by turning off the **'Opening a fader cancels its latched PFL'** in the **Show setup> Control preferences** page.

A further latched PFL cancelling option is available which automatically cancelled when a fader is uncut.

This feature can be enabled by turning on the **'Uncutting a fader cancels its latched PFL'** in the **Show setup> Control preferences** page.

Also by default, PFL is activated using the fader overpress feature: Move the fader down to its lowest position, then push it down past the normal backstop position and PFL activates for that fader, see Fig 1.

This is a momentary setting so as soon as you release the fader, PFL is deactivated.

This feature can be disabled by turning off the 'PFL on Fader backstop' option in the **Show setup>Control preferences** page.

Access AFL in Contribution Mode

When in Contribution mode any Auxiliary, Track or Group bus can be AFL'd by switching ON on the AFL Selected Aux, Track and/or Group slider and pressing the required Bus on the screen. Note that when another bus is selected the previous bus AFL is turned off. When used in conjunction with the 'AUX SEND LEVELS' option the user can listen to the bus whilst adjusting the levels being sent to it. See **"Contribution Mode" on page 93** for details.

Access bus AFL, PFL and OPL
If buses are assigned to faders then the AFL & PFL buttons can be used, if not the panels can be put into Buses mode which allows any bus to be brought into focus on the Touchscreen by selecting the bus type and then the required bus.

Once a bus is in focus options appear in the Touchscreen for activating PFL and AFL (or OutPut Listen when applicable), these controls are highlighted in Fig 2.

Cancel AFL and PFL
When any AFL, PFL or OPL is active, the APFL indicator on the Touchscreen Header, Monitor panel and Wild assign panel in monitor mode illuminates.

Press this button to cancel all AFLs, PFLs and OPLs that are currently active. This is also shown in Fig 2 in the header section.

Note: this APFL cancel button is always available on the Touchscreen.

Move PFL within signal chain
PFL can be selected to output from various points within a path's signal flow see Fig 3.

This is actioned in the Meter and PFL path positions dialogue box at the bottom right of the Touchscreen and allows the user to select where the Metering or PFL point in the selected audio path is taken from.

The '**Meter & PFL**' button located in the bottom right of the screen accesses the dialogue box shown in Fig 4.

PFL Source
The PFL pick off point can be taken from :
- Input (at the start of path processing)
- Pre EQ
- Post EQ
- Pre Fader

As shown in Fig 3.

Note: this selection only applies to the currently selected path.

Optionally there is an **'Apply to all paths in user area'** button at the bottom of the PFL source list if this is to be applied globally.

FIG 2 - ACCESS TO PFL, AFL AND OUTPUT LISTEN FOR AUX BUSES

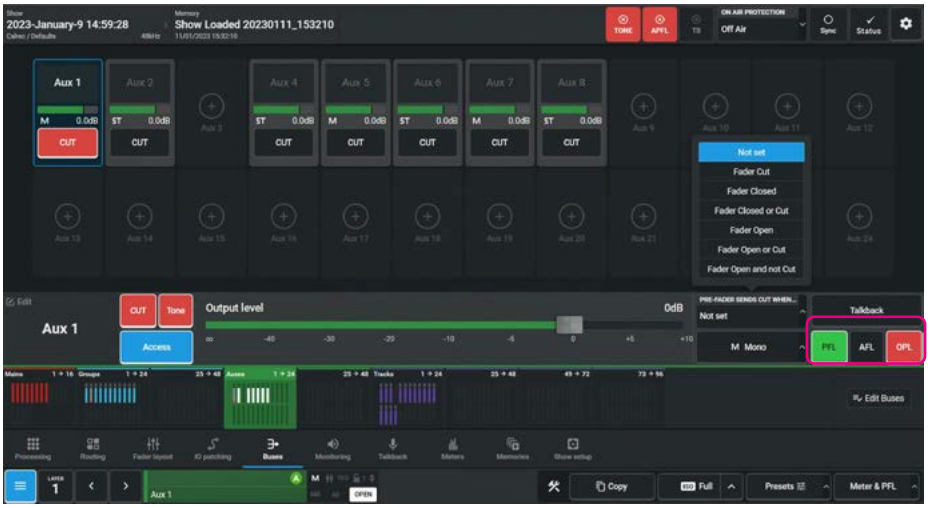


FIG 3 - PFL OPTIONS WITHIN PATH SIGNAL FLOW

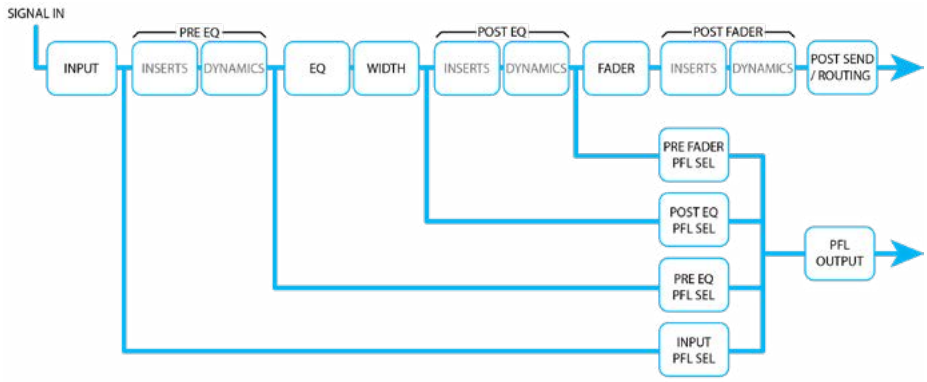
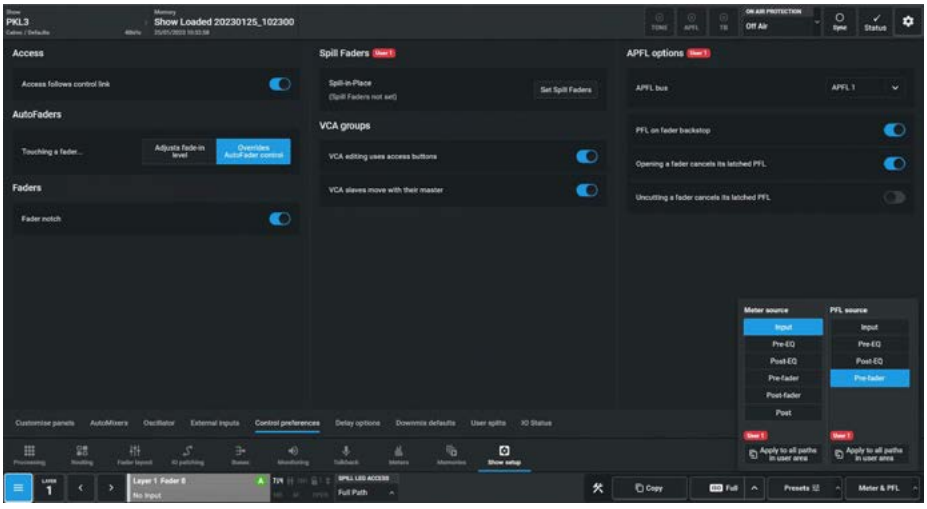


FIG 4 - ACCESS TO PFL PATH POSITIONS



Send PFL to the small LS
The system can be configured to route PFL signals to the small loudspeakers for both Control Room Monitor 1 & 2.

The PFL then overrides any other signal presently going to it.
This is set in **System settings >General settings>APFL settings.**

Patch AFL, PFL and APFL buses
As well as injecting into the main monitors, AFL, PFL and APFL systems are also available to patch to output ports. APFL systems are available in monitor source lists, post their level controls and in meter lists, pre their level controls.

Patch AFL/PFL to external monitors
Navigate to the **IO Patching** screen and touch the 'Select Source' button then 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 'Connect' button, see Fig 5.

Note: that if a path is moved to another fader on the surface or to another user split, the path's AFL or PFL status will move along with the path, feeding the APFL system that has been set for that user split.

Headphone Connections

Headphone jacks can be located in the control surface chassis,

The quantity and location of headphone jacks can vary depending on the chassis build ordered.

Please note that in order to use the headphone jacks, balanced analogue audio needs to be fed to the control surface.

This would normally be fed from an analogue output port in an AoIP device, such as the Combo AoIP I/O modules in the rear of the console allowing the headphone feed to be selected from the control surface.

Please consult with your installation engineer if unsure of connectivity.

FIG 5 - PATCHING AFL/PFL OUTPUTS TO AOIP TX TRANSMITTERS JUST CONNECTED TO EXTERNAL MONITORS 5.1 - AFL1 / STEREO - PFL1/RTB

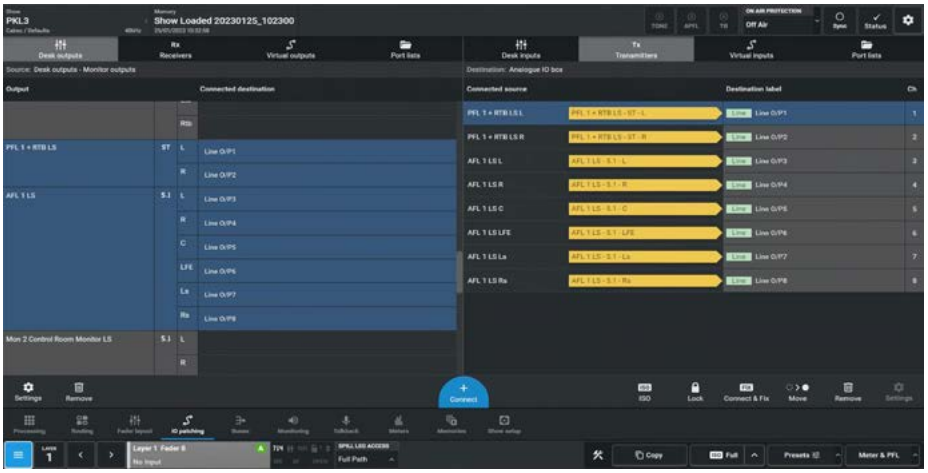
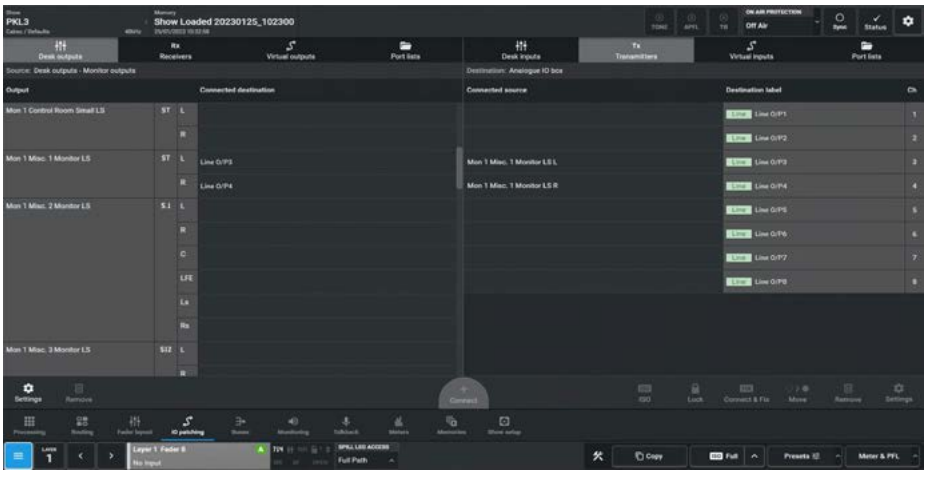


FIG 6 - PATCHING MISC MONITOR 1 OUTPUTS TO 2 AOIP TRANSMITTERS FOR CONNECTION TO A STEREO HEADPHONE CONNECTION POINT



Patching the headphone output
Navigate to the **IO Patching** screen and touch the 'Select Source' button then select 'Monitor Outputs' from the popup that appears as shown in Fig 6.

From the list select any monitor output you wish to drive the headphones.

In this case the Misc Mon 1 outputs have been set to be a stereo loudspeaker output for a pair of headphones.

In the right hand list, select the output transmitters that the headphone jack has been wired to and click 'Connect & Fix'.

ARGO
TALKBACK

CALREC

TALKBACK

Argo offers extensive Talkback facilities which can select the various destinations to talk to from the operator position. The destinations can be individually talked to or a number of Talkback Sets can be created which allows the operator to talk to a group of destinations which can be configured at any time. The Talkback pages appear on the Touchscreen, Wild Assign panel and the dedicated monitor panel when set to Talkback mode. It should be noted that the Monitor panel works independently from the Talkback mode on the console to provide continuous access to the talkback destinations if required. The Talkback mode when accessed by the Touchscreen & the Wild Assign panel in combination offers both touch and physical control of all the talkback functions.

The Talkback mode is accessed from either the Modes row of a fader panel, by first tapping on the Modes Menu and then the user presses the Talkback button as shown in Fig 1, or by tapping on the appropriate icon on the touchscreen as shown in Fig 2. The surface displays/controls the relevant information on both the touchscreen, and the Wild Assign panel shown immediately below.

Distributed Talkback

On each of the bus output pages and the 4 misc monitor outputs there is a momentary Talkback button. In the header area there is a TB indicator/button to show that there is an active Talkback somewhere.

Note: Talkback buttons are always yellow when active and not the matching function colour, this is to help identify them when active.

In addition to talking back to Mains, Groups, Auxes, Tracks, Direct Outputs & Mix Minus Outputs via Direct Outputs, using the Talkback buttons on those pages, the Misc Mons 1-4 can also have talkback applied.

The Talkback mode allows the user to talk to destinations individually or in a group of selected destinations.

Note: the exception to this is talkback to direct outputs which are channel & group based rather than global and as such are accessed on that basis.

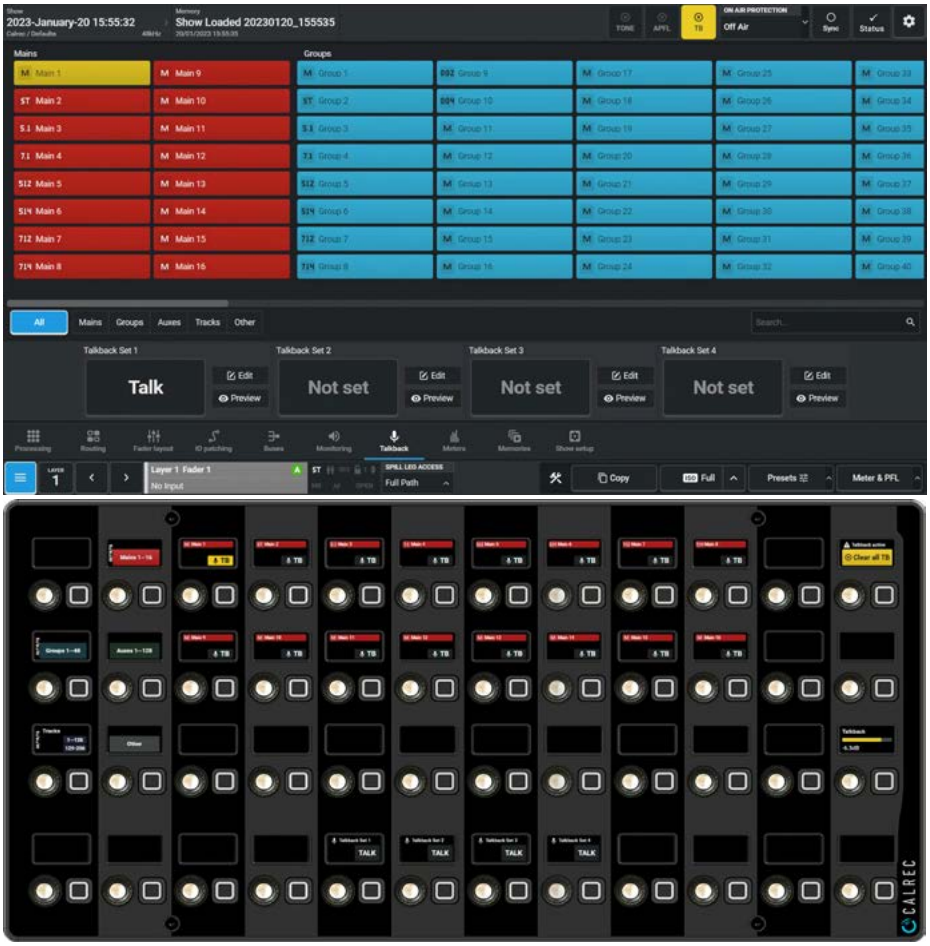
Global Talkback Page

After selecting **Talkback** from the Menu, the image in Fig 2 appears. When an individual talkback destination in this case Main 1 is selected either from the touchscreen or the wild assign panel.

This allows the user to pick any individual Main, Group, Aux, Track or one of the four Misc Monitors to be talked to from the console from this one screen, rather than in a distributed arrangement.

FIG 1 -TALKBACK MODE SELECT ON STANDARD FADER PANEL

FIG 2 -TALKBACK SCREEN ON TOUCHSCREEN & WILD ASSIGN PANEL



Talkback Sets

Argo provides four talkback sets to be created and selected from. A talkback set allows the user to talk to multiple destinations with a single button press.

To the right of each talkback button is the '**Edit**' button, as shown in Fig 3 which is used to select the destinations to be included in the Talkback Sets and under that is a '**Preview**' button as shown in Fig 4 which when selected shows the list of destinations currently in the set. Above the 4 Talkback button Sets is shown a list of all the destinations that the user can Talkback to.

In order to create "Talkback Sets" and to add/remove destinations to/from a talkback set, the user first presses the appropriate **'Edit'** button and deselects the '**Preview**' button for the selected Talkback set so they can see all the destinations or a filtered subset of the destinations list, at which point 'tick boxes' appear next to each destination button as shown.

The selected TB Destinations shown can be toggled on and off from the list to make up the set as required.

Each destination is tagged with the Talkback Set number 1 thru 4 and the destination can appear in multiple sets as required. Once a TB entry is added to the talkback set, its label changes from '**Not set**' to '**Talk**'

Once the selection is complete the user can then press the **'Edit'** button again to deselect it. The user can then select the **'Preview'** button to look at only what is included in each Talkback set as shown in Fig 4.

The user then simply uses the bigger **'Talk'** buttons to Talkback Set 1, 2, 3 or 4 to talk to the selected set as shown in Fig 5. The user can still talk to one of the destinations in the set by holding down the individual destination instead.

Note: a destination can appear in more than 1 Talkback set as shown in Fig 5.

FIG 3 - TALKBACK SET 1 - SELECTING DESTINATIONS

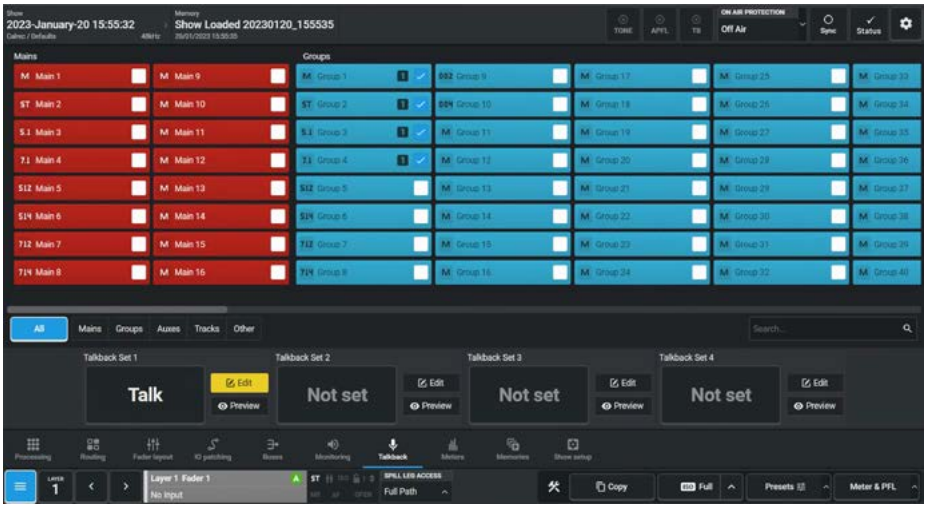


FIG 4 TALKBACK SET 1 - PREVIEWING DESTINATIONS

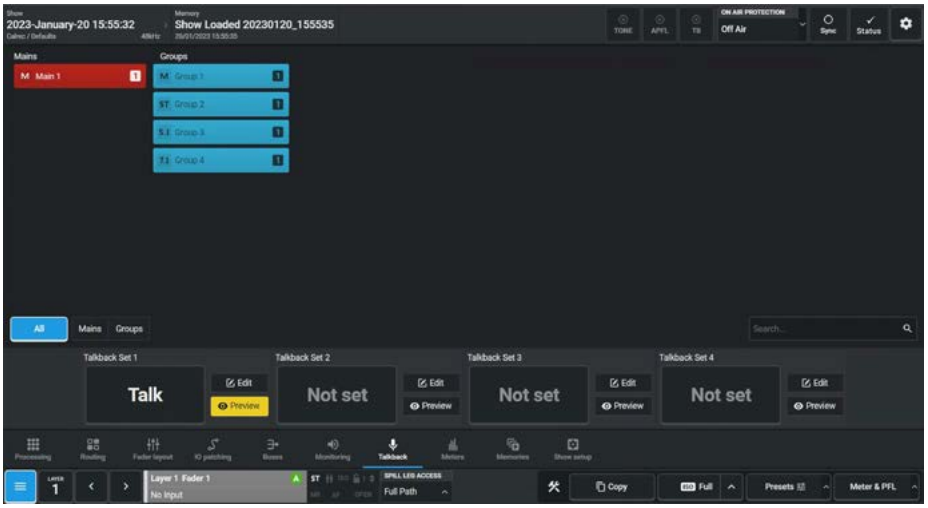
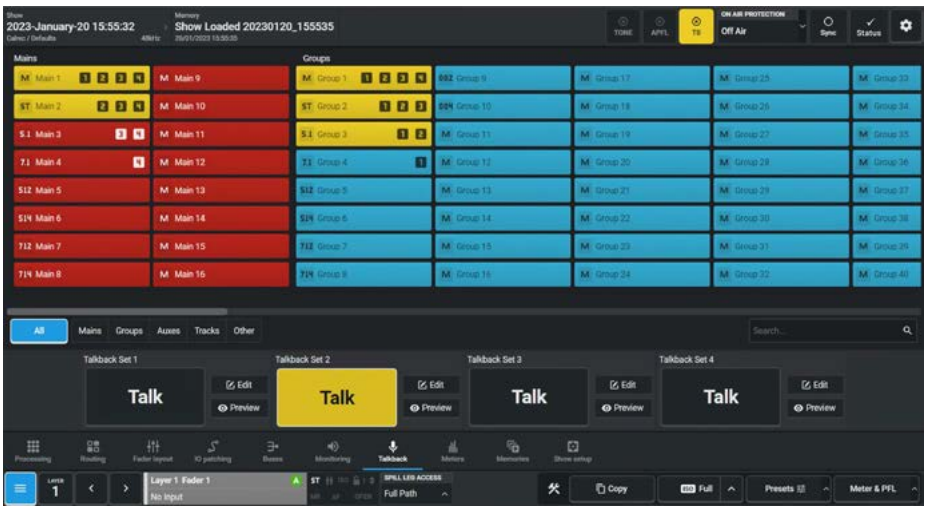


FIG 5 - TALKBACK SET 2 - TALKING TO DESTINATIONS IN SET



If no selection is made for a particular **'Talk'** buttons to Talkback Set 1, 2, 3 or 4 it is greyed out. When none of the Selector for TB Set buttons or Talk to Talkback Set buttons are active the Select Talkback destination list at the top of the page will, when pressed function act as individual talkback buttons.

There is a search box at the bottom right of the destinations list to allow the user to quickly find system labels such as "Aux 1" or user labels such as "IFB 1". This is especially useful when trying to find a particular path using its label.

The image in Fig 6 shows that the user was selecting destinations for Talkback set 4 but needed to talk Talkback set 1. The **'Talk'** buttons are always available even whilst the set is being edited.

Note: if the Argo is in On-Air mode then talkback to the Main Outputs is prevented, this includes any Main Outputs that have been added to the Talkback Sets.

Talkback on Wild Assign panels

The image in Fig 7 shows the Wild Assign panel showing Auxes at the same time as Fig 6 above. The Groups (not shown) and the Tracks shown in Fig 8 are arranged in the same pattern. However the Tracks page also has a Talk to all Tracks button also known as TB OMNI.

Note: the '**OTHER**' button shown in the destination types area provides access to Misc Monitor 1-4's Talkback buttons.

The layout is very similar to the Monitoring on the Wild Assign panel in that the Destination selection types are in the left 2 columns, 16 destinations of the selected type are shown in the middle of the top 2 rows and the 3rd row shows the various pages of destinations. Also shown on the 4th row are the 4 Talkback set buttons which are available when configured and showing the word **TALK.**

In the right hand column is shown the 'Clear all TB' which acts in the same way as the clear TB button in the Touchscreen header.

FIG 6 - TALKBACK SETS 1 & 4 - TALKING TO SET 1 WHILST EDITING SET 4

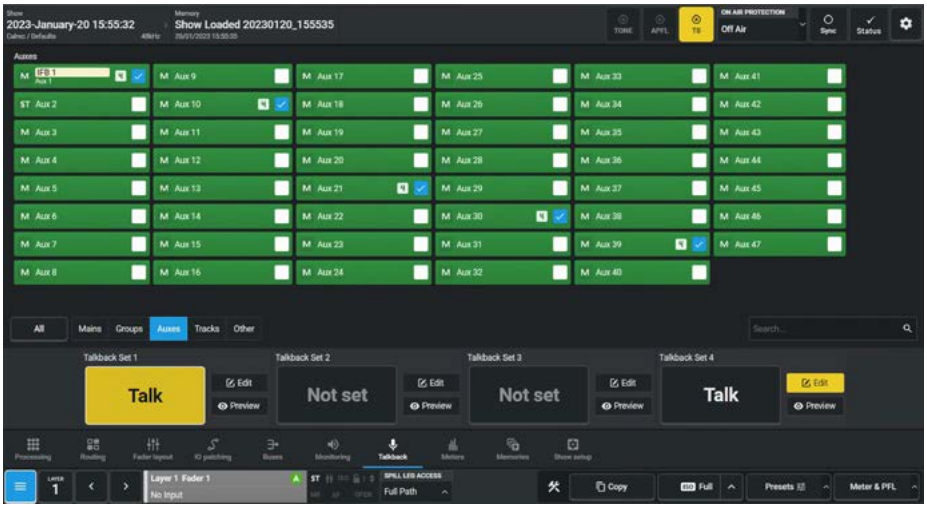


FIG 7 - TALKBACK OFF AUXES SELECTION 1-48 ON WILD ASSIGN PANEL

FIG 8 - TALKBACK ON TRACKS SELECTION 1-96 ON WILD ASSIGN PANEL

Below this is shown the Talkback level control for the Talkback mic used to talk to the various destinations which needs to be patched into the TB Mic Input.

Note: the 'Talkback Mic is connected to the XLR on the Monitor panel which in turn is wired to a mic input port on an AoIP box in the back of the console

Talkback on Monitor Panels

The dedicated monitor panel can also be put into Talkback mode and it should be noted that it works independently from the Talkback mode on the Touchscreen and Wild Assign combination to provide continuous access to the talkback destinations if required.

The image in Fig 9 shows that the Monitor panel selected to show Talkback to Mains and up to 16 Main destinations are individually accessible from here. As can be seen from the image Main 1 is being talked to.

Fig 10 shows the Monitor panel selected to show Talkback to Groups and Misc Mon 1. Up to 48 Group destinations are individually accessible from here and arranged in sets of 32. As can be seen from the image Groups 1, 4, 6 and Misc Mon 1 are being talked to at the same time. This has been made possible by putting the appropriate destinations in Set 1 which is also lit.

Fig 11 shows the Monitor panel selected to show Talkback to Tracks and up to 96 Track destinations are individually accessible from here and arranged in sets of 32. As can be seen from the image all the Tracks are being talked to at the same time. This has been made possible by pressing the Talk to all Tracks button also known as TB OMNI.

The layout for Talkback is very similar to the Monitoring Sources on the Monitor panel in that the Destination selection types are in the 2nd column, 32 destinations of the selected type are shown in the middle of the top 2 rows and the 3rd & 4th column of the top row shows the various pages of destinations.

Also shown in columns 9 & 10 are the 4 Talkback set buttons on the top row and a copy of the 4 Talk to Misc Mons buttons on the 2nd row.

In column 2 on the 2nd row is shown the 'Clear all TB' which acts in the same way as the clear TB button in the Touchscreen header.

FIG 9 - TALKBACK MODE ON MONITOR PANEL FOR MAINS

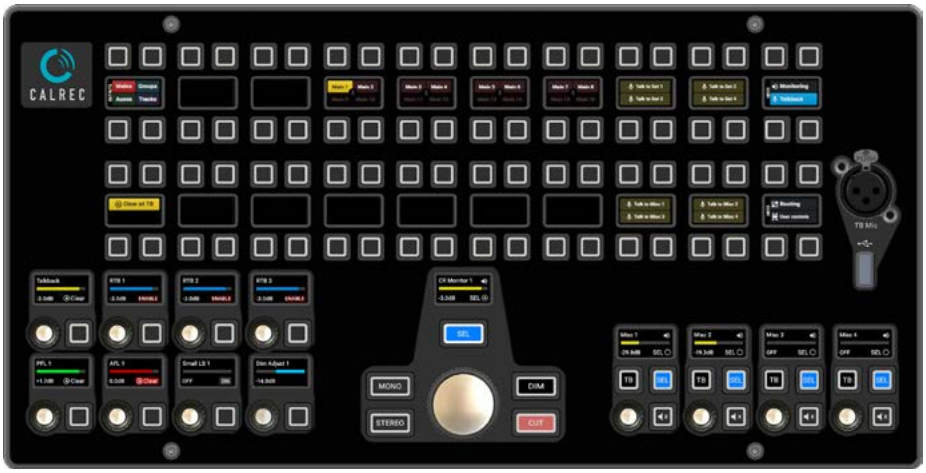


FIG 10 - TALKBACK MODE SET 1 ON MONITOR PANEL FOR GROUPS & MISC MON 1

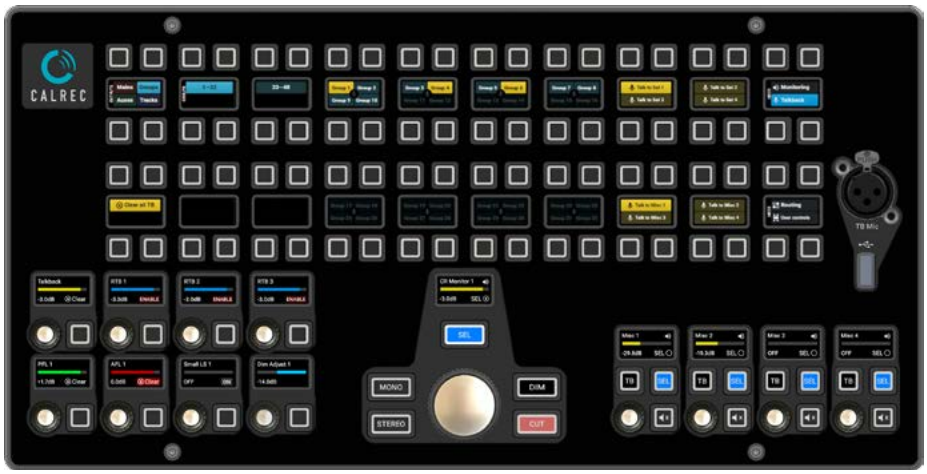
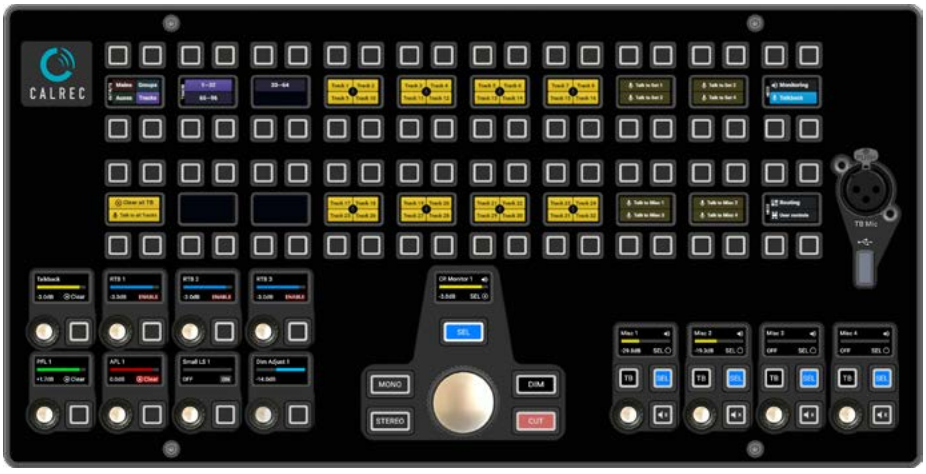


FIG 11 - TALKBACK MODE ON MONITOR PANEL FOR TRACKS IN TALKBACK OMNI



Talkback levels

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

Patching talkback/reverse talkback inputs

Navigate to **IO Patching** see Fig 12. The physical input receivers which will feed the talkback, i.e. the receiver to which the talkback microphone is patched to is shown as the Connected source on the right side of the page, as are the reverse talkback inputs.

These are shown unpatched in the image but could be microphones or other inputs in other areas of the facility.

With an input receiver selected, select the desired talkback input from the list on the right then touch the **'Connect & Fix'** button.

Physically the talkback microphone is connected to the TB Mic input XLR on the dedicated monitor panel which can be wired out to a mic input on an AoIP box fitted in the rear of the console.

Consult the studio technician 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 for analogue inputs, or SRC applied for AES3 inputs by checking the relevant box.

To adjust the mic gain, touch the relevant 'Analogue Gain' popup in the Gain column to bring up a dialogue for selection of the desired gain see Fig 12.

Monitoring talkback/reverse talkback signals

To monitor talkback and reverse talkback inputs, the TB & RTB buses can be patched to output transmitters where loudspeakers are connected.

FIG 12 - TALKBACK INPUT PATCHING WITH MIC GAIN

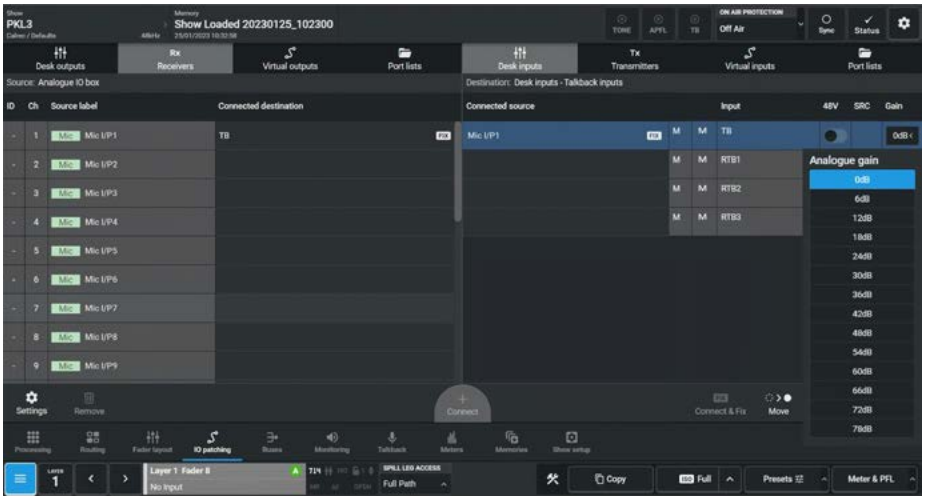
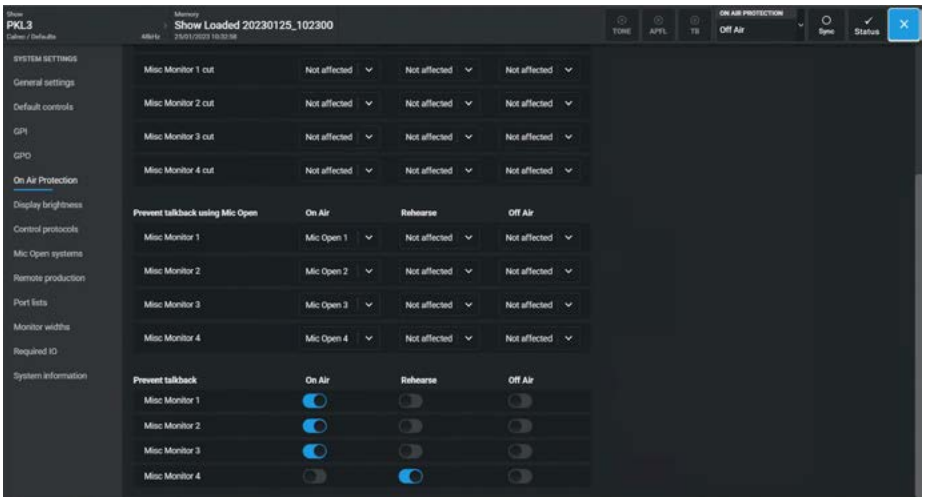


FIG 13 - TALKBACK INHIBIT SETTINGS FOR ON AIR PROTECTION



Inhibiting Talkback

For control over whether or not talkback is routed to a loudspeaker using the 4 misc monitor outputs. The user can choose to permanently inhibit talkback to a Misc Monitor output or set inhibit to be activated when one of the Mic open systems becomes active.

These settings can be configured separately for when the console is in On Air, Rehearse or Neither mode, see Fig 13.

To access these go to **System Settings >On-Air Protection**

ARGO
METERING

CALREC

METERS EDIT & VIEW

Argo offers extensive Metering facilities which can layout and display any of the available sources, buses and monitoring outputs on any of the MD6573 TFT Meter panels which provides the Argo S/Argo Q with a graphical user interface to provide a 1920px x 1080px TFT video display of the various audio input and output levels of the console. Typically the Meter panel shows audio metering displays. These panels are generally fitted across the required surface.
The Meters mode is accessed from either the Modes row of a fader panel, by first pressing the Modes Menu button in button cell 4 of the Layers & Modes row and then the user presses the Meter Setup button as shown in Fig 1, or by tapping on the appropriate icon on the touchscreen as shown in Fig 4. The surface displays/controls the relevant information on the touchscreen and there are 2 sub menus shown on both the standard fader an the lower right area of the Touchscreen labelled **Edit Meters** and **Loudness Meters** as shown in Figs 2 & 4. Note: the Wild Assign panel is not involved in the creation or display of meters.

Metering on Argo

The upstand meter TFT is a 1920 x 1080 monitor and can show 96 meter elements arranged as 4 rows of 24 meter elements. The meter layout grid is used to configure a layout of selected sources. Accessing the **Meter Setup** menu opens a further two sub-menus as shown in Fig 2.

Edit Meters

This is where the meter sources are selected and placed onto a meter display screen. In addition meter presets may be stored here allowing the user to change the meter display as required.

Exit Meter Setup

Once the user has finished using the Meter setup functions, pressing the 'Exit to Menu' button which takes them back to the primary modes menu.

Loudness Meters

This page is used to Start, Pause or Reset up to 16 loudness meters, change their mode and scales and display the Target Loudness, Target Variance and Max true peak values associated with that mode. See **"Loudness Meters" on page 214.**

Empty Meter Display

Fig 3 shows the upstand meters display screen when a new show is created without meters, ready to be configured in the Meter Layout Page.

Empty Meter Layout

Fig 4 on the next page shows the "Edit meters" layout grid without any meters configured. This editor can configure the meter displays for each of the available Argo upstand meter panels, tapping on the Meter Display Icon area button or the left & right arrow buttons as highlighted which allows the user to choose which meter display to edit.

FIG 1 -METERS MODE SELECT ON STANDARD FADER PANEL

FIG 2 -METERS MODE - EDIT METERS SELECT ON STANDARD FADER PANEL

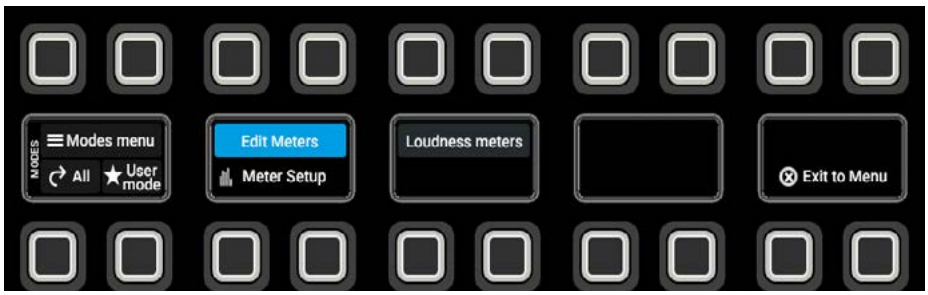
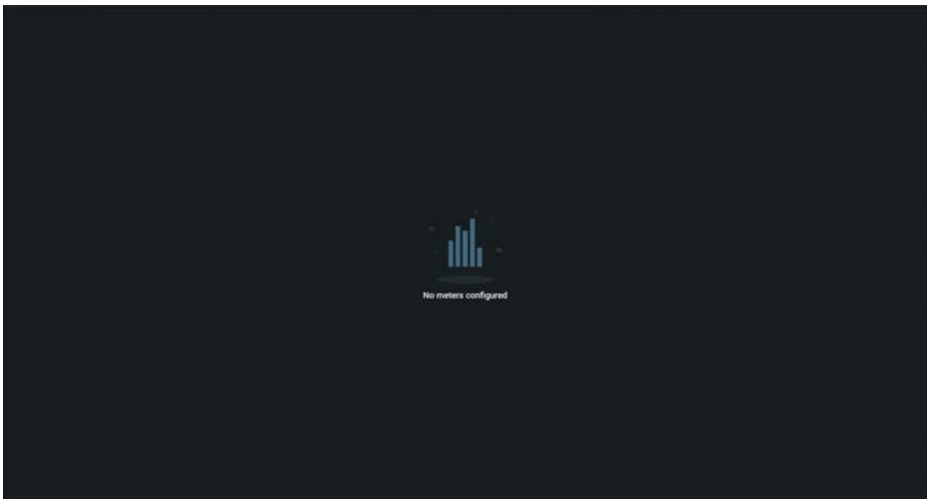


FIG 3 -EMPTY METER DISPLAY ON UPSTAND



Source Selection
To select a source to meter, the user first selects **Meter Setup>Edit meters** from the sub-menu to access the **'Create a meter'** button as shown in Fig 4. Tapping on this opens the "Select a source" dialogue box as shown in Fig 5.

The available sources to meter are:-
16 Main Output Buses, 48 Group Buses, 48 Aux Buses, 96 Track Buses, All Faders (depending on the size of the console), 152 External Inputs and Others including:-CR Monitors 1 & 2, APFL 1-3, AFL 1-3, PFL 1-3, Mix Minus 1 & User Meters 1-4.

Near the footer of this dialogue box is shown a scroll bar to show the position in the source list. To access other sources in the list swipe across the source list using two finger contact on the Multi-touchscreen.

A set of filters for each source type, each of which is arranged in pages, is placed along the bottom of the source list to simplify the selection down to a particular source type.

There is also a search option which will find a named source based on the source's system name or user label. The image in Fig 6 shows the search facility was used to find Main 8's user label "714 Prog" to be used as the source.

The user then taps on the source and the display changes to the "New meter" panel with the selected source ready to be configured as required then placed on the meter layout grid.

Many of the meters have a minimum size of 2 meter elements such as the faders, so as a rule of thumb the user can place 12 meters in a row.

There are exceptions to this namely basic Auxes and Track displays which only take up one meter element.

FIG 4 -EMPTY METER LAYOUT ON TOUCHSCREEN

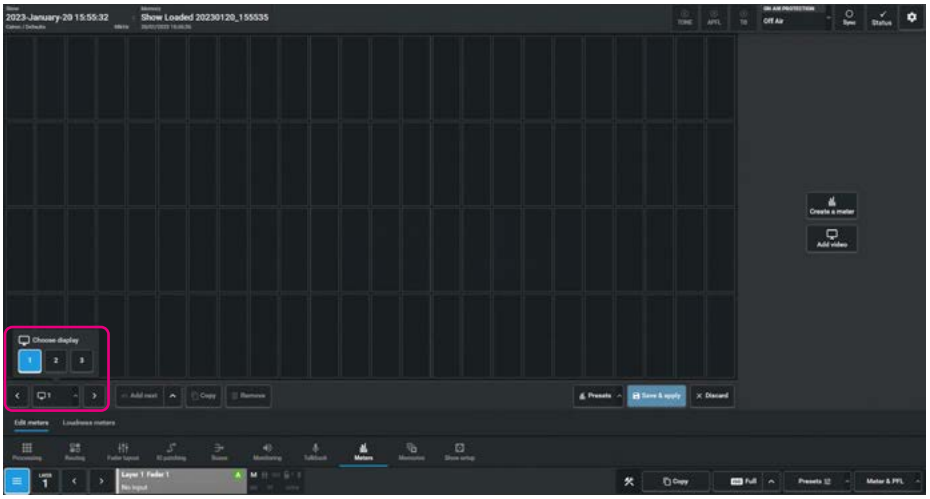
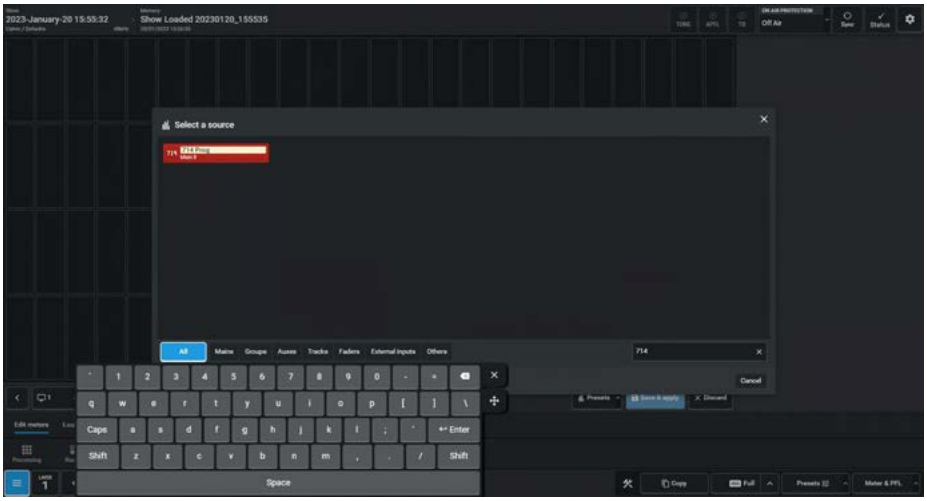


FIG 5 - SOURCE SELECTION DIALOGUE BOX

FIG 6 - SOURCE SELECTION USING SEARCH FUNCTION

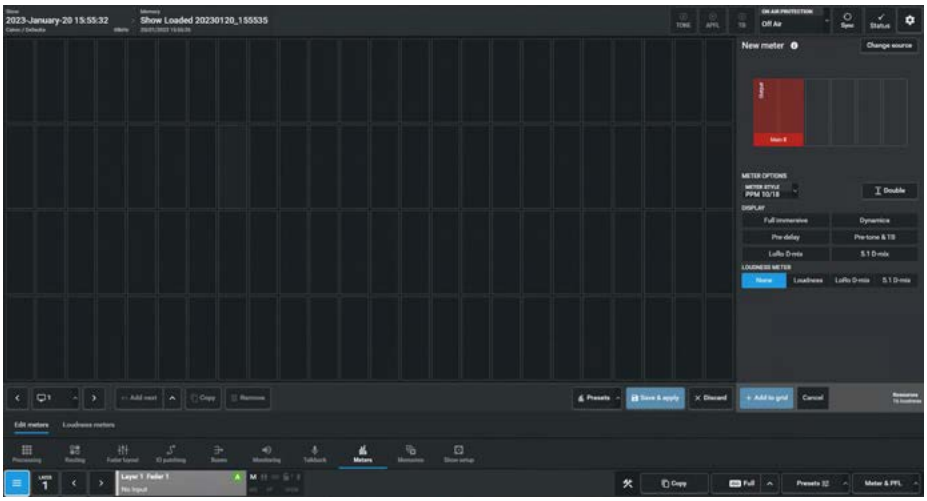


Creating a Bus Meter

The image in Fig 7 shows that the user has selected Main 8 which currently takes up 2 meter elements.

The meter can then be further configured using the Meter options shown in the panel. These options change depending on the source type and width and will be described later.

FIG 7 - CREATE A BUS METER



Source Placement on Meter Grid

Once the configuration changes to the selected source are made the user can either drag the meter design in the panel on to the grid, position it at the required location and release the drag placing the source on the meter grid, or tap on a location on the grid and then using the **'Add to grid'** button place the meter as shown middle right at that location.

In order to display changes made to the meters, the user taps the **'Save & apply'** button as shown below right. The Apply changes dialogue box appears as shown in Fig 8.

Tapping on that loads the meter layout onto the upstand meter panel indicated by the meter display icon area.

If the layout is not what is required they can tap on **'Discard'** which will revert the display to its last saved state.

FIG 8 - PLACE AND SAVE BUS METER ON DISPLAY GRID

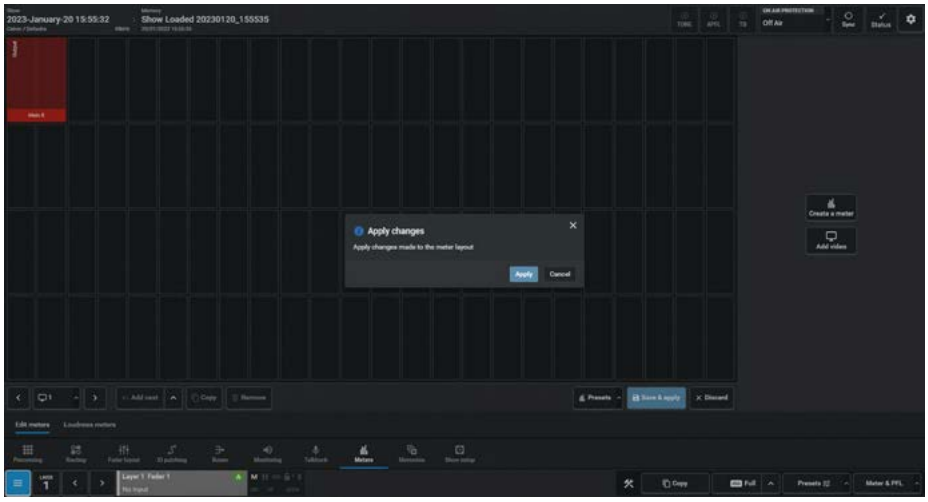


FIG 9 - METER DISPLAY SHOWING CREATED BUS METER

Meter Display of Created Meter

Fig 9 shows the created meter in the Meter upstand.

The Main 8 meter shows the 12 meter legs for the 7.1.4 path set at -18dBFS each with their leg suffix i.e. LR, C, e, S, R, TF & TR.

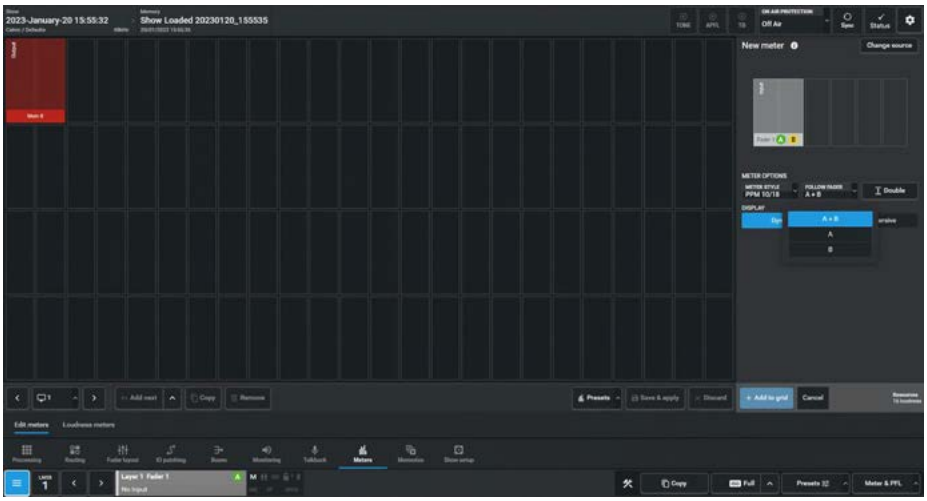
Creating Fader Meters

Most Meter layouts start by configuring the fader meters that are to be displayed. In Fig 10, the user has already selected Fader 1 from the source list and is ready to apply meter options.

Fader Type meters default to being two meter elements wide, displaying the Audio meter and Dynamics metering if any. There is also a Full immersive display option, which when selected, shows the height meters to the right of the surround meters using the same scale rather than the condensed scale shown in Fig 9.

Note: using this option removes the dynamics meter display in order to fit the audio meter in a 2 meter element width.

FIG 10 - CREATING FADER METER DISPLAYS

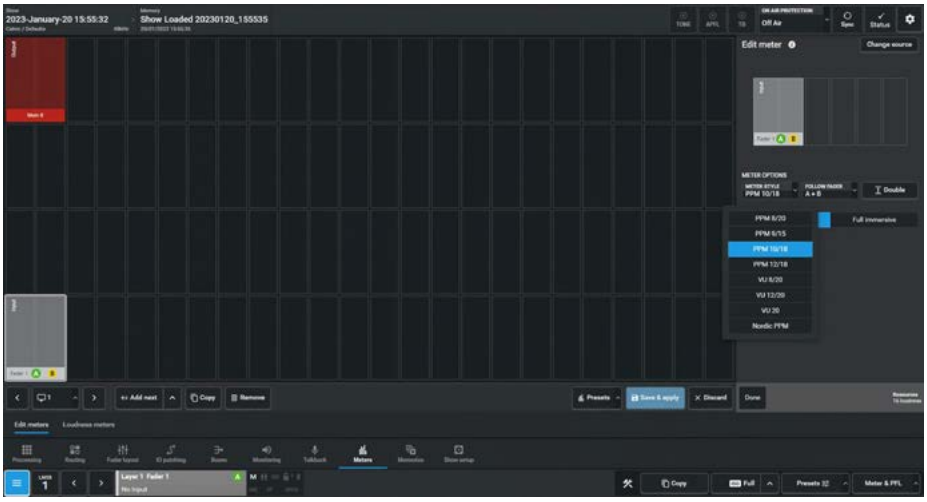


Follow Fader Option

Above the Dynamics or Full immersive options is a "Follow A/B" dropdown box. This allows the user to select this meter to only show what is on sub-layer A or sub-layer B or allow it to follow the change between sub-layer A & sub-layer B on the same meter, which is the default option.

Fig 11 shows Fader 1 has already been put on the grid but the user wants to edit its options. Selecting a meter from the grid allows changes to be made to the meter layout including the ability to edit meter options.

FIG 11 - EDITING FADER METER OPTIONS



Meter Style Option

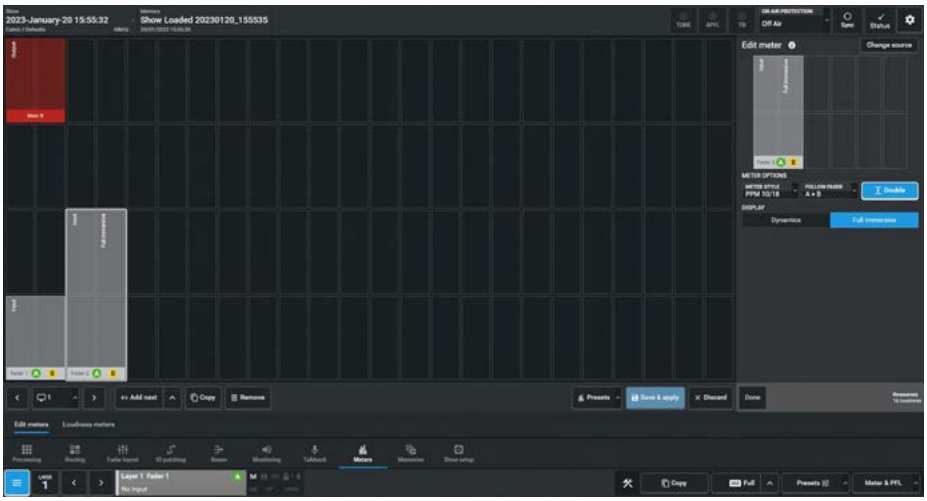
This box to the left of the Follow A/B button is the meter style option that is used as meters are created. This can be altered to allows the user to apply different meter scales and characteristics on a per meter basis if required.

There are 8 meter style options available:- PPM 8/20, PPM 9/15, PPM 10/18, PPM 12-18, VU 8/20, VU 12/20, VU 20 & Nordic PPM for use at 0dBFS=-18dBU.

Double Height Meters

Fader 2 has been defined as a double height meter as shown in Fig 12. It has also been set to Follow A/B, and been set to display the Full immersive meter size.

FIG 12 - DOUBLE HEIGHT METERS



Change Source Option

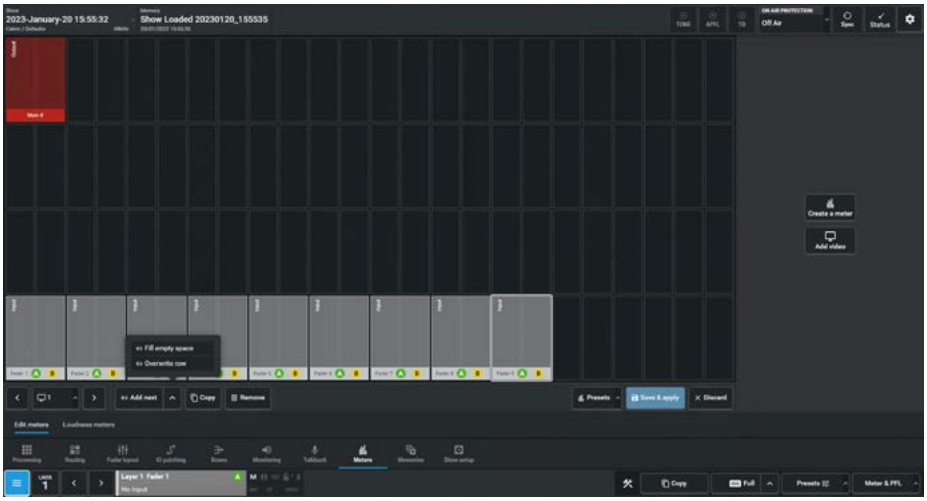
Either during creation or re-editing the **'Change source'** button highlighted in the top right corner of the content area allows the user to change the selected source to be replaced by reopening the Source list and selecting a different source.

Add Next Function

In order to speed up the creation process there is a button labelled **'Add Next'** in the footer. If the user selects a meter in the grid e.g. Fader 9AB as shown in Fig 13, a white outline appears around it and the '**Add Next'** button becomes available. Tapping on this will place and select the next meter (Fader 10AB) with the same options as Fader 9AB, immediately to the right of it. Continuing to tap on **'Add Next'** will auto increment the number so that a set of sequential meters can be created.

Alternatively opening the dropdown box from the right of that button offers 2 other methods of creating meter rows:-
'Fill empty space' repeats Add to next until it finds a non-empty space or row end
'Overwrite row' overwrites any existing meters to the end of the row. Fig 13 shows Fader 9 is used to fill to the end of the row.

FIG 13 - ADD NEXT FUNCTION AND FILL/OVERWRITE OPTIONS



Creating Main Meters

The various Main bus meter options available on the "Edit Meter" layout grid are shown in Fig 14 and the resulting meters display is shown in Fig 15, the same bus meter source has been displayed in both single height and double height sizes and start from the left with no additional meter options across to the right which has all the additional options. Each bus meter is identified by a position overlay as shown.

The available variants for this 7.1.4 Main meter have all been placed on the same grid and shown on the actual display in single & double height, these are described as follows from left to right:-

No options: The 1st Main bus meter shows the audio meter using compressed immersive height meters TF & TB placed above the surround meters.

Dynamics: The 2nd Main bus meter shows the audio meter, but includes Dynamics 1 Comp/Lim and Expander & Dynamics 2 Comp/Lim gain reduction meters.

Full Immersive: The 3rd Main bus meter shows the audio meter but using the Full size immersive meters TF & TB placed to the right of the surround meters.

Full Immersive & Dynamics: The 4th Main bus meter shows the audio meter using Full size immersive meters and the Dynamics gain reduction meters.

Pre-tone & TB: The 5th Main bus meter shows the audio meter, the meter data is taken before Tone & TB is injected.

Loudness: The 6th Main bus meter shows the audio meter, but now includes the loudness meter and its appropriate data for the 7.1.4 signal, as described in the loudness meter section.

LoRo and 5.1 D-Mix: The 7th Main bus meter shows the audio meter, but now includes two downmix meters: a 5.1 D-Mix meter derived from the 7.1.4 to 5.1 D-Mix and a LoRo D-Mix meter derived from a 7.1.4 to a LoRo D-Mix.

Pre-delay Output, LoRo/5.1 D-Mix & LoRo/5.1 D-Mix Loudness: The 8th Main bus meter shows a full combination of all the options. The Pre-delay option allows the user to see the audio output at the pre-delay point when a delay process has been added, the normal audio output being at the post-delay point. The output meter is displayed in Full immersive form with its Dynamics gain reduction meters. Also shown are the LoRo and 5.1 D-Mix meters and on the right of this 6 element wide meter is placed a 5.1 D-Mix loudness meter. There is also an alternative loudness meter that can be displayed which shows the LoRo loudness meter.

FIG 14 - CREATE MAIN METER VARIANTS

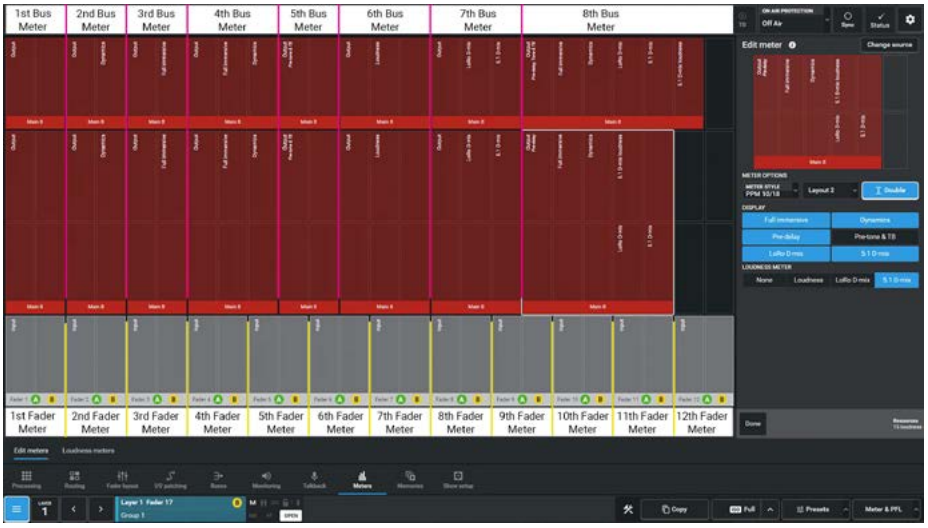
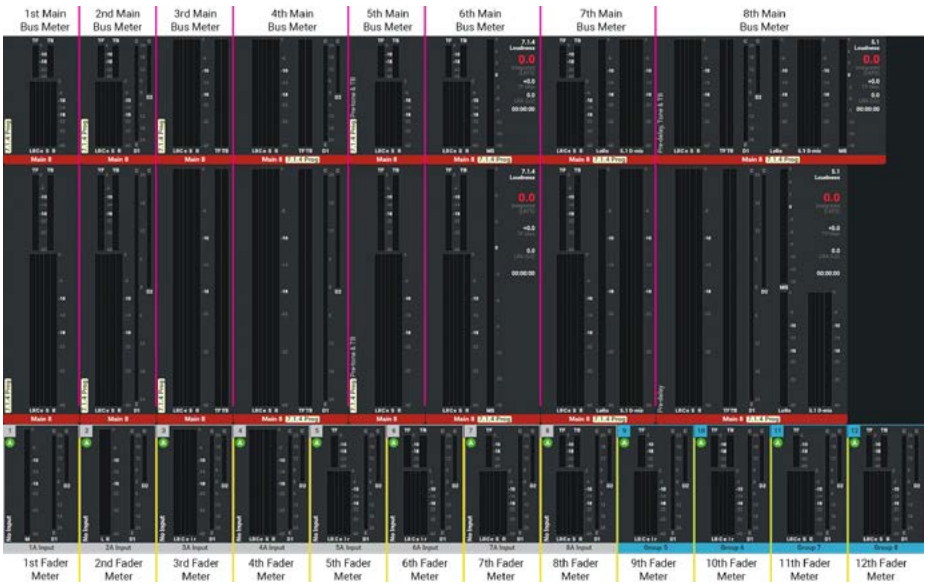


FIG 15 - MAIN METER VARIANTS ON UPSTAND METERS



Faders 1-12 Metering Display

The 12 Fader meters shown in the bottom row represent the various fader meters at various widths:-

Fader Meters 1-8 show the 8 different channel widths with the 'Dynamics' option.

Faders 5-8 show immersive meters with the compressed height meters placed above the surround meters.

Faders 9-12 show immersive meters with the compressed height meters placed above the surround meters on Groups 5-8.

Layout Options

When meter designs include many options they can also take a lot of space on the meter grid, especially when the double height metering option is chosen. In order to save space, in these situations an extra Layout dropdown button appears which can offer a number of different layouts. This is achieved by using a combination of single and double height elements to produce more compact displays which provide the same metering information in a smaller display format. This is shown in the double height version of the 8th Main bus meter saving space by using single height downmix & loudness meters.

Note: if the Main Source is not immersive the Immersive & 5.1 D-Mix options will not be displayed.

Creating Group Meters

The Group meter options available on the "Edit Meter" layout grid are shown in Fig 16 and the resulting meters display is shown in Fig 17 along with Aux meter variants. The available variants for this 7.1.4 Group meter have all been placed on the same grid and shown on the actual display in single & double height, these are as follows:-

No options: The 1st Group bus meter shows the audio meter using compressed immersive height meters TF & TR.

Dynamics: The 2nd Group bus meter shows the audio meter, but now includes gain reduction meters for Dynamics1 Comp/Lim & Exp or Gate and Dynamics 2 Comp/Lim.

Full Immersive: The 3rd Group bus meter (on layout only) shows the audio meter but using Full size immersive meters TF & TR.

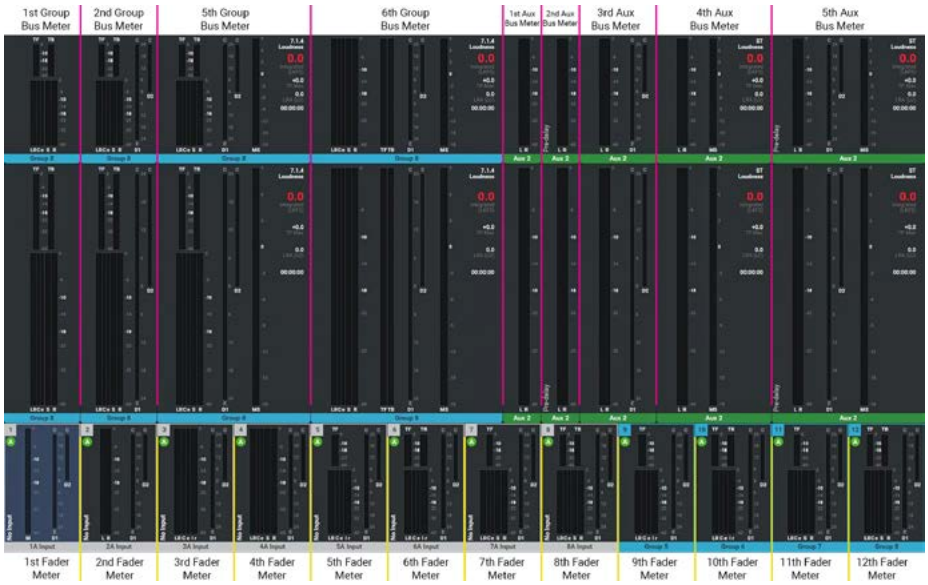
Full Immersive & Dynamics: The 4th Group bus meter (on layout only) shows the audio meter with Full size immersive meters and the Dynamics gain reduction meters.

Loudness: The 5th Group bus meter shows the audio meter with dynamics and the 7.1.4 loudness meter with its data.

Full Immersive, Dynamics & Loudness: The 6th Group bus meter shows the audio meter using Full size immersive meters, Dynamics gain reduction meters and the 7.1.4 loudness meter with its data.

FIG 16 - CREATE GROUP METER VARIANTS

FIG 17 - VIEW GROUP & AUX METER VARIANTS



Creating Aux Meters

The Aux meter options available on the "Edit Meter" layout grid shown in Fig 18 and the resulting meters display is shown in Fig 17 along with Group meter variants. The available variants for this Stereo Aux meter have been placed on the same grid and shown on the actual display in single & double height, these are as follows:-

No options: The 1st Aux bus meter shows the audio meter using stereo meters.

Pre-Delay: The 2nd Aux bus meter shows the Pre-delay version of the audio meter.

Dynamics: The 3rd Aux bus meter shows the audio meter but now includes gain reduction meters for Dynamics1 Comp/Lim & Exp or Gate and Dynamics 2 Comp/Lim.

Loudness: The 4th Aux bus meter shows the audio meter but now includes the Stereo Loudness meter and its data.

Dynamics & Loudness: The 5th Aux bus meter option for Auxes displays the audio meter, but now includes Dynamics 1 & 2, & the Stereo Loudness meter and its data.

FIG 18 - CREATE AUX METER VARIANTS

Creating Track Meters

The various Track meter options available on both the "Edit Meter" layout grid are shown in Fig 19 and the resulting meters display is shown in Fig 20 along with External IP meter variants, the available variants for Mono Track meters have all been placed on the same grid and shown on the actual display in single & double height, these are as follows:-

No options: The 1st Track bus meter shows the audio meter using a Mono meter.

Pre-Delay: The 2nd Track bus meter shows the Pre-delay audio meter using Mono meter at the Pre-delay point once a delay process has been added, the normal audio output being at the post-delay point.

2 Track display: The 3rd Track bus meter shows a pair of mono track outputs 1 & 2 side by side.

4 Track display: The 4th Track bus meter shows 4 mono track outputs 1, 2, 3 & 4 side by side.

Track Pair Loudness: The 5th Track bus meter shows the mono track outputs 1 & 2 and the loudness meter and its appropriate data for the combined track pair.

1st Track in Pair Loudness: The 6th Track bus meter shows the mono track outputs 1 & 2 and the loudness meter and its appropriate data for the 1st track in the pair.

2nd Track in Pair Loudness: The 7th Track bus meter shows the mono track outputs 1 & 2 and the loudness meter and its appropriate data for the 2nd track in the pair.

FIG 19 - CREATE TRACK METER VARIANTS

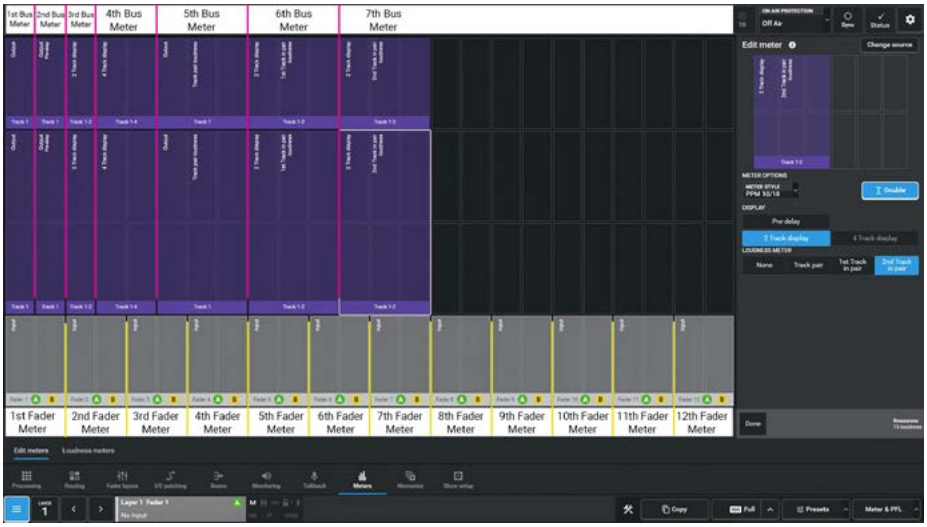
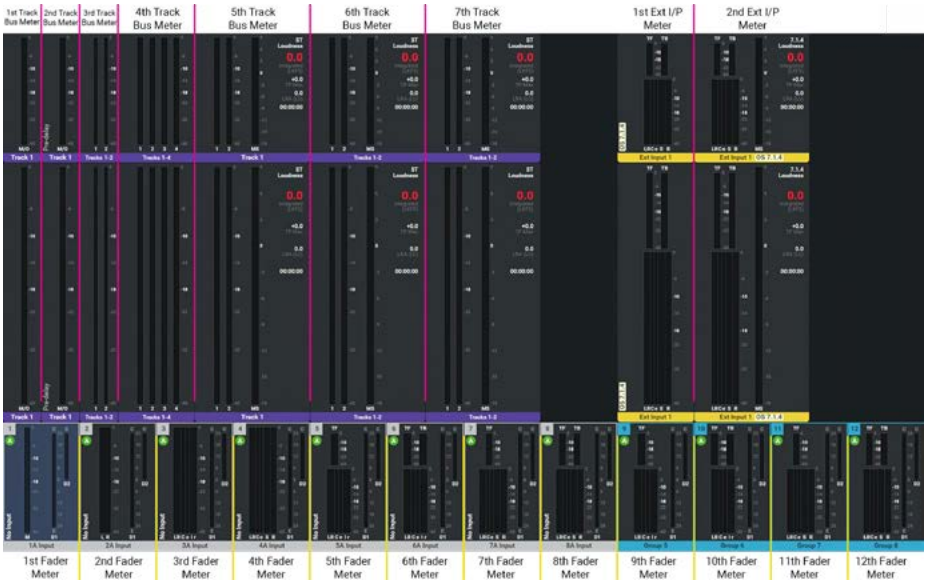


FIG 20 - VIEW TRACK & EXTERNAL INPUT METER VARIANTS



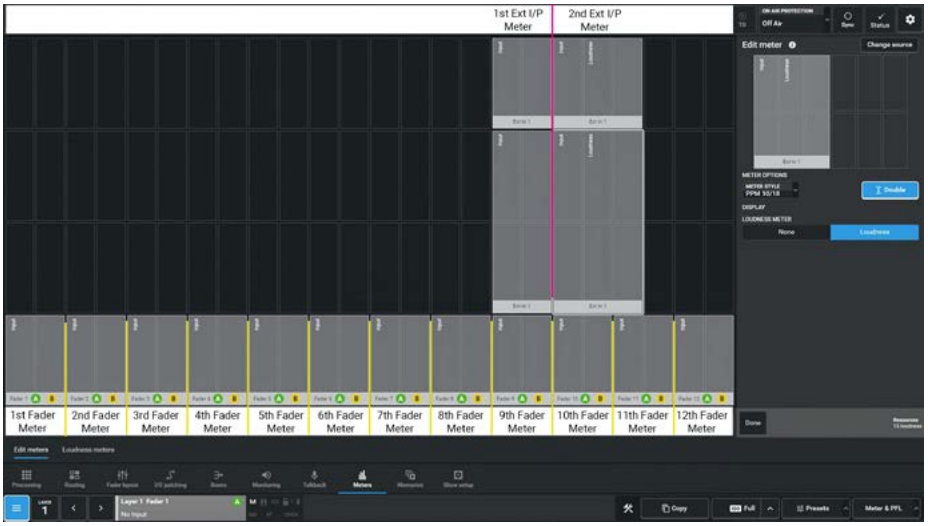
Creating External Input Meters

To show the various External input meter options available on both the "Edit Meter" layout grid as shown in Fig 21 and the resulting meters display is shown in Fig 20 along with Track meter variants, the available variants for this External Input meter have all been placed on the same grid on the actual display in single & double height, these are as follows:-

No options: The 1st External input meter shows the 7.1.4 immersive audio input meter.

Loudness: The 2nd External input meter shows the audio input meter, but now includes the loudness meter and its appropriate data for the 7.1.4 input.

FIG 21 - CREATE EXTERNAL INPUT METER VARIANTS



Creating Other Meters

The various Monitor meter and Mix-Minus bus meter options available on both the "Edit Meter" layout grid are shown in Fig 22 and the resulting meters display is shown in Fig 23. All the 'Other' meter sources can be shown in both single height and double height sizes. The available variants for:- CR Monitors 1 & 2 meters, PFL 1-3, AFL 1-3, APFL 1-3, User meters 1-4 and the Mix Minus Bus meters have all been placed on the same grid and shown on the actual display in single and double height, these are as follows:-

No options: The monitor meters shows the audio meter that has been selected in the Monitoring page at the width of the monitor as defined in the monitor widths and APFL widths setting.

The Monitor 1 meter, Monitor 2 meter and the 4 User meters show the source being monitored up the left side of the each monitor meter.

Loudness: Each of the 'Other' meters shows the audio meter being monitored, but now includes the loudness meter and its appropriate data for the signal being monitored.

Copying Meters

In the meter layout footer is a button labelled **'Copy'** as highlighted in Fig 22 and is provided to make a copy of any meter placed on the grid.

The user selects the meter to be copied in the grid and a white highlight is applied, the **'Copy'** button then becomes available, tapping on that button opens the copy dialogue in the footer as shown in Fig 24.

The user then taps on the location that the copy is to be placed. Once the location of the intended copy is set then the '**Paste**' button becomes available. Tapping on the '**Paste**' button, places the copy at the selected location. Tapping on the '**Cancel**' button exits and closes the Copy dialogue.

Note: Copy/Paste can be used between each of the available Argo TFT upstand meter panels by tapping on the 'Meter Display Icon area button as shown or left & right arrow buttons allowing the user to choose which displays to copy from or paste to.

FIG 22 - CREATE OTHER METER VARIANTS

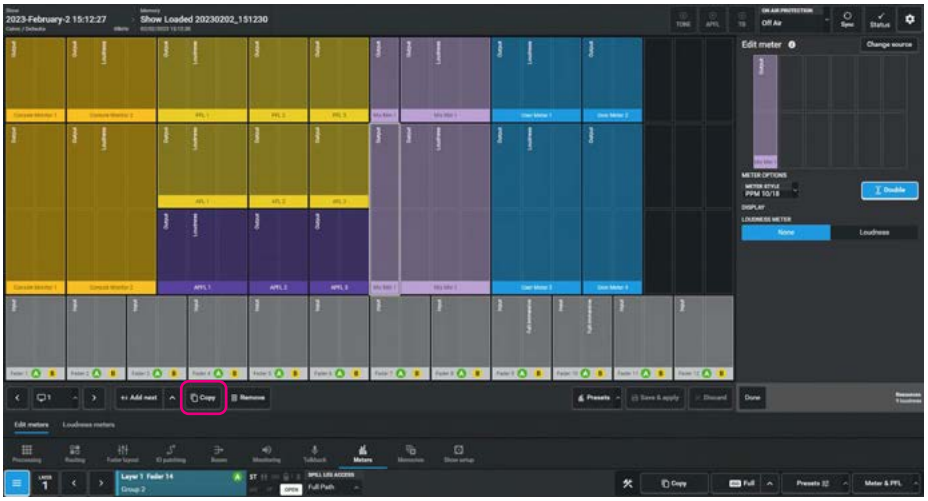
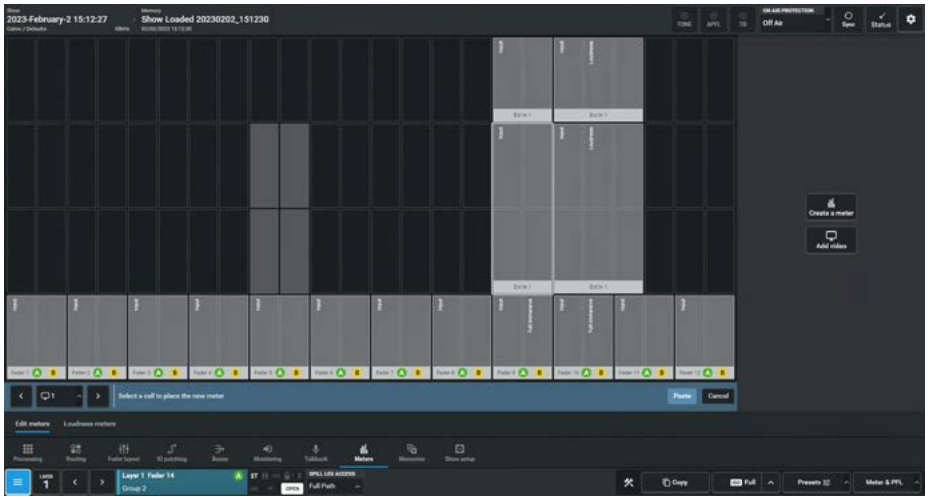


FIG 23 - VIEW OTHER METER VARIANTS

FIG 24 - COPYING METERS



Moving Meters in the Grid

The user may decide that the meter arrangement needs to change and to facilitate this the user can tap and drag or click and drag the meter to be moved to the desired new location in the grid.

The image in Fig 25 shows the Console Monitor 1 meter being dragged to a new location, in the background an outline appears over the nearest location. If the location is empty then releasing the drag places the meter in it's new location. If the desired location already has meters placed on that area of the grid then a dialogue box appears as shown advising that the user is about to overwrite an existing meter. Tapping on the '**Overwrite**' button removes the meter(s) that are underneath the required space and places the meter in the same location, clicking on '**Cancel**' exits the move and puts the meter that was moved back to its original location.

Removing Meters from the Grid

In the Meter Layout footer is the '**Remove**' option. The image in Fig 26 shows that Faders 13B thru 24B are going to be removed. The user selects the first meter to be removed in the grid and a white highlight is applied, the **'Remove'** button then becomes available, tapping on that button opens the remove dialogue in the footer as shown. The user can then tap on all the meters that are to be removed or use the **'Select All**' or **'Select None'** buttons in the footer. Each meter to be removed has a white highlight applied.

The user taps on the **'OK'** button in the footer dialogue which removes the selected meters from the grid, tapping on the '**Cancel**' button exits the dialogue without removing any meters.

Typical Meter Layout

Fig 27 shows an example of a typical meter layout consisting of:-

- 24 Fader meters A/B switchable
- 8 Group meters
- 4 Main meters
- 5 Aux meters
- 8 Track Meters
- 2 User/External meters
- 1 CR Monitor meter (Double Height)
- 1 AFL Meter & 1 PFL Meter

FIG 25 - MOVING METERS

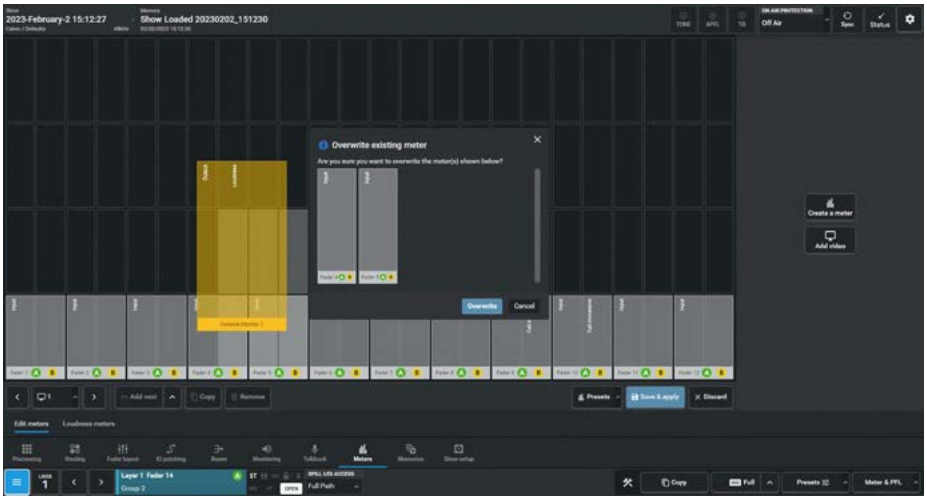


FIG 26 - REMOVING METERS

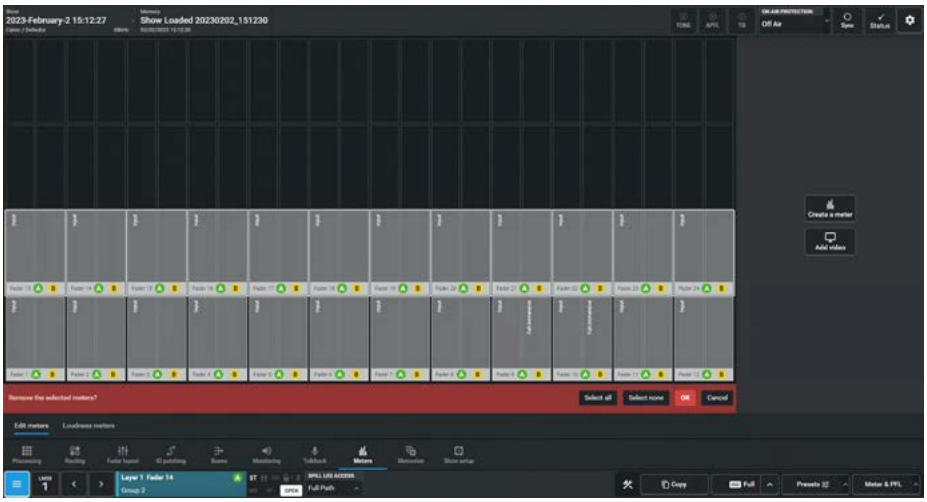


FIG 27 - TYPICAL METER LAYOUT

Add Video window to Meter Display

The Argo surface offers the option of two Video inputs via SFP's connected in the back of each section processor which can be displayed on its associated Upstand TFT meter panel. These Video inputs are labelled '1' and '2'.

Fig 28 shows the Edit Meters page is looking at Section 1 of the Argo Surface (faders 1-12) and when looking at an Argo section an additional Meter option is available to Insert a video window onto the Upstand Meter. When the **'Add Video'** button is pressed the Edit Video panel appears on the right side of the screen instead of the Audio Meter Configuration panel.

Fig 29 shows an empty meter page as the user is going to use it to show the full screen video window on the TFT screen on section 2 (faders 13-25). If there are meters already on the page then when the '**Add to Grid**' button is pressed the Overwrite dialogue box will appear so that the user can either overwrite them or cancel the operation.

The size and placement of the video is determined by first selecting either a Full window or 1/4 window size.

The TFT display is Full HD so if the Full screen is selected the display will use the full 1920px X 1080px window area to show the video, if a 1/4 screen option is made the user can choose where to place the 960px X 540px window area to show the video. The initial options are top left, top right, bottom left & bottom right.

Beneath the video position options is the Video input selection which determines which video input 1 or 2 will be the source.

Fig 30 shows that a 1/4 size Video window has been placed top left on section 3 (faders 25-36) and that it will appear at the top left of the TFT display. The remaining area has been populated with Audio Meters as normal.

Note: the position of the Video window, its size and which section it's placed in is saved as part of the meter preset.

FIG 28 - METER LAYOUT ON ARGO TFT SECTION 1- ADD VIDEO OPTION

FIG 29 - METER LAYOUT ON ARGO TFT SECTION 2-ADD FULL VIDEO-INPUT 1

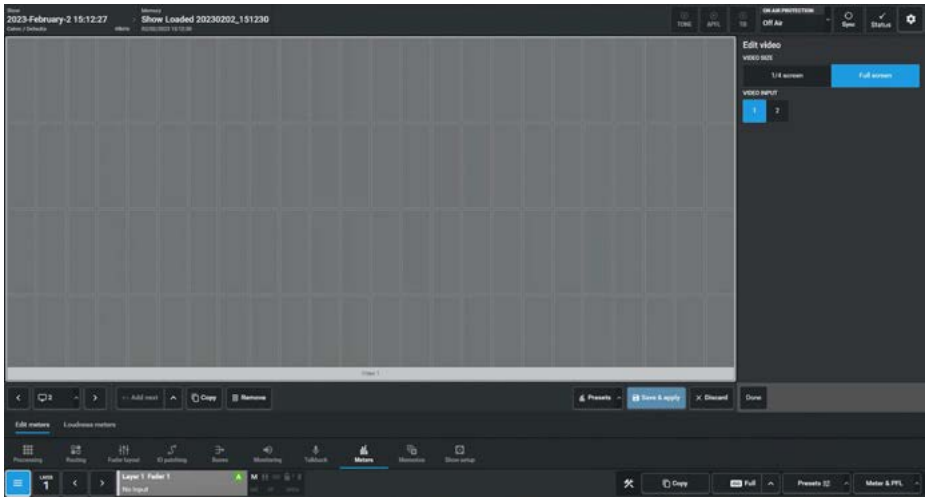


FIG 30 - METER LAYOUT ON ARGO TFT SECTION 3-ADD QUARTER VIDEO-INPUT 2

METER LAYOUT PRESETS

Meter Layout Presets Function
There is a requirement to store and recall meter layouts, this is carried out in the Presets dialogue. The user can access these by tapping the **'Meter Presets'** button in the meter layout page. The presets are contained in preset folders and typically a user will have their own preset folder. Fig 1 shows the meter layout presets dialogue box, it is arranged into two areas:- the left side allows the user to create, label or delete preset folders each of which can contain any number of meter layout files. The right side shows the presets that are contained in the selected preset folder.

Meter Layout Preset Folders
The following functions are available:-
Create Preset Folder: To create a new preset folder, the user taps on the folder icon highlighted on the preset folders side in Fig 1 and types in a preset name using the On-screen-keyboard in the "Create preset folder" dialogue box as shown in Fig 1. Once the **'Create'** button is tapped it creates a new empty preset folder.

Edit Preset Folder: To edit the name for an existing preset folder, the user selects the folder to be renamed, taps on the Edit icon on the preset folders side and types in a replacement name using the On-screen-keyboard for the folder in the "Edit preset folder" dialogue box, which appears instead of the create preset folder and shown for convenience inset in Fig 2. Once the **'Save'** button is tapped it applies the edited name to the folder and saves it.

Delete Preset Folders: To delete an existing preset folder, the user selects the folder to be deleted and taps on the Delete Icon highlighted on the preset folders side of Fig 3.
The "Delete selected folders" dialogue box appears as shown in Fig 3. This shows the presets contained in the folder and asks for confirmation to permanently delete the folders and the presets they contain. A graphic is inset showing the names of the folders and files affected. Once the **'Confirm'** button is tapped it deletes the selected folders and presets.

Note: this cannot be undone.

FIG 1 - METER PRESET FOLDER/PRESETS FUNCTION

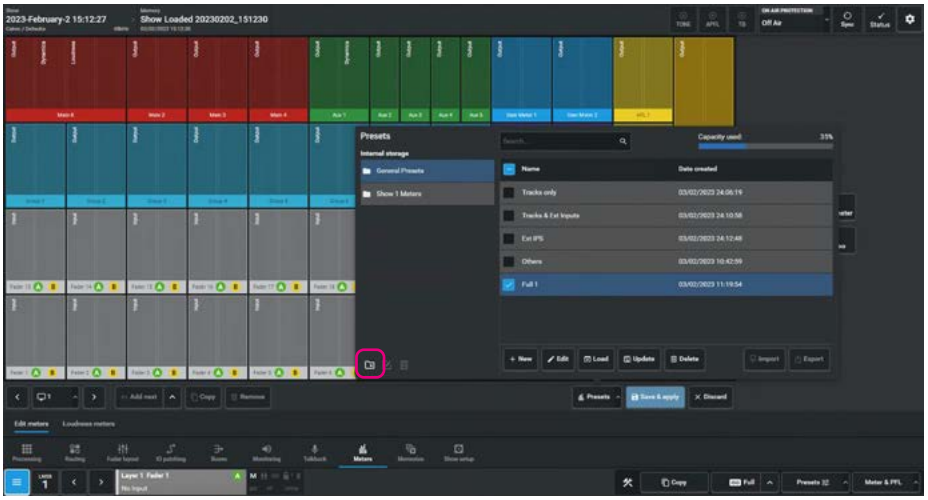
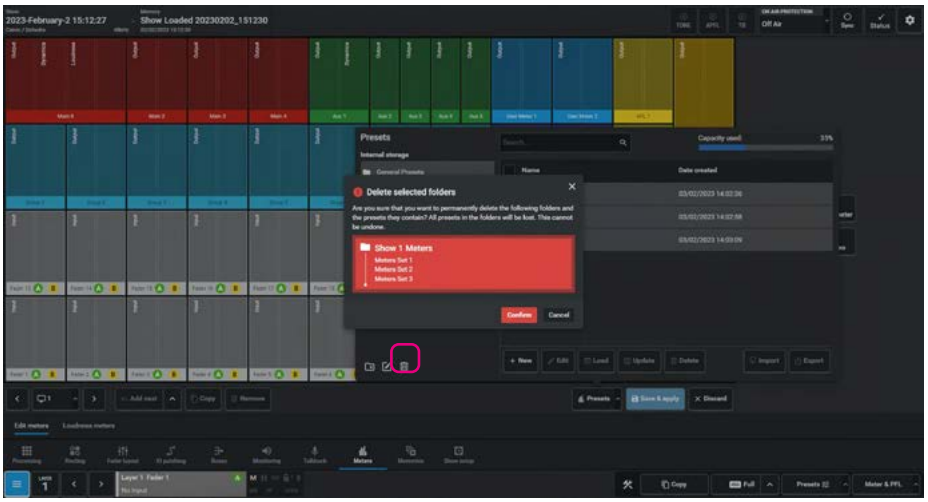


FIG 2 -CREATE PRESET FOLDER & EDIT PRESET FOLDER

FIG 3 -DELETE PRESET FOLDERS



Meter Layout Presets
The following functions are available:-
Create Preset: To create a new preset, the user selects the preset folder that the preset is to be put in, then taps on '**New**' on the presets side and types in a name using the On-screen-keyboard for the preset in the "Create preset" dialogue box as shown in Fig 4. Once the **'Create'** button is tapped it creates a new preset in the preset folder.

Note: the Meter Preset file contains the meter layout not only of the Assist meter page but also each of the Argo TFT meter upstand displays as well.

Edit Preset: To edit the name for an existing preset, the user selects the preset to be renamed, taps on '**Edit**' on the presets side and types in a replacement name using the On-screen-keyboard for the preset in the "Edit preset" dialogue box, which appears instead of the create preset dialogue box and is shown for convenience inset in Fig 4.

Once the **'Save'** button is tapped it applies the edited name to the preset and saves it.

Load Preset: Fig 5 shows the process of loading a meter preset. When the **'Load'** button is tapped a "Load" dialogue box pops up to ask the user if they are sure that they want to load this preset. Once the **'Load'** button is tapped it loads the preset into the grid.

Update Preset: Fig 6 shows the process of updating a meter preset. When the **'Update'** button is tapped an "Update" dialogue box pops up to ask the user if they are sure that they want to update this preset. Once the **'Update'** button is tapped it overwrites the stored preset with the current meter layout in the grid.

Note: make sure that the correct existing preset has been selected before applying 'Update' as it will be overwritten.

FIG 4 -CREATE PRESET & EDIT PRESET LABEL

FIG 5 -LOAD PRESET

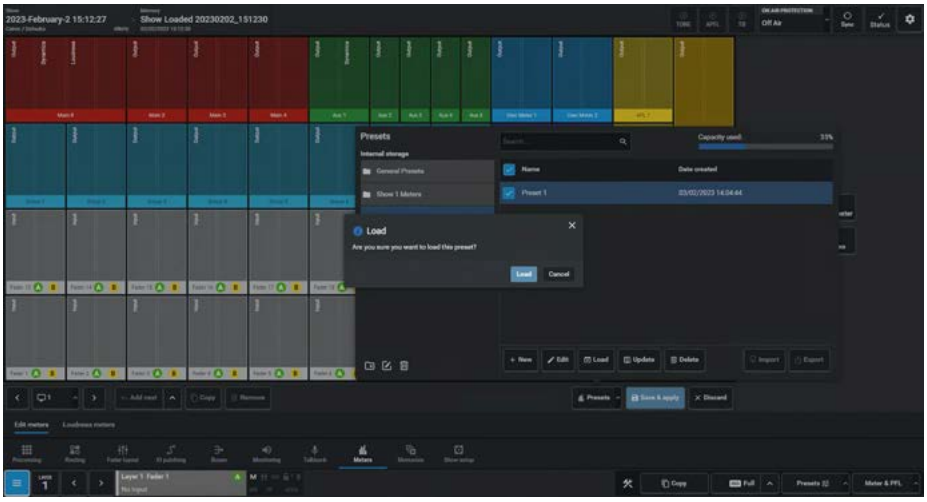
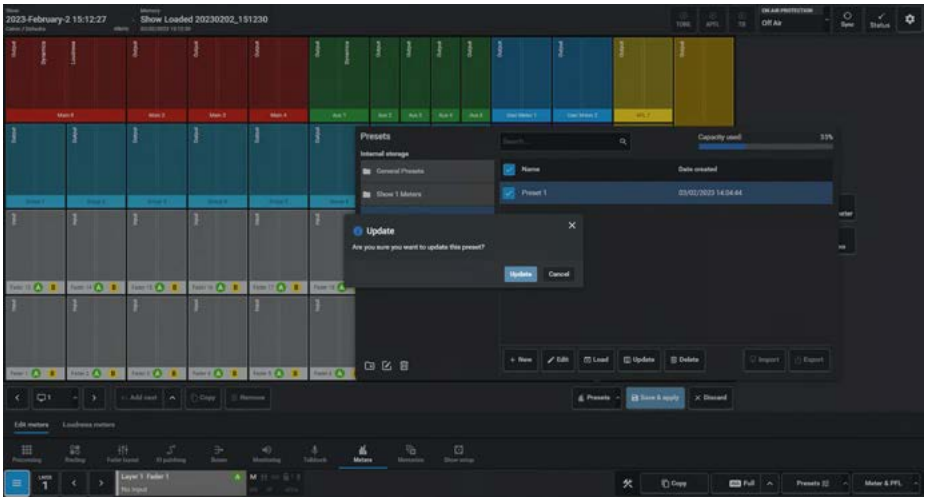


FIG 6 -UPDATE PRESET



Delete Presets: To delete existing presets, the user selects the presets to be deleted and taps on '**Delete**' on the presets side. The **"Delete selected presets"** dialogue box appears as shown in Fig 7. This shows the selected presets and asks for confirmation to permanently delete them.

A graphic is inset in the dialogue box showing the names of the presets affected. Once the **'Confirm'** button is tapped it deletes the selected presets.

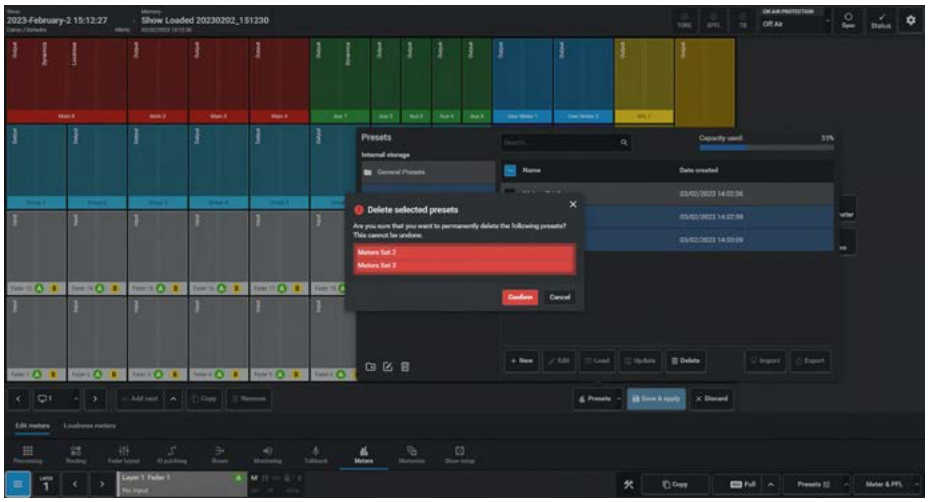
Note: this cannot be undone.

Import Meter Presets
This is not available in V1.0.x, however this can be carried out using Assist.

Export Meter Presets
This is not available in V1.0.x, however this can be carried out using Assist.

In addition to the preset functions there is a search box allowing the user to search for the name of a particular meter preset file and a Capacity Used indicator bar shown at the top of the meter presets dialogue box.

FIG 7 -DELETE PRESETS



LOUDNESS METERS

Loudness meters provide a way to monitor and regulate average loudness levels over the duration of a programme.

16 loudness meters are available to assign to any output. Loudness meters can be included in the 'View Meters' display using the method described in the Setup Meter layout section.

Loudness Metering Modes

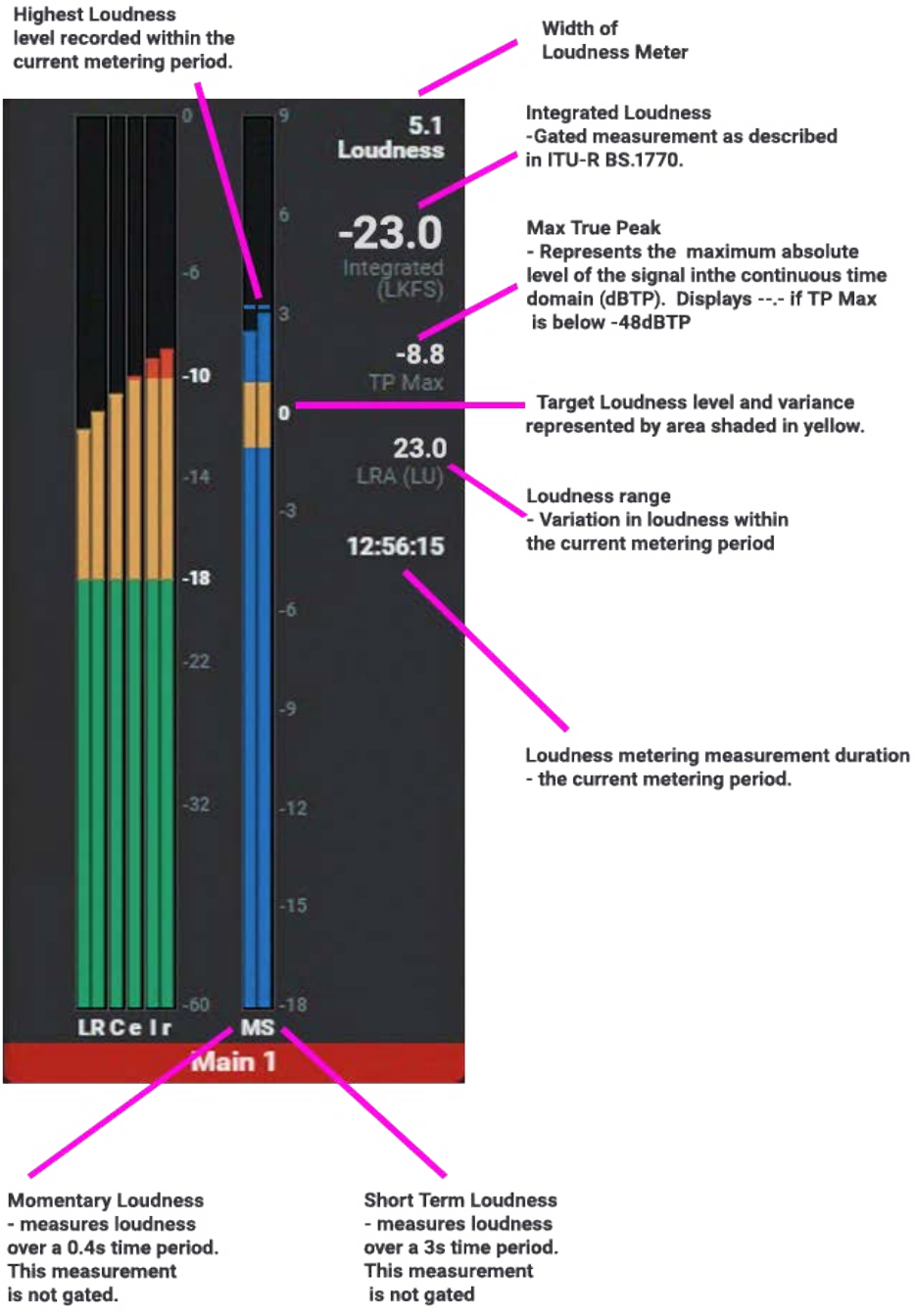
There are a number of loudness metering modes available on the console, this is shown in the drop down mode box the details of which are displayed in a table on the following pages. The loudness meter mode is set globally.

An appropriate loudness metering scale can also be set from this screen, as shown in the following pages. These alter the scale of all loudness meter bar graphs - the example shown on the right is displaying EBU mode with +9...-18 LU scale.

Loudness meter modes relate to standards set by organizations in different geographical regions. EBU (European Broadcasting Union) relates to Europe, ATSC (Advanced Television Systems Committee) to North America and ARIB (Association of Radio Industries and Businesses) to Japan. These are currently the main standards and are being widely adopted in other geographical regions.

See **"Loudness Metering Mode Tables" on page 216** for a table of Loudness Metering Modes.

FIG 1 - LOUDNESS METER - ANATOMY OF COMPONENTS



- The current metering period refers to the period since the meter(s) were last reset.
- A gated measurement is calculated ignoring signals below the gate threshold.

LOUDNESS METER OPTIONS

Loudness Page Selection
Fig 1 shows the Modes row selection for access to the Loudness meter settings by first pressing the Modes Menu button then the Meter Setup button to show the Meter Setup submenus. This can also be accessed from the lower part of the Touchscreen as highlighted in Fig 2.

Loudness Meter page
Argo offers 16 loudness meters which can be assigned to any of the Outputs or the External Inputs from the 'Edit meters' layout page.

This is accessed from the menu via the **Meter Setup>Loudness meters** page as shown in Fig 2.

It is split into two halves the left side deals with the various loudness modes and scales available and the right side controls the Start, Pause & Reset of up to 16 loudness meters.

Exit Meter Setup
Once the user has finished using the Meter setup functions, pressing the 'Exit to Menu' button which takes them back to the primary modes menu.

Controlling Loudness Meters
Once loudness meters have been set up in the "Edit meter" layout, the controls for each loudness meter shown in Fig 3 can be accessed from this page.

As well as individual control cells for each loudness meter, there is a global control cell called 'All' which starts, pauses and resets all loudness meters together.

Loudness Modes
The various loudness modes are selected from the Loudness Mode dropdown box shown in Fig 4.

The details of the current loudness limit settings for each of these modes are shown in the Loudness Metering Modes table see Fig 5 on the next page.

FIG 1 -METERS MODE - LOUDNESS SELECT ON STANDARD FADER PANEL

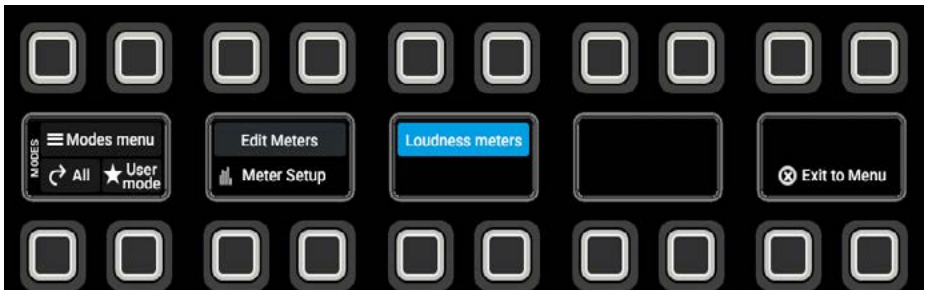


FIG 2 - LOUDNESS METER PAGE

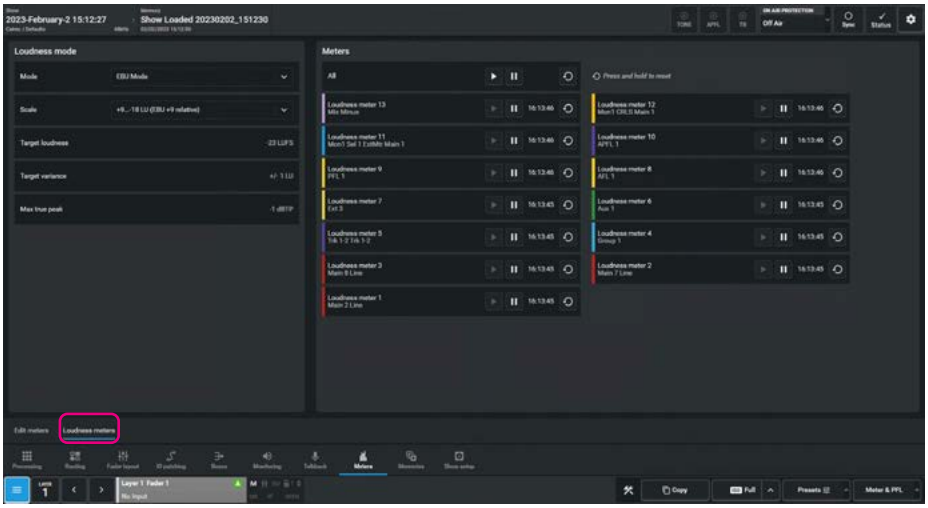


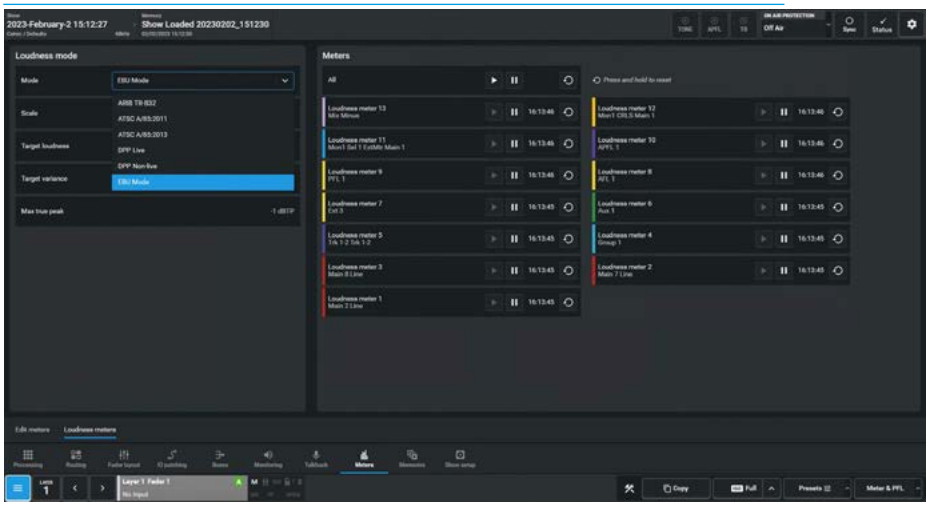
FIG 3 - LOUDNESS METER CONTROLS

Start Loudness Meter

Pause Loudness Meter

Reset Loudness Meter

FIG 4 - LOUDNESS MODES



Loudness Metering Mode Tables

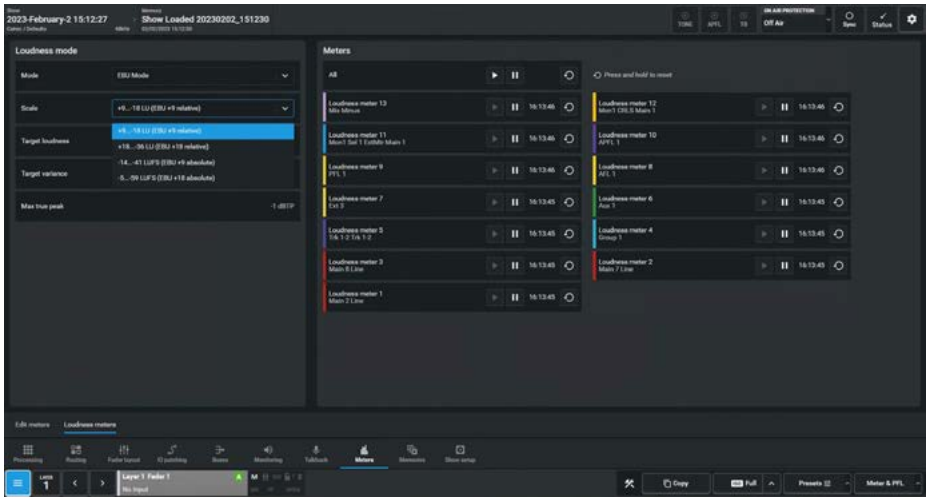
FIG 5 - LOUDNESS METERING MODES

	Scale	Target Loudness	Target Variance	Max True Peak	Relative Gate
EBU Mode	+9...-18 LU (EBU +9 relative) +18...-36 LU (EBU +18 relative) -14...-41 LUFS (EBU +9 absolute) -5...-59 LUFS (EBU +18 absolute)	0LU (-23 LUFS)	+/- 1 LU	-1 dBTP	-10.0 LU
ATSC A/85: 2011 (BS1770-1)	+9...-18 LU (+9 relative) +18...-36 LU (+18 relative) -15...-42 LKFS (+9 absolute) -6...-60 LKFS (+18 absolute)	0LU (-24 LKFS)	+/-2 LU	-2 dBTP	N/A
ATSC A/85: 2013 (BS1770-3)	+9...-18 LU (+9 relative) +18...-36 LU (+18 relative) -15...-42 LKFS (+9 absolute) -6...-60 LKFS (+18 absolute)	0LU (-24 LKFS)	+/- 2 LU	-2 dBTP	-10.0 LU
ARIB TR-B32	+9...-18 LU (+9 relative) +18...-36 LU (+18 relative) -15...-42 LKFS (+9 absolute) -6...-60 LKFS (+18 absolute)	0LU (-24 LKFS)	+/- 1 LU	-2 dBTP	-10.0 LU
DPP Live	+9...-18 LU (EBU +9 relative) +18...-36 LU (EBU +18 relative) -14...-41 LUFS (EBU +9 absolute) -5...-59 LUFS (EBU +18 absolute)	0LU (-23 LUFS)	+/-1 LU	-1 dBTP	N/A
DPP Non-Live	+9...-18 LU (EBU +9 relative) +18...-36 LU (EBU +18 relative) -14...-41 LUFS (EBU +9 absolute) -5...-59 LUFS (EBU +18 absolute)	0LU (-23 LUFS)	+/- 0.5 LU	-1 dBTP	N/A

Loudness Scales

Within each loudness mode is a set of four loudness scales, two of these are absolute scales and the other two are relative scales, which allows the user to view different ranges as shown in Fig 6.

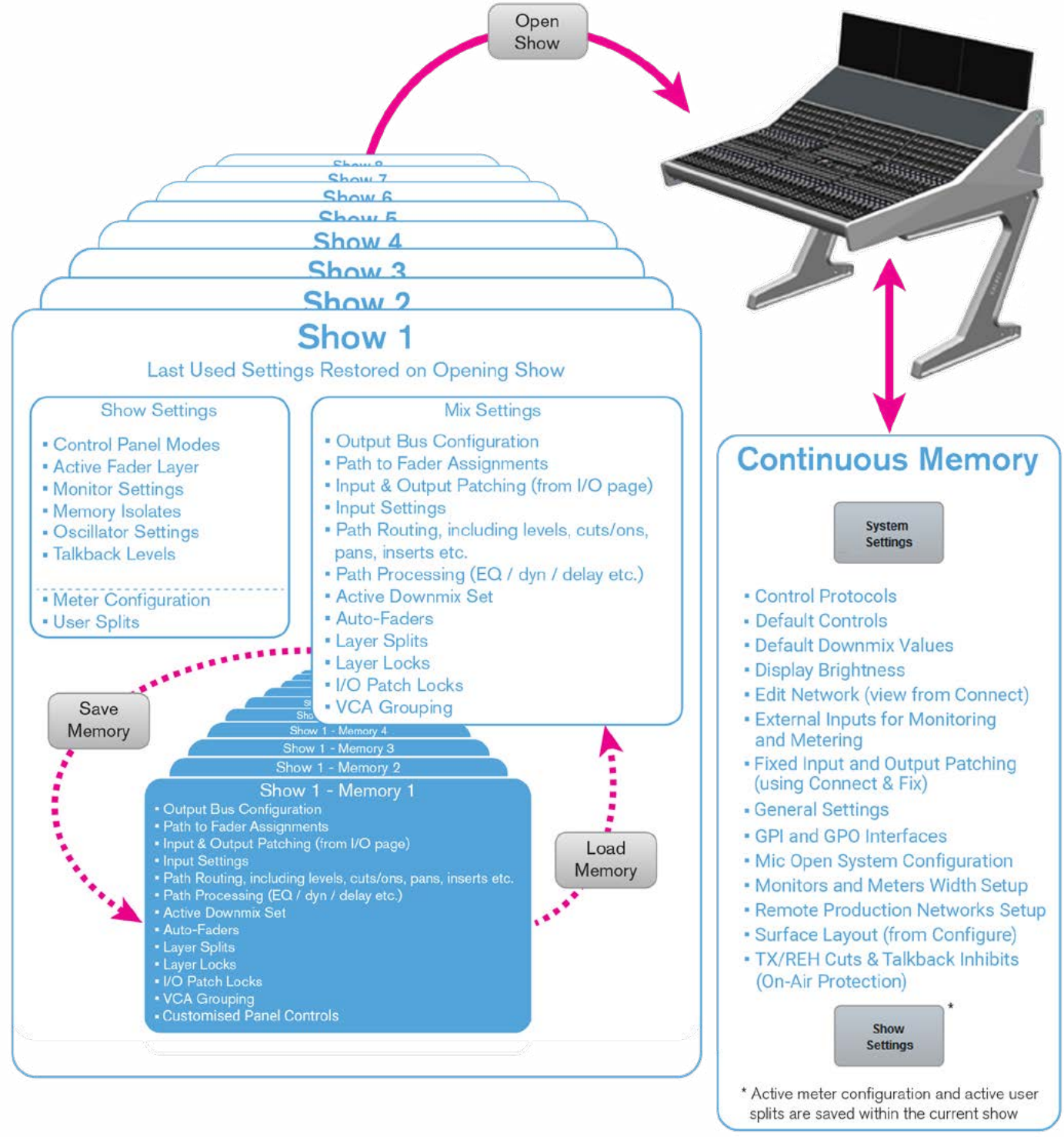
FIG 6 - LOUDNESS SCALES



ARGO
SHOWS AND MEMORIES

CALREC

FIG 1 - SHOWS, USER MEMORIES, ACTIVE OPTIONS FILES AND CONTINUOUSLY SAVED CURRENT SETTINGS



User memories can be thought of as snapshots - a way of recording the current settings at any given time for later recall. Argo user memories are organised within 'Shows'. Multiple Show files can be created, each containing their own set of user memories.

All current settings are continuously saved, allowing the console to boot up in its' previous state after power loss or reset.

Shows do not need to be manually saved when a show is opened, console settings automatically revert to how they were when the show was last in use.

User memories can be saved within each show to retain mix settings and configuration, such as path to fader assignments, input & output patching, path routing & levels, and signal processing, see Fig 1 opposite for a more comprehensive list. The current settings of all the parameters that can be saved to a user memory are continuously saved to a 'hidden' user memory within the show.

Note: that when a show is opened, (either manually or on boot up), it is the hidden user memory that is loaded, presenting the last used settings, NOT the last saved settings.

Although the console can be used without ever saving a user memory, it is good practise to save known good setups in order that they can be reverted to in the event that parameters get changed by accident, by other users, or to clear any ad-hoc temporary changes that have been made during operation.

Shows provide organization of user memories. Rather than having to search through a long list of varied memories, consolidating similar memories into shows makes them easier to search and to manage.

It may help to create a show for each type of production, e.g. 'Morning News', 'Football', 'Chat Show' 'Music' etc. before saving multiple memories within a show, it is good practise for a single setup to be built, tested, and saved as the default memory for the show.

During setup, there are likely to be changes and additions required - working with a single default memory is more manageable than having to make changes to multiple memories. Once the core setup is proven, and requirements for changes are less frequent, the default memory can be used as a template for customisation, and variations can be saved with different names.

New shows that are similar to existing ones can be created by choosing to Save Show As. This effectively makes a copy of the show, including the user memories within, so that it does not have to be built from scratch. Any unwanted user memories within the new show can then be deleted.

In addition to the settings that are saved within user memories, (and the hidden, continuous user memory), some other settings are maintained within each show.

The most obvious and visible of these is often the active meter layout on the console up-stand which can be different for each show.

Other settings that can change on the opening of a show file (and are not part of user memories) are:- the mode of control panels on the surface, the currently active fader layer, monitoring settings, memory isolates (settings that have been blocked from changing on user memory load), oscillator settings (level, frequency, idents), talkback levels and any active user splits.

These show based settings are not manually saved. On the opening of a show file, the settings are restored as they last were the previous time the show was open.

Meter layouts and user split configurations are saved as part of the show.

Other settings are not saved as part of shows or their user memories and as such will not change when opening shows or loading memories. Like all other settings, however, they are saved as part of a continuous memory, ensuring they are restored from power on or reset.

These include all of the settings that are applied from the System Settings pages of the main application, as well as some of the settings applied from the Show Setup page, see Fig 1 opposite.

Shows, Memories, and Show Setup files are saved on the primary and secondary Impulse Core controller cards fitted in the primary and secondary Impulse cores.

The number of show and memory files that can be saved is dependent upon the amount of available storage space on the controller cards, which is displayed on the Memory Load/ Save page of the main application.

The size of each show/memory file depends upon the amount of console resources being used. Shows and memories can be backed up using Assist.

SHOWS

Accessing the Shows List
In order to access the shows list the user taps on the area highlighted as shown in Fig 1 and the Shows list appears.

On the left side of the screen is shown information about the system including which Surface, Mixer and Current Show is loaded and a Disk space indicator at the bottom.

Along the footer of this screen are shown the various actions that the user can perform:- create a **'New'** show, **'Edit'** the show label and show description, **'Load'** the show, make a **'Duplicate**' of the show,

'Import' a show typically from a USB memory stick plugged into a PC/laptop, **'Export'** a show again typically from a USB memory stick plugged into a PC/ laptop or **'Delete'** the show.

Note: Import/Export not available in V1.0.x use Assist instead

New Show
As part of the system, a templates folder containing default shows can be made for this desk type and used to create any number of new shows as required.

Note: there is always at least one default template (which cannot be deleted) available for use to create a show.

Tapping on the **'New'** icon in the footer of the shows list (Fig 1) opens the **"Create new show"** dialogue as shown in Fig 2. The user selects the show template to be used in step 1 by tapping on it and then proceeds to step 2 by tapping on the **'Next'** button. Step 2, shown in Fig 3, allows the user to change the User/Client, Project/Series, Show Label & Show Description fields.

Once these fields have been entered the user then taps the **'Create'** button and this new show is automatically loaded which then switches to the **Fader Layout** screen so that the user can proceed to configure the required paths.

FIG 1 - SHOWS LIST

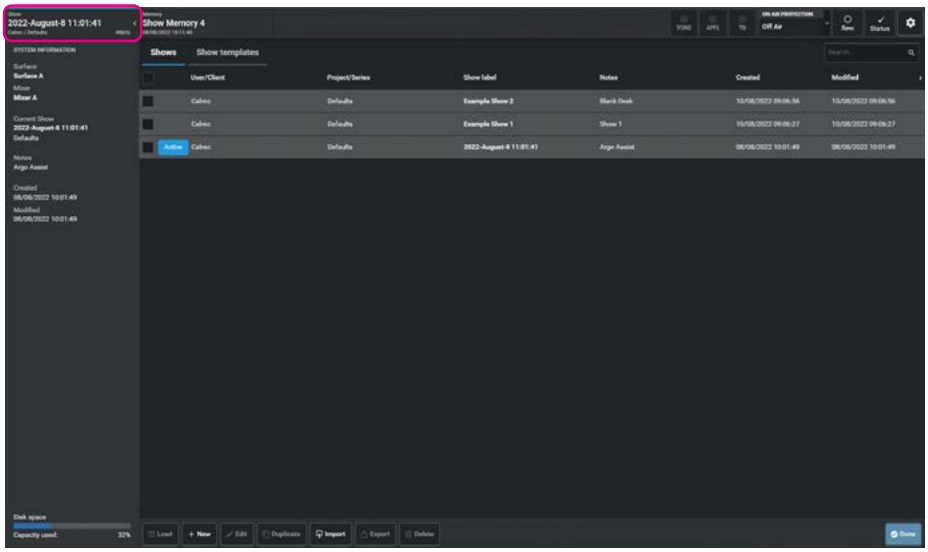


FIG 2 - CREATE NEW SHOW STEP 1

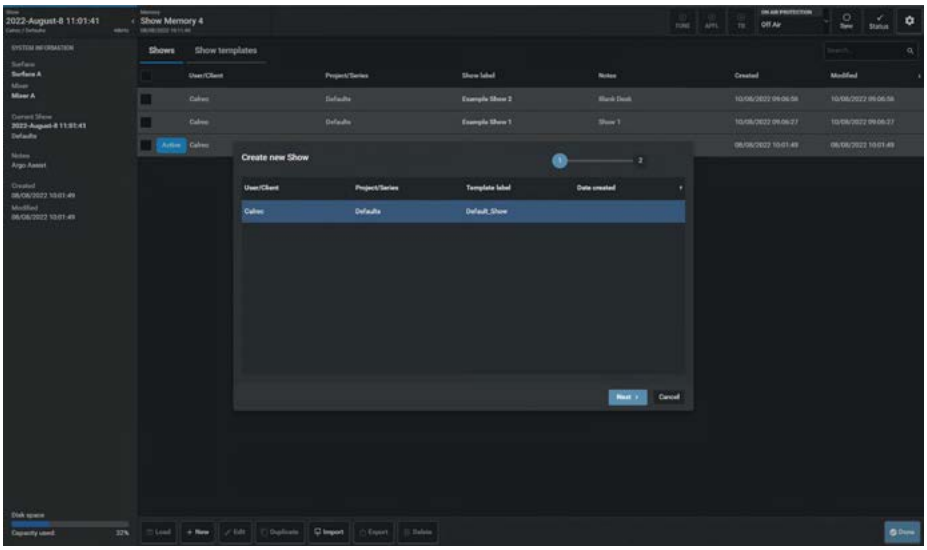
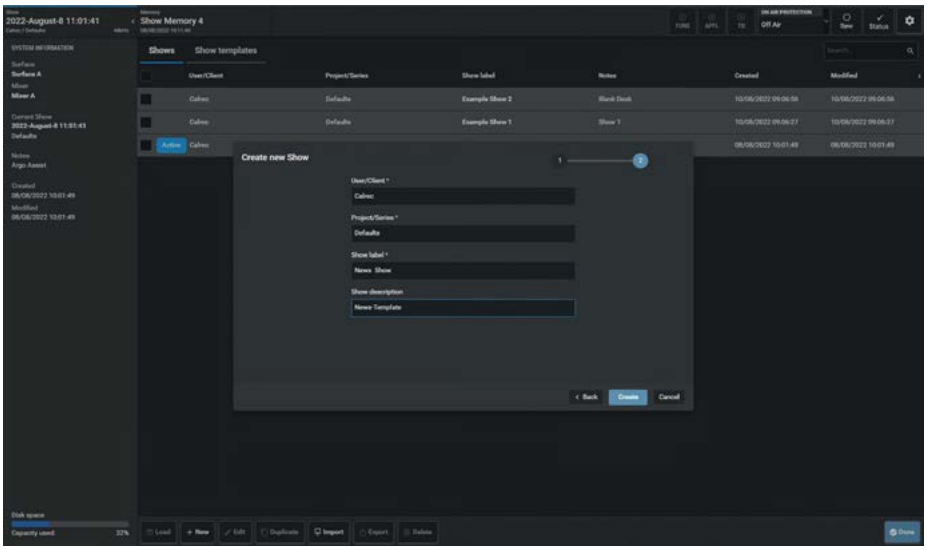


FIG 3 - CREATE NEW SHOW STEP 2



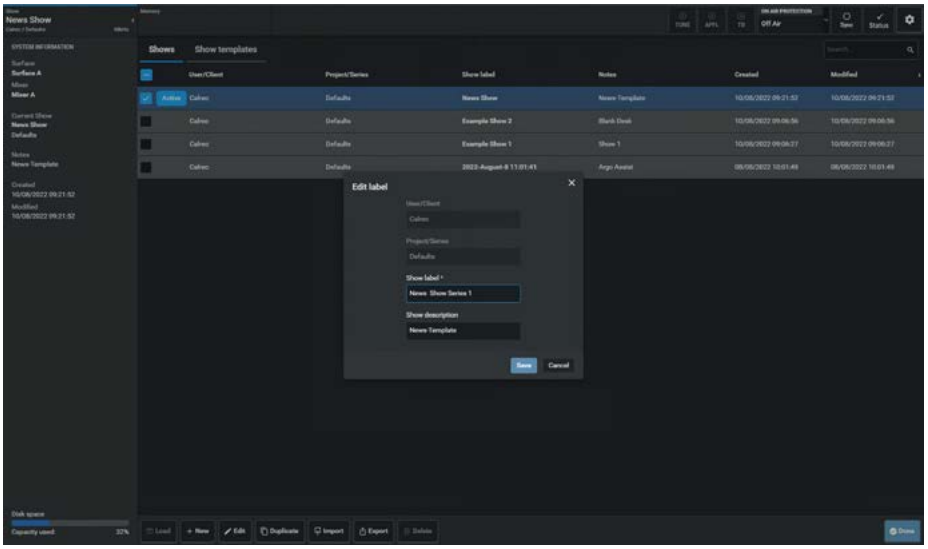
Edit Show Label
Once a show exists in the shows list the user can edit its show label and show description to make it more meaningful.

This is done by selecting the show, tapping on it and then tapping the **'Edit'** icon in the shows list footer.

This opens the "Edit label" pop-up and the user edits the show label and show description fields as required. See Fig 4.

Note: in order to Save Changes the show label or show description must have been edited.

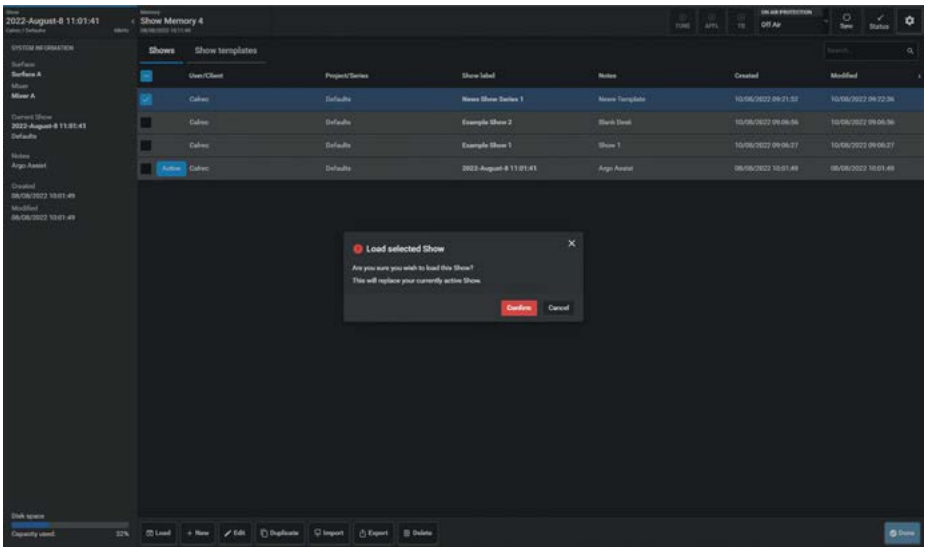
FIG 4 - EDIT LABEL



Load Show
In order to Load a Show the user selects the show to be loaded by tapping on it and then tapping on the **'Load'** icon in the footer.

This opens the "Load selected show" confirmation pop-up and the user taps the '**Load**' button as shown in Fig 5.

FIG 5 - LOAD SHOW



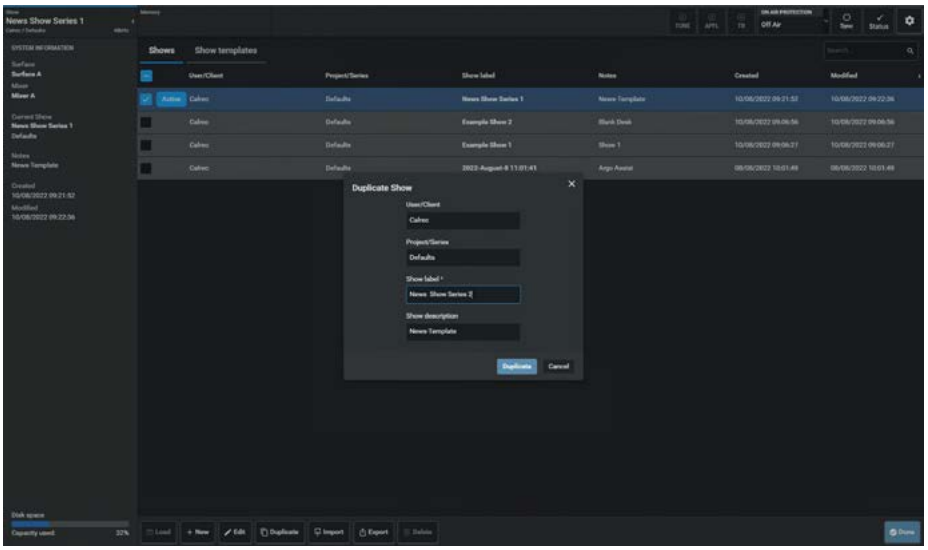
Duplicate Show
Sometimes it is useful to have an unedited or different copy or duplicate of a show.

In order to Duplicate a Show the user selects the show to be duplicated by tapping on it and then tapping on the **'Duplicate'** icon in the footer.

This opens the "Duplicate show" pop-up which allows the user to change the User/Client, Project/Series, Show Label & Show Description fields as required.

Once these fields have been edited the user taps on the **'Duplicate'** button and this creates a duplicate copy of the show, as shown in Fig 6.

FIG 6 - DUPLICATE SHOW

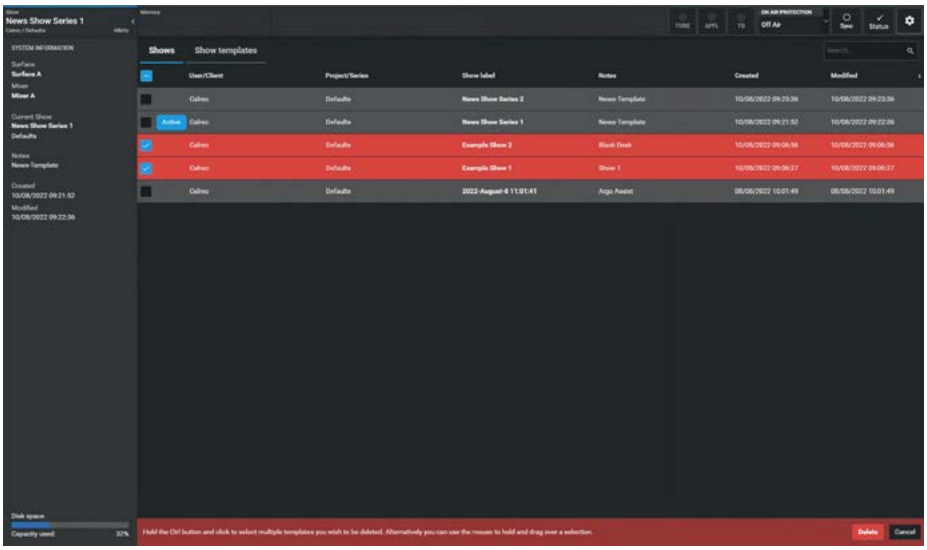


Delete Show

When shows are no longer required the user can select and delete them. To delete shows the user selects the shows to be deleted by tapping on them as confirmed with the “tick” icon and then tapping on the **‘Delete’** icon in the footer. This opens the delete dialogue footer which provides information about deleting multiple shows as shown in Fig 9. Once all the shows to be deleted have been selected the user taps on the **‘Delete’** button in the dialogue footer and this deletes them.

Note: the loaded ‘Active’ show cannot be deleted.

FIG 9 - DELETE SHOWS



Import Show

This is not available in V1.0.x, however this can be carried out using Assist.

Export Show

This is not available in V1.0.x, however this can be carried out using Assist.

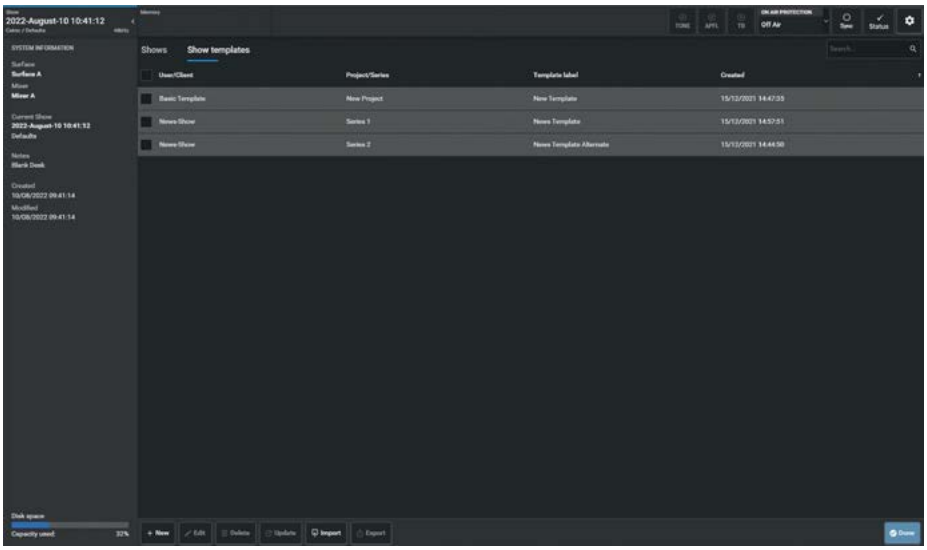
Show Templates

Once a show exists in the shows list it can be used as a Show template. This is done by tapping on the **'Show templates'** tab to the right of the 'Shows' tab.

This opens the show templates screen as shown in Fig 10.

Note: the Calrec Default Show Template doesn't appear in this list but it is always present in the system and appears when a new show is being created.

FIG 10 - SHOW TEMPLATES



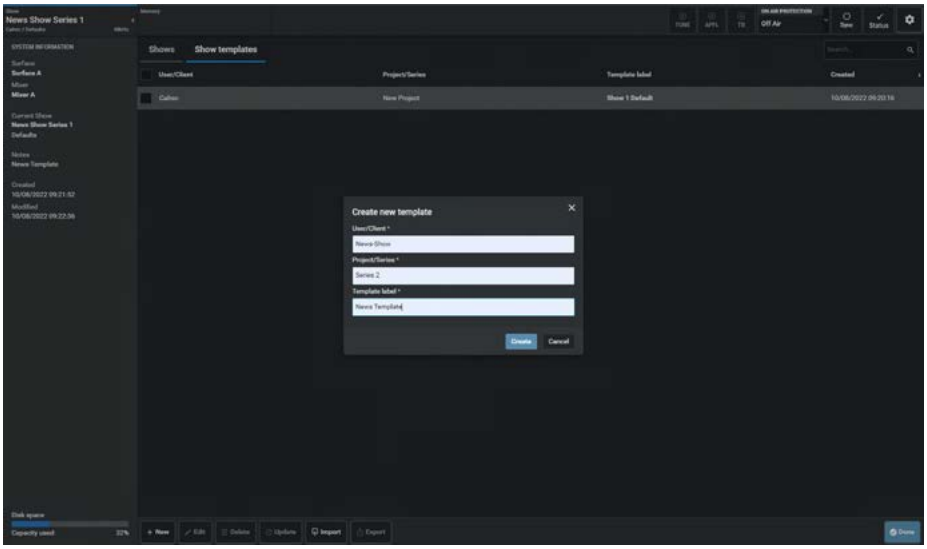
New Show Template

The User taps on **'New'** in the Show templates footer and the "Create new template" dialogue box appears.

The user can then add User/Client, Project/Series and Template Label information as shown in Fig 11.

Once the **'Create'** button is tapped the currently loaded 'Active' show becomes the new Show template and is now saved as a Show template file.

FIG 11 - NEW SHOW TEMPLATE



Edit Show Template Label

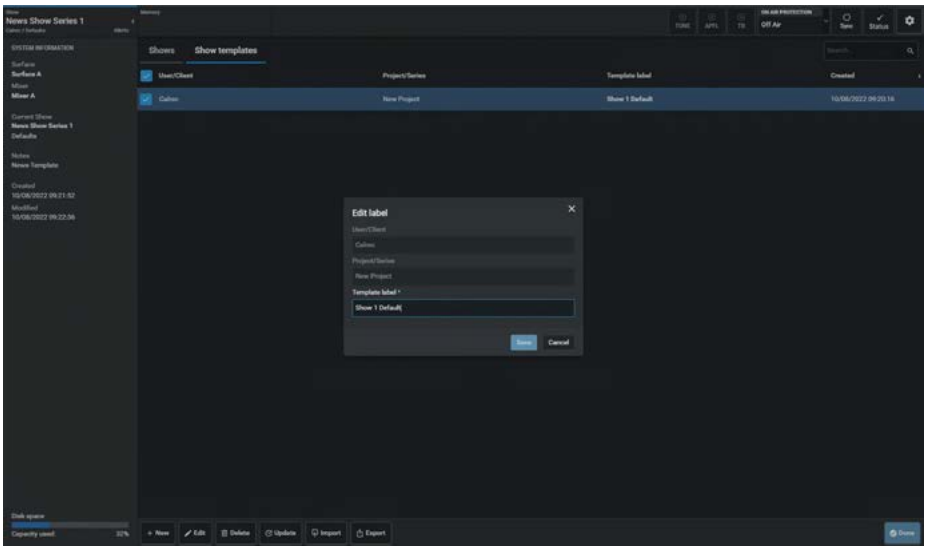
Once a template exists in the show templates list the user can edit its label and make it more meaningful. This is done by selecting the template and then tapping the **'Edit'** icon in the show template list footer.

This opens the "Edit label" dialogue box and the user edits the 'Template label' as required as shown in Fig 12.

Once the **'Save'** button is tapped the new label for the show template is applied.

Note: the User/Client and Project/Series fields cannot be edited from here and are greyed out.

FIG 12 - EDIT SHOW TEMPLATE LABEL



Delete Show Template
When show templates are no longer required the user can select and delete them. In order to delete show templates the user selects a show template to be deleted by tapping on them as confirmed with the "tick" icon and then tapping on the **'Delete'** icon in the footer.

This opens the delete template dialogue footer which provides information about deleting multiple shows by tapping on all the shows to be deleted.

Once the templates to be deleted have been selected the user taps on the **'Delete'** button and this deletes them, as shown in Fig 13. Once all the show templates to be deleted have been selected the user taps on the **'Confirm Delete'** button in the dialogue footer and this deletes them.

Note: the Calrec default template cannot be deleted and is not shown in the Show templates list.

Update Show Template
The image in Fig 14 shows the process of updating a Show Template. In order to update a show template the user selects the required show template to be updated by tapping on it as confirmed with the "tick" icon and then tapping on the **'Update'** icon in the footer.

This opens the "Update show template" dialogue which asks the user if they are sure that they want to update the selected template. Once the **'Update'** button is tapped it overwrites the stored show template with the loaded Active show.

Note: make sure that the correct existing Show template has been selected before applying 'Update' as it will be overwritten.

Import Show Template
This is not available in V1.0.x, however this can be carried out using Assist.

Export Show Template
This is not available in V1.0.x, however this can be carried out using Assist.

FIG 13 - DELETE SHOW TEMPLATES

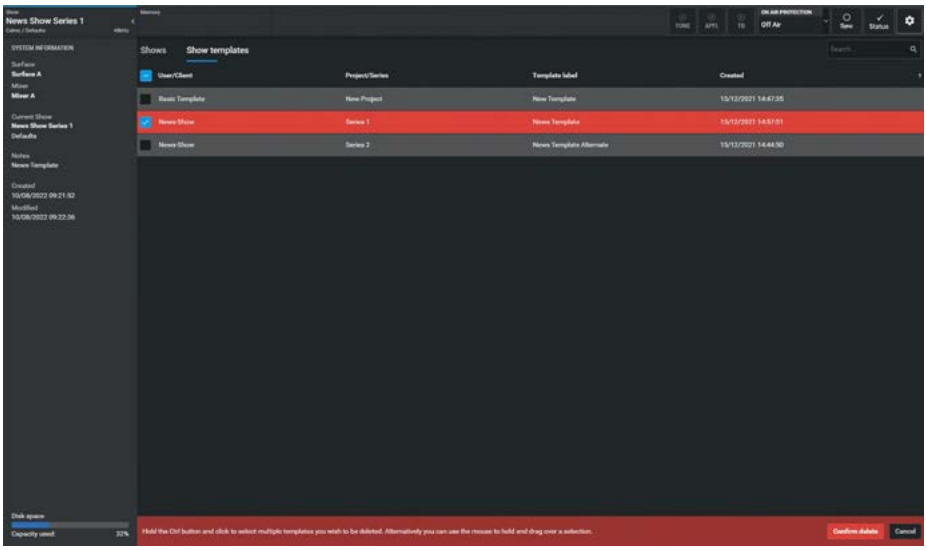
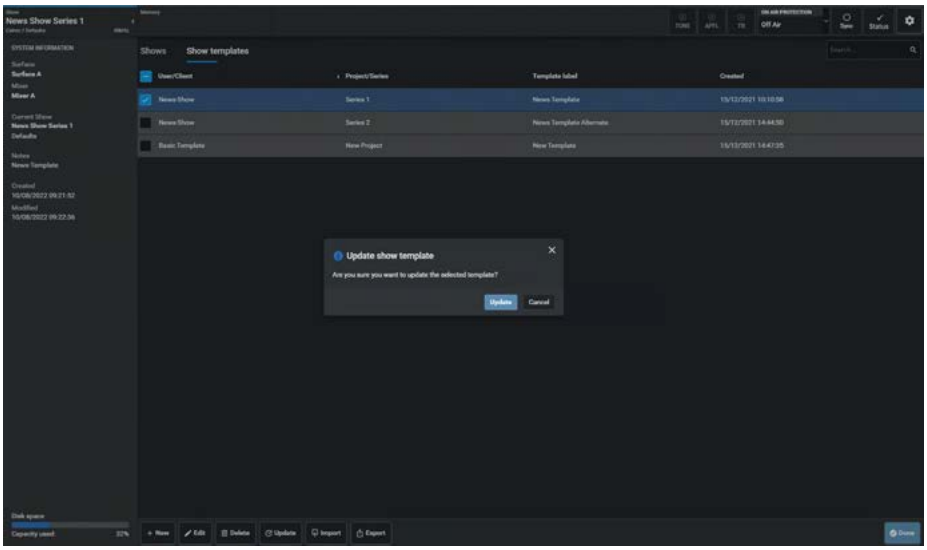


FIG 14 - UPDATE SHOW TEMPLATE



MEMORIES

User memories are files which store processing, routing & patching information which can be recalled at any time.
The Memories mode is accessed from either the Modes row of a fader panel, by first pressing the Modes Menu button in button cell 4 of the Layers & Modes row and then the user presses the 'Mems' button as shown in Fig 1, or by tapping on the appropriate icon on the touchscreen as shown in Fig 3. The surface displays/controls the relevant information on the touchscreen and there are 2 sub menus shown on both the standard fader an the lower right area of the Touchscreen labelled **Memories** and **Cues** as shown in Figs 2 & 3. Note: the Wild Assign panel is not involved in the creation or display of memories.

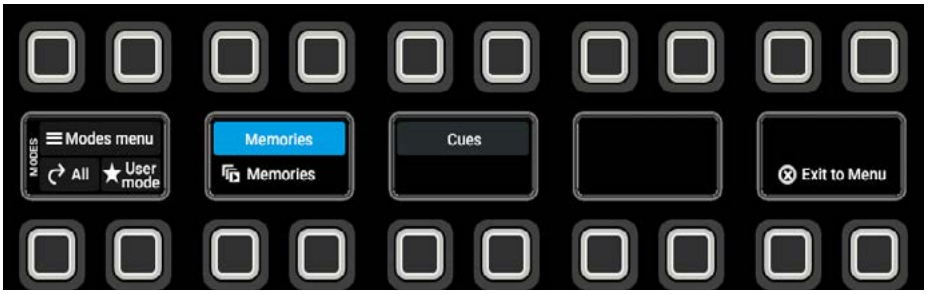
To access memories, the user selects **Mems>Memories** from the sub-menu as shown in Fig 2 on the modes row of the Standard fader panel or alternatively accessed from the Touchscreen area as highlighted in Fig 3.

Exit Memories

Once the user has finished using the Memories functions, pressing the 'Exit to Menu' button which takes them back to the primary modes menu.

FIG 1 -MEMORIES MODE SELECT ON STANDARD FADER PANEL

FIG 2 -MEMORIES MODE - MEMORIES SELECT ON STANDARD FADER PANEL



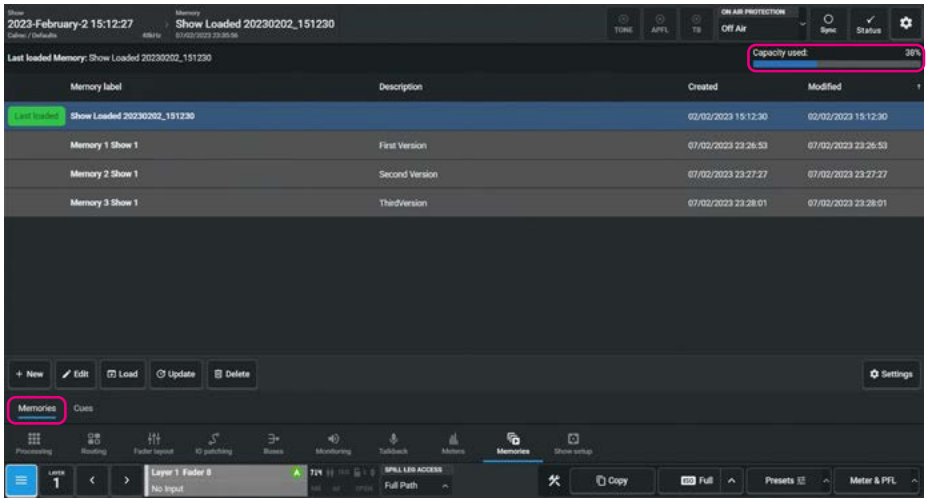
Memories Page Layout

Fig 3 shows the layout of the Memories page. The central area of the page contains the list of memories available for the current show.

An indicator on the left of the list shows which memory was the last one to be loaded and to the right of that are shown the Memory Label and Memory Description.

These are labelled when the New memory is created as shown in Fig 4, and can be re-labelled as required by tapping on the Edit button as shown in Fig 5.

FIG 3 - MEMORIES PAGE



Storage Capacity

There is a capacity indicator highlighted at the top right of the memories screen which shows the available storage space.

If more space is required, the user should delete any old shows and memories which are no longer needed.

The capacity indicator shows the amount of space available on the controller card for storing shows & memories, however, the controller card is also used for other files & folders, so the capacity may vary.

Creating a New User Memory

To create a new user memory with current surface settings:

1. Tap on **'New'** in the memories footer.

2. Enter a label and optionally a short description for the new user memory.

3. Tap on **'Save'** or **'Cancel'**. as shown in Fig 4.

Editing a User Memory Label

To edit a user memory label:

1. Select the memory to be renamed.

2. Tap on **'Edit'** in the memory footer.

3. Edit the label and optionally the short description for the user memory.

4. Tap on **'Save'** or **'Cancel'**. as shown in Fig 5.

Loading an Existing User Memory

To load a user memory:

1. Tap to select the user memory required and tap on **'Load'**.

2. The loading memory symbol may or may not appear (depending on memory size) in the background and the name of the memory loaded with the last loaded label is shown as highlighted in image below right.

3. There is a settings icon at the bottom right of the page, which is usually hidden. When loading without confirmation, it is shown as turned off. It allows the user to set a confirmation before loading a memory as a safety feature if required. Otherwise the memory loads without asking the user for confirmation, as shown in Fig 6.

Loading with Confirmation On

To load a user memory with confirmation:

1. Tap to select the user memory required and tap on **'Load'**.

FIG 4 - CREATE NEW USER MEMORY & LABELS

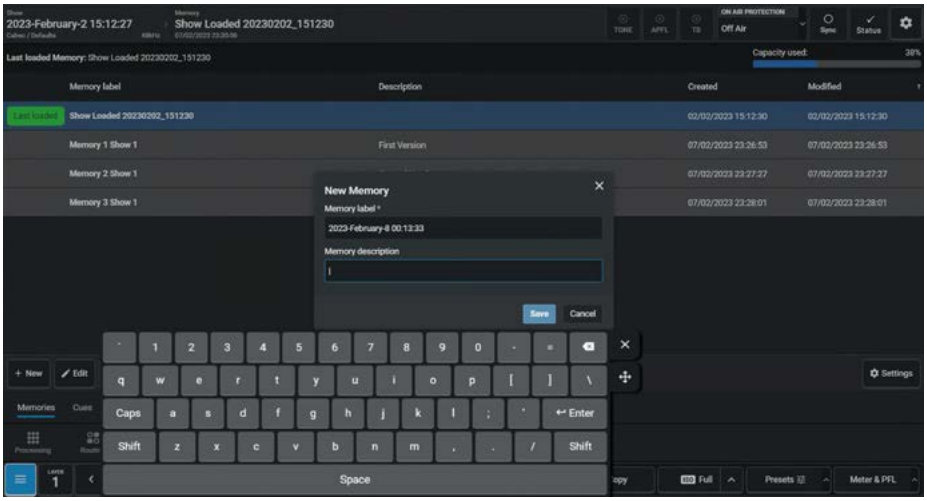


FIG 5 - EDIT USER MEMORY LABELS

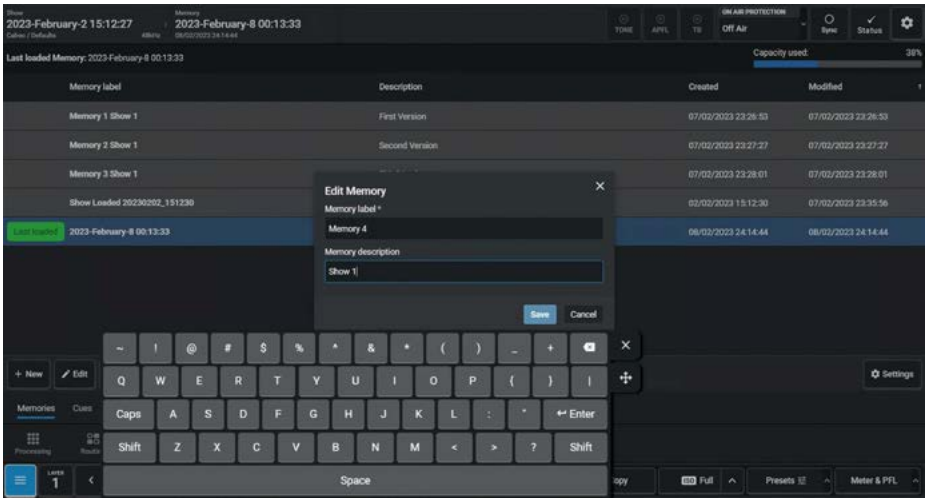
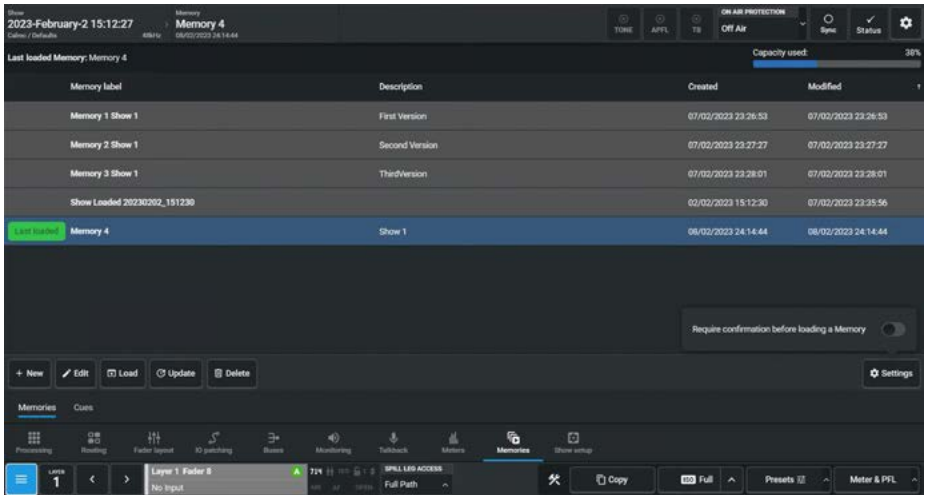


FIG 6 - LOAD USER MEMORY (WITHOUT CONFIRMATION)



2. A dialogue box appears to show the confirmation request which asks the user to confirm by tapping on **'Load'** or **'Cancel'** as shown in Fig 7.

This is because the Confirmation before loading option which is usually hidden, has been enabled.

Updating a User Memory

To update a user memory with the current surface settings:

1. Select the user memory that is to be updated and tap on **'Update'** in the memories screen footer.

2. A prompt will appear for the user to confirm by tapping on either **'Update'** or **'Cancel'** see Fig 8.

Deleting a User Memory

To delete a user memory that is not the current loaded memory:

1. Tap to select the user memory to be removed and tap on **'Delete'** in the footer.

2. This opens the delete dialogue in the footer which provides information about deleting multiple shows by tapping on all the shows to be deleted.

3. Once the memories to be deleted have been selected the user taps on the **'Delete'** button and this deletes those memories as shown in Fig 9 or **'Cancel'**.

Creating Multiple User Memories

Best practice is to create one "default" user memory, test it, make any necessary changes, and then use this as the basis for all other user memories in the show.

This speeds up the process by reducing the need to make the same changes to many different user memories. To do this, create, test and update what is to be the 'default' user memory as described above.

With this user memory still loaded on the surface, tap on **'New'** and the information will be saved into a new user memory, creating a duplicate.

FIG 7 - LOAD USER MEMORY WITH CONFIRMATION

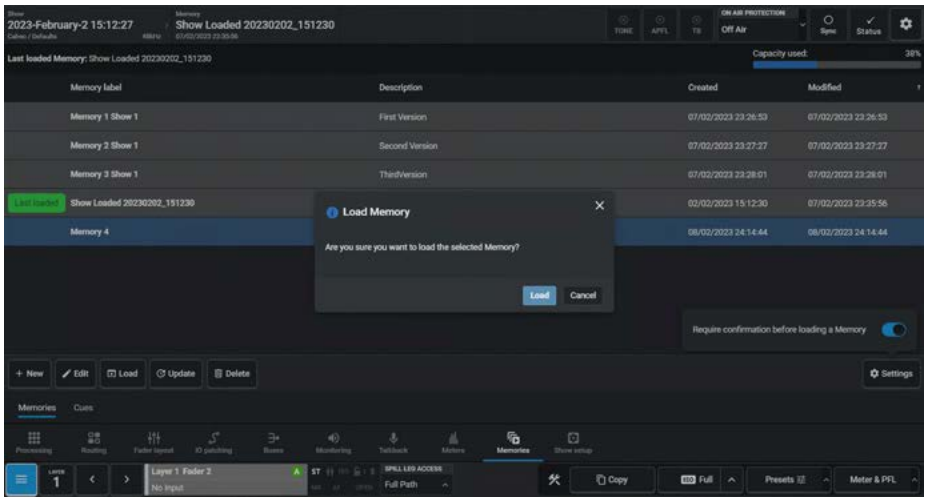


FIG 8 - UPDATE USER MEMORY

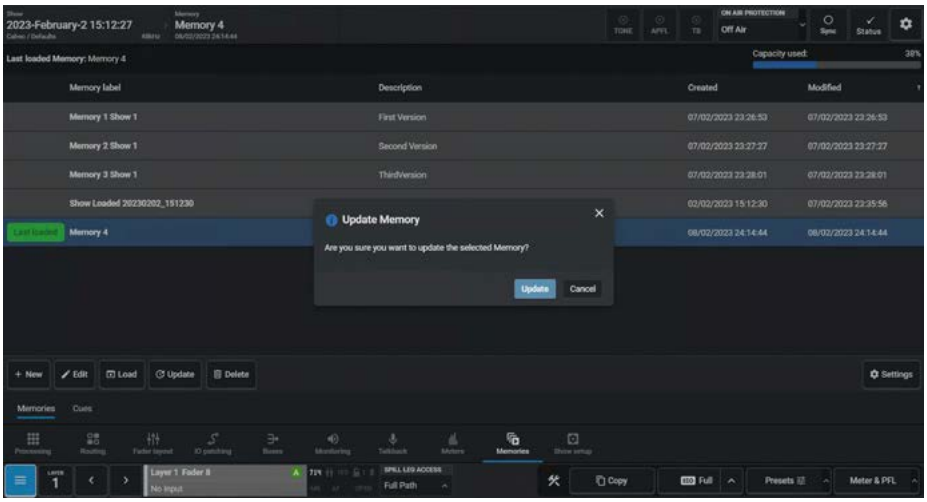
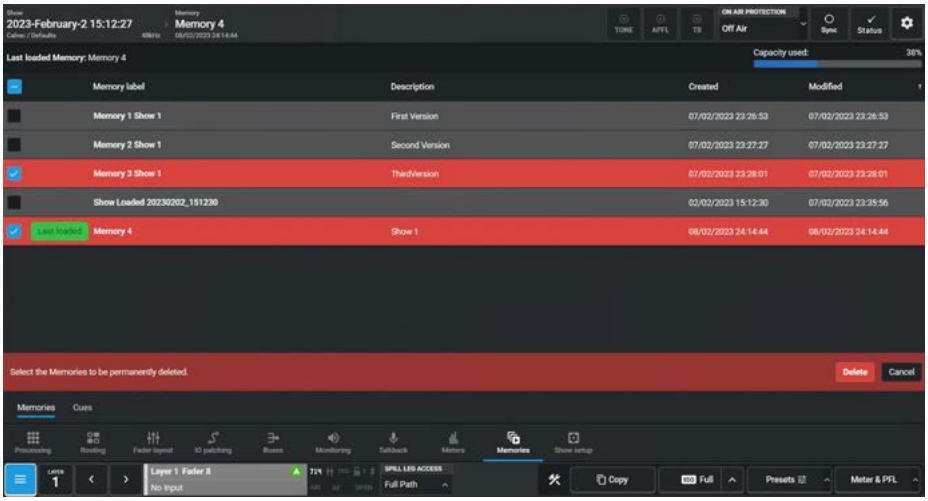


FIG 9 - DELETE USER MEMORY



CUES

The Cues List allows user memories to be stacked in order to be able to recall them in sequence.
To access cues, the user selects the **Mems>Cues** entry from the menu.

This mode can either be selected from the Modes row on a standard fader panel by first pressing the Modes Menu button then the Mems button to show the Memories submenus as shown in Fig 1 this can also be accessed from the lower part of the Touchscreen as highlighted in Fig 2.

Exit Memories
Once the user has finished using the Memories functions, pressing the 'Exit to Menu' button which takes them back to the primary modes menu.

Creating a New Cue
Each user cue has an associated memory which is added to the sequence list.

To add a cue to the list, tap the **'New'** button in the memories footer as shown in Fig 2. This presents the user with three options:-

Selecting **'New Cue'** puts a place-holder into the list which can be later edited to add a user memory, as shown in Fig 3.

The user can enter a name for the Cue using the On-screen-keyboard

Creating a New Cue with memories

The user can select:-
'New Cue with new Memory' which will save the current console settings as a user memory and add it to the cue list as shown in Fig 4.

The user can enter a name for the Cue, Memory Label and optional Description using the On-screen-keyboard.

This memory also becomes available to load from the memory list like any other memory.

Tap on **'Save'** to create a New Cue with a New Memory or **'Cancel'** to exit the dialogue as required.

FIG 1 --MEMORIES MODE - CUES SELECT ON STANDARD FADER PANEL

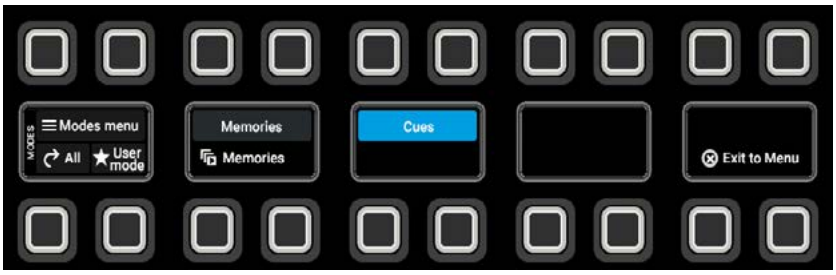


FIG 2 - ADD NEW CUE OPTIONS

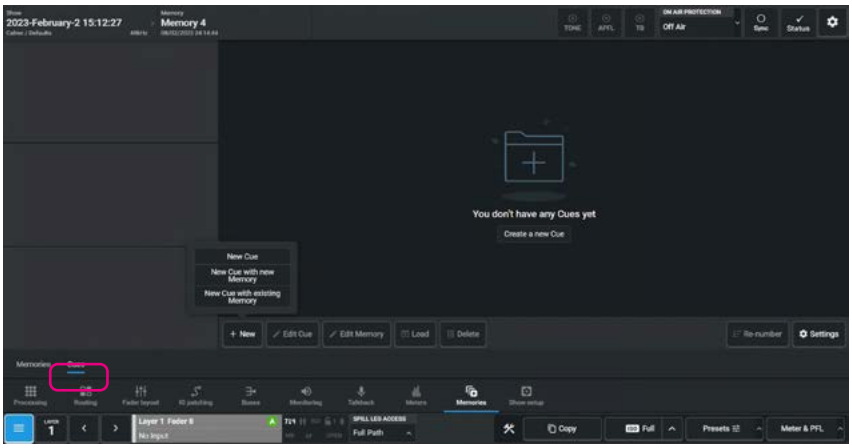


FIG 3 - NEW CUE WITH NO MEMORY ATTACHED

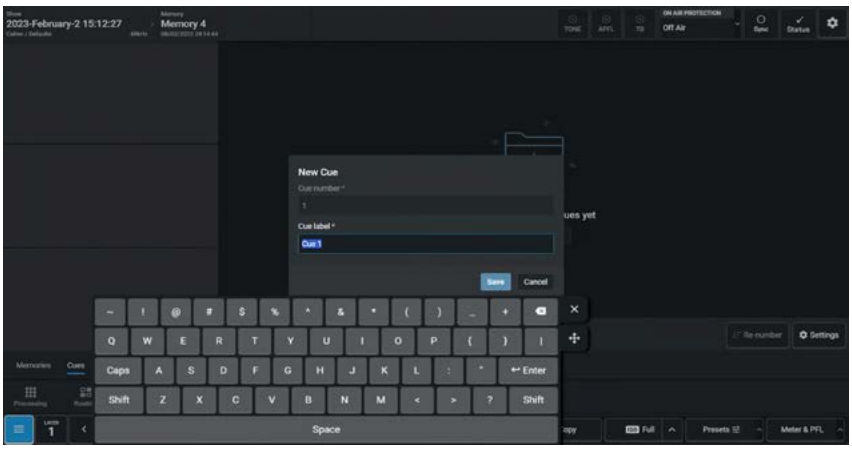
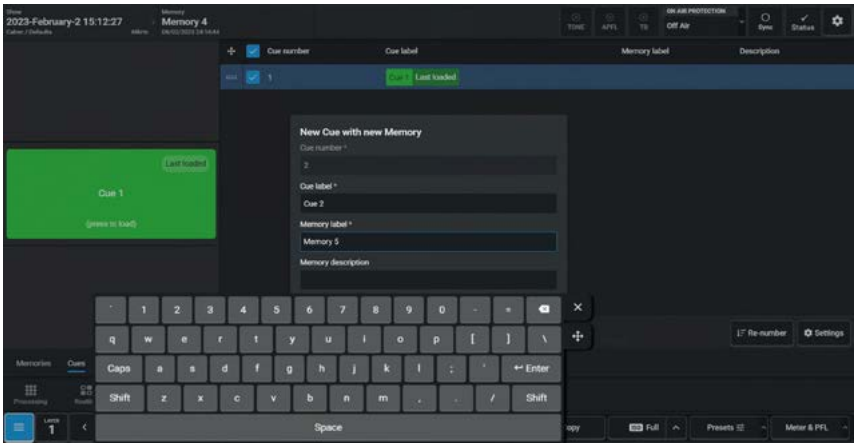


FIG 4 - NEW CUE WITH NEW MEMORY



Alternatively the user can select:-
'New Cue with existing Memory' allows the user to choose a pre-saved user memory from the current show to add to the cue list, see Fig 5 on the next page.

Editing a Cue Label
The Edit Cue icon in the memories footer allows the user to relabel the cues. The user enters the replacement Cue Label "Current Cue 1" in the Cue Label field as shown in Fig 6.

The **'Previous'** and **'Next'** buttons allow the user to select each of the cues in turn and relabel them as required without exiting the Edit Cues dialogue.

The user taps on **'Save'** when finished or '**Cancel**' to exit the dialogue as required.

Editing a Memory
The Edit Memory button in the memories footer as shown in Fig 7, provides the user with a number of options relating to both Memories and their related Cues:-

Create new Memory & attach to Cue: Tapping this will bring up the **'New'** dialogue, which behaves as described in the **Memories>Memories** section. When the new memory is created, it is also attached to the selected cue, replacing any existing memory attachment. The previously attached memory is not deleted and remains in the console, so this does not need confirmation.

Attach existing Memory: Tapping this brings up a dialogue list of all existing memories in the show and behaves as in the "New Cue with Existing Memory" dialogue. The selected existing memory replaces any previous memory.

Update Memory: Tapping this will initiate the same "Update" dialogue which behaves as described in the **Memories>Memories** section.

The memory to be updated is the one attached to the cue and will affect any other cues that use the same memory. If this isn't what the user wants, then they can use the **'Create New Memory and attach to cue'** instead.

FIG 5 - NEW CUE WITH EXISTING MEMORY

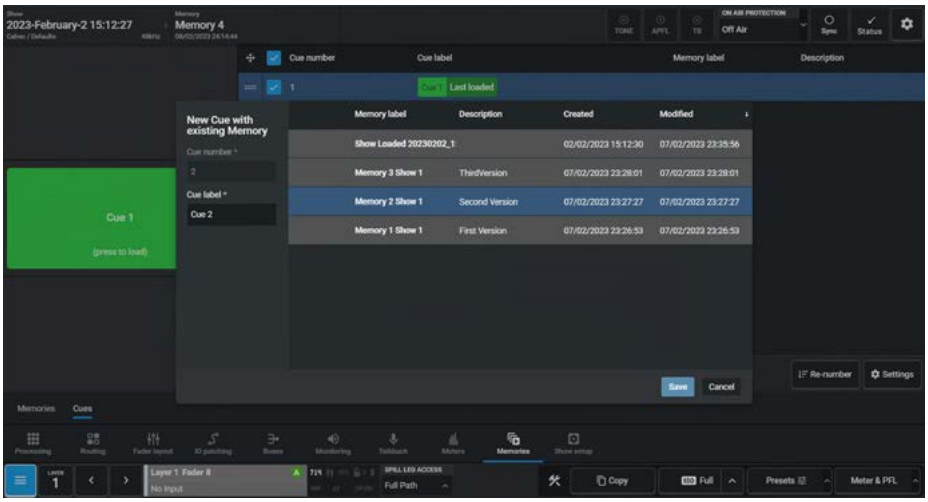


FIG 6 - EDIT CUE LABEL

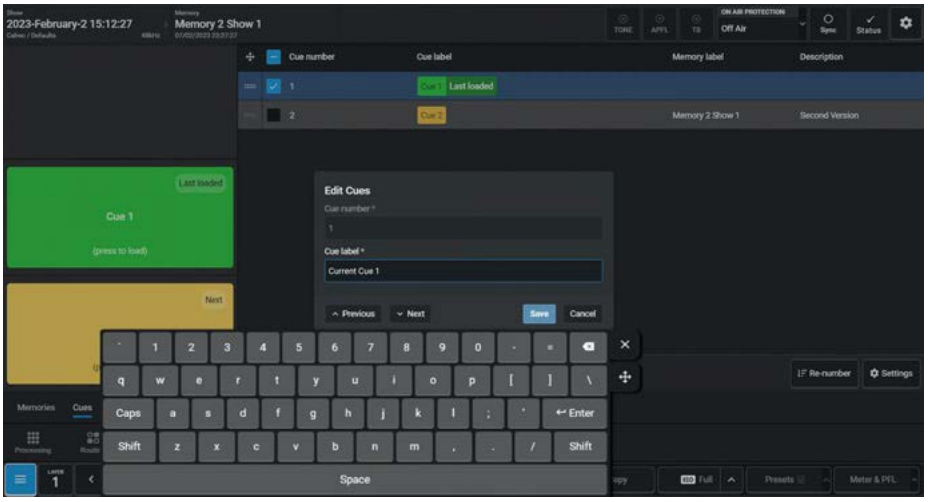
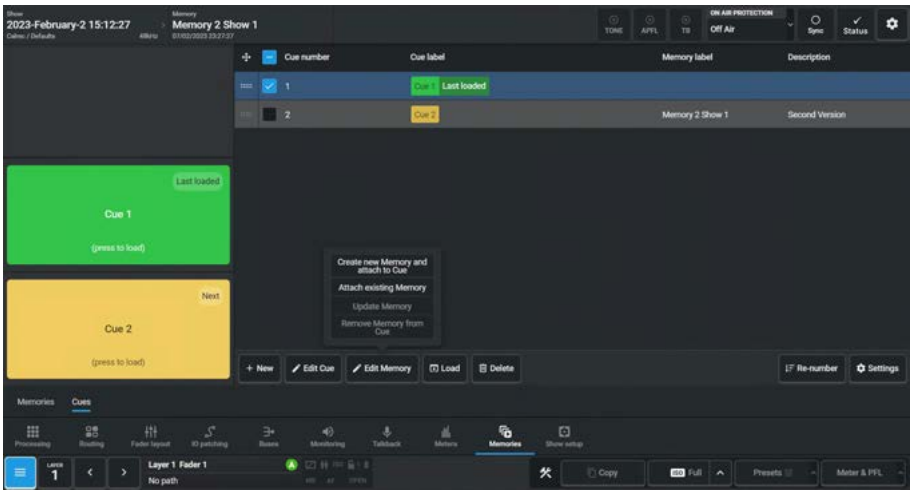


FIG 7 - EDIT MEMORY



Remove Memory from Cue:
Tapping this will remove any existing memory attached to the selected cue or cues, it is disabled if there is not a memory attached. This can be applied to multiple cues and the memories themselves won't be deleted, so no need for confirmation.

Loading Cues
Tapping on the Load Icon in the footer will load the next cue number in the list. Items in the cue list are colour-coded as green for current, yellow for next and gray for previous.

The user can also tap on the Grey, Green and Yellow blocks to load those cues and associated memories directly.

Before the Load button is tapped the image in Fig 8 shows that Cue 2 is the last loaded and Cue 3 is the next one to load.

After the Load button is tapped Cue 2 becomes the previous cue, Cue 3 becomes the last loaded cue and the next cue, Cue 4 appears as the next one in the list as shown in Fig 9.

Deleting Cues
To delete selected cues, pick the cues from the cue list and then tap on the **'Delete'** Icon in the footer, the **"Delete selected Cues"** dialogue appears as shown in Fig 10, which displays the cues to be deleted.

Tap on **'Delete'** or **'Cancel'** as required. The memories attached to the deleted cues will not be deleted and the numbering of all the remaining cues remain the same.

FIG 8 - CUES BEFORE LOAD

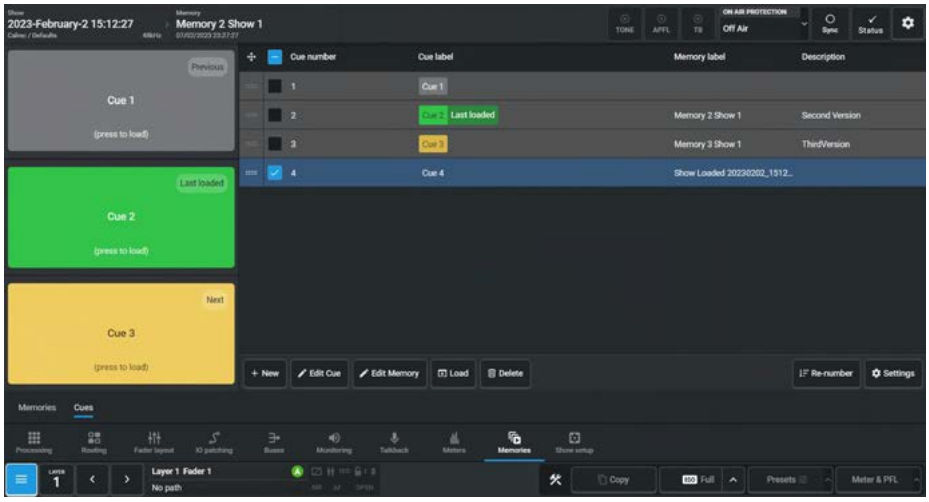


FIG 9 - CUES AFTER LOAD

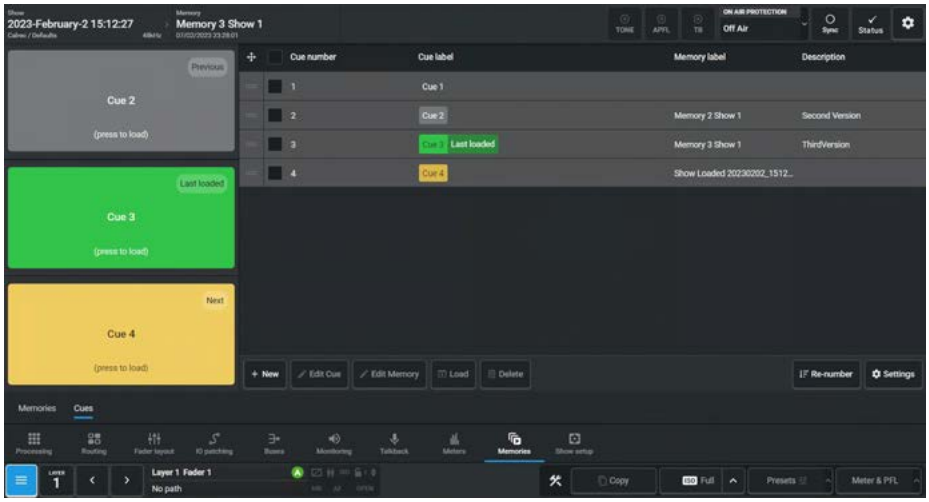
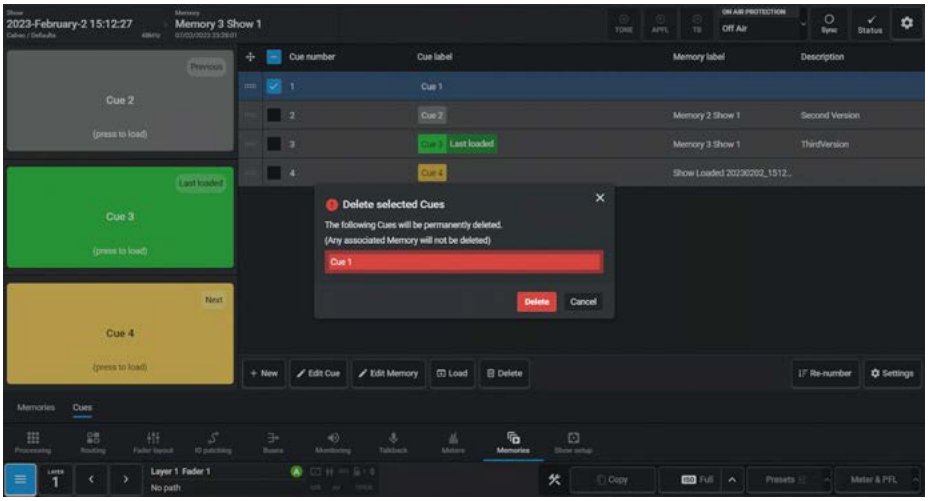


FIG 10 - DELETE CUES



Reordering and Renumbering Cues
On the left side of the cue list is a manual sort column, with '**:::::**' drag handles. The user can select items in this column and drag them up or down the list, in this way a cue list order can be arranged for use during a show.

The numbers of the selected cues that were moved remain as they were prior to the move. The Cue order was 1, 2, 3, 4 but is now 3, 2, 4, 1 as shown middle right. If Cue 2 and then Cue 1 were dragged to the top their cue numbers would be back in sequence.

Loading the **'Next'** cue or **'Previous'** cue via the large cue buttons will always follow the order in which the list appears, even if cue numbers are out of sequence.

Once the list is sorted the user can renumber all the cues to make the order simpler and more obvious by tapping on the **'Re-number'** Icon in the footer.

This opens the Renumber Sequence dialogue as shown in Fig 11, actioning this would cause the first cue to become cue number 1 and all subsequent cues will be given incremental integers as shown in Fig 12. To action this Tap on **'Re-number'** or **'Cancel'** as required.

Cue List Settings
On the right side of the Cue footer is a Settings icon which when tapped reveals two optional features as shown in Fig 13.

External Sequence control:
An external controller can, by using GPI's or a Control Protocol such as Ember+, load the previous cue or next cue. The external sequence control slider switch can enable or disable this remote control functionality.

Keep Last Loaded Cue in View:
This slider control keeps the last loaded cue visible in the list by automatically scrolling the cue list.

FIG 11 - RENUMBER CUES BEFORE RENUMBERING

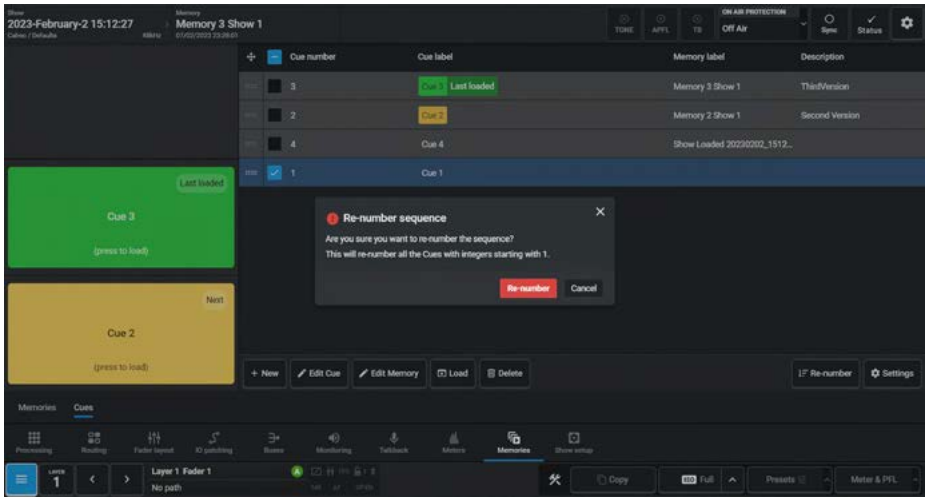


FIG 12 - RENUMBER CUES AFTER RENUMBERING

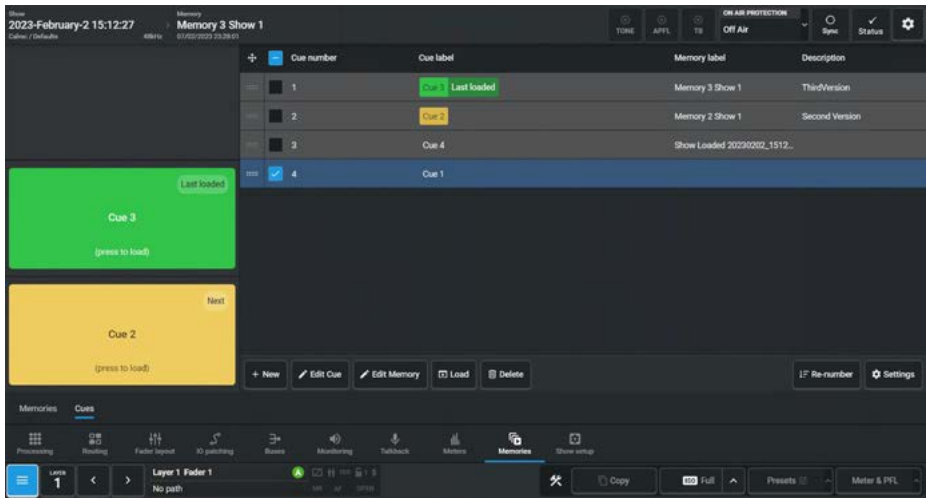
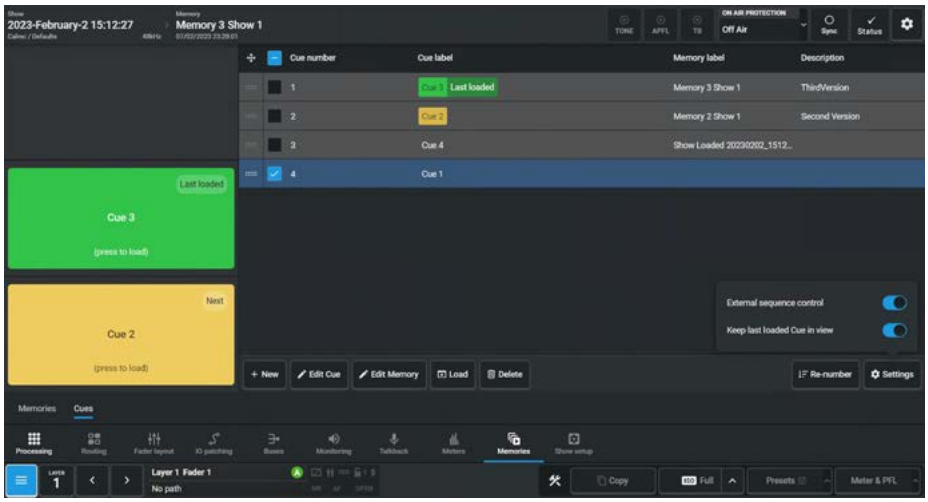


FIG 13 - CUE LIST SETTINGS



ARGO
SHOW SETUP

CALREC

CUSTOMISE PANELS

The Customise Panels options in the Show setup pages allows the user to display a selection of Controls and place them on the control surfaces to provide a Customised control layout which suits the workflow of the operator. There is a vast selection of controls available for placement on the Fader Panels, Wild Assign panels and Monitor panels which can be altered as needed by the user and saved into Custom panel preset. These can then be recalled, renamed, updated, exported and imported at any time to provide a library of control functions.

The Show setup mode is accessed from either the Modes row of a fader panel, by first pressing the Modes Menu button in button cell 4 of the Layers & Modes row and then the user presses the 'Show setup' button as shown in Fig 1, or by tapping on the appropriate icon on the touchscreen as shown in Fig 5.

The surface displays/controls the relevant information on the touchscreen and there are 8 sub menus shown across 2 pages on the standard fader as shown in Fig 2 and Fig 3, as a set of 8 sub menus on the lower area of the Touchscreen as highlighted in Fig 5.

Note: the Fader panels, Wild Assign panels & Monitor panels are not directly involved in the process of creating customised panel layouts (other than displaying the resultant layouts) as this is primarily implemented on Touchscreens.

Custom Controls - Fader Panels

The Argo console has the ability to display custom configured functions on each of the control panels. The 4 x 4 button control cells placed top right on the IU6576 Standard Fader panel can be used for this purpose as shown in Fig 4.

The first of these 4 cells allows the user to select different pages (Pages 1 & 2) for the other 3 cells which are highlighted as shown on the fader panel images above right. The 3 cells can have their buttons configured to perform a customised set of button functions.

Note: the Wild panel button shown in the top left of button cell 8 (to the left of the Page 1 and Page 2 buttons allows the user to switch on or off the Custom Wild controls on the Wild Assign panels above the Standard Fader panels.

FIG 1 -SHOW SETUP MODE SELECT ON STANDARD FADER PANEL

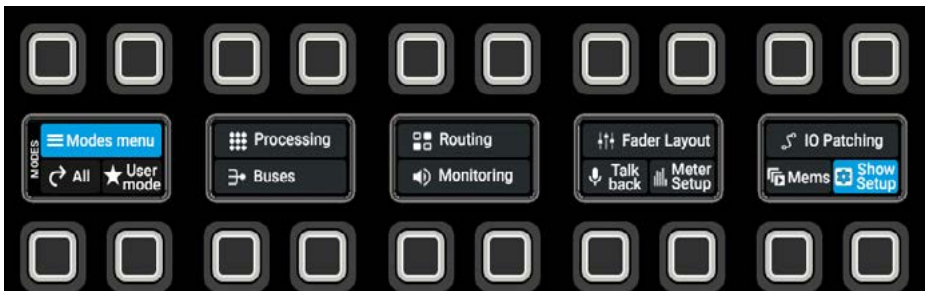


FIG 2 -SHOW SETUP MODE - CUSTOMISE PANELS SELECT ON PAGE 1

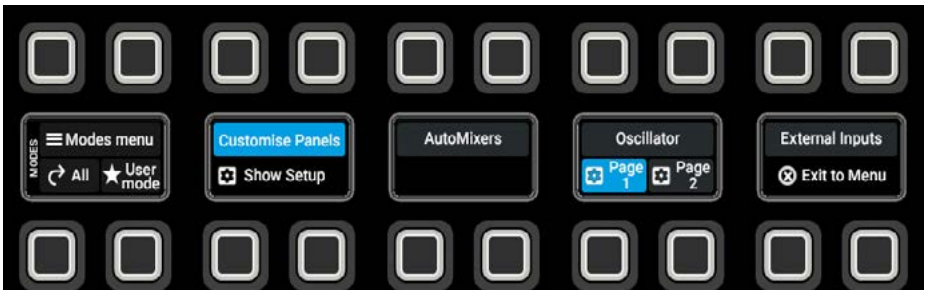


FIG 3 -SHOW SETUP MODE - CONTROL PREFERENCES SELECT ON PAGE 2

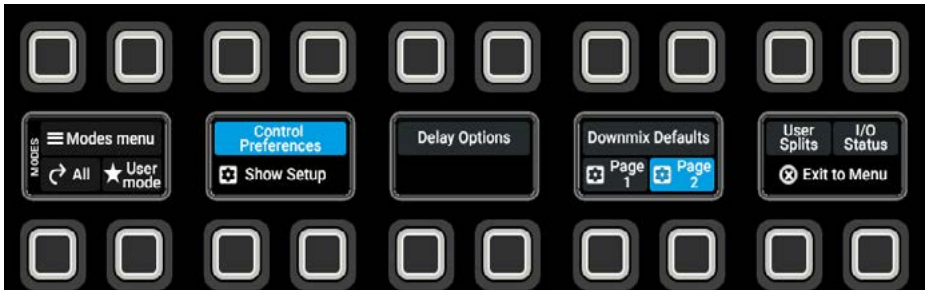
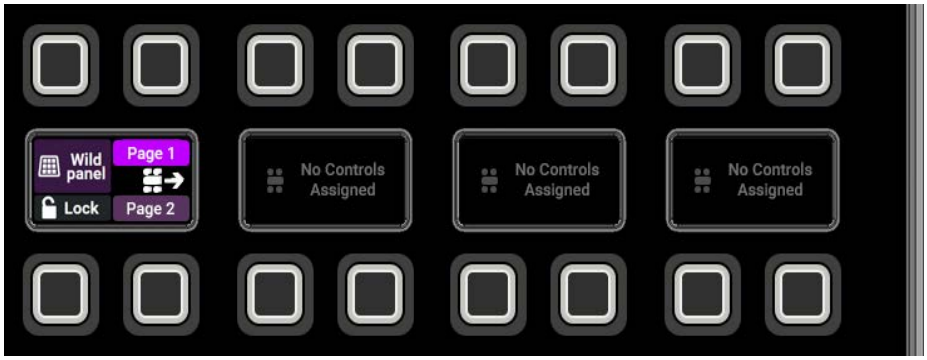


FIG 4 -CUSTOM CONTROLS AREA ON STANDARD FADER PANEL



To configure the 2 pages of the 3 x 4 button cells, the user first selects the standard fader panel to have its control cells configured from the Surface panel layout shown in Fig 5 when entering the **Show setup>Customise panels** page.

The user then selects the cell to add a control to on that panel by tapping on it, which highlights the cell as shown in Fig 6.

Selecting this option opens the user controls editor and on the right side of the editor is shown the 4 button layout with the currently undefined user controls shown in the display in the centre.

Tapping on any of the 4 buttons in the display or any of the 4 Add buttons under button functions, opens the Customise button menu as shown in Fig 7.

The following pages detail the extensive set of control options that each of the 4 buttons for the selected path can be customised to perform.

In order to simplify some of these selections, 3 filter sets are provided:-

- Global Functions: these controls are console wide.
- Path Functions: these controls apply to the selected path.
- Bus Functions: these controls apply to buses only.

The sliders filter for that type of function in the control option lists.

The user taps on **OK** once the selection is made or **Cancel** to exit unchanged.

All the button control options and operation are the same as those shown in the User controls editor in the **Fader Layout> Controls** page and as such will not be repeated here. See **"User Controls Editor" on page 120.**

FIG 5 - CUSTOMISE PANEL MODE - SURFACE PANEL LAYOUT

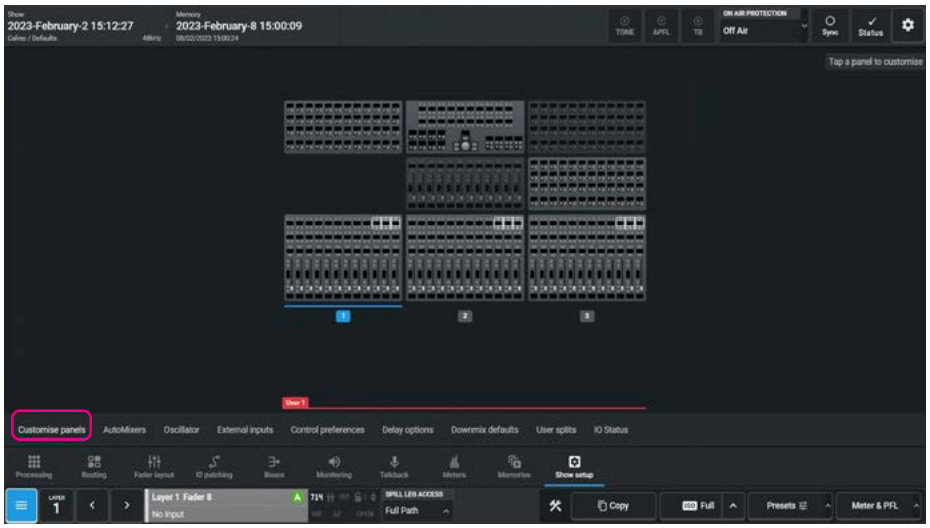


FIG 6 - FADER PANEL CUSTOM CONTROLS

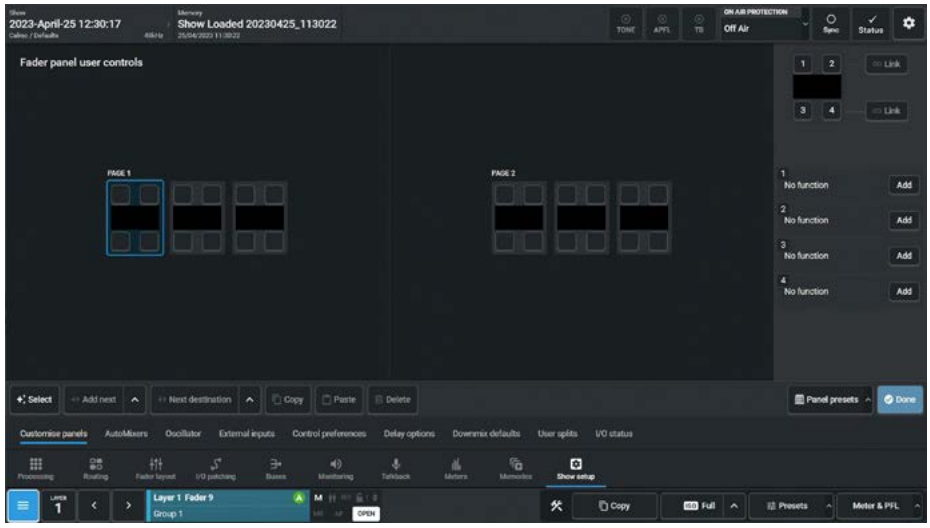
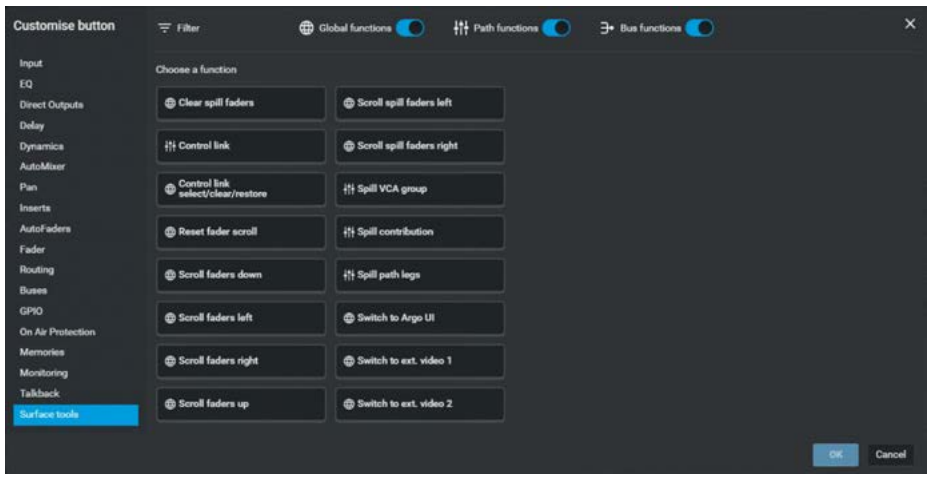


FIG 7 - ASSIGNING FUNCTIONS TO FADER PANEL CUSTOMISED BUTTONS

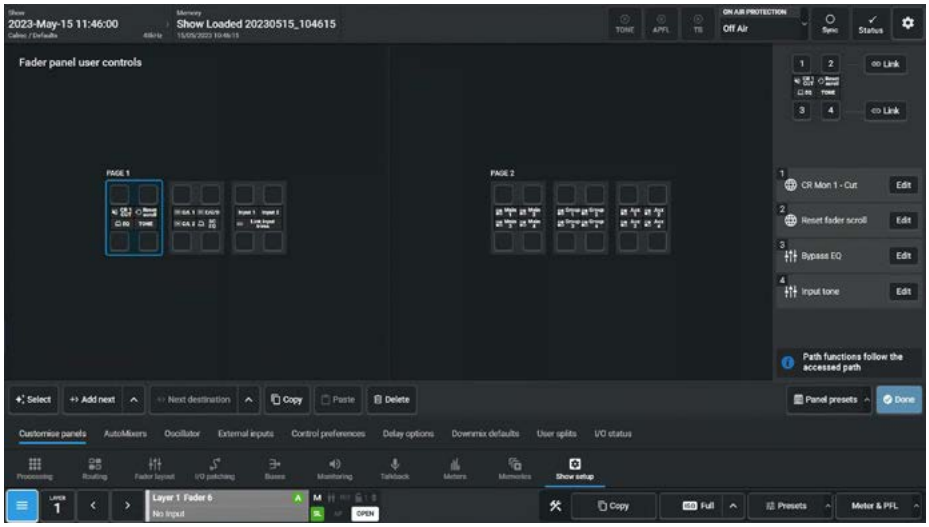


Path Follows Accessed Path
The Path functions follow area at the bottom right of the Customise panels page shows that any path functions will follow the Accessed path and it should be noted that Global and Bus functions are independent of this follow mode."

This means that when appropriate the custom controls will appear with the settings that relate to the currently Accessed path.

In the case of mixed control cells such as that highlighted in Fig 8, only the Tone and Bypass controls would only be applied to the currently accessed path, whilst the Global CR Mon 1- CUT control and Bus Aux 1- CUT control are fixed.

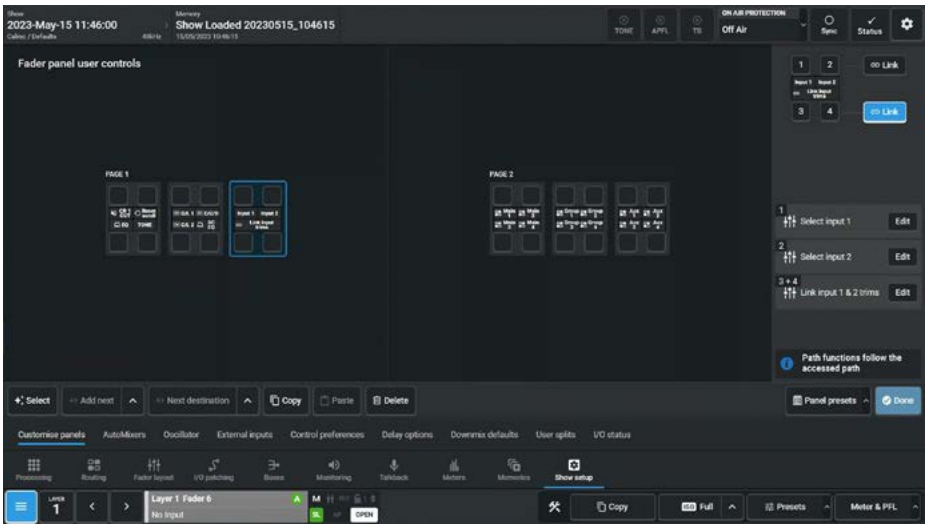
FIG 8 - ONLY PATH FUNCTIONS FOLLOW ACCESSED PATH



Path Input Functions Follows Accessed Path
Fig 9 shows that the highlighted 4-button cell contains path functions related to Input controls.

This means that when appropriate the custom controls will appear with the settings that relate only to the currently Accessed path. In this case the Input 1 and Input 2 selectors and the Link input trims would appear for channel input paths, but would not be available when not applicable such as on a Main bus when accessed.

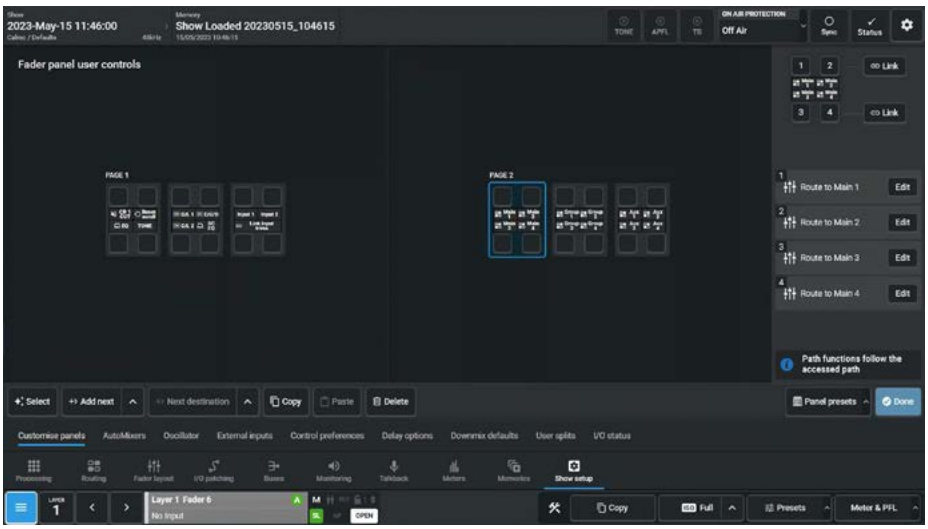
FIG 9 - PATH INPUT FUNCTIONS FOLLOW ACCESSED PATH (WHEN APPLICABLE)



Path Routing Functions Follows Accessed Path
Fig 10 shows that the highlighted 4-button cell contains path functions related to routing to Main outputs 1-4.

These functions would appear for paths that can be routed to Main outputs such as Channels and Groups, but would not be available when not applicable such as on an Aux bus when accessed.

FIG 10 - PATH ROUTING FUNCTIONS FOLLOW ACCESSED PATH (WHEN APPLICABLE)



Custom Controls - Wild panels

The Argo console has the ability to display custom configured variable controls on the Wild Assign or Monitor panels. The rotary control cells on the CA6575 Wild Assign panel has 48 cells that can be used for this purpose as shown in Fig 11.

This is carried out by first selecting the panel to have its control cells configured from the Surface panel layout shown when entering the **Show setup> Customise panels** page. The user then selects the cell(s) that they wish to add controls to on that panel by tapping on the required cell(s).

Then tap on the '**Add control**' button which appears on the right of the panel. This opens the rotary controls template which contains all the current control variants that can be applied. The selected cell(s) can have one of the many templates attached to it by choosing which control to use tapping on that control from the template sets as shown in Fig 12 and tapping on the 'OK' button. There are many pages of Templates to choose from arranged in various ways:

'All templates' as the name suggests contains them all, or a particular template such as the Input can be selected displaying the associated subset.

Alternatively the user can search for a particular control or set of controls using the search box top right of the 'Choose a template' pop-up.

The image in Fig 13 shows that a set of templates have been put together to provide a combined Equaliser and Dynamics 1 control set. When the user selects a cell that has already had a control assigned its name appears along with an edit button allowing the user to change the function of that cell.

These completed sets of controls can then be saved as presets by tapping on the **'Panel Presets'** button at the bottom right of the panel page allowing them to be saved, updated and loaded as required.

Note: once the Custom controls template is loaded for the Wild Assign panel, the Wild panel button (see **"Fig 4 -Custom Controls Area On Standard Fader Panel" on page 234**) can be used to switch between custom controls and the standard contextual controls.

FIG 11 - WILD PANEL CUSTOM CONTROLS

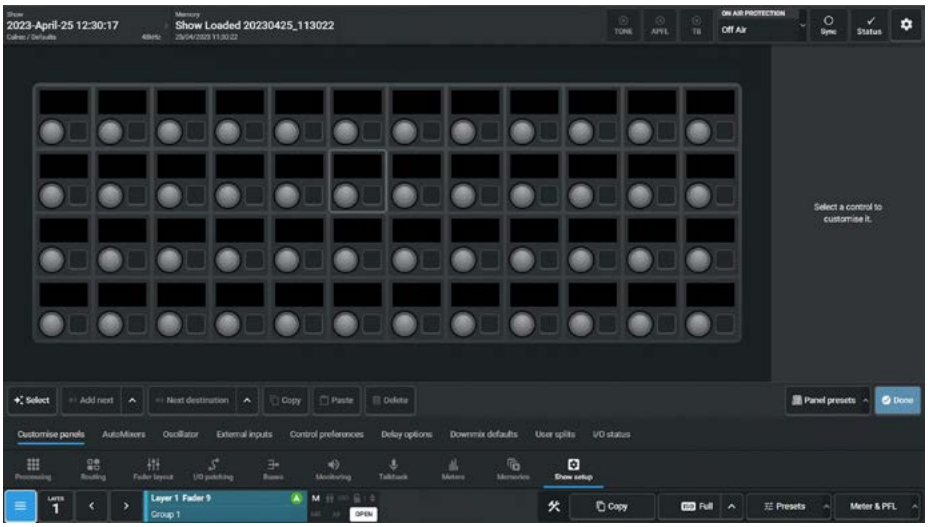


FIG 12 - WILD PANEL CONTROLS TEMPLATE

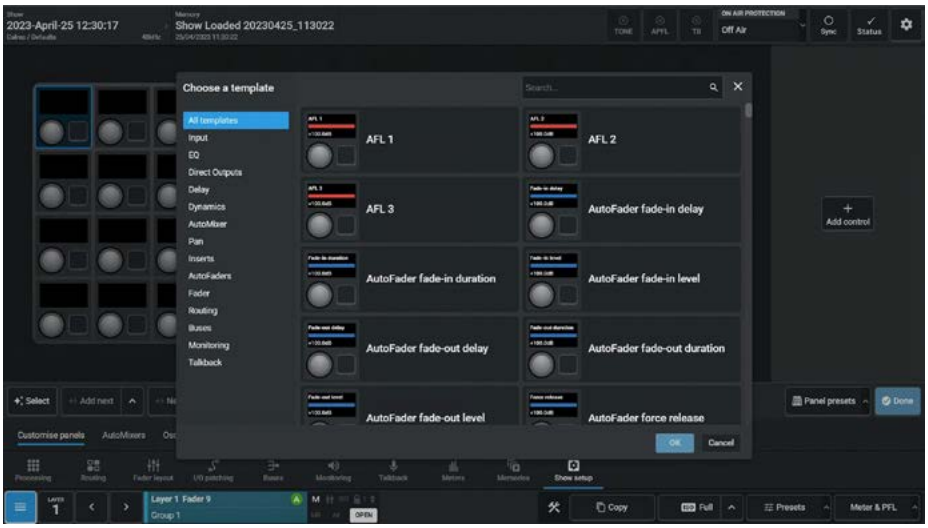
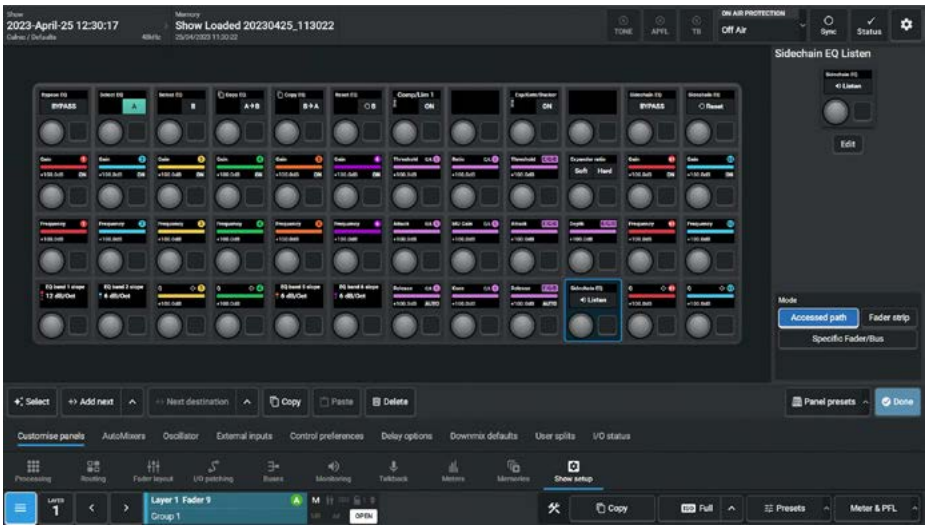


FIG 13 - EQUALISER & DYNAMICS 1 BUILT FROM TEMPLATE CONTROLS



Custom Controls - Monitor panels
The Argo console has the ability to display custom configured variable controls on the Wild Assign or Monitor panels. The rotary control cells and button cells on the MY6574 Monitor panel with its 18 button control cells, 8 rotary control cells and 4 rotary -3 button control cells can be used for this purpose.

This is carried out by first selecting the panel to have its control cells configured from the Surface panel layout shown when entering the **Show setup> Customise panels** page. The user has selected the Monitor panel as shown in Fig 14. The user then selects the cell(s) that they wish to add controls to on that panel by tapping on them, which highlights the cells, then taps on the '**Add control**' button on the right of the panel.

This opens either the button or rotary controls template depending on the type of control cells selected. In this case a rotary control cell was selected and inside the Direct Outputs template set, the user has searched for the word Level which has selected the '**Direct O/P 2 Level, TB & position selector**' as shown in Fig 15.

The image in Fig 16 shows a monitor panel template set in the process of construction with various controls added in the process which contains all the current control variants that can be applied. Once completed these sets of controls can then be saves as presets by tapping on the **'Panel Presets'** button at the bottom right of the Customise panels page allowing them to be saved, updated and loaded as required.

Note: there are separate Panel Preset files for each panel type: Standard fader, Wild assign and Monitor.

All the button cell templates are already shown in the User controls editor in the **Fader Layout>Controls** page and as such will not be repeated here. See **"User Controls Editor" on page 120**

Note: once the Custom controls template is loaded for the Monitor panel, the '**User controls**' button (see **"Monitor Controls On Monitor Panel" on page 184**) can be used to switch between custom controls and the standard contextual controls.

FIG 14 - MONITOR PANEL CUSTOM CONTROLS

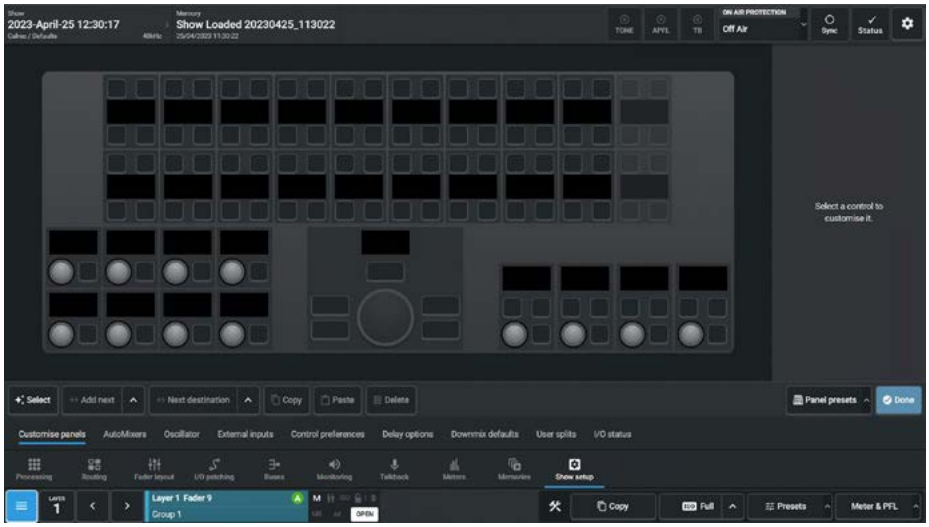


FIG 15 - MONITOR PANEL CONTROLS TEMPLATE

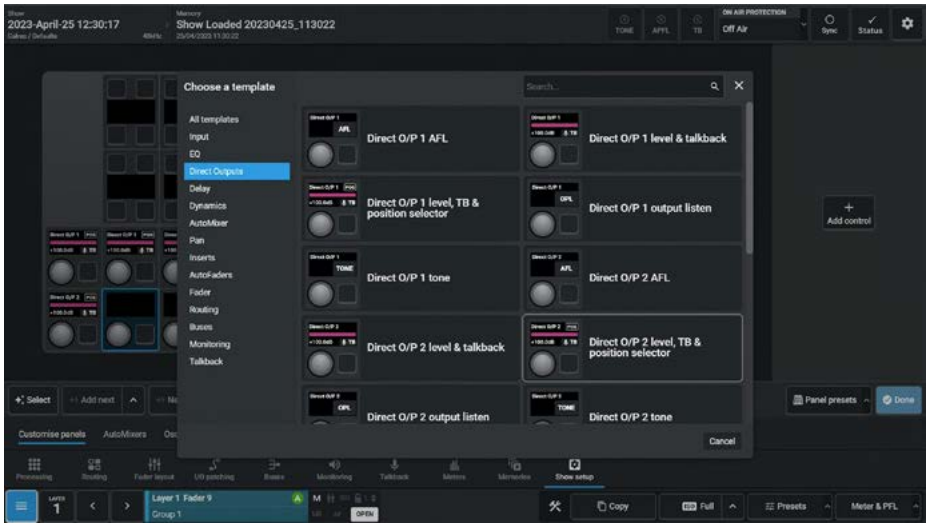
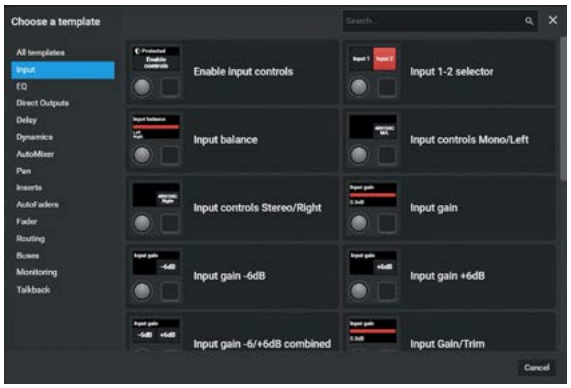


FIG 16 - DIRECT OUTPUT, MISC MON CUT/DIM, TALKBACK, SCROLL, SPILL ETC...

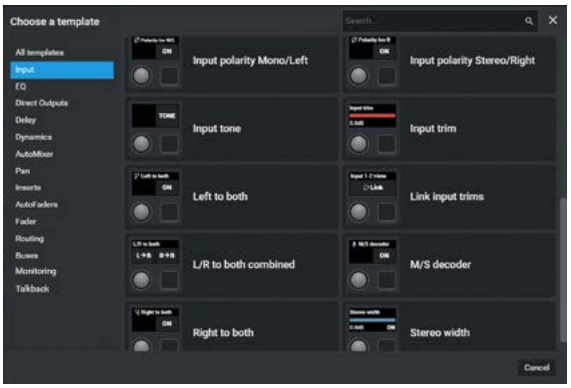
Control Templates - Wild & Monitor Panels

The following pages show all the current pages of templates available to be applied to the rotary control cells. Apart from the last two templates which are designed for the 3 button rotary control cells on the monitor panel, the rest are designed for the single button rotary control cells found on the Wild Assign panels and the 8 cells found on the bottom left of the Monitor panel.

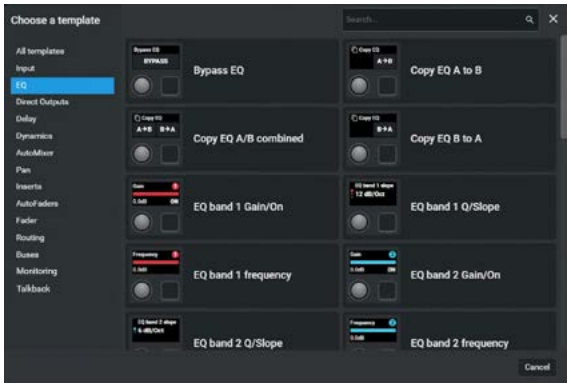
CONTROLS TEMPLATE - INPUT PAGE 1



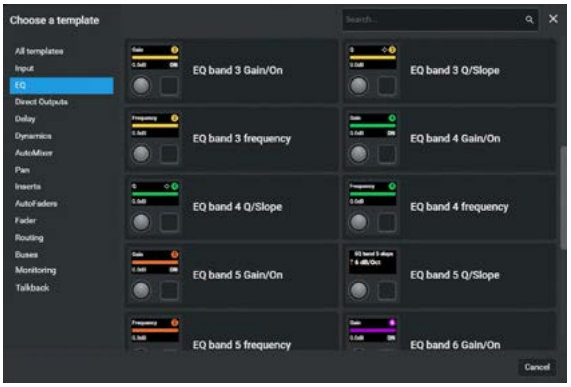
CONTROLS TEMPLATE - INPUT PAGE 2



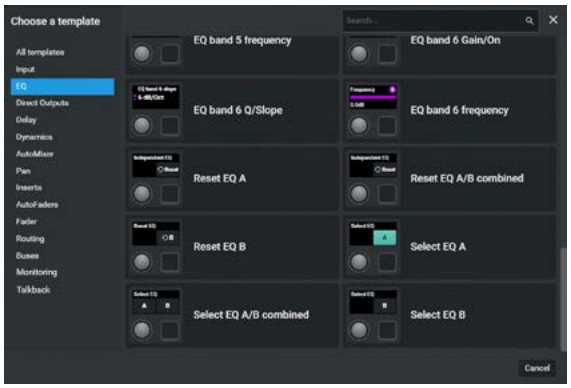
CONTROLS TEMPLATE - EQ PAGE 1



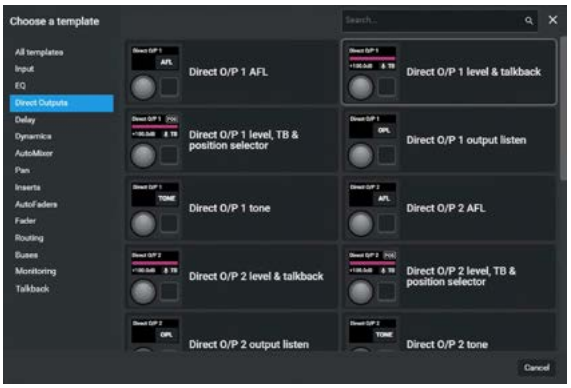
CONTROLS TEMPLATE - EQ PAGE 2



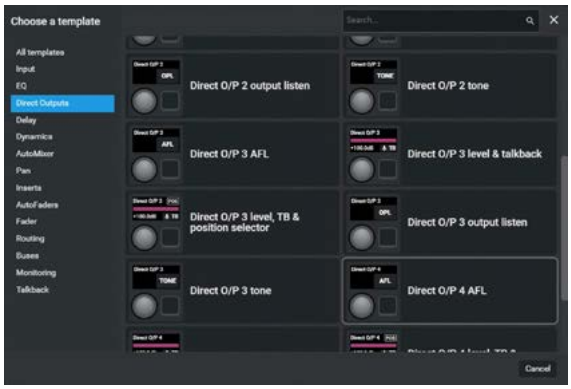
CONTROLS TEMPLATE - EQ PAGE 3



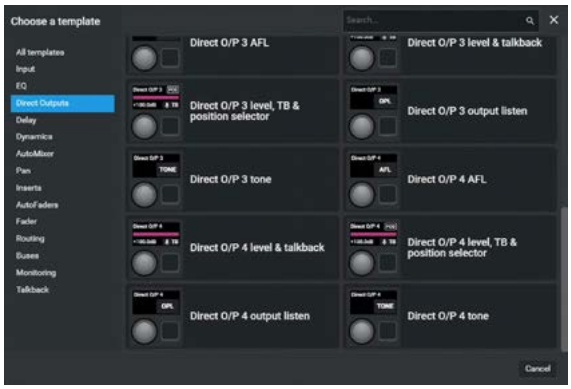
CONTROLS TEMPLATE - DIR OUTPUTS PAGE 1



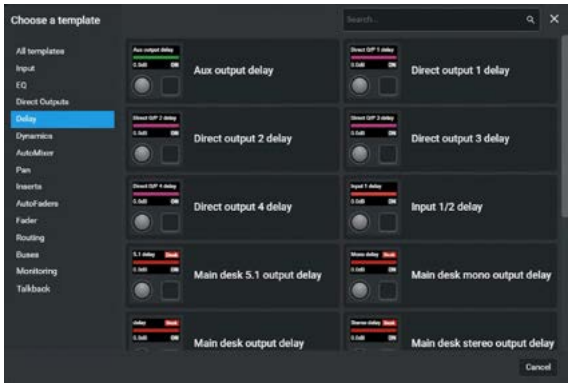
CONTROLS TEMPLATE - DIR OUTPUTS PAGE 2



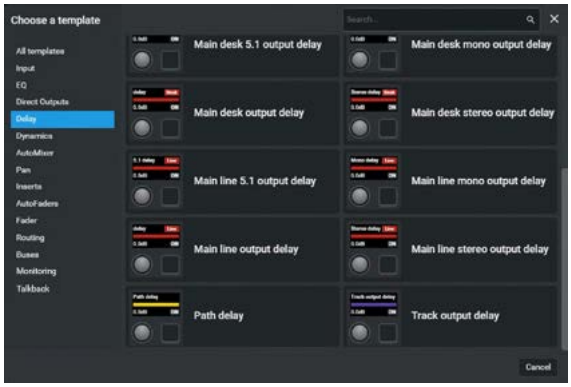
CONTROLS TEMPLATE - DIR OUTPUTS PAGE 3



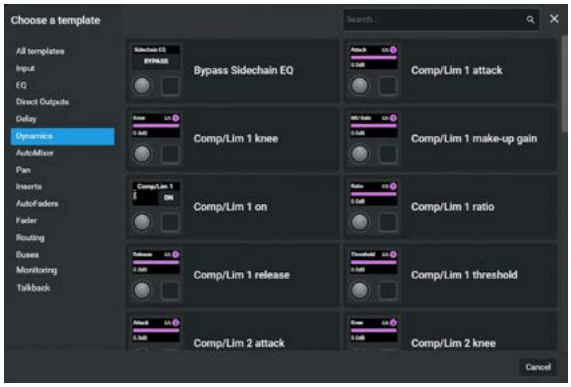
CONTROLS TEMPLATE - DELAY PAGE 1



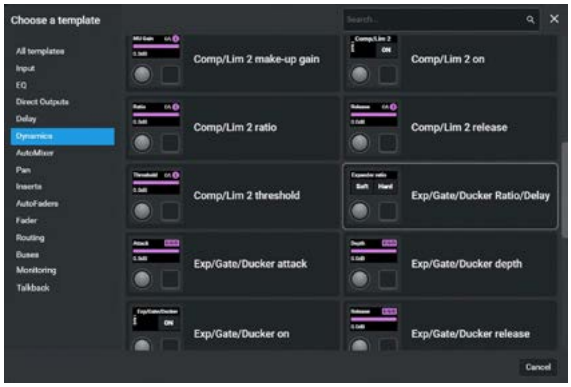
CONTROLS TEMPLATE - DELAY PAGE 2



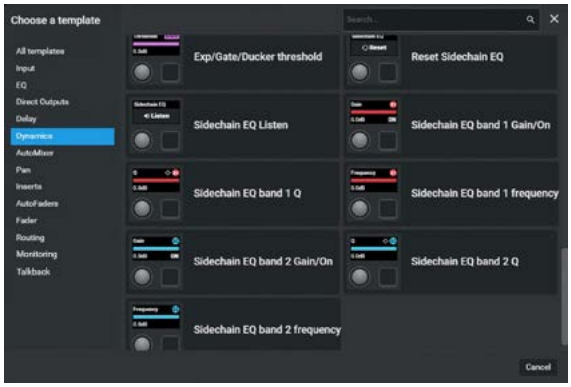
CONTROLS TEMPLATE - DYNAMICS PAGE 1



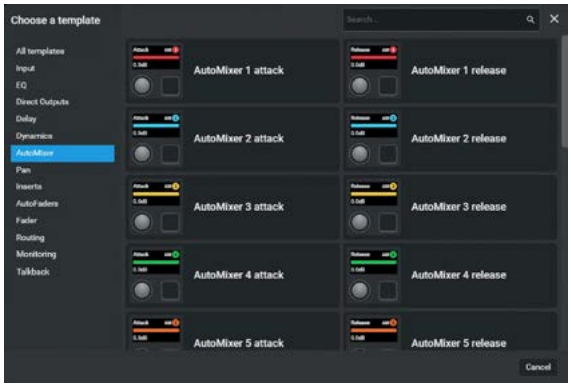
CONTROLS TEMPLATE - DYNAMICS PAGE 2



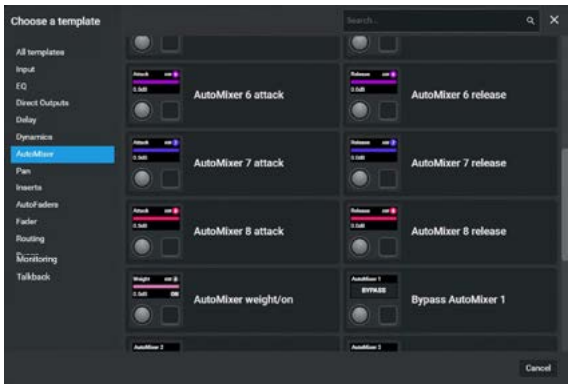
CONTROLS TEMPLATE - DYNAMICS PAGE 3



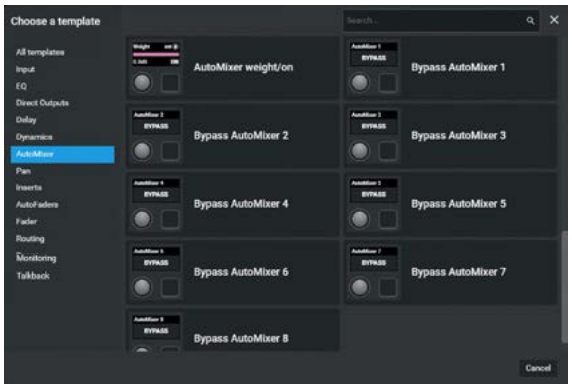
CONTROLS TEMPLATE - AUTOMIXER PAGE 1



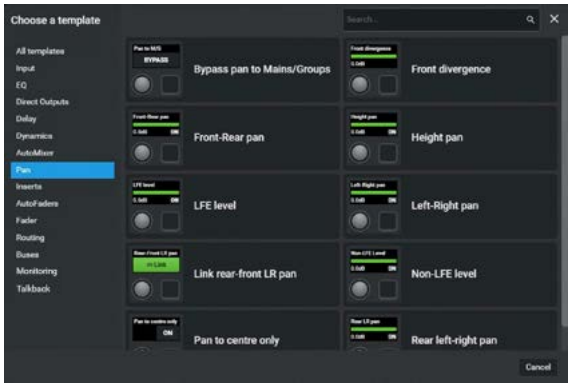
CONTROLS TEMPLATE - AUTOMIXER PAGE 2



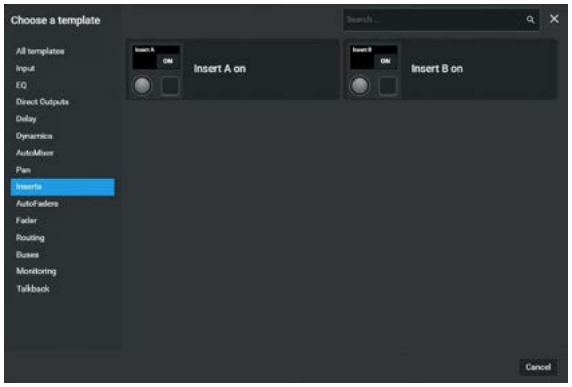
CONTROLS TEMPLATE - AUTOMIXER PAGE 3



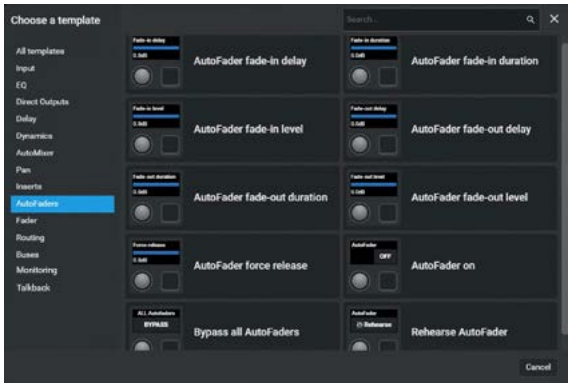
CONTROLS TEMPLATE - PAN PAGE 1



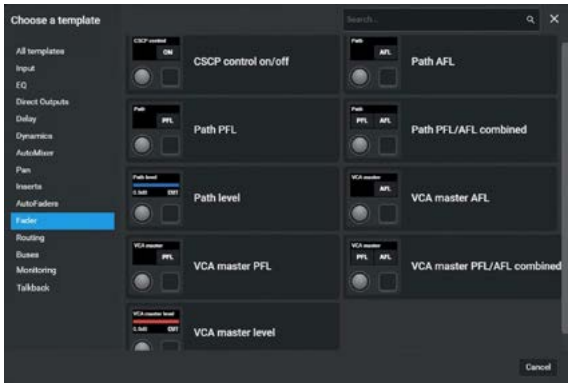
CONTROLS TEMPLATE - INSERTS PAGE 1



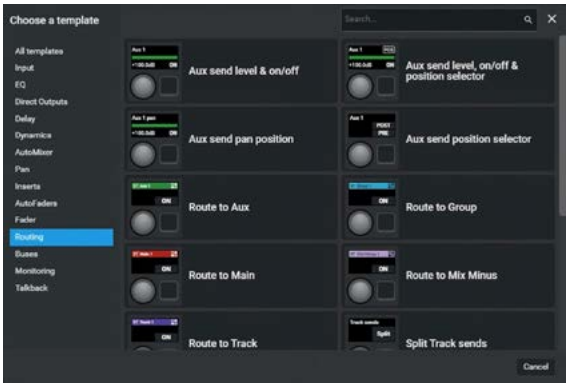
CONTROLS TEMPLATE - AUTOFADERS PAGE 1



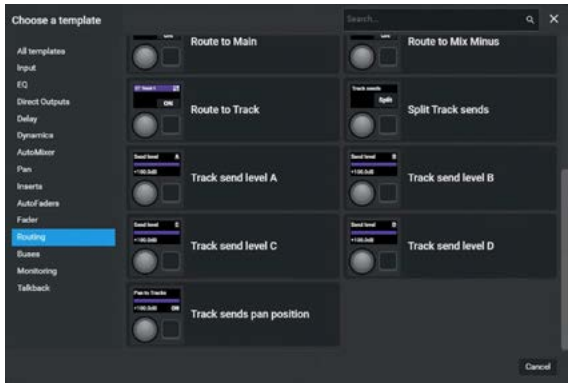
CONTROLS TEMPLATE - FADERS PAGE 1



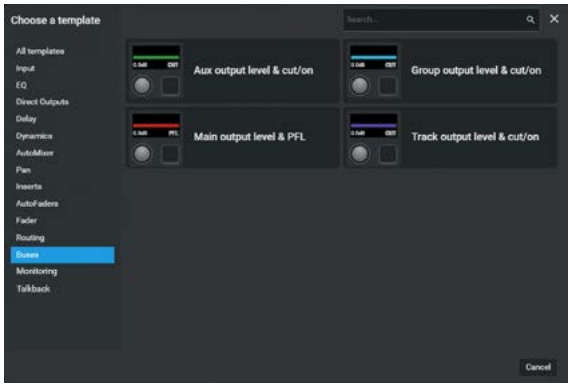
CONTROLS TEMPLATE - ROUTING PAGE 1



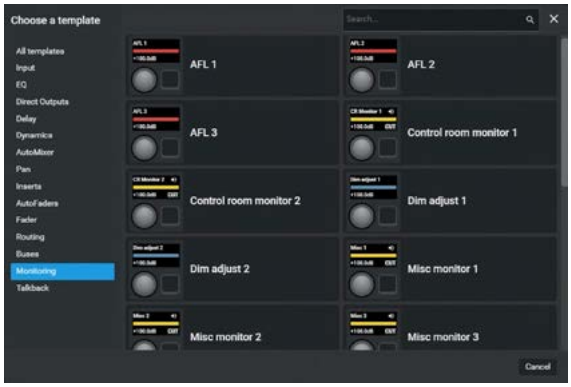
CONTROLS TEMPLATE - ROUTING PAGE 2



CONTROLS TEMPLATE - BUSES PAGE 1



CONTROLS TEMPLATE - MONITORS PAGE 1



CONTROLS TEMPLATE - MONITORS PAGE 2

CONTROLS TEMPLATE - TALKBACK PAGE 1

CONTROLS TEMPLATE - MISC MON PAGE 1

CONTROLS TEMPLATE - MISC MON PAGE 2

Using Add Next & Next Destination
In order to speed up the creation of customised panel layouts there are two buttons labelled **'Add next'** and **'Next destination'** provided.

Add next:- Fig 17 shows a Wild Assign panel custom controls layout being edited. The user selected the top left rotary cell and clicked on the **'Add next'** button which has made a copy and placed it in the next adjacent cell. If the user clicks on the up arrow to the right of this button two options appear:-
'Fill empty space', when selected, places copies to the right of the selected cell into empty cells until it finds a full cell then stops. This is shown on row 2 which filled up to the Dynamics control.
'Overwrite row', when selected, places copies to the right of the selected cell till it reaches the end of the row, overwriting any full cells after first showing a warning. This is shown on row 1 which overwrote the dynamics controls. This is a useful method of creating fader strips where the same controls are used for each fader.

Next Destination:- Fig 18 shows a Wild Assign panel custom controls layout being edited. The user selected the top left rotary cell and clicked on the '**Next destination'** button which has made an incremental copy and placed it in the next adjacent cell. If the user clicks on the up arrow to the right of this button, the same two options appear:- Fill empty space, and Overwrite row, which operate as described above. This is a useful method of creating a set of common controls that increment such as Aux send 1, Aux send 2 etc.

Deleting multiple custom controls
The '**Select**' button when pressed, opens a select footer which allows the user to:- 'Select all' the panel cells, 'Select row' of cells by first selecting a member of that row, select individual cells or 'Select none' of the cells, ready to delete multiple controls from button or rotary cells. Once the user has selected the required cells for deletion the user taps on the **'Delete'** button. A dialogue box appears labelled 'Delete selected controls?' The user then taps on the red '**Delete**' button to remove the selected control(s) from a panel layout. Fig 19 shows that the user has tapped on **'Select all'** and **'Delete'**, this provides a quick way to delete all the custom controls from a panel.

FIG 17 - USING ADD NEXT FOR FADER STRIPS

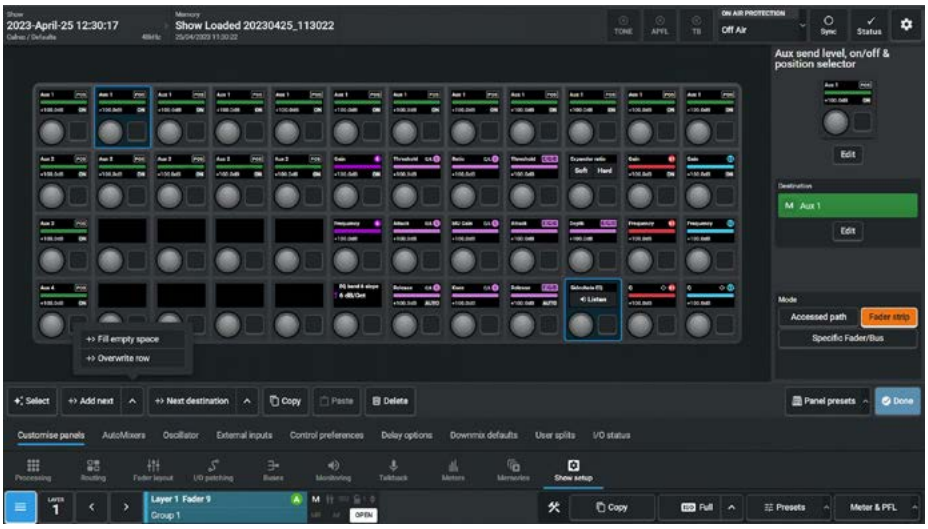


FIG 18 - USING NEXT DESTINATION FOR CONSECUTIVE AUX SENDS

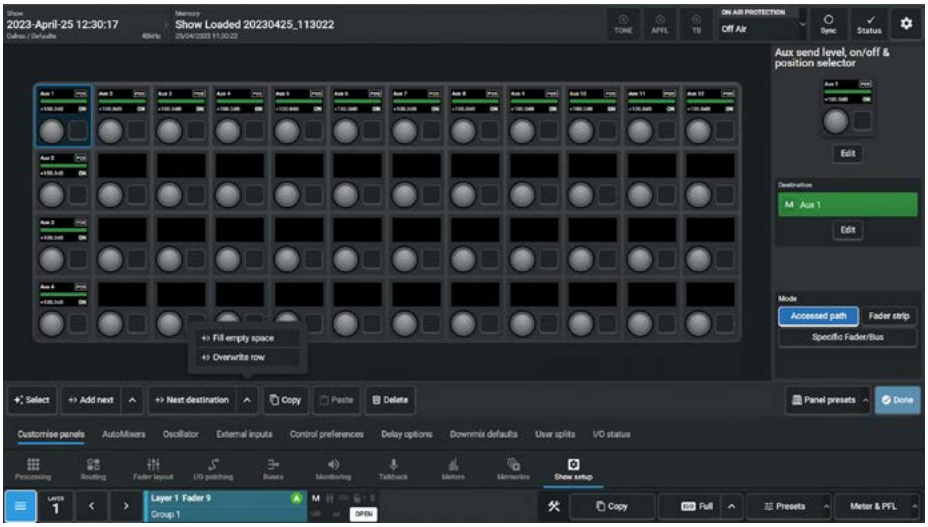
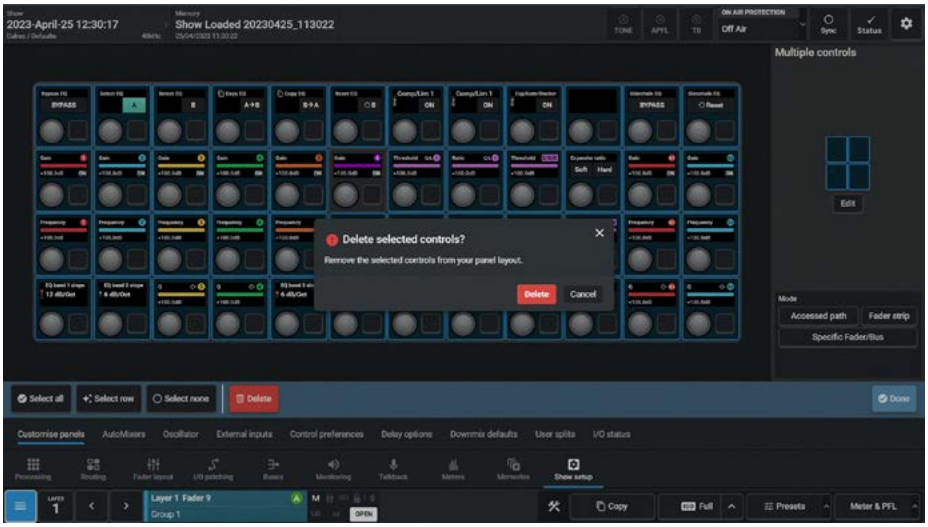


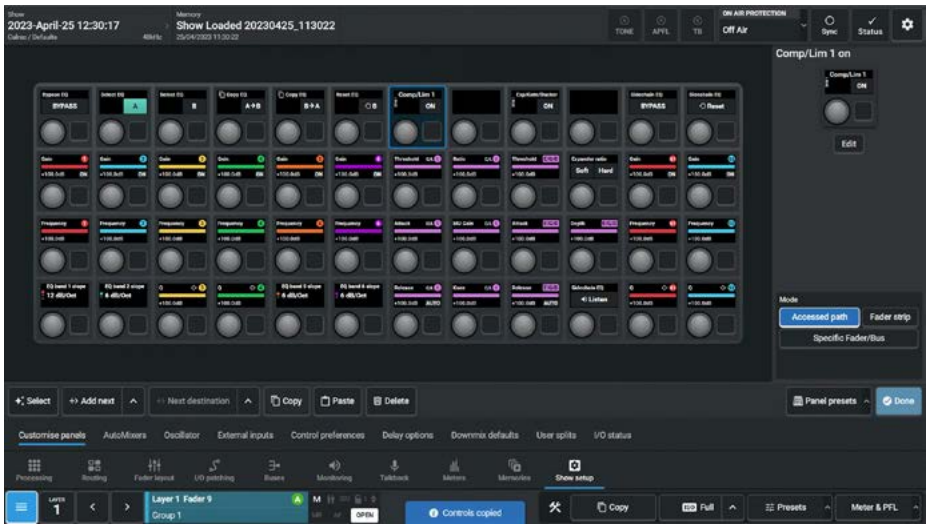
FIG 19 - DELETING MULTIPLE CONTROLS FROM A WILD ASSIGN PAGE



Copy and Paste Custom Controls
The Customise panel operation has the ability to Copy & Paste control cells. The user first selects the Cell to copy and taps on the '**Copy**' button, a confirmation pop-up **"Controls copied"** appears to confirm the copy at the bottom of the page as shown in Fig 20.

The Copy is entered into the Paste buffer ready to be placed as required. In this case a **"Comp/Lim 1 On"** cell has been copied and as an example is going to be pasted into the Adjacent cell.

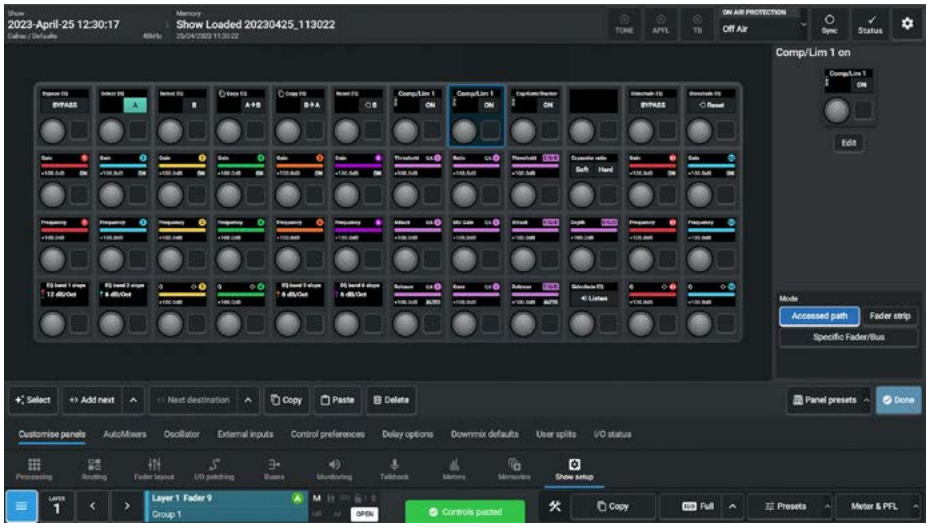
FIG 20 - COPYING A CUSTOM CONTROL



The user selects the destination cell that is to have the copy pasted into it and a confirmation pop-up **"Controls pasted"** appears once the '**Paste**' button is tapped as shown in Fig 21.

Note: the copy will overwrite any already occupied control cell if selected.

FIG 21 - PASTING A CUSTOM CONTROL

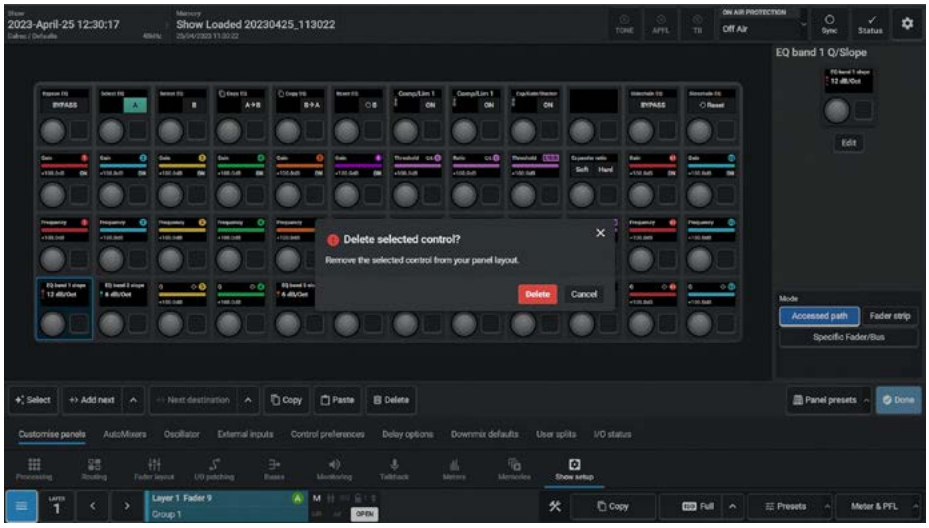


Delete a Selected Custom Control
In order to remove controls from button or rotary cells the user selects the cell(s) to be deleted and taps on the **'Delete'** button. A dialogue box appears labelled 'Delete selected control?' The user can either tap on the red 'Delete' button to remove the selected control(s) from your panel layout or tap on **'Cancel'** to cancel the operation.

The image in Fig 22 shows that a cells has been selected for deletion.

Once the Delete/Cancel selection is complete the dialogue box closes.

FIG 22 - DELETE A SELECTED CUSTOM CONTROL



CUSTOM PANEL PRESETS

Custom Panel Presets Function
There is a requirement to be able to store and recall custom panel layouts, this is carried out in the Panel presets dialogue. The user can access these by tapping the **'Panel presets'** button in the Customise panels pages for the Standard Fader, Wild Assign & Monitor panels. The presets are contained in these preset folders and typically a user will have their own preset folder.

The image in Fig 1 shows the custom Panel presets dialogue box, it is arranged into two areas:- the left side allows the user to create, label or delete panel preset folders each of which can contain any number of custom panel layout files. The right side shows the presets that are contained in the selected preset folder.

Custom Panel Preset Folders
The following functions are available:-
Create Preset Folder: To create a new preset folder, the user taps on the Create folder icon' on the preset folders side and types in a name for the preset in the 'Create preset folder' dialogue box as shown in Fig 2, using the On-screen-keyboard. Once the **'Create'** button is tapped it creates a new empty preset folder.

Edit Preset Folder: To edit the name for an existing preset folder, the user selects the folder, taps on the Edit icon on the preset folders side and types in a replacement name for the folder in the 'Edit preset folder' dialogue box, using the On-screen-keyboard. This appears instead of the create preset dialogue box and is shown inset in Fig 2. Once the **'Save'** button is tapped it applies the edited name to the folder and saves it.

Delete Preset Folders: To delete an existing preset folder, the user selects the folder to be deleted and taps on the Delete icon on the preset folders side. The 'Delete selected folders' dialogue box appears as shown in Fig 3. This shows the presets contained in the folder and asks for confirmation to permanently delete the folders and the presets they contain.

FIG 1 - CUSTOM CONTROLS PRESET FOLDER/PRESETS FUNCTION

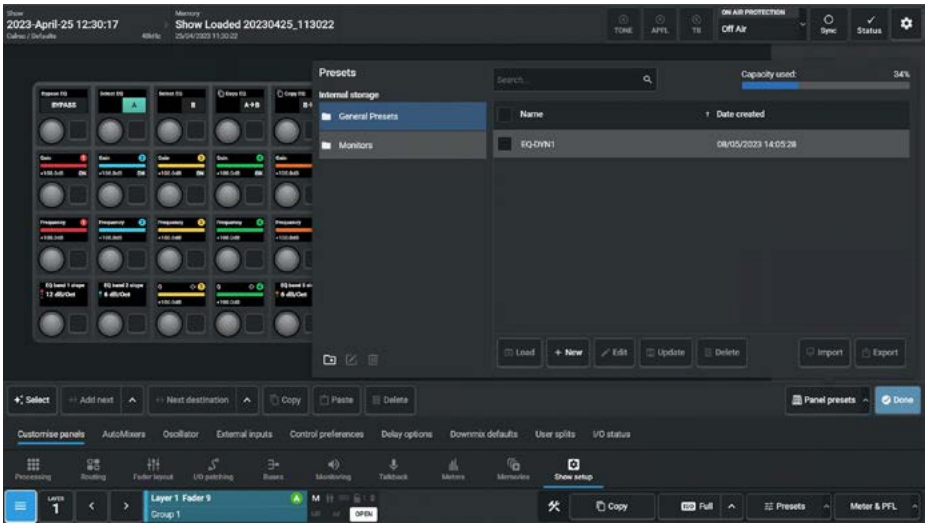


FIG 2 - CREATE PRESET FOLDER & EDIT PRESET FOLDER

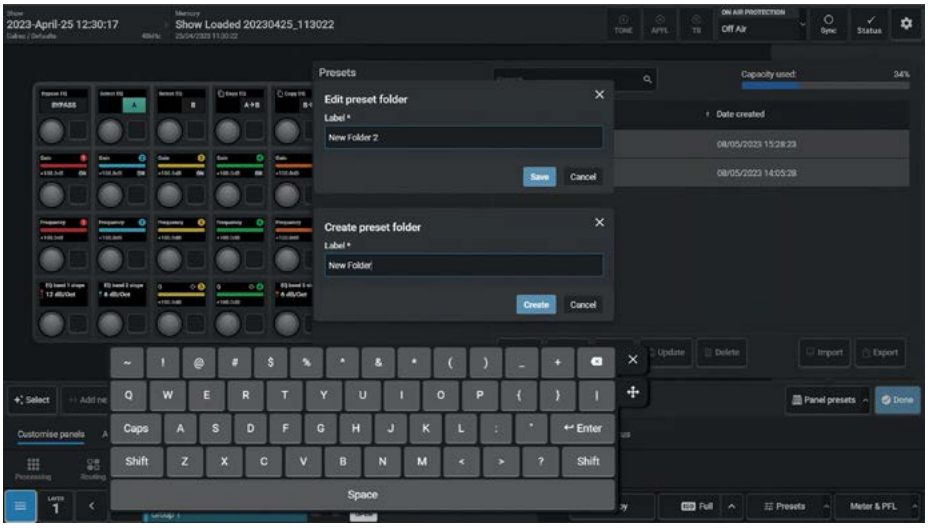
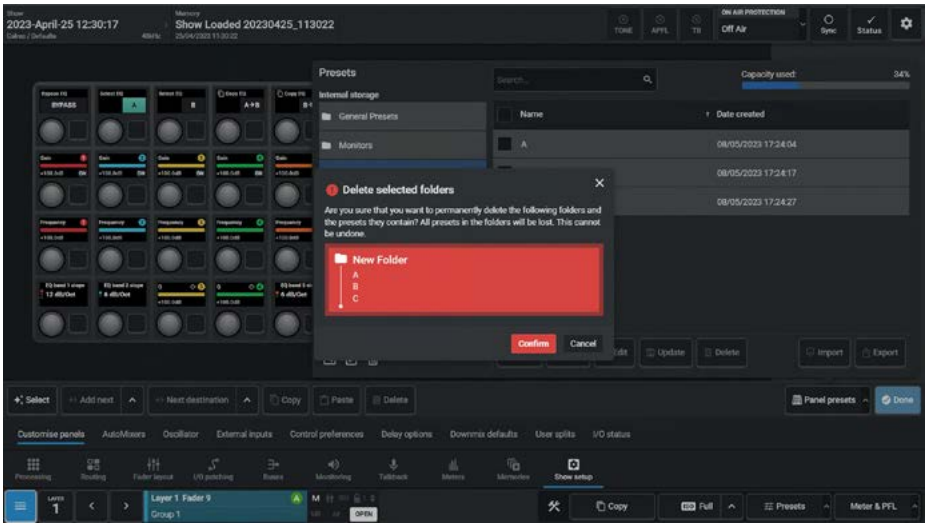


FIG 3 - DELETE PRESET FOLDERS



A graphic is inset showing the names of the folders and files affected. Once the **'Confirm'** button is tapped it deletes the selected folders and presets.

Note: this cannot be undone.

Custom Panel Presets

The following functions are available:-

Create Preset: To create a new preset, the user selects the preset folder that the preset is to be put in, then taps on '**New**' on the presets side and types in a name for the preset in the 'Create preset' dialogue box as shown in Fig 4 using the On-screen-keyboard. Once the **'Create'** button is tapped it creates a new preset in the preset folder.

Edit Preset: To edit the name for an existing preset, the user selects the preset to be renamed, taps on '**Edit**' on the presets side and types in a replacement name for the preset in the 'Edit preset' dialogue box, using the On-screen-keyboard. This appears instead of the create preset dialogue box and is shown inset in Fig 4. Once the **'Save'** button is tapped it applies the edited name to the preset and saves it.

Load preset: The image in Fig 5 shows the process of loading a panel preset. When the **'Load'** button is tapped a 'Load' dialogue box pops up to ask the user if they are sure that they want to load this preset. Once the **'Load'** button is tapped it loads the preset into the panel.

Update Preset: The image in Fig 6 shows the process of updating a custom panel preset. When the **'Update'** button is tapped an 'Update' dialogue box pops up to ask the user if they are sure that they want to update this preset.

Once the **'Update'** button is tapped it overwrites the stored preset with the current custom panel layout.

Note: make sure that the correct existing preset has been selected before applying 'Update' as it will be overwritten and cannot be undone.

FIG 4 - CREATE PRESET & EDIT PRESET LABEL

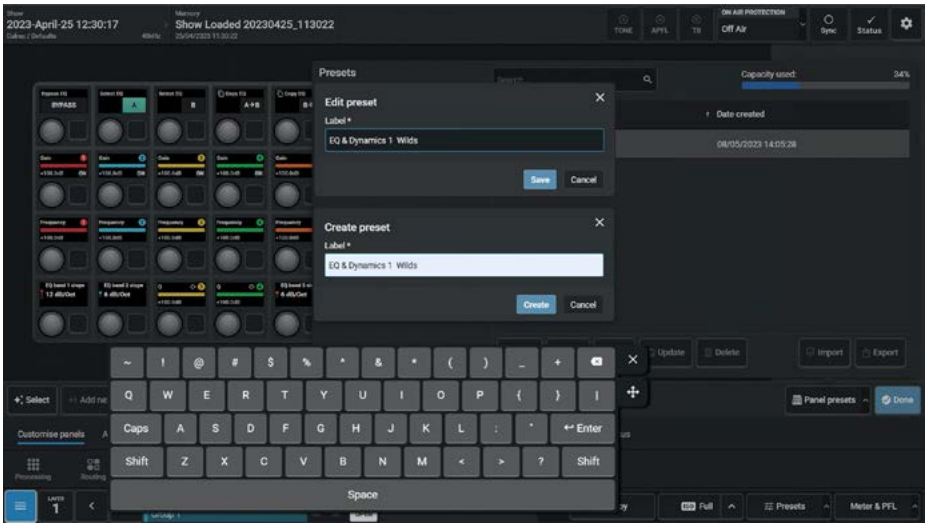


FIG 5 - LOAD PRESET

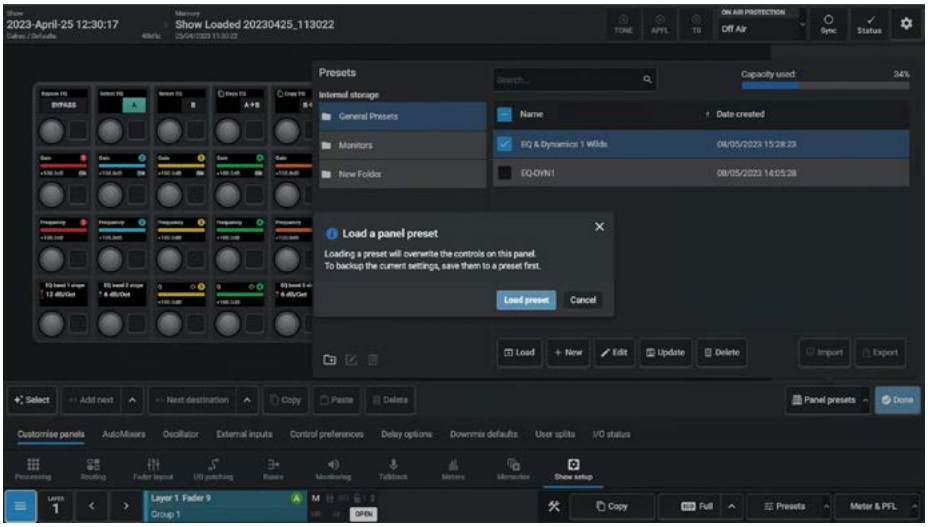
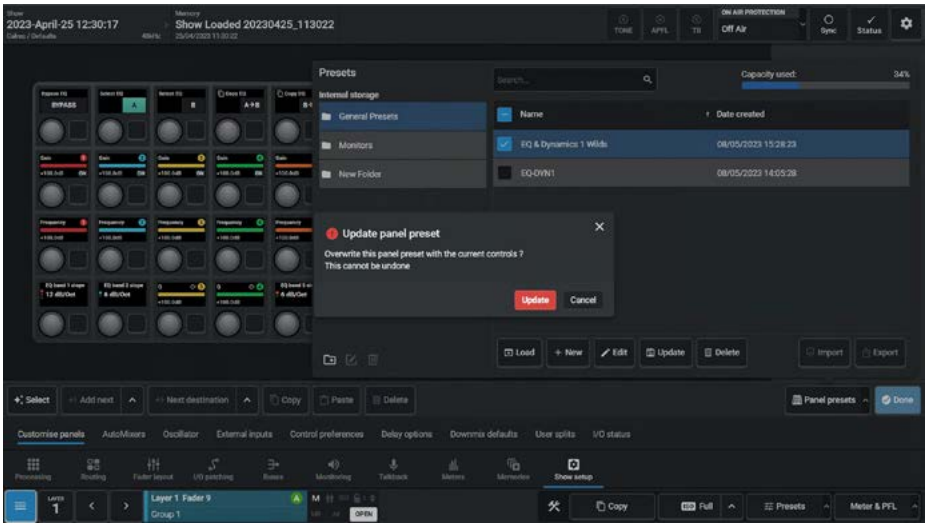


FIG 6 - UPDATE PRESET



Delete Presets: To delete existing presets, the user selects the presets to be deleted and taps on '**Delete**' on the presets side. The **'Delete selected presets'** dialogue box appears as shown in Fig 7. This shows the selected panel presets and asks for confirmation to permanently delete them. A graphic is inset in the dialogue box showing the names of the presets affected. Once the **'Confirm'** button is tapped it deletes the selected custom panel presets.

Note: this cannot be undone.

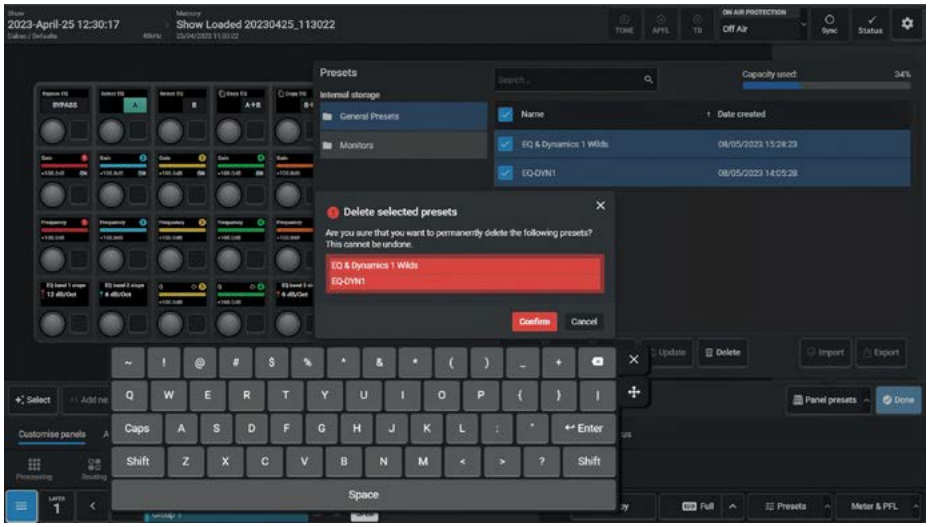
Import Presets

This is not available in V1.0.x, however this can be carried out using Assist.

Export Presets

This is not available in V1.0.x, however this can be carried out using Assist.

FIG 7 - DELETE PRESETS



AUTOMIXER SETTINGS

The AutoMixer page in the Show Setup pages allows the user to configure the Global settings of the eight AutoMixers which includes the Attack and Release time and Bypass control for each of the eight AutoMixers.
The AutoMixers page is accessed from the Automixers button in the Show Setup mode which itself is accessed from either the Modes row of a fader panel, by first pressing the Modes Menu button in button cell 4 of the Layers & Modes row and then the user presses the Show Setup button as shown in Fig 1, or by tapping on the appropriate icon on the touchscreen as shown in Fig 3. Once the Show setup is accessed, a number of submenu options appear including the AutoMixers page, which appears as shown in Fig 2 or from the Touchscreen submenu entry highlighted in Fig 3.

AutoMixer Global Controls
Each of Argo's eight AutoMixers have their own global attack, release and bypass controls. Attack and release are used to smooth out the signals prior to the level ratio calculation being made.

A compromise must be made between fast attack and release, which leads to a more erratic but fast-acting functioning, and slow attack and release times, which leads to a slower acting but smoother functioning.

To access AutoMixer global controls, the user taps on **Show Setup>Automixers** from the modes row as shown in Fig 1, then Fig 2 or via the touchscreen shown in Fig 3 and then the AutoMixers entry.

For each AutoMixer, tapping the **'Bypass'** button disables that selected AutoMixer for all assigned paths.

The Attack Time for each AutoMixer can be set between 50us (default) and 0.2s

The Release Time for each AutoMixer can be set between 75ms and 4s (default).

Auto Release: In 'Auto' mode a filter is applied which determines how quickly the signal comes out of attenuation by measuring the amount and duration of the attenuation attack. This is useful in dealing with both sudden noises which recover quickly and sustained noises such as applause which recover slowly.

Auto Release is enabled when the slider is dragged all the way to the left.

If the user wants to momentarily take a path out of the AutoMixer assignment, the **'AutoMixer Control'** On/Off switch should be used which can be found on the individual path's AutoMixer processing tab, see **"Automixer" on page 62"**.

FIG 1 -SHOW SETUP MODE SELECT ON STANDARD FADER PANEL

FIG 2 -SHOW SETUP MODE - AUTOMIXERS SELECT

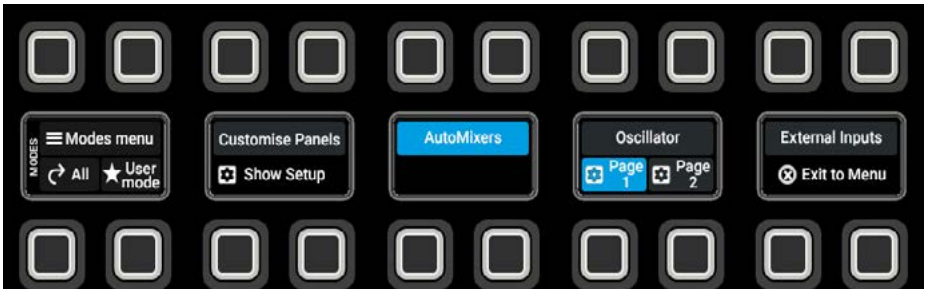
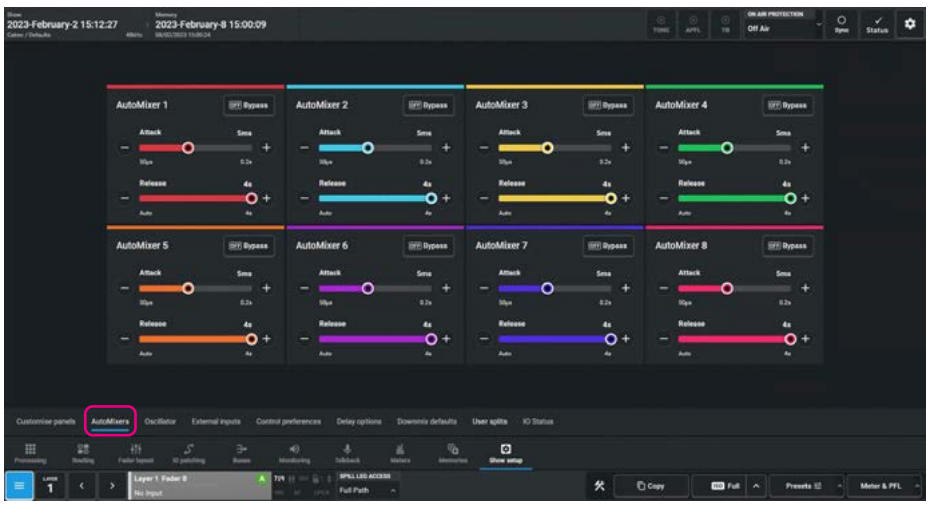


FIG 3 - AUTOMIXER GLOBAL CONTROLS



OSCILLATOR SETTINGS

The Oscillator page in the Show Setup pages allows the user to configure the Global settings of both the Fixed and User Oscillators provided.

The Oscillators page is accessed from the Oscillator button in the Show Setup mode which itself is accessed from either the Modes row of a fader panel, by first pressing the Modes Menu button in button cell 4 of the Layers & Modes row and then the user presses the Show Setup button as shown in Fig 1, or by tapping on the appropriate icon on the touchscreen as shown in Fig 3. Once the Show setup is accessed, a number of submenu options appear including the Oscillator page, which appears as shown in Fig 2 or from the Touchscreen submenu entry highlighted in Fig 3.

Oscillator Controls

Internal tone signals are generated by the Argo oscillators which are accessed from **Show setup>Oscillator** as shown in Fig 2. The oscillators provide control of internal tone parameters and the option to override the internal tone generators with external tones.

The system provides 2 fixed oscillators & 2 user oscillators which can be adjusted using the level & frequency controls on the left of the screen. The user can set the oscillators to generate a fixed frequency tone at a specified frequency, or a stepped 20Hz to 20kHz tone frequency sweep.

Fixed Oscillators

These can provide different tone sources for Mono, Stereo & 5.1 outputs, using the internal and external tone source buttons. Selecting **'Internal'** uses the DSP internal oscillators as the tone source for that path width, whereas selecting **'External'** uses the feed(s) currently patched to the external tone input(s). Each leg of stereo or 5.1 tone sources can be muted using their leg mutes.

Stereo/mono (ST/M) downmix option

For the downmix outputs of 5.1 and wider paths there is an option to use the ST/M oscillator instead of the 5.1 or User Oscillators which normally feed the Lo/Ro & Mo D-Mix O/Ps from Mains and L/R/M Direct O/Ps from Channels and Groups.

Note: 0.0.2/0.0.4 O/Ps such as Groups are always fed tone from ST/M oscillators.

Clearing Tone

Tapping the '**Clear tone on all Paths**' button switches off all tone on all paths.

FIG 1 -SHOW SETUP MODE SELECT ON STANDARD FADER PANEL

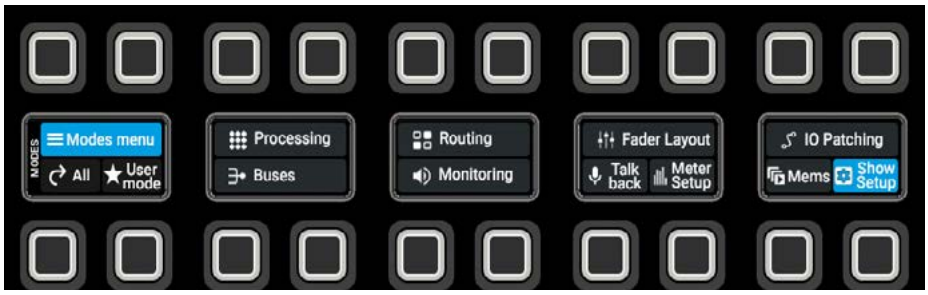


FIG 2 -SHOW SETUP MODE - AUTOMIXERS SELECT

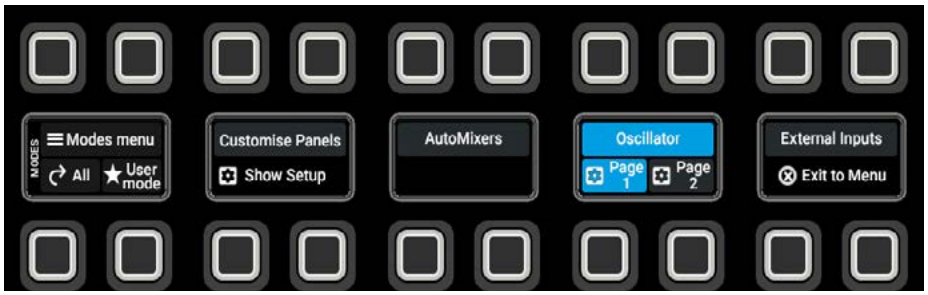
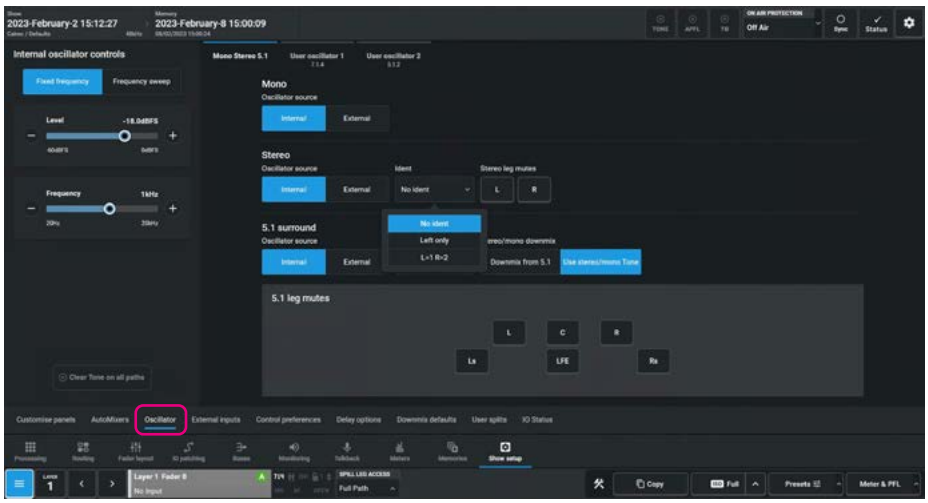


FIG 3 - FIXED OSCILLATOR SHOWING STEREO IDENT OPTIONS & LEG MUTES



Oscillator Tone Idents
Tone idents are variations in the tone signal used to identify legs of multichannel paths when verifying routing and patching.

To set an ident for a stereo path, tap its **Ident** selector drop-down button to display a pop-up menu populated with the following path width ident options:-

Left Only is similar to the EBU ident specification. The tone on the left audio channel is repeatedly interrupted whilst the right channel remains constant.

L=1, R=2 is similar to the GLITS ident specification. Tone is repeatedly interrupted on both left and right channels.
Each interruption on the left channel is followed by two interruptions on the right channel. These are stereo idents and will only be applied to tone being injected onto stereo paths/outputs.

If tone is selected directly onto a surround output (rather than on a fader routed to an output) the stereo ident only affects stereo downmix outputs.

Note: only one of the two stereo idents can be selected at any given time.

To set an ident for a 5.1 path, tap its **'Ident'** selector drop-down button to display a pop-up menu populated with the following path width ident options:-

BLITS ident is for use on 5.1 surround paths and will not affect tone on mono or stereo paths, it can be selected & used at the same time as one of the stereo idents.

Four different modes can be selected for the BLITS format, selectable from the 5.1 ident drop down shown below right.

'Normal' is the full BLITS cycle mode - First, is the 'Ident' stage, a short burst of tone is applied to each of the channels, one at a time, in order. 4 tone frequencies are used at this stage for channel ID:-

FIG 4 - FIXED OSCILLATOR SHOWING SURROUND IDENT OPTIONS & LEG MUTES

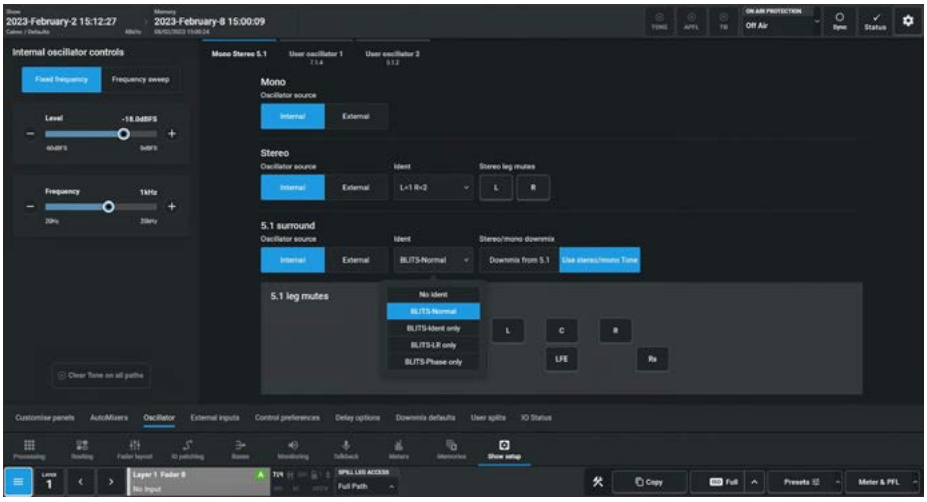
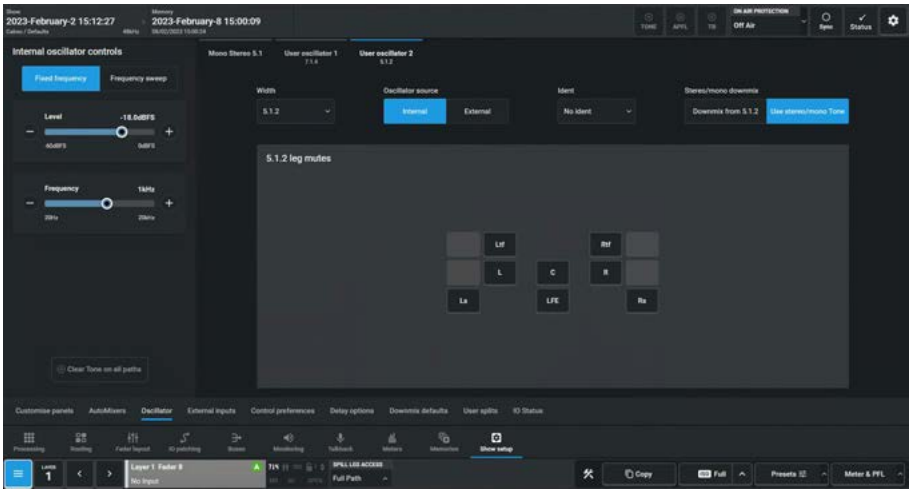


FIG 5 - USER OSCILLATOR 2 SHOWING WIDTH OPTIONS



5.1 applies L/R at 880Hz,
C at 1320Hz,
Lfe at 82.5Hz,
Ls/Rs at 660Hz.

This is followed by the 'LR' stage a 1kHz tone on the L & R legs only, the right channel is continuous, whilst the left channel is repeatedly interrupted.
The last stage of the cycle is 'Phase' which applies 2kHz tone on all channels simultaneously before restarting the cycle.

The different frequencies used also help to identify each part of the cycle, for example if 1kHz can be heard anywhere other than front L/R there must be a problem with routing or patching.
The **'Ident Only'**, **'LR Only'** and **'Phase Only'** options are there to provide each stage of the BLITS ident separately.

User Oscillators
In addition to the Mono/Stereo & 5.1 fixed oscillators, the DSP also provides 2 User definable oscillators. Each of these can be independently set to provide 7.1, 5.1.2, 5.1.4 7.1.2 & 7.1.4 immersive tones.

The image in Fig 5 shows the width has been set to 5.1.2.

The image in Fig 6 shows the “Ident” dropdown to apply the parts of the BLITS ident. The user oscillators provide an extended version of the BLITS ident on top of the **5.1** version to identify the extra legs by using the following frequencies:-

7.1 applies Lss/Rss at 660Hz,
Lrs/Rrs at 330Hz.
5.1.2 applies Ltf/Rtf at 1760Hz.
5.1.4 applies Ltf/Rtf at 3520Hz,
Ltr/Rtr at 440Hz.
7.1.2 applies Lss/Rss at 660Hz,
Lrs/Rrs at 330Hz,
Ltf/Rtf at 1760Hz.
7.1.4 applies Lss/Rss at 660Hz,
Lrs/Rrs at 330 Hz,
Ltf/Rtf at 3520Hz,
Ltb/Rtb at 440Hz.

Each leg of the selected user oscillator widths can also be muted as shown in Fig 6 for the C leg of the 5.1.4 leg mutes.

External Tone Inputs

For the Ext Mono, Ext Stereo & Ext 5.1 inputs, analogue sources have been used as the external options for the fixed oscillators patched to the Tone Inputs as shown in Fig 7.

For the Ext 7.1, Ext 5.1.2, Ext 5.1.4, Ext 7.1.2 & Ext 7.1.4 inputs digital sources have been used as the external options for User Oscillators 1 & 2 patched to the Tone Inputs as shown in Fig 8.

All four Tone sources are separated to support their idents. External tone can be applied and selected individually to each width of tone view, meaning a mixture of internal and external tone could be used if required.

For Analogue tone sources both Phantom Power (48V) and Analogue Gain can be applied and for Digital tone sources SRC can be applied.

FIG 6 - USER OSCILLATOR 1 IDENT OPTIONS

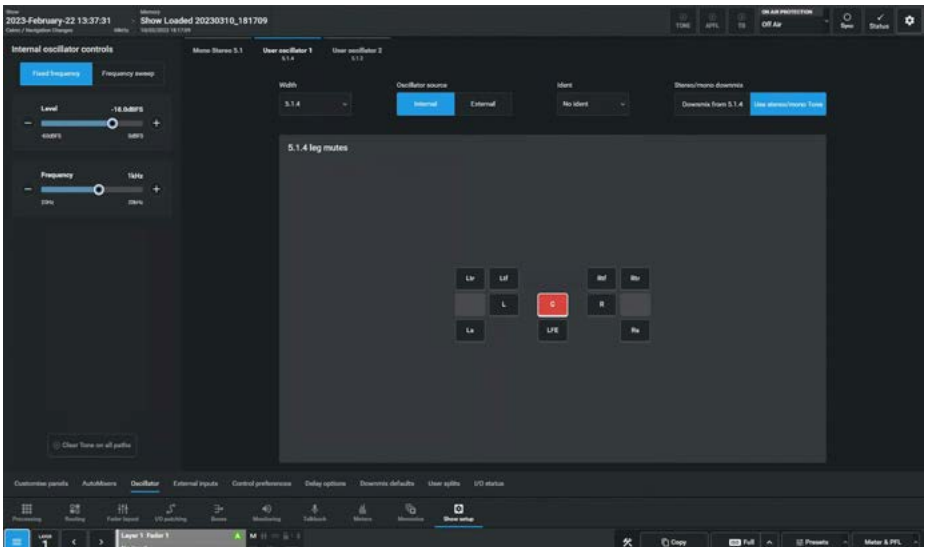
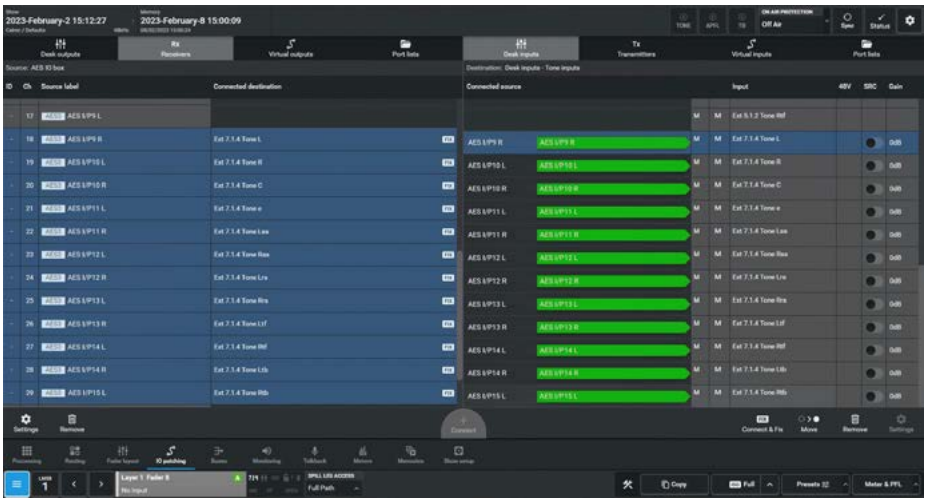


FIG 7 - PATCHING EXTERNAL SOURCES TO TONE INPUTS ON FIXED OSCILLATORS

FIG 8 - PATCHING EXTERNAL SOURCES TO TONE INPUTS ON USER OSCILLATORS



Tone Troubleshooting & FAQs

No tone present when selected

Selecting external tone will replace the console oscillator whether external tone is present or not. If internal tone is not present when expected, check it is not set to external. If using external tone, check the correct input receivers are patched to the external input (and that the tone generator is connected, on and set correctly). Also check that the oscillator level/frequency are set to suitable values.

Tone on stereo downmixed outputs lower than expected

When selecting tone to a surround output bus, it is also applied to that bus's LoRo outputs at the same level. This is because tone is being applied at the final output stage. With tone to line selected the signal on LoRo is NOT derived from a downmix of the surround channels. The same level of tone is applied to both the 5.1 & Stereo downmixed output.

Tone on stereo downmixed outputs higher than expected

If tone is fed from a surround or immersive channel/path, which is in turn routed to a surround output, the LoRo of that output will generally be of a higher level than that on the surround/immersive legs, as the LoRo output is derived from a downmix of the content on the surround legs as defined in the downmix settings.

Tone not present or low on LFE channel of outputs

If tone is routed from a channel to a surround main output and signal is not present on the LFE leg of the output, this is likely to be due to the default state of surround main outputs having a high frequency filter switched in on the LFE leg.

Try reducing the frequency of the oscillator to around 50Hz to see (and hear) the LFE channel. If desired, the filter can be switched out or adjusted by selecting the main output as assigned, then selecting the LFE channel from the surround spill panel and adjusting the filters from an EQ panel.

EXTERNAL INPUTS

The External Inputs page in the Show Setup pages allows the user to configure the width of External inputs from a Pool of 152 mono inputs which can be configured to any of the available widths from Mono through Stereo and Surround up to 7.1.4 immersive inputs, allowing the user to bring in outside sources of various widths as required.

The External Inputs page is accessed from the External Inputs button in the Show Setup mode which itself is accessed from either the Modes row of a fader panel, by first pressing the Modes Menu button in button cell 4 of the Layers & Modes row and then the user presses the Show Setup button as shown in Fig 1, or by tapping on the appropriate icon on the touchscreen as shown in Fig 3.

Once the Show setup is accessed a number of submenu options appear including the External Inputs page which appears as shown in Fig 2 or from the Touchscreen submenu entry highlighted in Fig 3.

FIG 1 -SHOW SETUP MODE SELECT ON STANDARD FADER PANEL

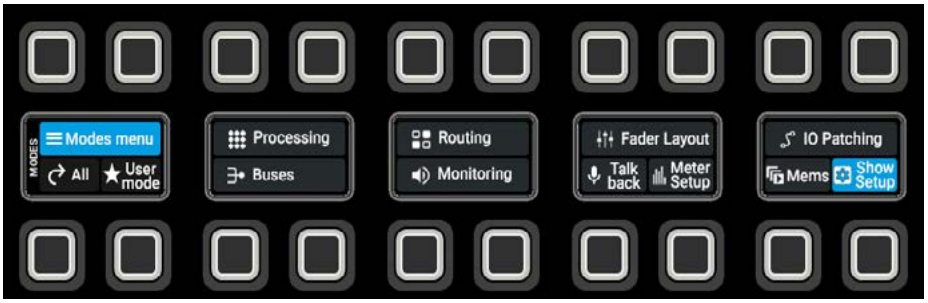
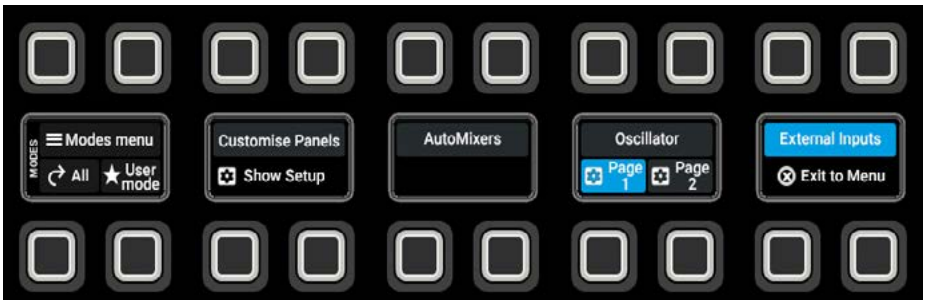


FIG 2 -SHOW SETUP MODE - EXT INPUTS SELECT



Creating External Inputs

External Inputs are typically used to bring in outside sources into the monitoring and metering systems of the console.

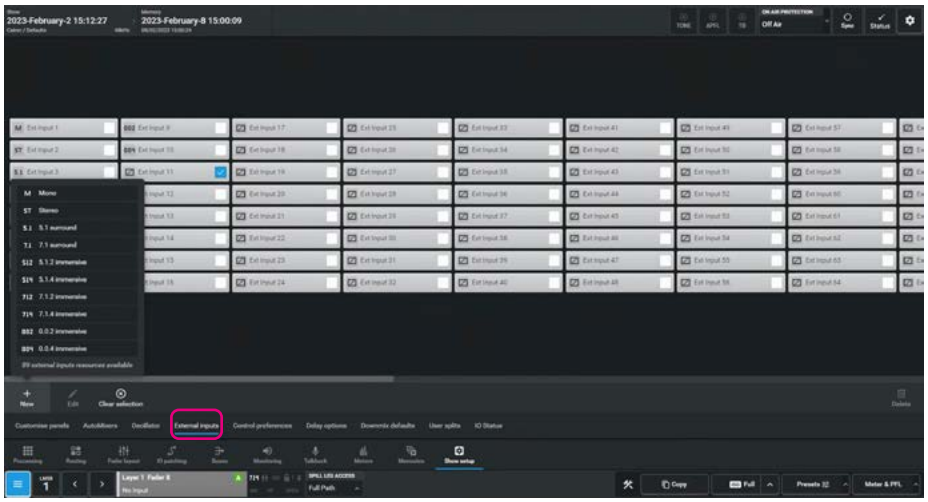
Argo provides a pool of 152 mono inputs which are used to create external inputs at the selected width, ready to patch from the outside sources.

The external inputs page is accessed from **Show setup>External inputs** and the image in Fig 3, shows the creation of new external inputs.

The user taps on empty external input entries, for example **"Ext Input 11"** as shown and then taps on the '**New**' button in the footer, this presents the user with a path width pop-up.

The user selects the width (in this case M Mono) and the "ticked" external input(s) will be set to that width. In the IO patching page the user then ports the inputs from the IO receivers to the external inputs.

FIG 3 - CREATE EXTERNAL INPUTS



Labelling External Inputs

Each external input can have a more meaningful label attached to it as shown in Fig 4. The user selects an external input entry from the table and the **'Edit'** button becomes available, tapping on this opens an external input label footer which allows the user to enter an appropriate label using the On-screen keyboard.

The user can tap on **'Previous'** or **'Next'** to continue editing other labels or **'Done'** to exit the dialogue.

Note: tapping on Previous or Next, acts as an acceptance of the new label. Tapping on Cancel will only ignore the current external input label change.

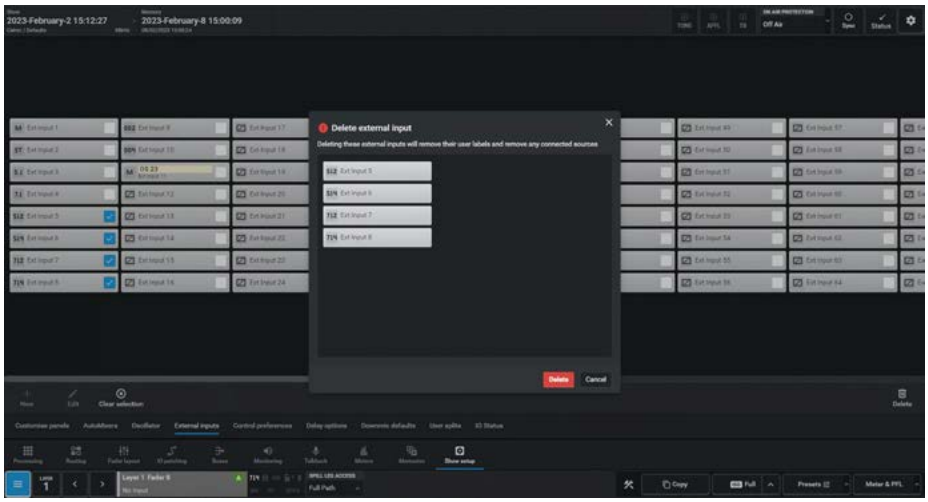
FIG 4 - LABEL EXTERNAL INPUTS

Deleting External Inputs

Existing external inputs can be deleted when no longer required. The user selects the external inputs by tapping on those external inputs to be deleted as confirmed by the "tick" in each entry and the **'Delete'** button becomes available, tapping on this opens the **"Delete external input"** dialogue which contains a list of external inputs that are to be deleted.

The user can then tap on **'Delete'** to confirm which will remove any connected sources or **'Cancel'** to leave the external inputs as they were as shown in Fig 5.

FIG 5 - DELETE EXTERNAL INPUTS



Clear Selection

This button will deselect any external inputs that have been "ticked" during the '**New**' or '**Delete'** process.

CONTROL PREFERENCES

The Control Preferences page in the Show Setup pages allows the user to determine how the various features such as AutoFaders, Faders, VCA groups and APFL options will behave.
The Control Preferences page is accessed from the Control preferences button in the Show Setup mode which itself is accessed from either the Modes row of a fader panel, by first pressing the Modes Menu button in button cell 4 of the Layers & Modes row then the user presses the Show Setup button as shown in Fig 1, or by tapping on the appropriate icon on the touchscreen as shown in Fig 3.

Once the Show setup is accessed a number of submenu options appear including the Control Preferences page which appears as shown in Fig 2 or from the Touchscreen submenu entry highlighted in Fig 3.

Control Preference Options

This is accessed from:-
Show setup>Control preferences and the page appears as shown in Fig 3.
Details of the various preferences are described below:-

Access:-

When the '**Access follows link**' slider switch is on and the user creates a link across a range of faders by simultaneously pressing two link buttons, the left-most path in the link will be accessed.

Using this option eliminates the worry about accessing the right path after the link is created.

The user can now also link faders that do not contain paths, this makes it very quick to select a range of faders.

AutoFaders:-

Touching a fader when fading has two options, '**Adjusts fade-in**' levels or as an alternative '**Overrides AutoFader Control**'.

Faders:-

Argo faders are provided with a notch feature where the fader motor applies a pulse to indicate when passing through the 0dB position, this can be turned off with the '**Fader Notch**' slider switch.

Spill Faders:-

The Argo surface allows the user to either allow Spill-in-place where the spill legs are opened to the side of the selected "path" or pre-define a range of faders that can be used as a Spill area.

FIG 1 -SHOW SETUP MODE SELECT ON STANDARD FADER PANEL

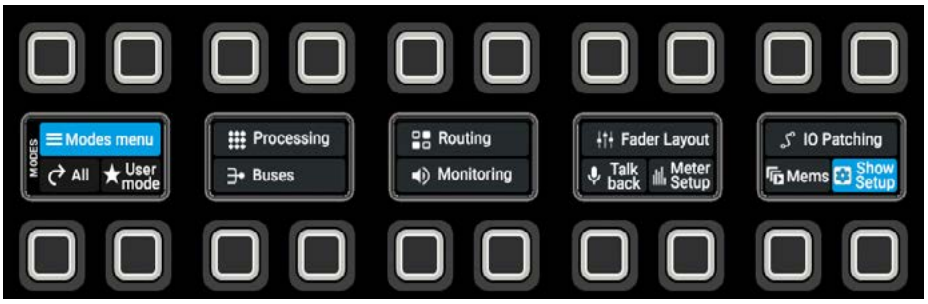


FIG 2 -SHOW SETUP MODE - CONTROL PREFERENCES SELECT

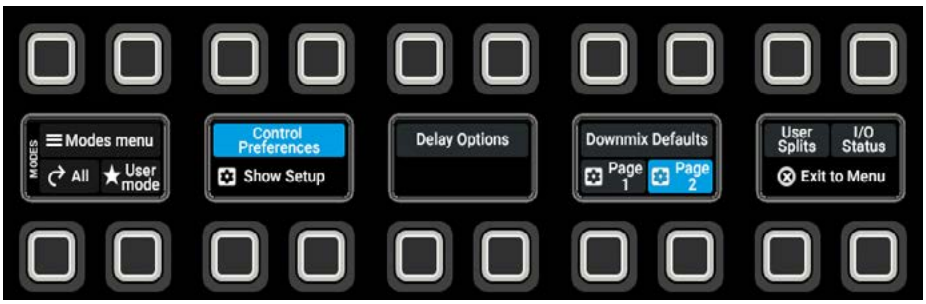
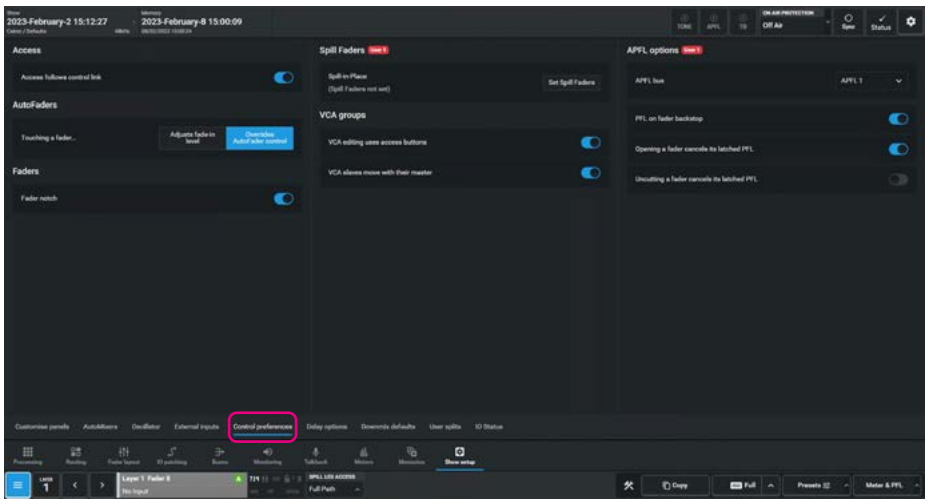


FIG 3 - CONTROL PREFERENCES- INCLUDING SPILL-IN-PLACE INDICATION



This is setup by tapping on the '**Set Spill Faders**' button, which opens the **"Set Spill Faders"** dialogue box and then defining a start and end fader number then pressing the '**Save & enable**' button as shown in Fig 4.

The image in Fig 5 shows that a Spill area from faders 1 to 12 is set, this range can be changed with the '**Edit**' button which opens the Set Spill Faders dialogue box again or it can be removed with the '**Use Spill-in-Place**' button which clears the Spill Fader settings for this user area.

VCA Groups:-
By default VCA groups are edited using the Access buttons, this process can be disabled to protect VCA assignments or stop VCA groups being made accidentally.

Also, by default the "VCA slaves move with their master" preference is set so that when VCA slave levels are changed by their VCA master then the VCA slave faders move under motor control. This functionality can be switched off and the VCA slaves will remain stationary.

Note: combined master/slave levels will still be indicated by nulling indicators in the fader displays.

APFL and PFL options:-
APFL Bus
The APFL bus to use for each User area is selected from the APFL bus dropdown as shown in Fig 5.

The APFL1, 2 or 3 buses can be selected for use in any of the 3 User areas or by multiple user areas. APFL1 is the default.

PFL on Fader Backstop
By default, the PFL can be turned on momentarily by pulling the fader down below its off position, and deactivated once released. This can be switched off per user area.

Opening a fader cancels latched PFL
By default, if a fader is closed and this option is selected, when it's PFL is on, it will be automatically turned off when the fader is opened. This feature can be switched off per user area.

Uncutting a fader cancels latched PFL
If a fader is cut and this option is selected then any PFL that is latched on will be cancelled when the path has its "Cut" turned off. This feature can be switched off per user area

Note: The User 1/User 2/User 3 indicators that are displayed in the UI are used to flag that those settings only apply to that user area. Settings without this flag apply to the entire control surface.

FIG 4 - CONTROL PREFERENCES - SETTING THE SPILL AREA

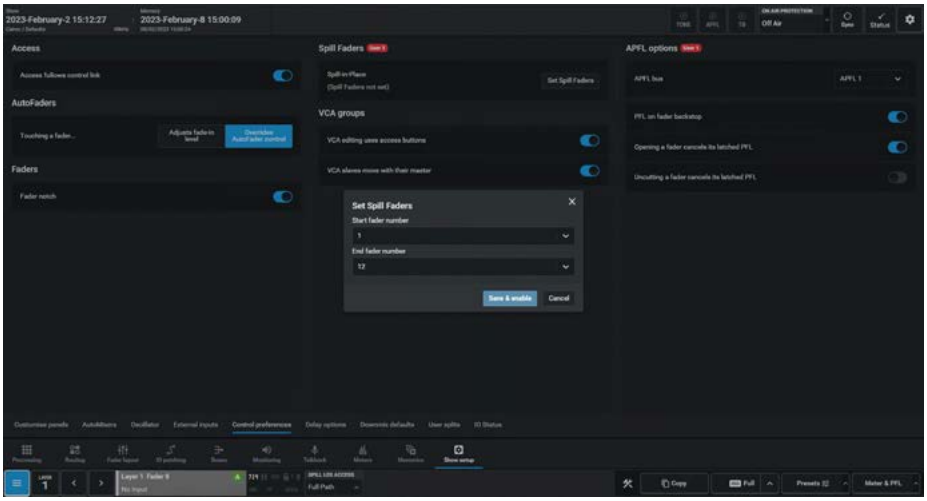
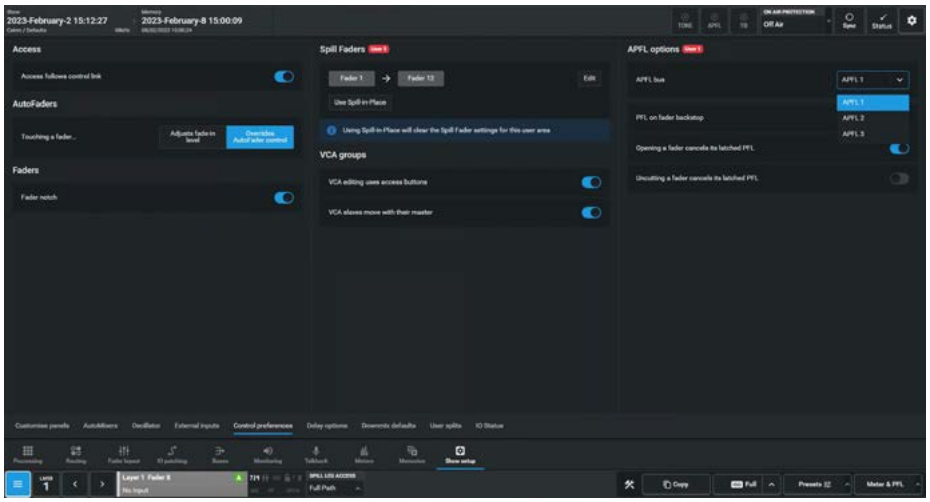


FIG 5 - CONTROL PREFERENCES - FIXED SPILL ZONE & APFL/PFL OPTIONS



DELAY OPTIONS

The Delay options page in the Show Setup pages allows the user to determine how the delay is measured in Time or in a pre determined frame rate. The Delay options page is accessed from the Delay options button in the Show Setup mode.

This in turn is accessed from either the Modes row of a fader panel, by first pressing the Modes Menus button in button cell 4 of the Layers & Modes row and then the user presses the Show Setup button as shown in Fig 1, or by tapping on the appropriate icon on the touchscreen as shown in Fig 3. Once the Show setup is accessed a number of submenu options appear including the Delay options page which appears as shown in Fig 2 or from the Touchscreen submenu entry highlighted in Fig 3.

Delay Option Settings

The delay options page is accessed from **Show setup>Delay options** as shown in the image in Fig 3.

This page allows the user to decide if the delay period applied should be defined in Time or in Frames, the default units are time based in 0.1ms intervals. There are three global delay settings available:-

Delay Units sets the resolution type for all new delay assignments, the interface is a two state button switching between '**Time**' in milliseconds and '**Frames**' in frames per second. This 'ms'/'frames' selection can be applied to all existing delay assignments by tapping the button labelled '**Apply to all existing delays**'.

The **Frame rate** selection button is used to set the video frame rate for all frame-based delay assignments. The frame rate should be set to match the frame rate of the video signal that the audio feed is related to. The various frame rates available are shown in the frame rate options dropdown as shown in Fig 4.

Finally there is the **Frame Step Size** selection button which sets the resolution of the stepper button within the surface or on the **Processing>Delay** page.

There are two step size options available: 0.5 frame and 1 frame.

Note: the time step size in time is not affected by frame step size changes and remains at 10ms throughout.

FIG 1 -SHOW SETUP MODE SELECT ON STANDARD FADER PANEL

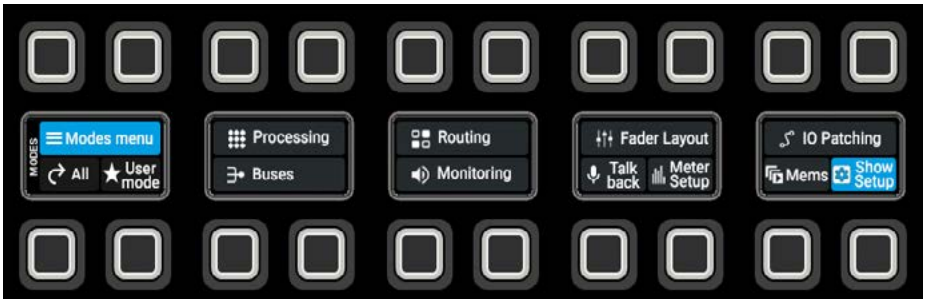


FIG 2 -SHOW SETUP MODE - DELAY OPTIONS SELECT

FIG 3 - DELAY UNITS - TIME/FRAME OPTIONS

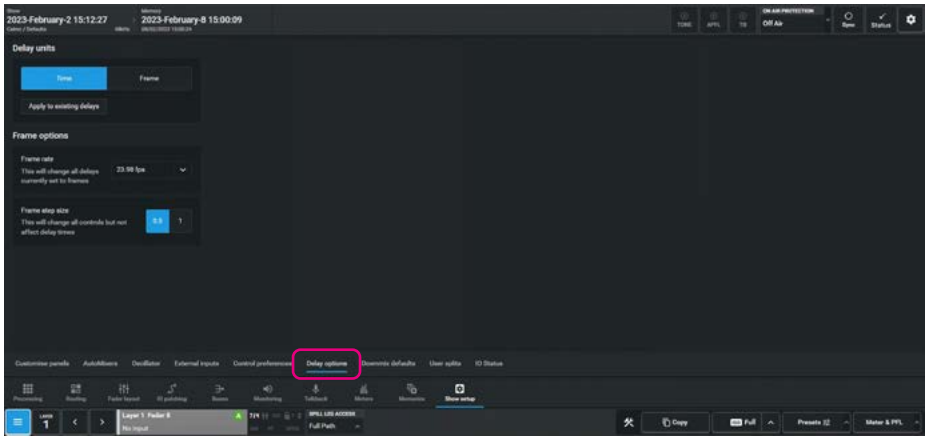
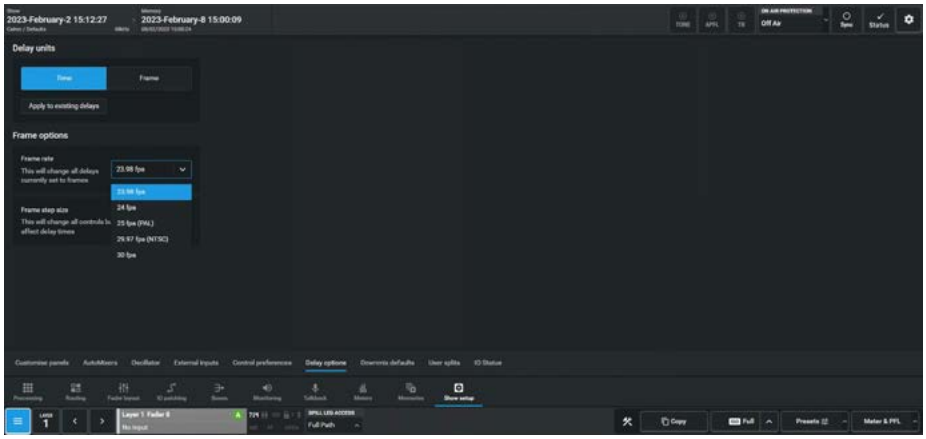


FIG 4 - FRAME RATE OPTIONS



DOWNMIX DEFAULTS

The Downmix Defaults page in the Show Setup pages allows the user to determine what offsets they require when downmixing from one audio width format to another. The Downmix defaults page is accessed from the Downmix defaults button in the Show Setup mode, which itself is accessed from either the Modes row of a fader panel, by first pressing the Modes Menu button in button cell 4 of the Layers & Modes row and then the user presses the Show Setup button as shown in Fig 1, or by tapping on the appropriate icon on the touchscreen as shown in Fig 3. Once the Show setup is accessed a number of submenu options appear including the Downmix defaults page which appears as shown in Fig 2 or from the Touchscreen submenu entry highlighted in Fig 3.

Downmixes an overview

These are conversions of surround or immersive path, downmixing occurs automatically whenever a surround or immersive signal is routed on to a bus of a width that is smaller than the original path.

Downmixes ensure that all the required elements of a surround or immersive signal are maintained and mixed together at appropriate levels when used to feed destinations of a smaller width.

In some circumstances, it may be preferable not to downmix elements of a surround path to a certain bus, for example, if a presenter is fed a surround source into their mono earpiece, it may be beneficial to omit the rear channels to enhance the clarity of any dialogue in the front.

In this case, the audio should not be routed from the surround/immersive master which would cause a downmix.

Select the surround/immersive path on the surface instead, then select the front L/R or C element of the surround or immersive path from the spill area or spill-in-place area will make the front L/R only the currently assigned path and allow it to be routed on its own, to the required destination.

When a surround or immersive path is routed to a narrower bus from its master, rather than from a spill leg, a downmix is automatically applied.

FIG 1 -SHOW SETUP MODE SELECT ON STANDARD FADER PANEL

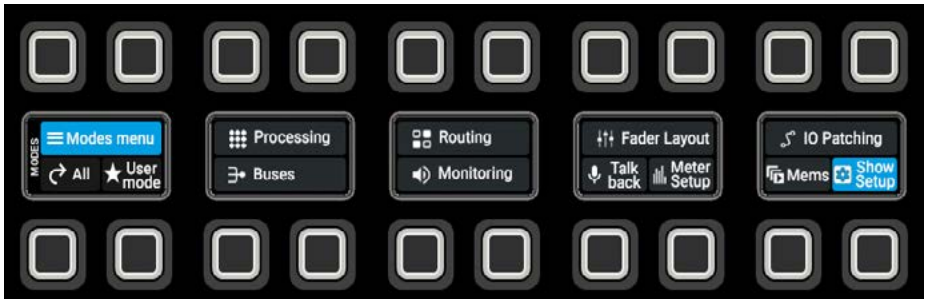
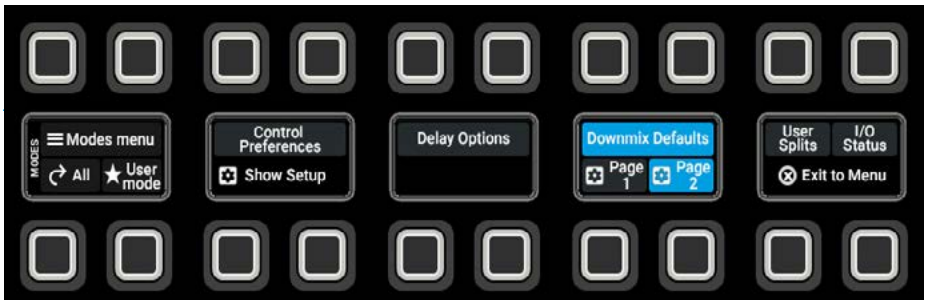


FIG 2 -SHOW SETUP MODE - DELAY OPTIONS SELECT



Surround or immersive stereo downmixes maintain stereo separation by mixing front L, rear L & C together and in the case of immersive sources top L front & rear to create a Lo - 'Left Overall' channel, and front R, rear R & C together and in the case of immersive sources top R front & rear to create a Ro - 'Right Overall'.

Default downmixes do not include the LFE channel, but this can be added if required.

The levels that the surround/immersive elements mix together to form a downmix are defined by the downmix set, default downmix values are applied console wide.

Initially Set 1 thru Set 5 are set up with Calrec factory defaults, however these sets can be edited and the user can select and then apply any of the five pre-defined downmix sets. This selection is made from the left panel of the **Show Setup> Downmix Defaults** page.

The image in Fig 3 shows that the Current downmix preset is Set 1 which has been reset to Calrec default values and the table is showing its active settings.

In order to change to a different downmix preset the user taps on the required preset (Set 3) as shown in the image in Fig 4, the table values then change to show the downmix values that are contained in Set 3 for instance the Front L/R and C have been changed to -3dB and -4.5dB respectively and the '**Show active settings**' button will be turned off.

If the user wants to apply this downmix set then they tap on the '**Apply Levels and update all down mix faders**' button, this will activate Set 3 as the current preset and the '**Show active settings**' button will be turned on again.

The downmix values at the top of the table shows the various levels applied by default to the Stereo Lo/Ro downmix from each of the Spill elements of the source path.

The first column shows the contribution from the Front left and right L/R legs that exist in all surround/immersive paths, the Centre leg C and the Low Frequency Effects leg LFE which is usually set as OFF i.e -100dB.

The second column shows contribution levels from the Rear surrounds from either 5.1 Ls/Rs source legs or 7.1 Lss/Rss and Lrs/Rrs source legs.

The third column shows contribution levels from the Top surrounds from 0.0.2 Ltf/Rtf source legs & 0.0.4 Ltf/Rtf & Ltb/Ltr Rtb/Rtr source legs which are from height only paths or 5.1.2 & 7.1.2 Ltf/Rtf source legs and 5.1.4 & 7.1.4 Ltf/Rtf & Ltb/Ltr Rtb Rtr source legs which are from fully immersive paths.

FIG 3 - DOWNMIX DEFAULTS - DOWNMIX SET 1 SELECTED

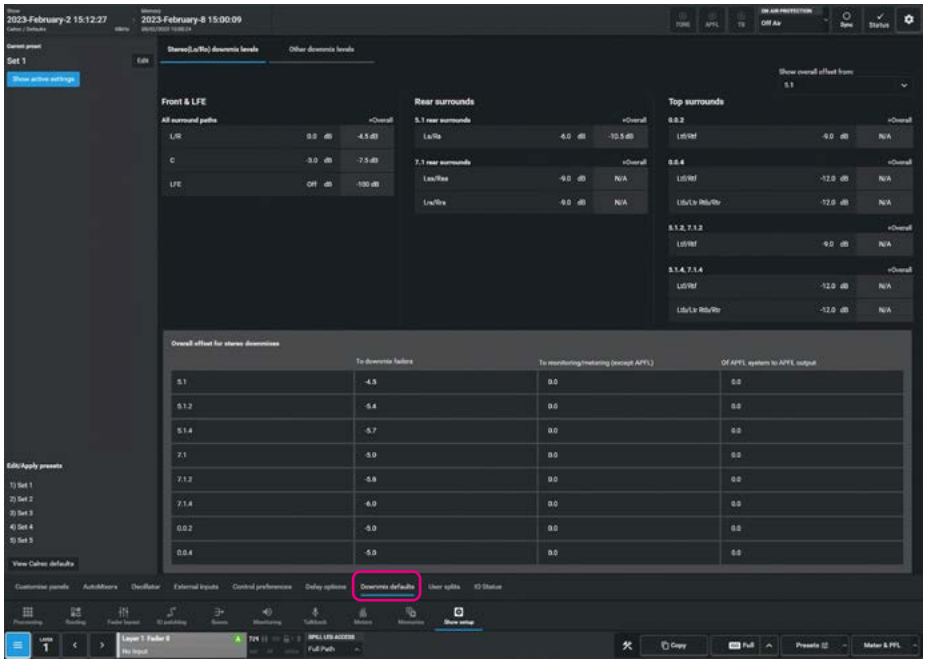
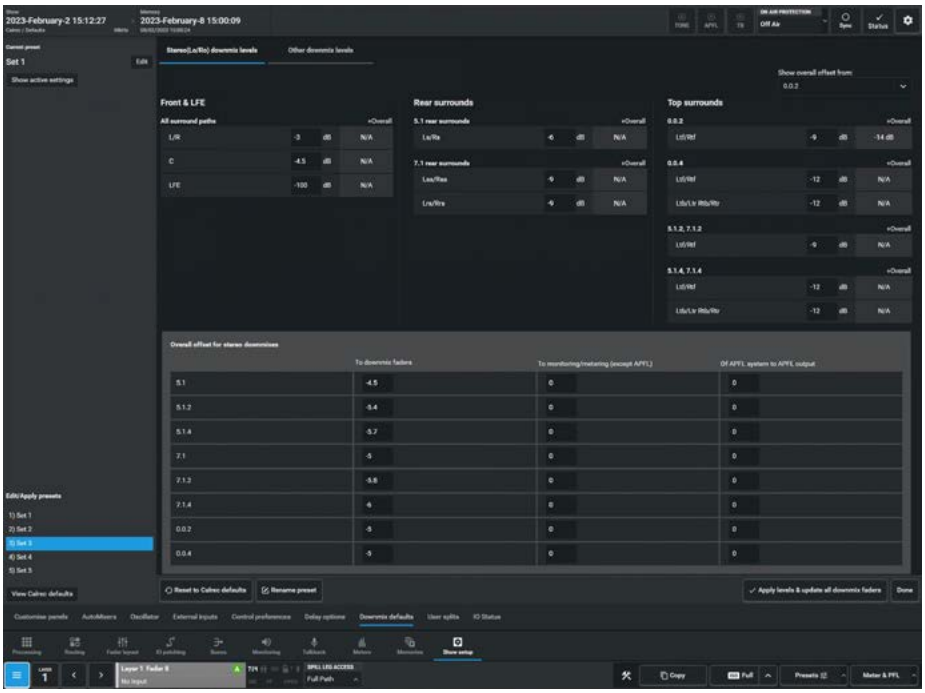


FIG 4 - DOWNMIX DEFAULTS - CHANGING TO DOWNMIX SET 3



The downmix level is the sum of each leg and Overall offset levels where applicable, the image in Fig 5 right shows the overall offset levels to be applied from each source into the LoRo downmix and the "Show Overall offset from" dropdown box (top right) displays those values in the table on the previous page for each source width selected from the dropdown.

As well as the LoRo downmix tables, the "Other downmix/upmix levels" TAB shown in Fig 6, displays the change in levels to be applied from Source legs to Destination legs when routed, in tabular form.

The upper entry shows the Front L/R, C & Lfe legs of all surround paths being fed into: 0.0.4 & 0.0.2 destinations showing what levels are to be applied.

The upper middle entry shows the 5.1/5.1.2 & 5.1.4 rear surround Ls/Rs source legs being fed into:
7.1/7.1.2 & 7.1.4 front L/R, side surrounds Lss/Rss, rear surrounds Lrs/Rrs and the 0.0.4 & 0.0.2 destinations
showing what levels are to be applied.

The middle entry shows the 7.1/7.1.2 & 7.1.4 rear surround Lss/Rss and Lrs/Rrs sources being fed into:

5.1/5.1.2 & 5.1.4 front L/R, surrounds Ls/Rs and the 0.0.4 & 0.0.2 destinations showing what levels are to be applied.

The lower middle and lower entries show what levels are to be applied from the Top surrounds when routed to destinations of different widths.

The lower middle entry shows the top of 5.1.2 /7.1.2 & 0.0.2 Ltf/Rtf source legs being fed into:

5.1 front L/R & surround Ls/Rs

7.1 front L/R, side surround Lss/Rss & rear surround Lrs/Rrs

Top front Ltf/Rtf & top back or rear Ltb or Ltr/Rtb or Rtr of 5.1.4/7.1.4 & 0.0.4 destinations showing what levels are to be applied.

FIG 5 - DOWNMIX DEFAULTS - OVERALL OFFSET LEVELS FOR LORO

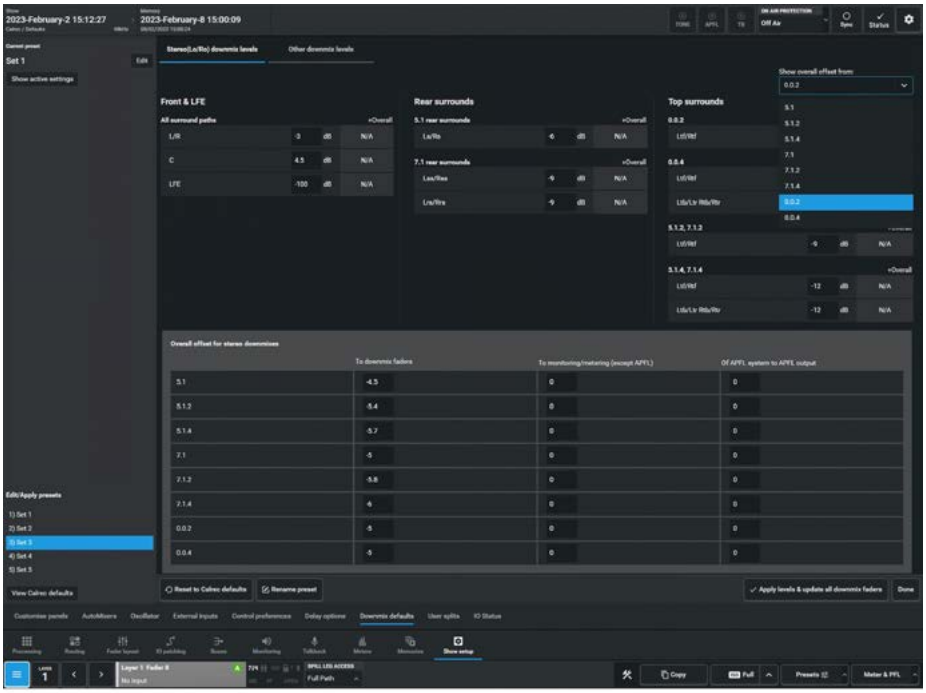
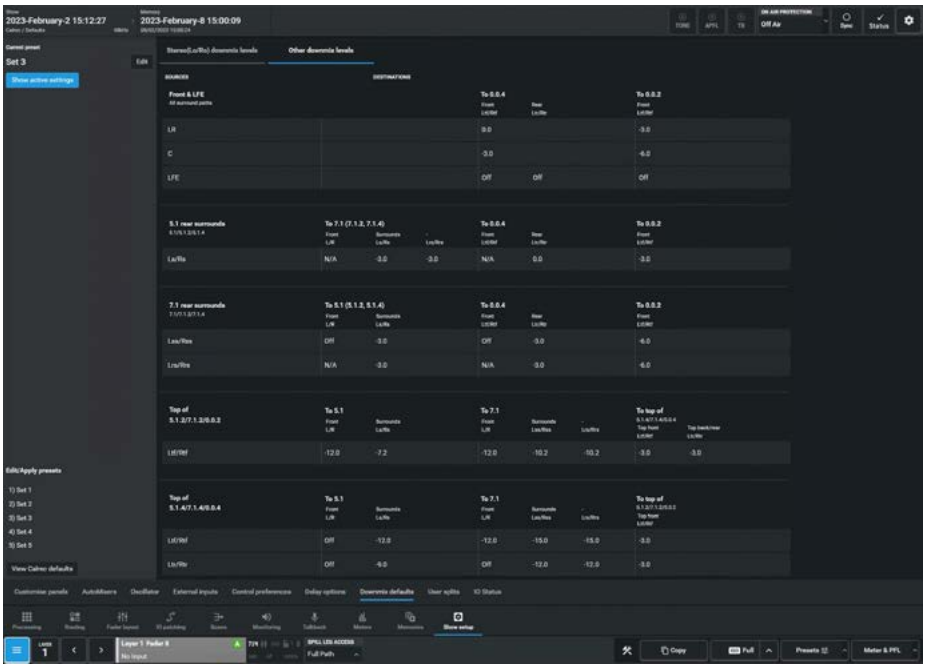


FIG 6 - DOWNMIX DEFAULTS-OTHER DOWNMIX LEVELS



The lower two entries show the top of 5.1.4/7.1.4 & 0.0.4 Ltf/Rtf & Ltr/Rtr source legs being fed into:

5.1 front L/R & surround Ls/Rs

7.1 front L/R, side surround Lss/Rss & rear surround Lrs/Rrs
Top front Ltf/Rtf of 5.1.2/7.1.2 & 0.0.2 destinations, showing what levels are to be applied.

Setting downmix defaults

Users can set up any or all of the five different downmix defaults (any of which can be set to the default set up by Calrec using the '**Reset to Calrec defaults**' button).

One of these defaults can then be selected by operators to be the default for their show.

Users can edit settings in each downmix set, as shown in the image in Fig 7, they first select the preset to edit or if it is the current set they can tap on the '**Edit**' button at the top of the left panel and the editable fields change background colour.

The user here is editing Set 3 and has altered Set 3's Centre leg level from -3dB to -5dB as shown above right.

Each level can be altered by tapping on it which opens the editing dialogue box where the values can be altered using the +/- buttons, the slider or typing in a numeric value.

Once the value is set the user taps on the "tick" icon to **'Save'** the level changes or the "cross" icon to **'Cancel'** the level changes.

Changes take effect immediately and an asterisk is shown next to the altered Set 3 *, the changes are applied to all user memories within the current show.

These include downmixing for internal system routing, surround or immersive main outputs and surround or immersive channel/group direct outputs which have downmixed versions available for patching to output transmitters.

In the image in Fig 8 the user is just about to change the level that will be sent from the Front LR of all surround paths to the 0.0.4 Front Ltf & Rtf outputs.

When levels have been changed an information message appears in the left panel informing the user that "Preset values have been changed since last applied".

FIG 7 - DOWNMIX DEFAULTS - SET 3 EDITING C LEVEL FOR STEREO (LO/RO)

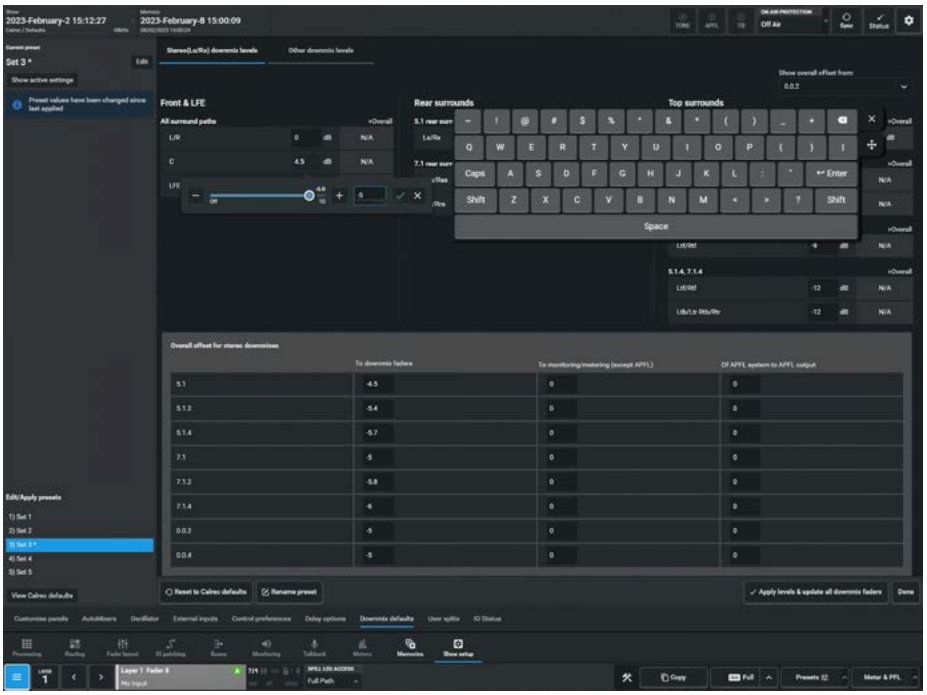
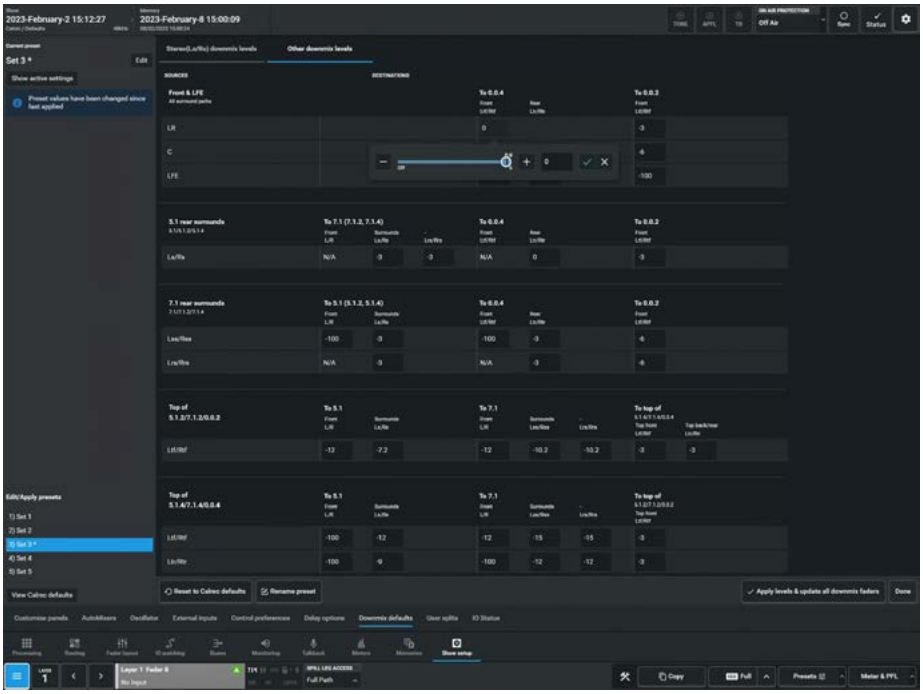


FIG 8 - DOWNMIX DEFAULTS - SET 3 EDITING LR LEVEL FOR 0.0.4 FRONT LTF/RTF



If the user wants to save these preset value changes they can click on the **'Apply Levels and update all downmix faders**' button to save the values into the selected set and make it active.
It is then saved as part of the user memory and the "Preset values ..." message and the asterisk adjacent to the edited preset is removed.

Note: at the bottom of the left panel is a '**View Calrec defaults**' button, this allows the user to do a quick comparison between the current preset values and the Calrec default values without changing the settings.

Renaming Presets
As shown in Fig 9, the name of the preset may be altered by tapping on the '**Rename preset**' button, entering a new name in the "Rename preset" dialogue box using the On-screen keyboard and tapping on the '**Rename**' button or '**Cancel**' button as required.

Reset to Calrec defaults
As shown in Fig 10 at the bottom left of the table area is a '**Reset to Calrec defaults'** button, which when tapped opens the "Reset this preset to defaults" dialogue box.

'Tapping on the **'Reset'** button overwrites all the downmix values of the current Set selection with the default values in the Calrec defaults, providing an easy way to clear any unwanted edits and start creating a new downmix setup from a known default set of values.

Bypassing Downmix levels
When routing a surround or immersive path or bus to a bus of narrower width, the downmix levels set by the downmix faders are applied automatically. To bypass the downmix faders for a given bus, select the bus in Routing mode and slide the '**Bypass Downmix Faders**' switch.

Pre-fader downmixes
Should a surround or immersive path or bus be sent to a bus pre-fader, it may be necessary to have the spill fader levels applied to make the downmix the same as the post-fader downmix.

This is because the post-fader downmix is processed after the spill faders, and so adjustments to individual legs on the spill faders will have an effect on the resultant downmix.

To make the pre-fader send follow the spill faders (but not the overall path fader) to produce the correct downmix, select the destination bus in Routing mode and slide the '**Follow Spill Fader levels**' switch.

Note: this button will only be accessible if the send or route is pre-fader.

FIG 9 - DOWNMIX DEFAULTS - RENAMING PRESETS

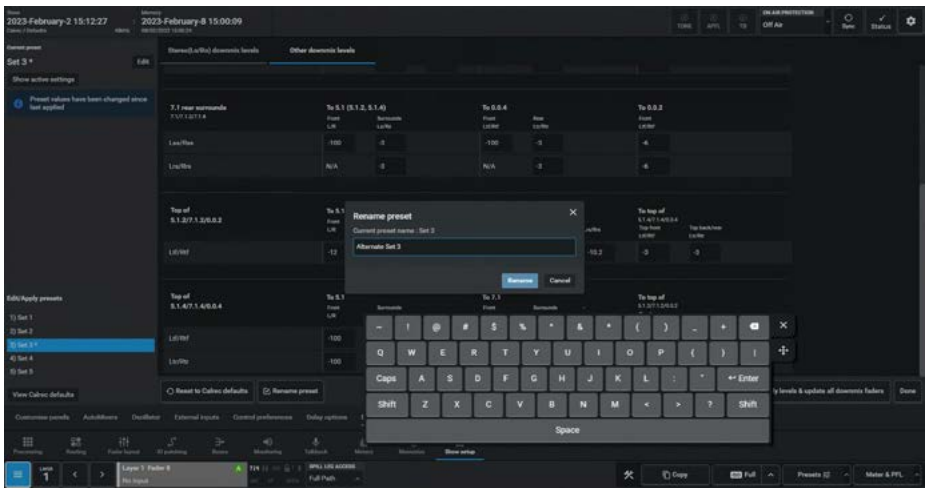
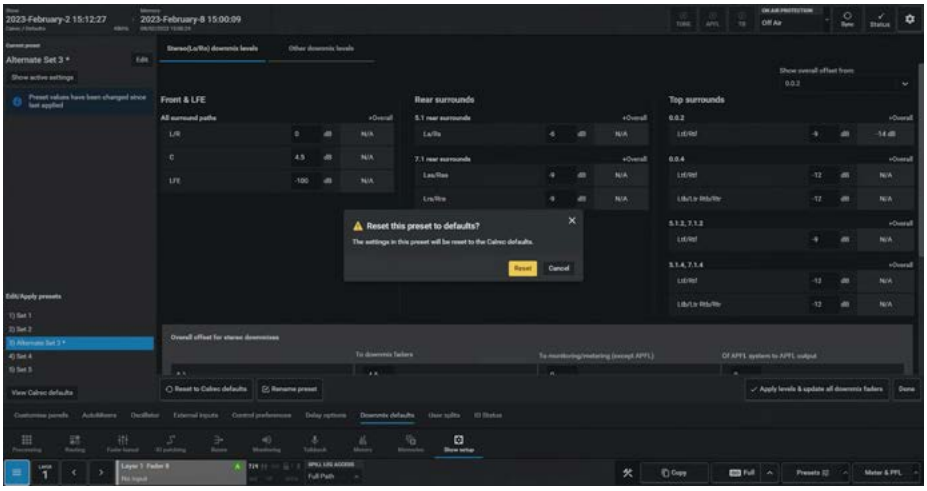


FIG 10 - DOWNMIX DEFAULTS - RESET TO CALREC DEFAULTS



Note: globally applied downmix settings can be adjusted on a path by path basis from the **Processing>Faders** -Downmix page.

With a surround or immersive path assigned, selecting the **Processing> Faders** - Downmix faders mode allows the user to alter the contribution made from each element of the surround or immersive path to a downmixed feed.

Unless previously adjusted on that path, the faders should show the levels as dictated by the globally configured downmix set.

Adjusting the faders in downmix mode alters the downmix contributions from the currently assigned path.

USER SPLITS

The User Splits page in the Show Setup pages allows the user to partition the surface into one, two or three operational areas. This allows multiple operators to work on the same surface without impacting on each other.
The User Splits page is accessed from the User splits button in the Show Setup mode, which itself is accessed from either the Modes row of a fader panel, by first pressing the Modes Menu button in button cell 4 of the Layers & Modes row and then the user presses the Show Setup button as shown in Fig 1 or by tapping on the appropriate icon on the touchscreen as shown in Fig 3. Once the Show setup is accessed a number of submenu options appear including the User splits page which appears as shown in Fig 2 or from the Touchscreen submenu entry highlighted in Fig 3.

User split Partitioning

User splits are often used to separate an extended control surface or sidecar from the main control surface in addition to partitioning the main surface.

A maximum of three user splits can be set across the combination of main console and extension/sidecar, user splits can be placed between standard fader panels to provide separate areas of control for up to 3 operators. The splits may appear in any order, for instance User 1 can be controlling faders 37-48, User 2 can be controlling faders 1-12 and User 1 can be controlling faders 13-24. The only constraints are that a User area has to be in a single block and there must be a User 1 area.

User splits partition faders and the assignable panel modes. The assignable panel modes can only affect the currently accessed path within their user area. Each area can have its own currently accessed path.

Changing the accessed path within an area does not change or cancel the accessed path or focus of assignable panels in other user areas. Also, changing layers only affects faders within the user area that the change was made from.

If multiple operators require their own monitoring system, speakers and headphones can be fed from monitor outputs 1 or 2, or miscellaneous monitor outputs, and each operator then use the controls relevant to their area.

The PFL and AFL listen outputs of the faders within each user are can be selected to feed one of three different APFL bus sets, each of which can be patched to outputs for local monitoring and this is chosen from **Show Setup>Control Preferences.**

FIG 1 -SHOW SETUP MODE SELECT ON STANDARD FADER PANEL

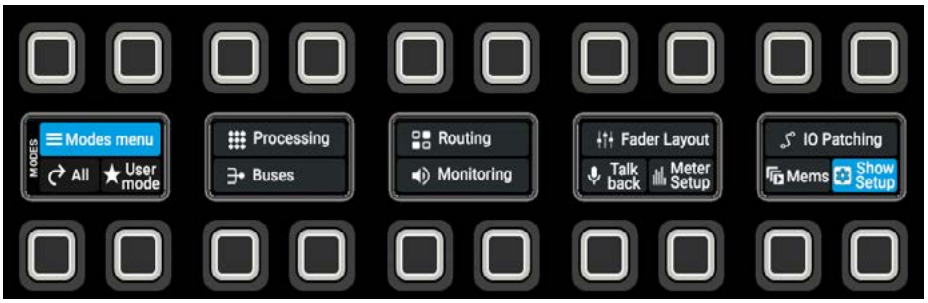


FIG 2 -SHOW SETUP MODE - USER SPLITS SELECT

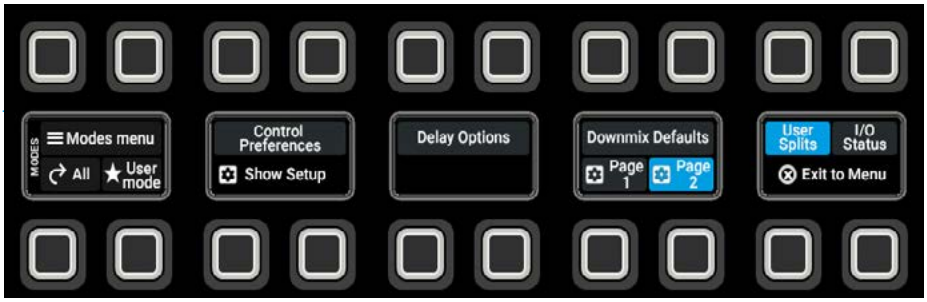
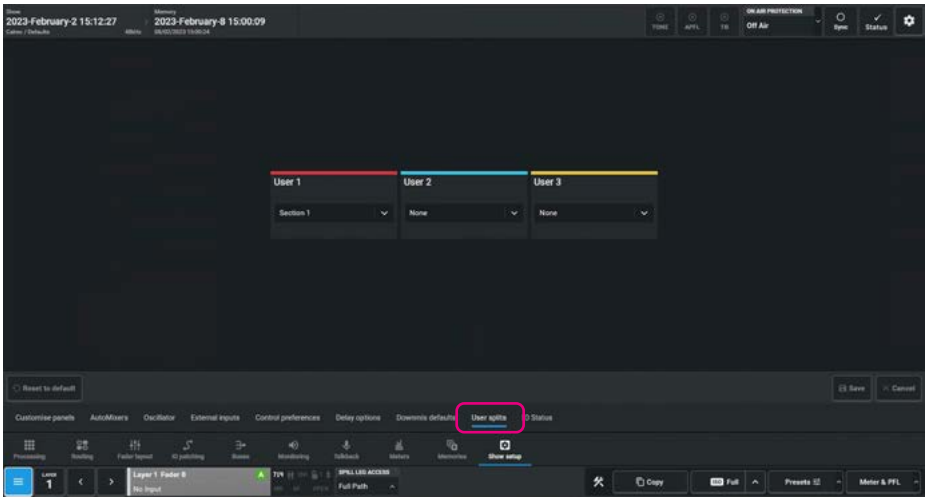


FIG 3 - USER SPLITS



The two main monitors can be configured to be interrupted by different APFL sets, allowing each user to be able to listen to their paths without affecting each other's monitoring. Please refer to Monitoring section for details on configuring monitoring for multiple users.

Creating / removing user splits
User splits are managed from the **Show Setup>User Splits** screen, as shown in Fig 3.

Clicking on the various dropdown buttons for each user area displays the list of sections for users 1, 2 or 3 to select and includes those panels to the right of it up to the next user split.

Tapping the **'Save'** button in the bottom right of the footer opens the 'Spill faders and scrolling may be reset' dialogue box as shown in Fig 4. When saved it applies the user split settings on the screen to the surface, or **'Cancel'** to put it back as it was.

Tapping the **'Reset to default'** button will remove all user splits.

After tapping on '**Save**' a confirmation pop-up appears advising the user that

"Any Spill Faders set in the affected User Splits will be reset to Spill-in-Place. Any active scrolling will also be reset."

Note: the User split configuration is saved in the Show, but no changes are applied to the surface until the Save button is tapped.

Identifying User Split Locations
The location of active user splits is shown on the fader layout page as shown in Fig 5 and on the Customise Panels page in Fig 6.

The standard fader panels to the left of a user area if any, for example the User 2 split highlighted marker in Fig 5 are in another user area in this case User 1. Any panels to the right of a user area e.g. User 2 will belong to the User 2 area until another User Split marker i.e. User area 3 or the end of the surface is reached.

FIG 4 - USER SPLITS SAVE DIALOGUE

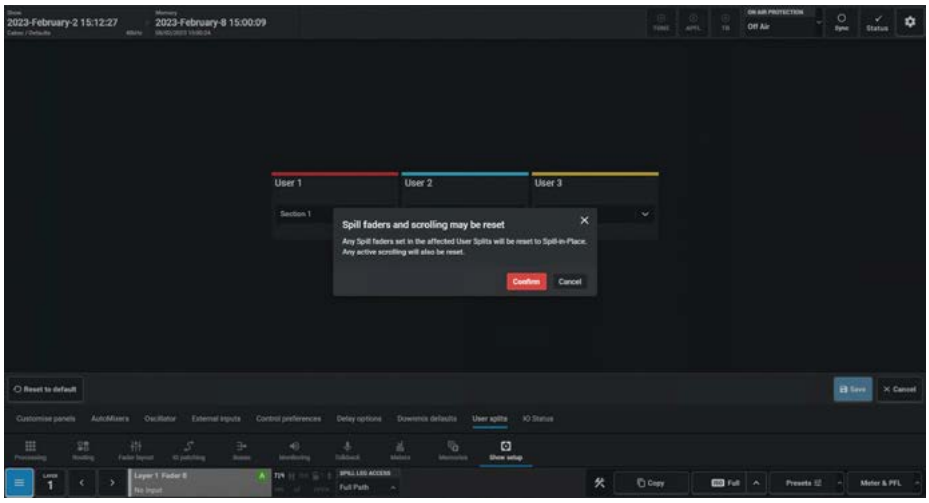
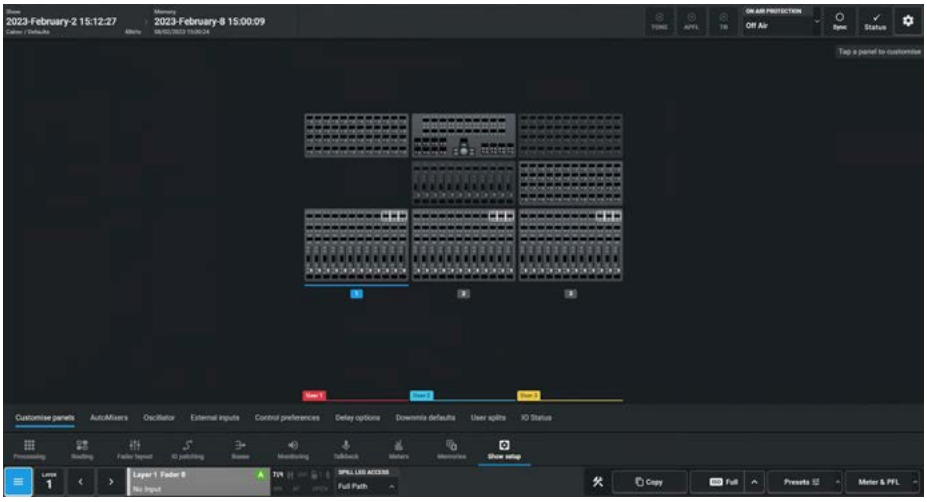


FIG 5 - USER SPLIT SHOWN IN FADER LAYOUT SURFACE

FIG 6 - USER SPLIT SHOWN IN SHOW SETUP>CUSTOMISE PANELS



I/O STATUS

The I/O Status page in the Show Setup mode is used to shown the Online or Offline status of any IO device that this console has been attached to from the Connect application.

The I/O Status page is accessed from the I/O Status button in the Show Setup mode, which itself is accessed from either the Modes row of a fader panel, by first pressing the Modes Menu button in button cell 4 of the Layers & Modes row and then the user presses the Show Setup button as shown in Fig 1, or by tapping on the appropriate icon on the touchscreen as shown in Fig 3.

Once the Show setup is accessed a number of submenu options appear including the I/O Status page which appears as shown in Fig 2 or from the Touchscreen submenu entry highlighted in Fig 3.

I/O Status Messaging

The IO devices in the table may or may not be in use by other surfaces in the network, this page allows the user to Receive or Ignore status messages from those IO devices that this user has an interest in.

A 'Receive status messages' slider switch is provided for each IO device so that the user can select the boxes as necessary.

When an IO device is Offline a further option appears which allows the user to forget the device as shown in Fig 4.

If the box is no longer required by this user then tapping on the **'Forget device'** button will remove that device from the table.

The three buttons at the bottom of this page allows the user to turn the **'Status messaging ON'**, turn the **'Status messaging OFF'** or to **'Forget selected'** IO Devices based on the selection 'Tick' boxes on the left side of the IO Device table.

FIG 1 -SHOW SETUP MODE SELECT ON STANDARD FADER PANEL

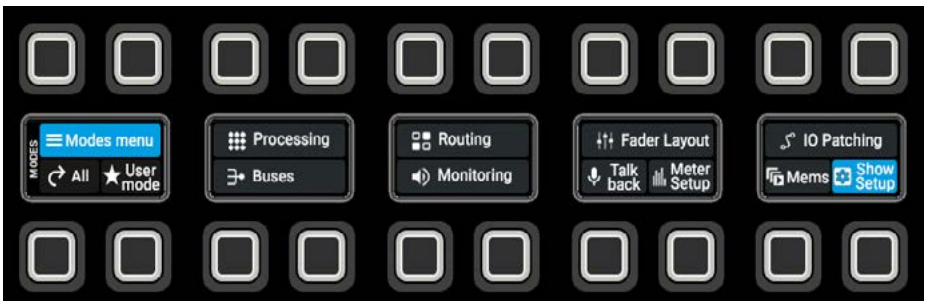


FIG 2 -SHOW SETUP MODE - I/O STATUS SELECT

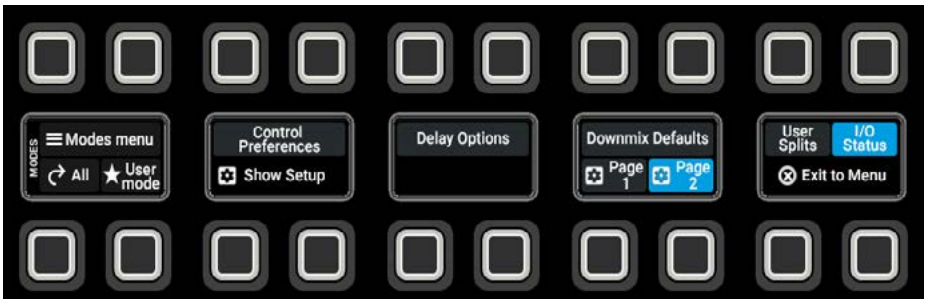


FIG 3 - I/O STATUS WITH ONLINE DEVICE HIGHLIGHTED

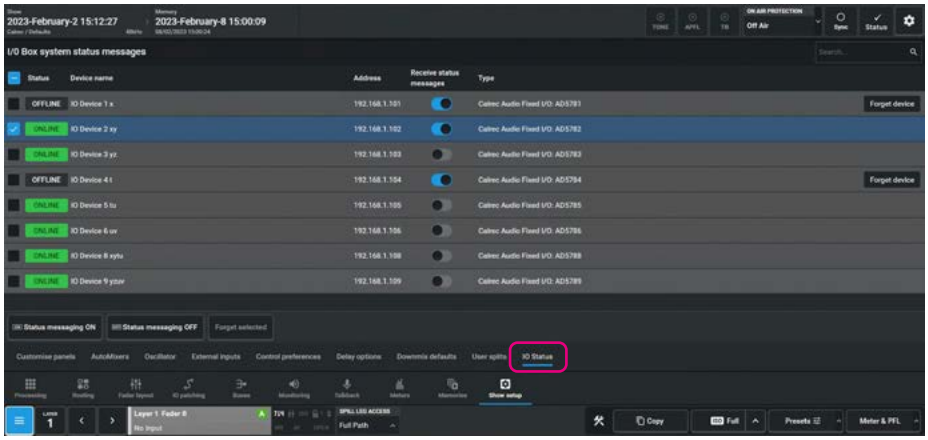
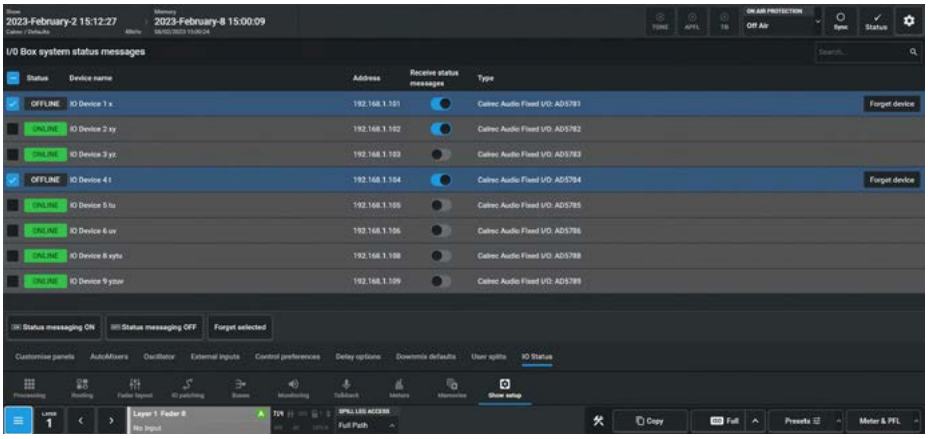


FIG 4 - I/O STATUS WITH OFFLINE DEVICE HIGHLIGHTED



ARGO
SYSTEM SETTINGS

CALREC

GENERAL SETTINGS

Accessing System settings
To access the System settings drawer the user taps on the gear wheel highlighted in Fig 1 the "SYSTEM SETTINGS" drawer appears as shown. On the left side of the screen is shown the various sub-menu pages for system settings. Tap on the **System Settings>General Settings** option from the sub-menu on the left side.

Operational Settings
Levels:
Reference Level (dBFS) - can be set to an integer value from -6 to -32dBFS. The reference level sets default level values for the dynamics and oscillator modules, see the image in Fig 1.
Meters:
Meter Style - can be set for all meters on the meter displays. Various PPM or VU scales can be chosen from a dropdown, see image in Fig 2. This changes the default meter style used when new meters are created, the meter style can be changed later in the "Edit meters" page. The existing meters are unaffected by this.
Fader settings:
Fader Cut/On Buttons - This setting switches the Cut/On buttons operation between Lit when Cut & Lit when On for the faders and in the user interfaces.
Fader touch overrides CSCP control -if this switch is active the CSCP control of the faders can be overridden from the touch sensitive faders if touched.
System logs:*
Export Logs button- when tapped this exports the operational logs to a file for diagnostic purposes. All the log files from around the system are compressed into a gzip tar archive and written to a chosen location e.g. on a USB memory device.
*Note: Export is not yet available from surface in v1.0.x, but is from Assist
APFL Bus Widths:
APFL 1,2 & 3 Width dropdowns- when these are tapped a dropdown appears for each of the APFL buses, which is used to select the width of the AFL and PFL buses associated with that APFL bus.
PFL to CtrlRoom monitor 1/2 Small LS:
These switches allow the user to listen to the output of the PFL bus using the Small LS output rather than a dedicated PFL LS or using PFL to Mon.

FIG 1 - ACCESSING SYSTEM SETTINGS & REFERENCE LEVEL SELECTION

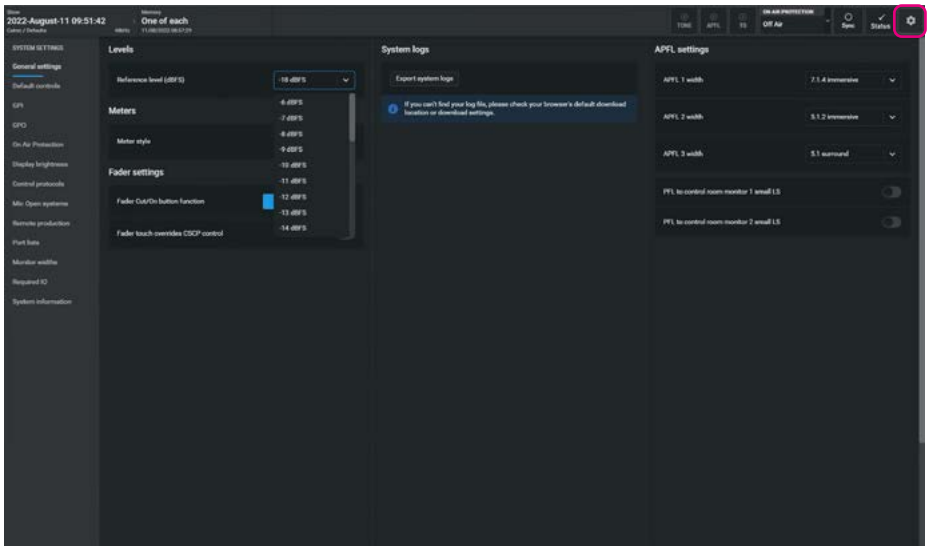


FIG 2 - METER SCALE SELECTION

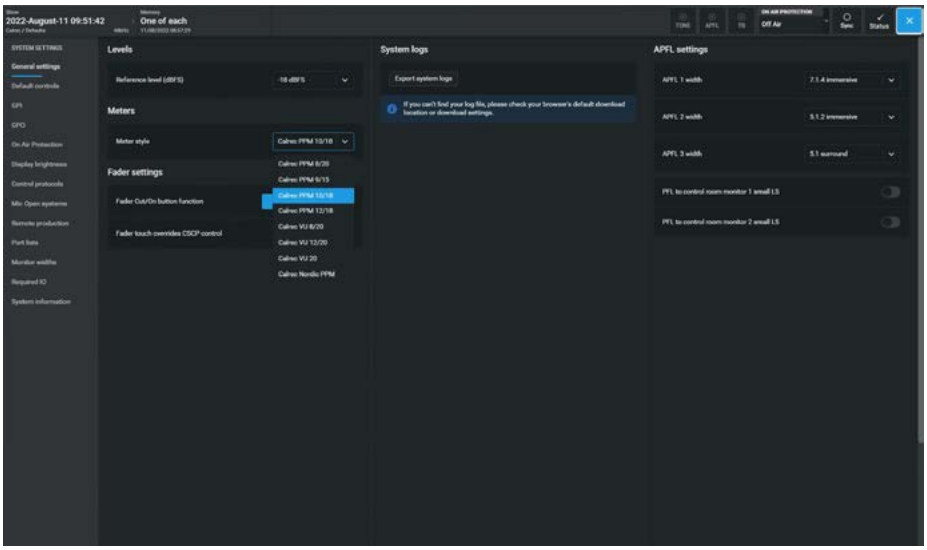
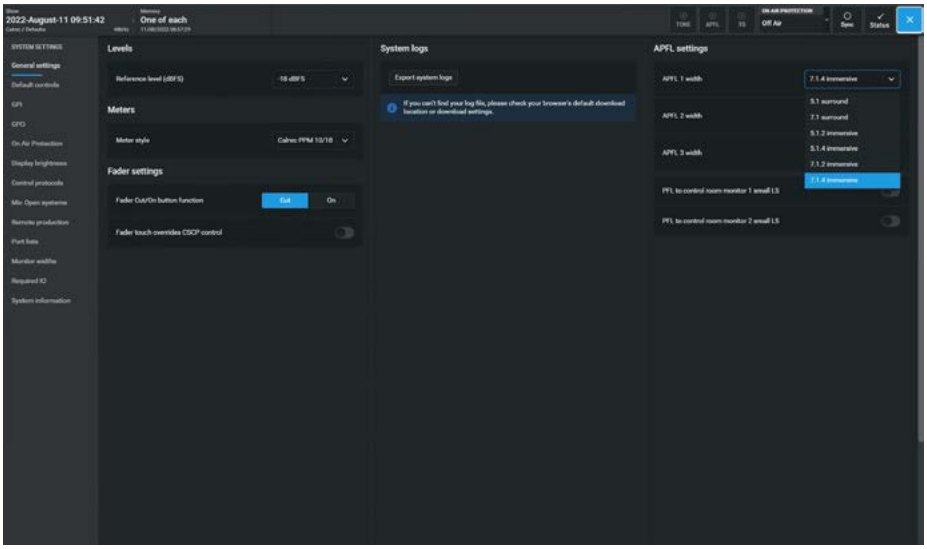


FIG 3 - APFL WIDTH SELECTION



DEFAULT CONTROLS

Setting Default Strip Controls
To access the Default controls sub-menu tap on the **System Settings>Default Controls** option from the sub-menu on the left side of the system settings drawer as shown in Fig 1. The page is arranged in two halves the left side of the screen is used to set the default controls that appear on the standard fader panel's lower row of 4 button control cells placed just above the faders Cut/On button on the IU6576 Standard Fader panel. This row of 4 button cells are the same cells as described in the Fader Layout section see **"User Controls Editor" on page 120**.

The right side of the screen is used to set the default fader button controls, that appear on both the standard 12 fader panel which has 3 definable buttons and the short fader panel which only has 2 definable buttons.

Tapping on any of the buttons in the 4 button cell or any of the 4 Add buttons under button functions, or any of the 3 or 2 buttons next to the faders on the standard or short fader panels opens the Customise button menu with the Input Control page shown in Fig 2.

There are an extensive set of control options that each of the buttons can be set to use as the default functions.

In order to simplify some of these selections, 3 filter sets are provided:-

- Global Functions: these controls are console wide.
- Bus Functions: these controls apply to buses only.
- Path Functions: these controls apply to the selected path.

Note: Path Functions are recommended for strip controls as they will apply specifically to the fader strip.

All the button cell templates are already shown in the User controls editor in the **Fader Layout - Controls** page and as such will not be repeated here, see **"User Controls Editor" on page 120.**

Setting up the B layer control access
The image in Fig 3 shows the user editing the number 1 button next to the fader (which is now labelled **'B')** to be the **'B layer'** button by default.

FIG 1 - SETTING THE DEFAULT STRIP CONTROLS

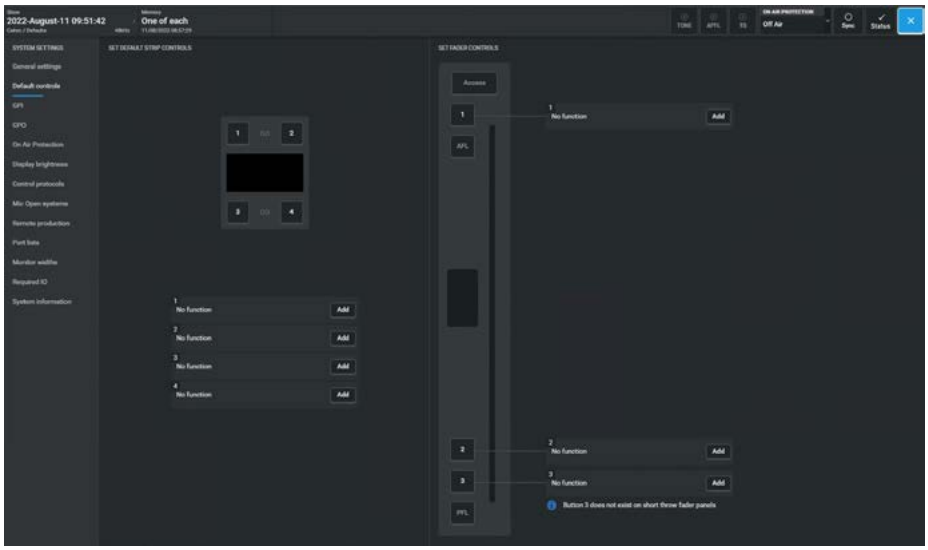


FIG 2 - CUSTOM BUTTON TEMPLATES

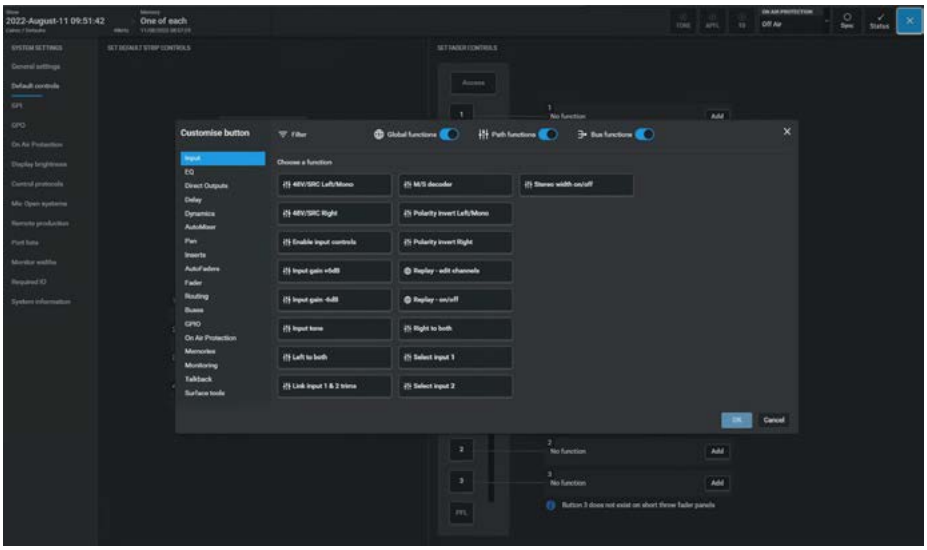
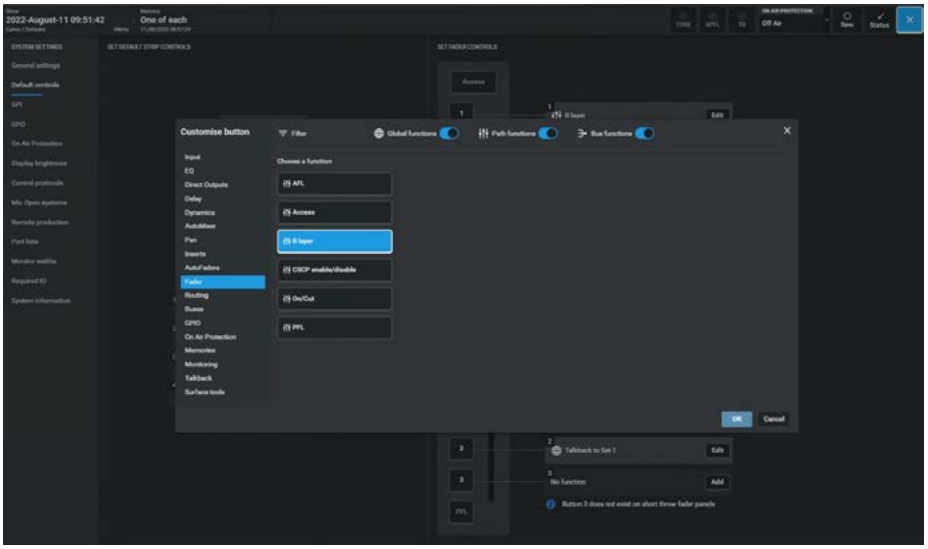


FIG 3 - B LAYER SELECTION



GPI

Opto-isolated general purpose inputs (GPIs) can be configured to allow the Argo to respond to external control signals.

GPI Functions

To access the GPI setup screen, tap **System Settings>GPI** from the sub-menu on the left side.

The page shown in Fig 1 will appear with the available incoming GPI control signals appearing on the left side of the screen and the functions they will be controlling appearing on the right side of the screen. The remote GPI is arranged as sets of Remote GPI receivers.

These are then connected to physical GPI sources located in AoIP devices using the 'Network' page of the '**Connect**' application which is described in detail in '**Connect Guide (926-292)**'

In Fig 1, the user selected the Remote GPI 01 circuit and selected the '**AutoFaders**' option from the list of functions to act on.

The table to the right in Fig 2 shows the functions controllable from GPI sources:-

GPI functions listed within the **"Functions"** pop-up, are specific to console functions and GPI Tallies.

The '**Fader Cut**' and '**Fader PFL**' functions are audio receiver input port/channel specific. For example, if a user connects a GPI to a port's Fader Cut, that GPI will stay connected to that port's fader cut even if the port is moved to another fader.

The Audio Receiver input ports are derived from Remote AoIP Inputs received on AoIP streams.

Settings

If more than one destination is connected to a source there is a settings button on the bottom left hand side of the footer which allows the user to compact or expand the view of the connected destinations as required.

FIG 1 - GPI PATCHING SCREEN

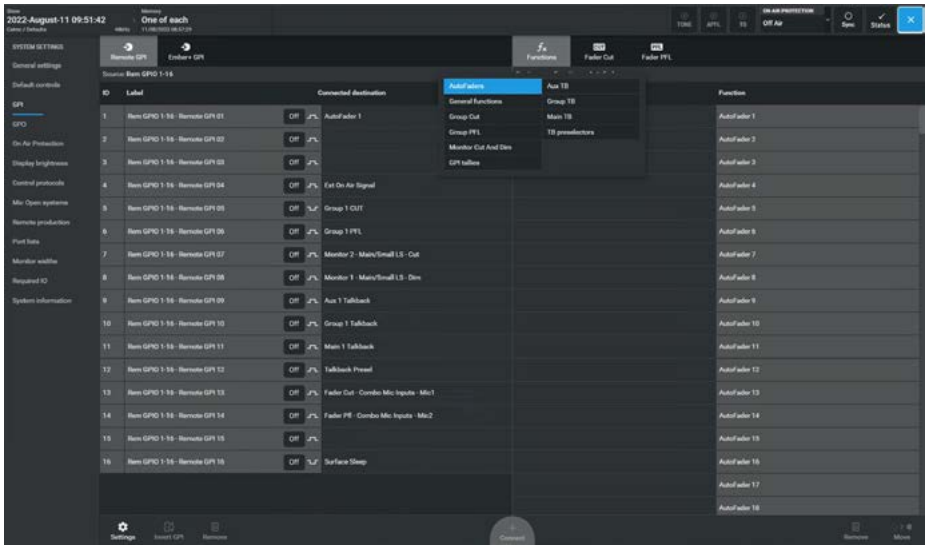


FIG 2 - FUNCTION SELECTION TABLE FOR GPI SOURCES

Function	Description
AutoFaders	Trigger any number of the 256 independent AutoFaders via a GPI signal
General Functions	Ext On Air Signal - Use an external signal to switch into 'On-Air' mode Ext Reh Signal - Use an external signal to switch into 'Rehearse' mode Tracks Omni TB- Use an external signal to Talkback to all Tracks. Tracks Omni Tone - Use an external signal to send Tone to all Tracks. Next Cue- Use an external signal to Load the next cue in sequence. Previous Cue- Use an external signal to Load the last cue in sequence. Surface Sleep- Use an external signal to turn off its displays.
Group Cut	Apply CUT to any of the Group Buses
Group PFL	Apply PFL to any of the Group Buses
Monitor Cut & Dim	Apply a CUT or DIM to any of the Mon1 LS, Mon2 LS or the 4 Misc Mons
GPI Tallies	Use external signals to switch any of the 256 GPI Tallies On/Off
Aux Talkback Group Talkback Main Talkback	Route Talkback to any of the Aux Outputs Route Talkback to any of the Group Outputs Route Talkback to any of the Main Outputs
TB Pre-selectors	Use an external signal to action any of the 4 Talkback Pre-selectors
Fader Cut	Apply CUT to the Fader to which a specific port is patched
Fader PFL	Apply PFL to the Fader to which a specific port is patched

In compact mode, the number in the Connected Destination field shows the number of connections to that source.

GPI Status Flag

To the right of the Source column is shown the GPI status flag for each GPI. If the GPI circuit is not activated then the 'Off' icon will appear as shown above right, if the GPI circuit is activated then an 'On' icon will appear in its place.

Invert GPI

The Invert GPI button in the footer of the GPI patching screen allows the user to change the trigger between an active high input and an active low input. The user first selects the required Remote GPI and then taps the **'Invert GPI'** button.

The symbol on the right of the Source column will invert to show the required trigger state.

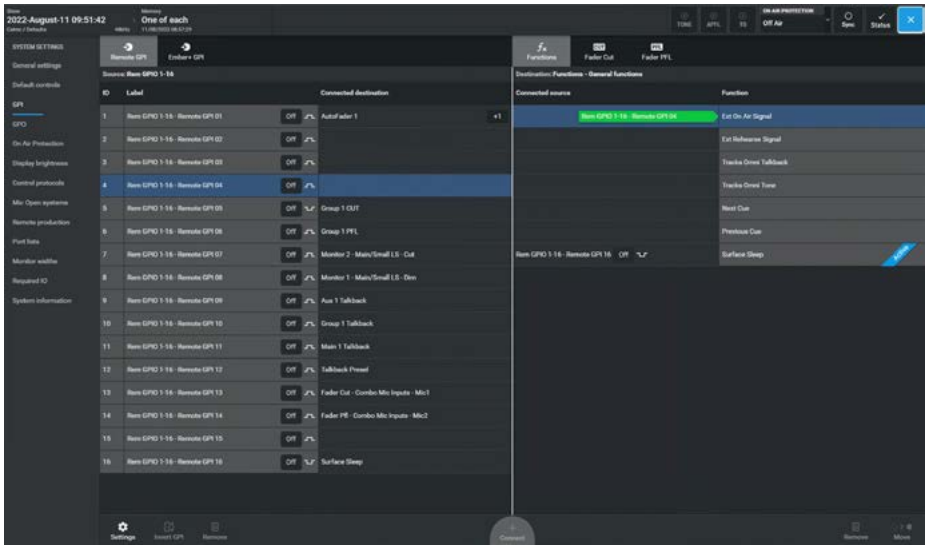
Connect GPIs to Functions

In order to connect GPI sources to destination functions, the user first selects the required GPI source from the left side table and then taps on the required destination function from the right side table as shown in Fig 3.

A green arrow will appear indicating which GPI is about to be connected to which function. The user then taps on the **'Connect'** button in the centre of the footer and the connection is made at which point the arrow turns orange.

Note: a GPI can be assigned to control more than one function if required.

FIG 3 - CONNECT GPI SOURCE TO DESTINATION FUNCTION



Remove Connected Destinations

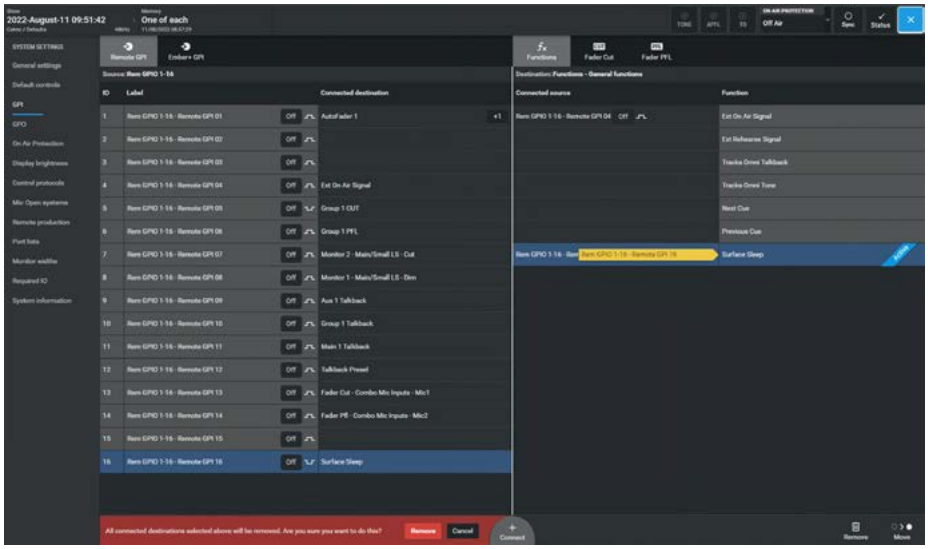
In order to remove connected destinations from the GPIs the user selects the connected destinations to be removed and taps on the **'Remove'** button in the left side footer. This opens the footer remove dialogue as shown in Fig 4.

The user can then tap on **'Remove'** in the footer to complete the procedure or **'Cancel'** if the user changes their mind.

If the GPI is connected to more than one destination as shown by the **"+1"** icon then all connected destinations will be removed.

Note: the procedure for removing single connected sources is the same as above but applied to the right side of the page.

FIG 4 - REMOVE CONNECTED/DESTINATIONS/SOURCES FROM GPI/FUNCTIONS



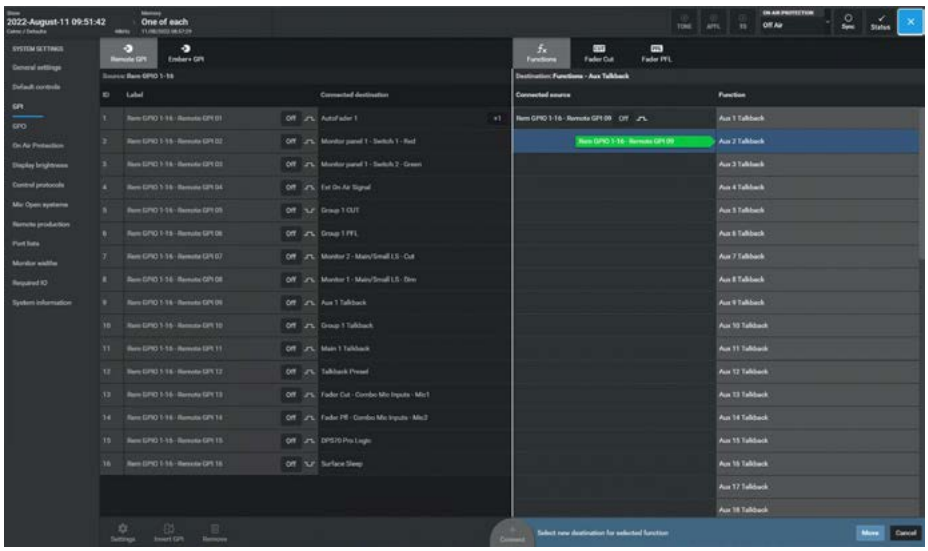
Move Connected Sources

In order to move a connected GPI source from one destination function to another, the user selects the connected source to be moved and taps on the **'Move'** button in the right side footer. This opens the footer move dialogue as shown in Fig 5.

The user then taps on the new destination for the selected source.

A green arrow will appear indicating which GPI is about to be connected to which function. The user can then tap on the **'Move'** button in the footer dialogue to complete the procedure or **'Cancel'** if the user changes their mind.

FIG 5 - MOVE CONNECTED GPI SOURCES TO DIFFERENT FUNCTIONS



Connect Ember+ GPIs to Functions
In order to connect Ember+ GPI sources to Destination Functions, the user first taps on the **'Ember+ GPI'** button in the left side function header then taps on the required Ember+ GPI Source from the left side table and destination function from the right side table as shown in Fig 6.

An arrow will appear indicating which Ember+ GPI is about to be connected to which function. The user then taps on the **'Connect'** button in the centre of the footer and the connection is made.

Note: a GPI can be assigned to control more than one Function if required as shown for Ember+ GPI 4 controlling both Main 3 & Main 4 talkback circuits.

Select Remote GPI Receiver Stream
In order to select which Remote GPI the user requires they first have to select which GPI Console receiver stream the remote GPI is contained in.

To do this the user taps on the **'Remote GPI'** button in the left side function header.

This opens the Remote GPI Console receiver stream list as shown in Fig 7. The user then selects the appropriate GPI receiver stream and then the GPI receiver channel in that stream.

Select Audio Receiver Stream
In order to select which Audio receiver channel the user wants to associate with either the Fader Cut or Fader PFL function the user first has to select which Audio receiver stream the Audio receiver is contained in.

To do this the user taps on the **'Fader Cut'** or **Fader PFL'** button in the right side function header.

This opens the Audio receiver stream list as shown in Fig 8. The user then selects the appropriate Audio receiver stream and then the Audio receiver channel in that stream.

FIG 6 - CONNECT EMBER+ GPI SOURCE TO DESTINATION FUNCTION

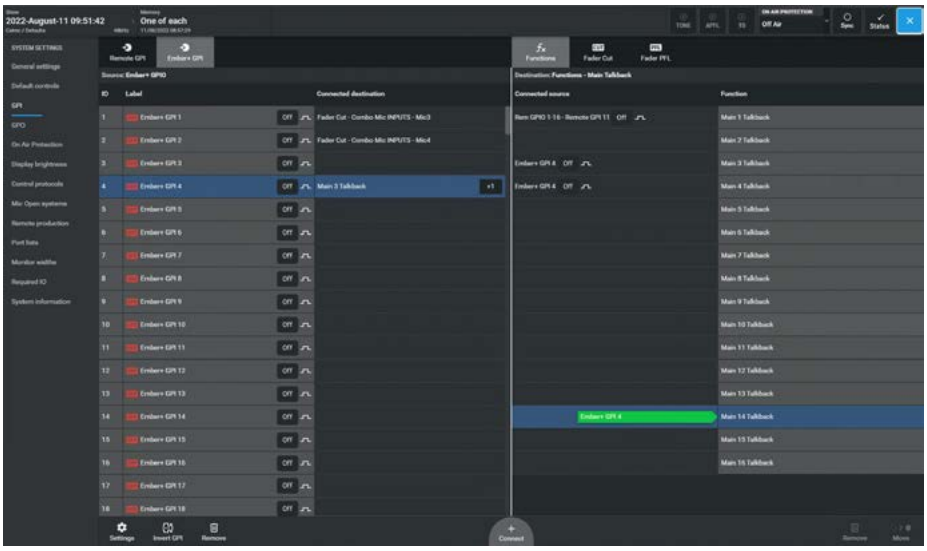


FIG 7 - SELECT REMOTE GPI RECEIVER STREAM

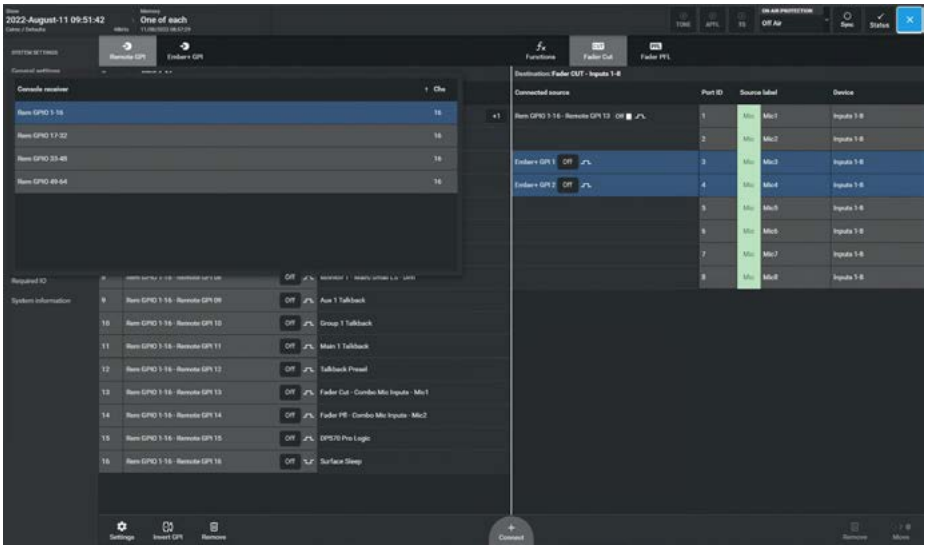
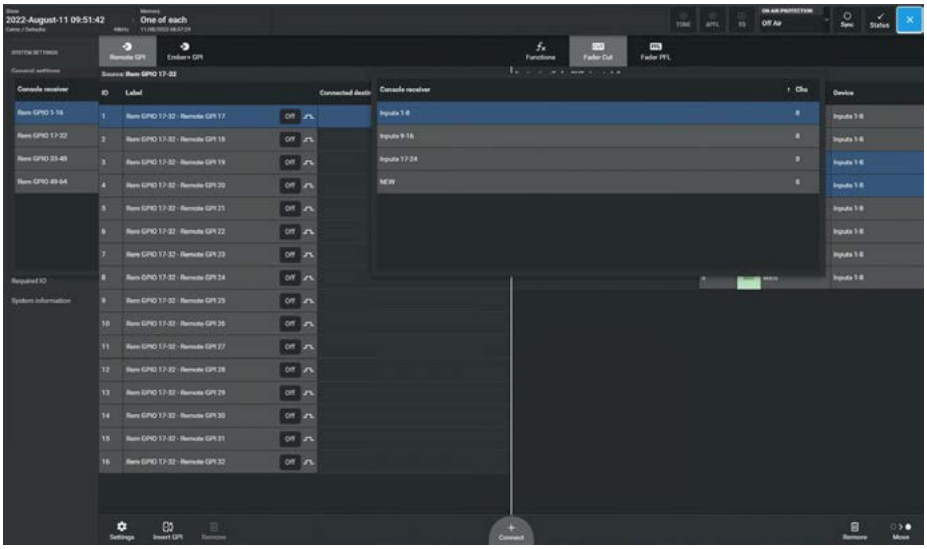


FIG 8 - SELECT AUDIO RECEIVER STREAM



Connect Remote GPI to Fader Cut
In order to externally control a fader's cut state, the user selects a Remote GPI from the source list on the left side of the screen, the '**Fader Cut**' function button from the function header, then the required audio receiver channel on the right side of the screen and clicks or taps on the '**Connect**' button as shown in Fig 9.

The Remote GPI, when activated switches that Fader's Cut on/off as required. 'Fader Cut' functions are audio receiver specific. For example, if a user connects a GPI to an audio receiver Fader Cut that GPI will stay connected to that audio receiver's Fader Cut even if the audio receiver is moved to a different fader.

Connect Remote GPI to Fader PFL
In order to externally control a fader's PFL state, the user selects a Remote GPI from the source list on the left side of the screen, the **'Fader PFL'** function button from the function header, then the required audio receiver channel on the right side of the screen and clicks or taps on the **'Connect**' button as shown in Fig 10.

The Remote GPI, when activated switches that Fader's PFL on/off as required. 'Fader PFL' functions are audio receiver specific, for example, if the user connects a GPI to an audio receivers Fader PFL, that GPI will stay connected to that audio receiver's Fader PFL even if the audio receiver is moved to a different fader.

Connect Remote GPI to tally
In order to control a Tally from a Remote GPI, the user selects a Remote GPI from the left side of the screen, selects a Tally from the **System Settings>GPI> Functions>GPI Tallies** on the right side of the screen and clicks on the **'Connect'** button as shown in Fig 11.

The 256 tallies available are subsequently used to flag that various external events have occurred and take the appropriate action such as indicating Mic Open conditions.

FIG 9 - CONNECT REMOTE GPI SOURCE TO FADER CUT

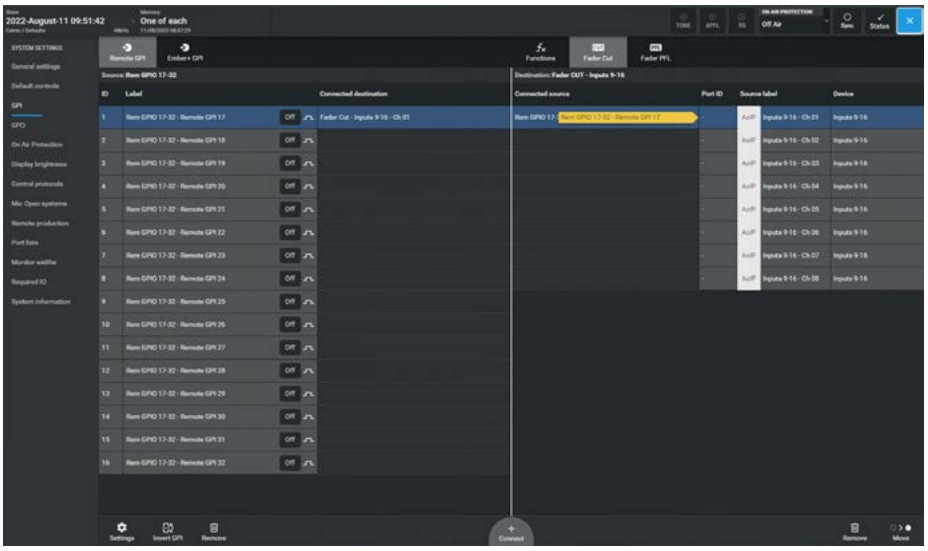


FIG 10 - CONNECT REMOTE GPI SOURCE TO FADER PFL

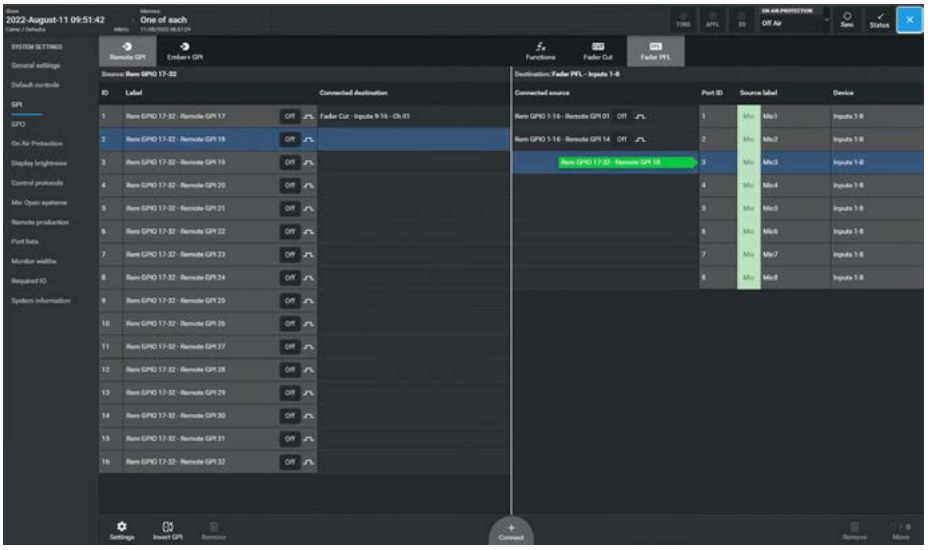
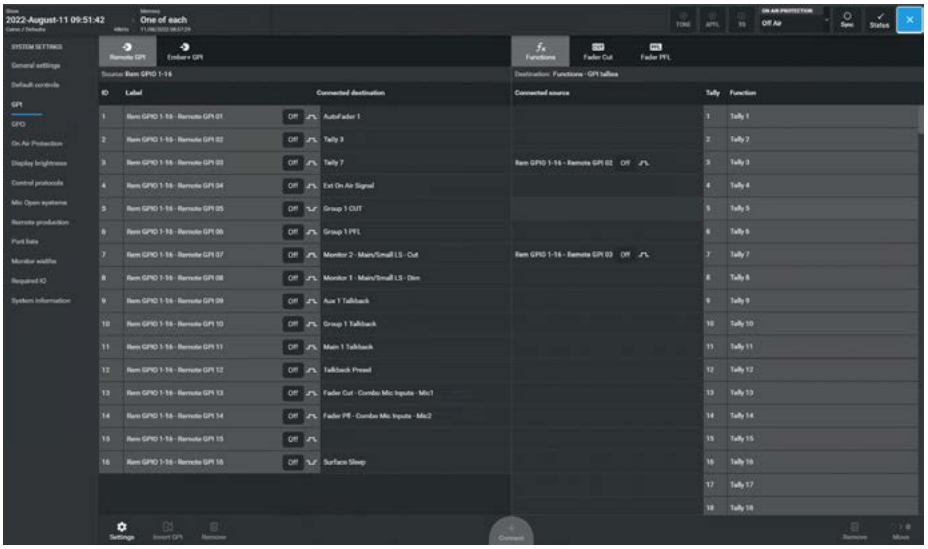


FIG 11 - CONNECT REMOTE GPI SOURCE TO TALLY



GPO

Argo can output control signals via general purpose outputs (GPOs) to control external equipment.

GPO Functions

To access the GPO setup screen, tap **System Settings>GPO** from the sub-menu on the left side.

The page shown in Fig 1 will appear with the functions appearing on the left side of the screen and the available outgoing GPO control signals appearing on the right side of the screen.

The remote GPO is arranged as sets of Remote GPO transmitters.

These are then connected to physical GPO destinations located in AoIP devices using the Network page of the Connect application which is described in detail in '**Connect Guide (926-292)**'

In Fig 1, the user selected the Remote GPO 01 circuit as the Destination and the 'Functions - GPO Triggers' option from the list of Source functions to activate the GPO

The table to the right shows the functions available:-

GPO functions listed within the "Functions" pop-up, are specific to console functions.

The 'Fader On', 'Fader Open' and 'Fader Open & On' functions are I/O port specific, so if the user connects a GPO to a port's Fader Open that GPO will stay connected to that port's Fader Open even if the port is moved to a different fader.

Settings

If more than one destination is connected to a source there is a settings button on the bottom left hand side of the footer which allows the user to compact or expand the view of the connected destinations as required.

In compact mode, the number in the Connected Destination field shows the number of connections to that source.

FIG 1 - GPO PATCHING SCREEN

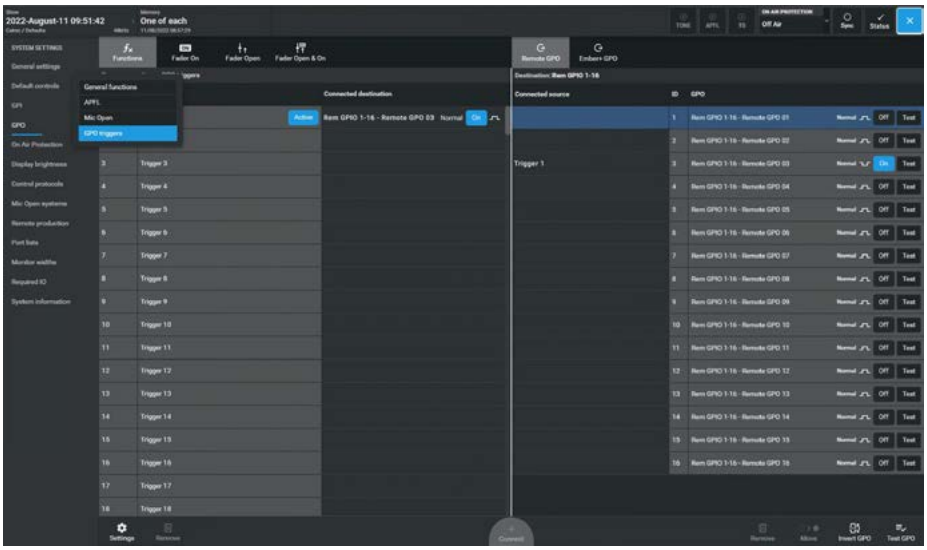


FIG 2 - FUNCTION SELECTION TABLE FOR GPO FUNCTIONS

Function	Description
General Functions	On Air Signal - Use an On-Air ON state to activate a GPO Rehearse Signal - Use a Rehearse ON state to activate a GPO Red Light - Use a Red Light ON state toto activate a GPO Fire Alarm Mute - Use a Fire Alarm Light ON state to activate a GPO Error Warning - Use an Error message from the Core to activate a GPO
APFL	AFL 1, 2 & 3 ON - Use an AFL ON state to activate a GPO PFL 1, 2 & 3 ON - Use a PFL ON state to activate a GPO
Mic Open	Use any of the 5 Mic Open buses being active to activate a GPO
GPO Triggers	Use any of the 256 GPO triggers to activate GPO for Cue lights and other purposes where a signal trigger needs to be sent.
Fader On	Fader On (not Cut) with fader position ignored activates GPO for any Port
Fader Open	Fader Open with Path On/Cut state ignored activates GPO for any Port
Fader Open & On	Fader Open & Path On (Not Cut) activates GPO for any Port

GPO Status Flag & Test GPO buttons

On the right of the destination column is shown the GPO status flag for each GPO. If the GPO circuit is not activated then the 'Off' icon will appear as shown above right, if the GPO circuit is activated a blue 'On' icon will appear in its place.

To the right of this is placed a momentary '**Test**' button which when held will directly activate the selected GPO, by-passing its associated function for test purposes.

Connect Functions to GPOs
In order to connect source Functions to GPO destinations, the user first selects the required source function from the left side table and then taps on the required destination GPO from the right side table as shown in Fig 3.

A green arrow will appear indicating which function is about to be connected to which GPO. The user then taps on the **'Connect'** button in the centre of the footer and the connection is made at which point the arrow turns orange.

Note: a Function can be assigned to control more than one GPO if required.

Remove Connected Sources
In order to remove connected sources from the GPOs, the user selects the connected sources to be removed and taps on the **'Remove'** button in the right side footer. This opens the footer remove dialogue as shown in Fig 4, the user can then tap on **'Remove'** in the footer dialogue to complete the procedure or **'Cancel'** if the user changes their mind.

If more than 1 GPO destination is connected to from a function as shown by the **"+1"** icon then all connected destinations will be removed when using the **'Remove'** option from the left side of the screen.

Note: the procedure for removing Connected Destinations is the same as but applied to the left side of the screen.

Move Connected Sources
In order to move a connected function source from one destination GPO to another the user selects the connected source to be moved and taps on the **'Move'** button in the right side footer.

This opens the footer move dialogue as shown in Fig 5, the user then taps on the new destination for the selected source.

A green arrow will appear indicating which function is about to be connected to which GPO. The user then taps on the **'Move'** button in the footer dialogue to complete the procedure or **'Cancel'** if the user changes their mind.

FIG 3 - CONNECT SOURCE FUNCTION TO GPO DESTINATION(S)

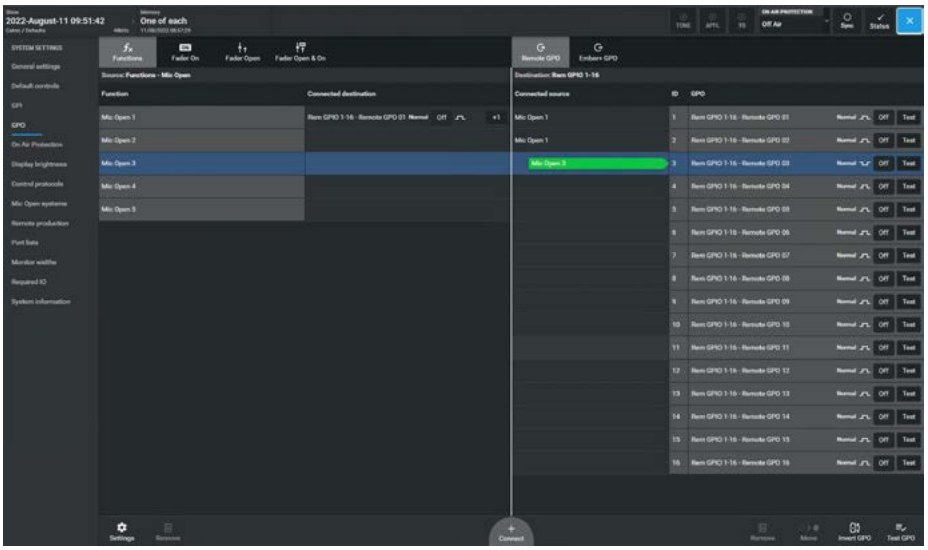


FIG 4 - REMOVE CONNECTED/DESTINATIONS/SOURCES FROM GPO/FUNCTIONS

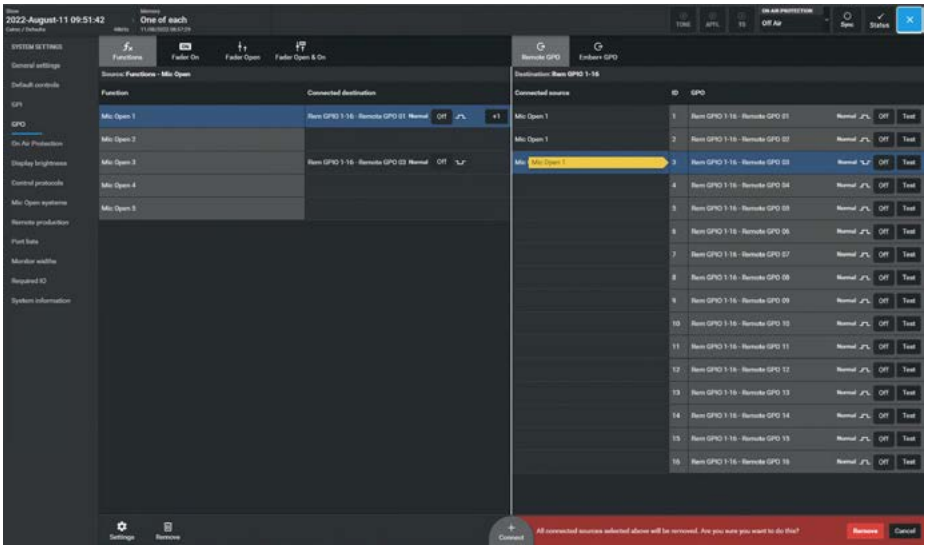
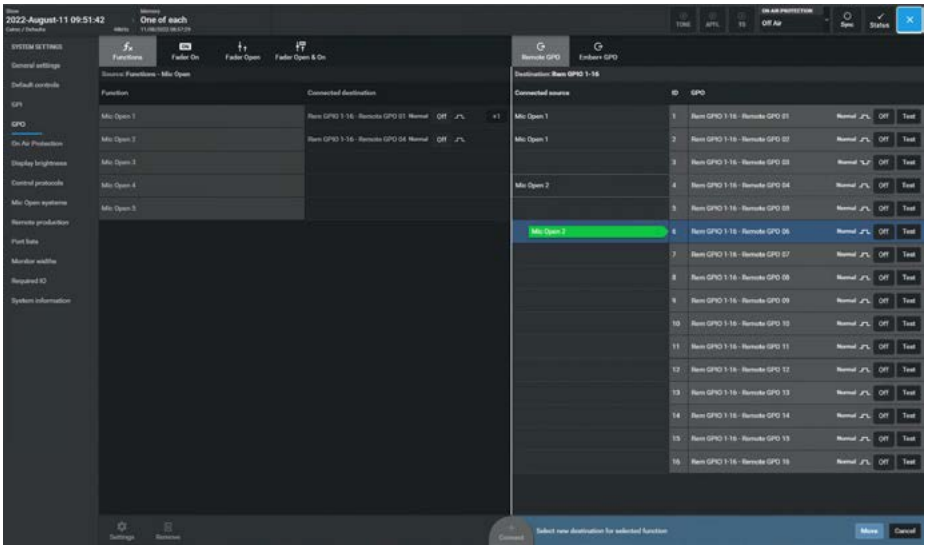


FIG 5 - MOVE CONNECTED SOURCES TO DIFFERENT GPO DESTINATIONS



Connect Functions to Ember+ GPOs
In order to connect Source Functions to Ember+ GPO destinations, the user first taps on the **'Ember+ GPO'** button in the right side function header then taps on the required Ember+ GPO Destination from the right side table & source function from the left side table as shown in Fig 6.

An arrow will appear indicating which Ember+ GPO is about to be connected to which function. The user then taps on the **'Connect'** button in the centre of the footer and the connection is made.

Note: a function can be assigned to control more than one GPO if required as shown for PFL1 on triggering Ember+ GPO 4 & Ember+ GPO 5 circuits.

Select Remote GPO Transmitter Stream
In order to select which Remote GPO the user requires, they first have to select which GPO Console transmitter stream the remote GPO is contained in. To do this the user taps on the **'Remote GPO'** button in the right side function header.

This opens the Remote GPI Console transmitter stream list as shown in Fig 7.

The user then selects the appropriate GPO transmitter stream and then the GPO transmitter channel in that stream.

Select Audio Receiver Stream
In order to select which Audio receiver channel the user wants to associate with either the Fader On, Fader Open or Fader Open & On function the user first has to select which Audio receiver stream the Audio receiver is contained in.

To do this the user taps on the **'Fader On'** or **'Fader Open'** or **'Fader Open & On'** button in the left side function header.

This opens the Audio receiver stream list as shown in Fig 8. The user then selects the appropriate Audio receiver stream and then the Audio receiver channel in that stream.

FIG 6 - CONNECT SOURCE FUNCTION TO EMBER+ GPO

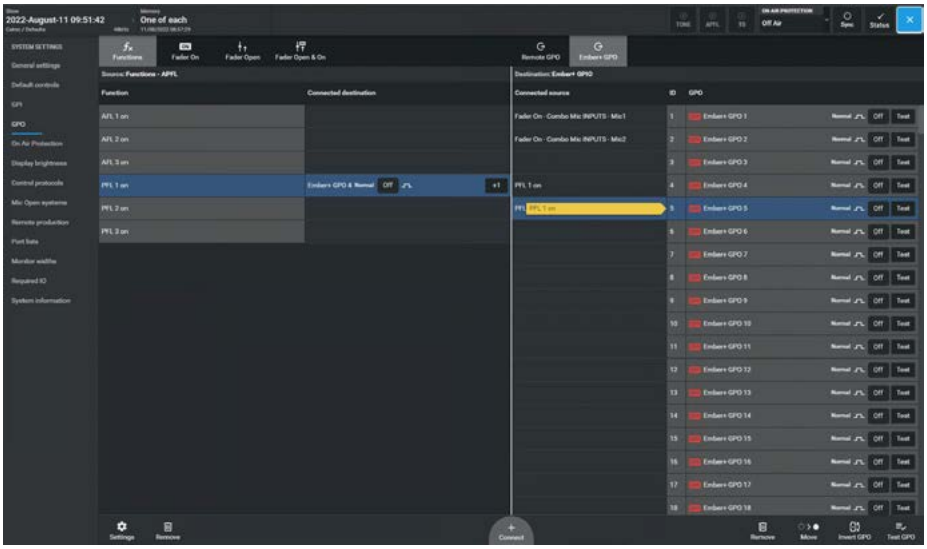


FIG 7 - SELECT REMOTE GPO TRANSMITTER STREAM

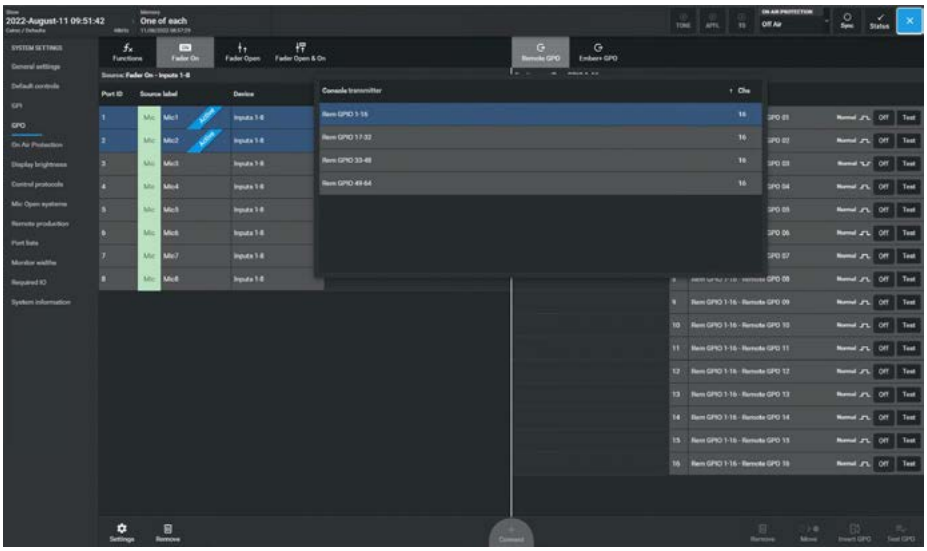
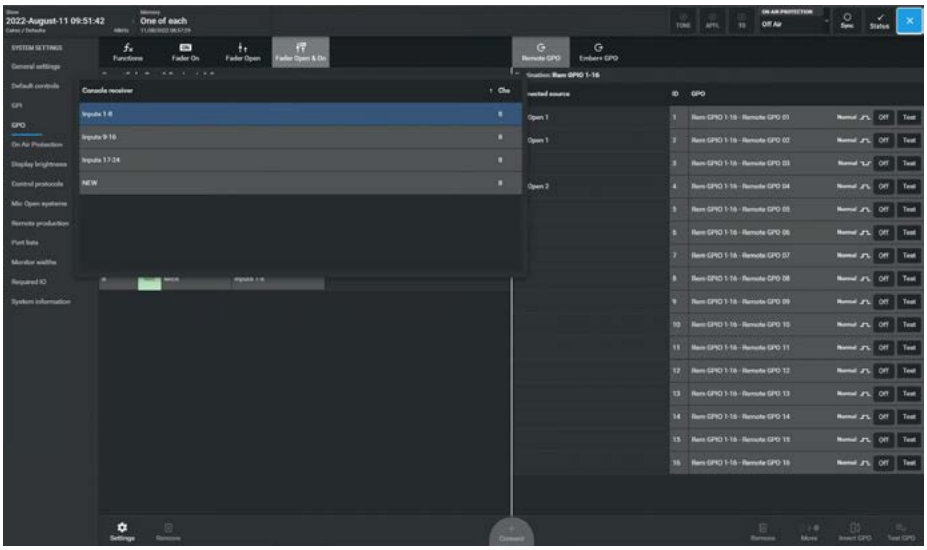


FIG 8 - SELECT AUDIO RECEIVER STREAM



Connect Fader Open & On to Remote GPO

In order to control a 'Remote GPO' from a 'Fader Open or On state', the user selects a Remote GPO from the destination list on the right side of the screen, the required audio receiver channel on the left side of the screen and clicks on **'Connect'** as shown in Fig 9.

The Fader Open & On controls, when activated, switches that Remote GPO On/Off as required. 'Fader Open & On' functions are audio receiver specific.

For example, if the user connects a GPO to an audio receiver 'Fader Open & On', that GPO will stay connected to that audio receiver's Fader Open & On even if the audio receiver is moved to a different fader.

Connect Fader On to Remote GPO

In order to control a 'Remote GPO' from a 'Fader On' state, the user selects a Remote GPO from the destination list on the right side of the screen, the required audio receiver channel on the left side of the screen and clicks on the **'Connect'** button as shown in Fig 10.

The Fader On controls, when activated, switches that Remote GPO On/Off as required. 'Fader On' functions are audio receiver specific.

For example, if the user connects a GPO to an audio receiver 'Fader On', that GPO will stay connected to that audio receiver's 'Fader On' even if the audio receiver is moved to a different fader.

Connect AFL trigger to Remote GPO

In order to control a 'Remote GPO' from a 'Trigger', the user selects a Trigger switch source from the **System Settings>GPO >Functions>GPO Triggers** on the left side of the screen, selects a Remote GPO from the right side of the screen and clicks on the **'Connect'** button as shown in Fig 11.

FIG 9 - CONNECT FADER OPEN & ON TO REMOTE GPO DESTINATION

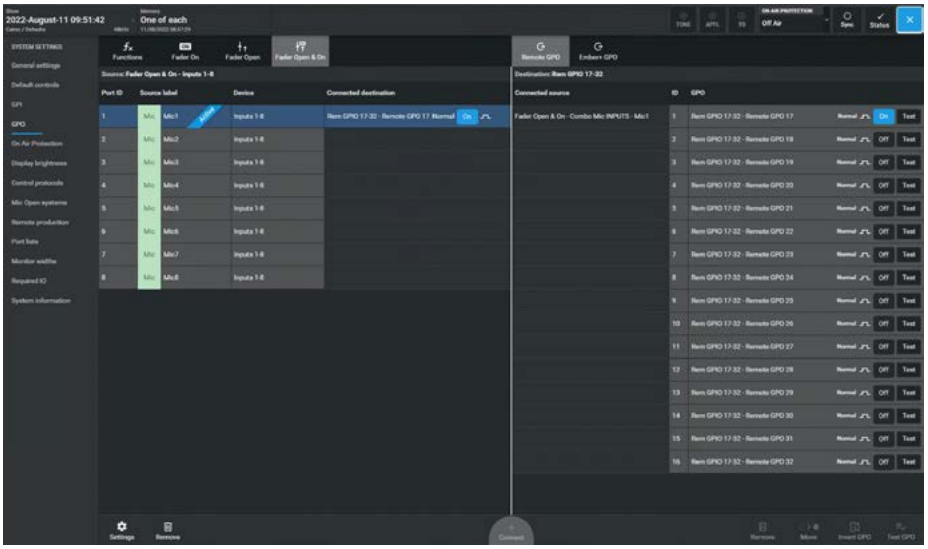


FIG 10 - CONNECT FADER ON TO REMOTE GPO DESTINATION

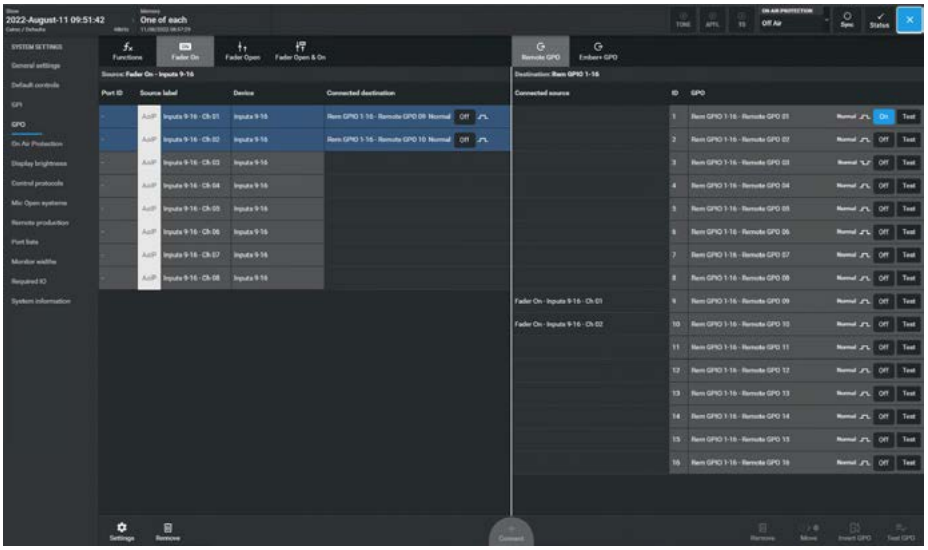
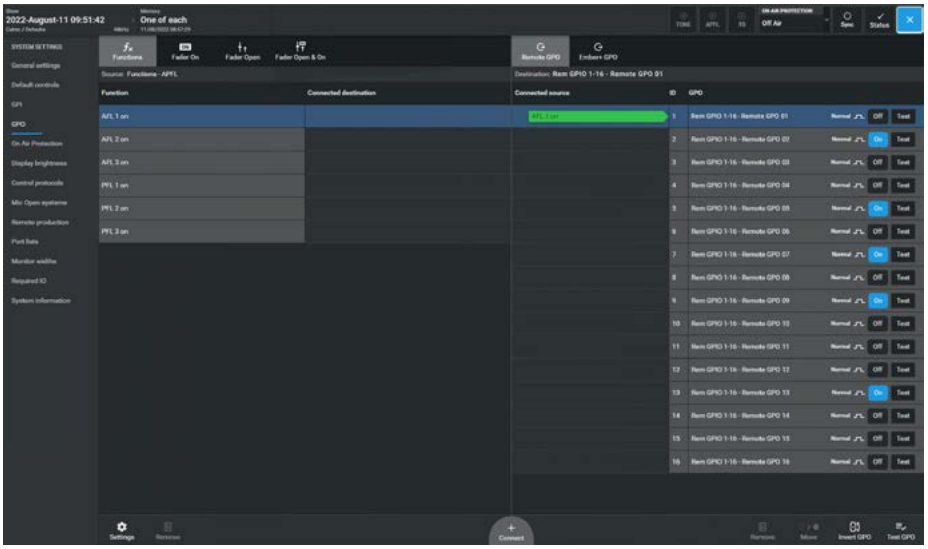


FIG 11 - CONNECT AFL ON/OFF TRIGGER TO REMOTE GPO DESTINATION



ON AIR PROTECTION

To access Argo's On Air Protection settings, the user selects:- **System Settings>On Air Protection** from the menu on the left hand side.

This page is used to apply different functions to the various monitors in the system when in an On-Air, Rehearse or Off-Air state based on the condition of the Mic Open Systems or in the case of Talkback the option to prevent Talkback as a manual override, as shown in Fig 1.

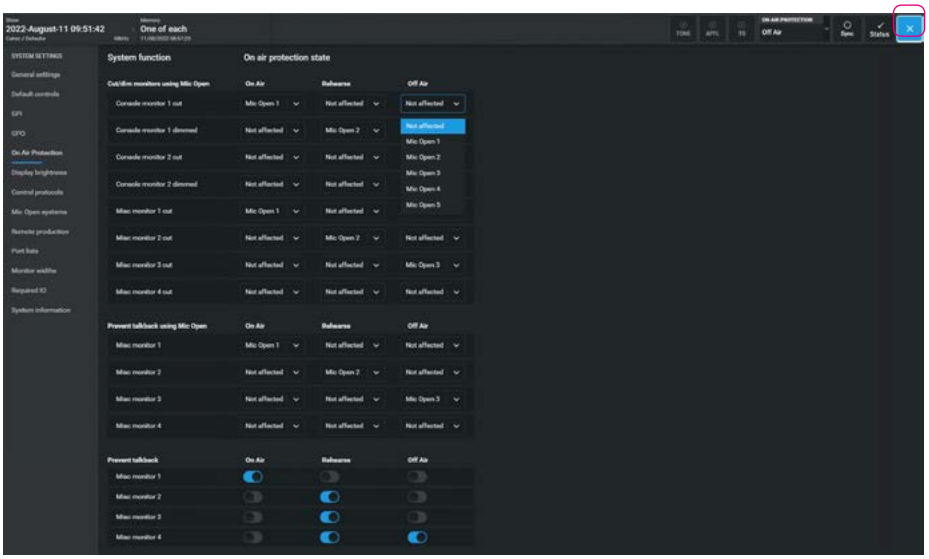
Cut/Dim monitors using mic open
The two Console monitors can be Cut or Dimmed under the 3 different states of the On-Air, Rehearse and Off-Air flags from a selection of one of the 5 Mic Open systems that are available. See **"Mic Open Systems" on page 281.**

The Misc Monitors can be Cut under the 3 different states of the On-Air, Rehearse and Off-Air flags from a selection of one of the 5 Mic Open systems that are available. See **"Mic Open Systems" on page 281.**

Prevent talkback using mic open
The Misc Monitors can have Talkback to them prevented under the 3 different states of the On-Air, Rehearse and Off-Air flags from a selection of one of the 5 Mic Open systems that are available. See **"Mic Open Systems" on page 281.**

Prevent talkback
The Misc Monitors can have Talkback to them prevented under the 3 different states of the On-Air, Rehearse and Off-Air flags by sliding the appropriate toggle switch manually.

FIG 1 - ON AIR PROTECTION OPTIONS



DISPLAY BRIGHTNESS

To access Argo's Display brightness and sleep options the user selects **System Settings>Display brightness** from the menu on the left hand side.

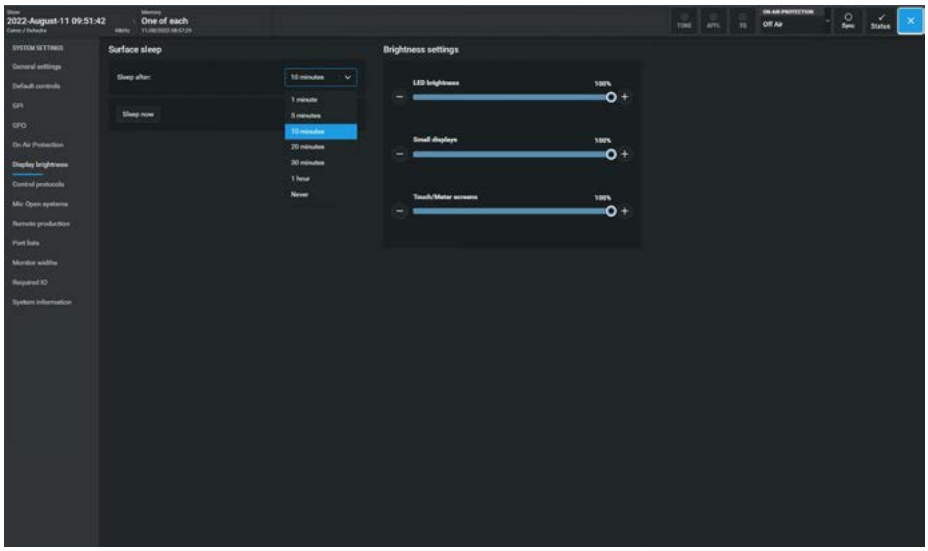
This page is used to screen-save the displays and adjust the brightness of those displays on Argo's surface, as shown in Fig 1.

Surface Sleep
The user can set a time delay whereby if none of the controls are touched for the period of time set in the Sleep after dropdown box, the displays will go to sleep i.e. turn the displays off. The optional times are:- 1 min, 5 min, 10 min, 20 min, 30 min, 1 hr or Never. Alternatively the user can turn off the displays immediately by tapping on the **'Sleep Now'** button.

Brightness
The three controls in this area allows the user to adjust the brightness of the LED's Small TFT displays and the Touchscreen and Upstand Meter screen panels as required.

The user can either tap on the '+' or '-' buttons or drag the slider left and right to adjust the brightness of each display type.

FIG 1 - DISPLAY BRIGHTNESS AND SLEEP OPTIONS



CONTROL PROTOCOLS

In addition to GPI activated controls, Argo supports various protocols to allow 3rd party equipment to remotely control various features.

Two of these protocols directly affect surface operation:- CSCP and Ember+.

CSCP

Calrec Serial Control Protocol (CSCP) allows remote control from 3rd party equipment over fader positions, PFL's, path CUT/ON status, routing to Auxes and Mains, and Aux output levels.

Accessing the following sub-menu page on the left side, **System Settings> Control protocols** allows these remote control interfaces to be enabled and disabled. This screen shown in Fig 1, displays TCP ports which are used to access the system are setup for the serial control interfaces that are installed.

Note: as part of the system settings, these settings are not saved as part of a show or memory.

When a new CSCP interface is created the user can label it as shown in Fig 2.

CSCP Per Fader

CSCP can be enabled and disabled per fader using the CSCP switch in the header of the **Processing>Fader** page for each fader.

Further information on CSCP is available on request.

Ember+

The Ember controller can when Enabled:-

- Change the User Show & Memory recall that is on the control surface memory as shown in Fig 3.
- Allow the use of Virtual GPIO which can control and respond to all the functions available to physical GPIO as shown in Fig 3.

See **"Connect Ember+ GPIs to Functions" on page 272** and **"Connect Functions to Ember+ GPOs" on page 276.** Further information on Ember+ is available on request.

FIG 1 - CSCP INTERFACES

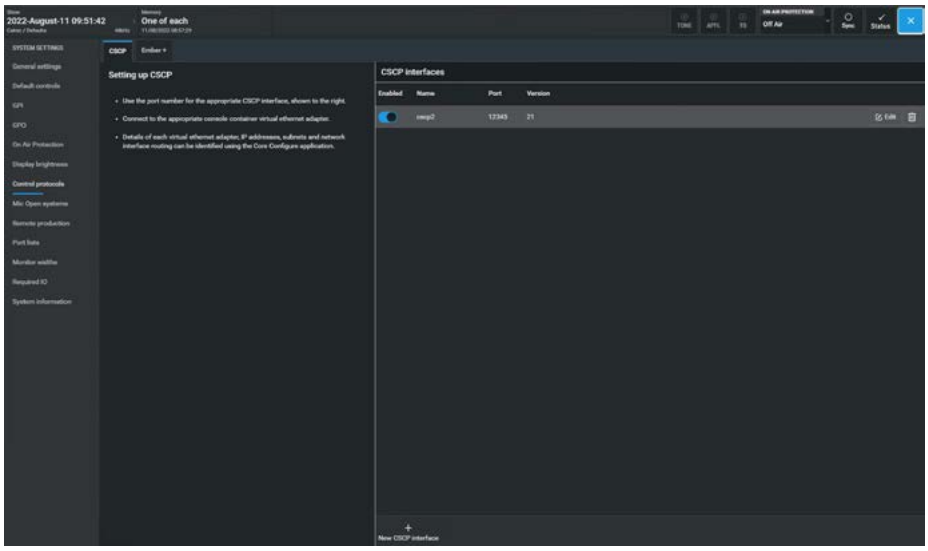


FIG 2 - LABELLING CSCP INTERFACES

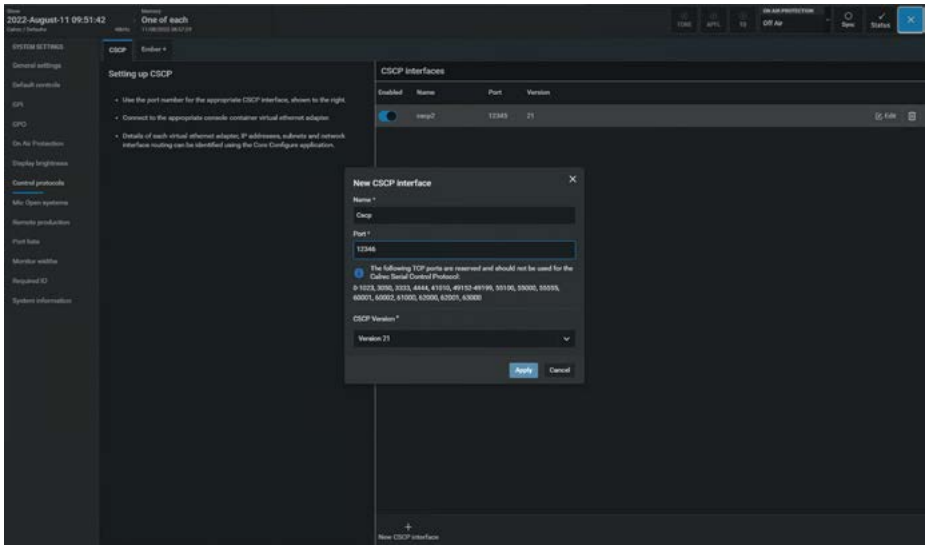
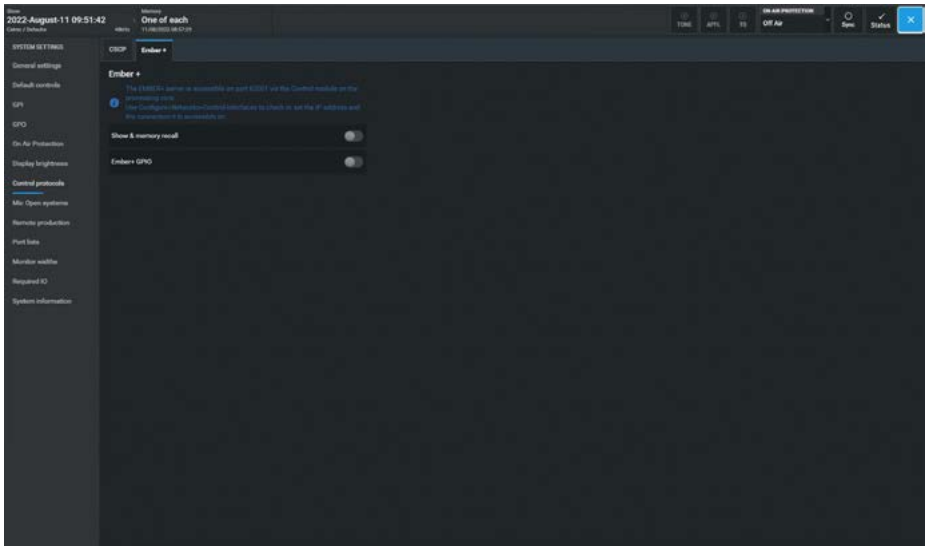


FIG 3 - EMBER+



MIC OPEN SYSTEMS

Mic Open Systems
These are used to control external devices, relative to the 'On Air' status of a signal source. Mic open systems can CUT or DIM a loudspeaker to avoid feedback, or control GPO relays for switching purposes, such as turning on ON AIR lights.

To access the mic open systems page, tap on the **System Settings>Mic Open systems** entry in the sub-menu on the left side as shown in the image in Fig 1.

There are 5 mic open systems available on the console, each is normally associated with a physical area for control, such as a studio or area of a studio floor.

Note: Mic open systems work for all input signals not just microphones.

Mic open systems detect whether the assigned signal sources are on air.

A signal is deemed to be on air if:
- It is assigned to a channel input (one or two).
- The channel is selected to that input (one or two).
- Its fader is open and not cut.
- It is routed to a main output.
- That main output's fader is open.
- If a signal is routed via a group or a number of groups in series before being routed to a main output, those group faders must also be open and not cut.

Note: the fader open trigger happens at -90dB and the fader close trigger happens at -95dB.

When a mic open system detects that a signal is on air, it switches on and the associated GPO/CUT/DIM is executed.

Assigning Inputs to Mic Open Systems
To allocate an input port to any of the 5 mic open systems, the user selects either an audio receiver from an incoming audio receiver stream or a port from one of the port lists and taps on the required connected ports at which point a "tick" appears.

FIG 1 - MIC OPEN SYSTEM-AUDIO RECEIVERS

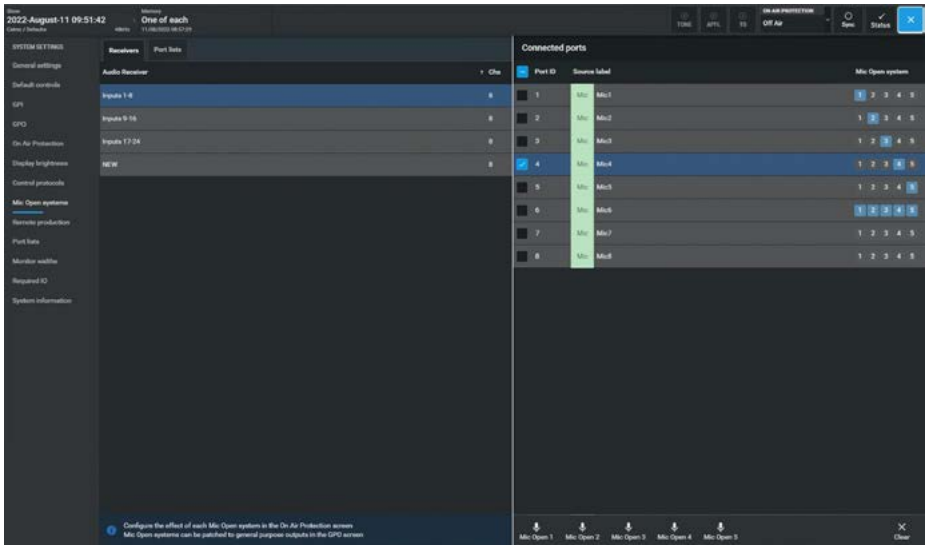
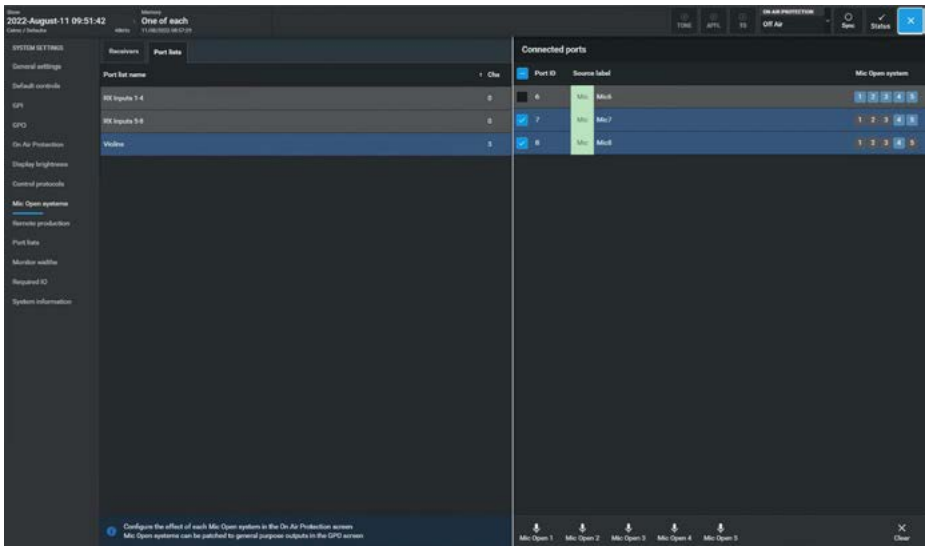


FIG 2 - MIC OPEN SYSTEM-PORT LIST RECEIVERS



Note: the user can select multiple ports rather than actioning one port at a time as required.

The 5 **'Mic Open n'** buttons in the footer shown below right can then be used to select which of the 5 mic open systems they wish to associate these ports with.

Note: connected ports can be associated with more than one mic open system.

For example, the image in Fig 2 is showing that when any fader using Mic 7's input is opened it will be set to trigger Mic Open systems 4 & 5.

Clicking/tapping on each of the Mic Open buttons toggles the attachment of the port to the selected Mic Open system.

If the user no longer wishes to have a port associated with a mic open system then selecting the port(s) and tapping on '**Clear**' button from the footer will clear all its mic open system selections and all the Mic Open system icons will be turned off.

To select/deselect all the connected ports tap on the icon box in the Port ID header area, this in combination with the '**Clear**' button will turn off all the Mic Open system icons on that page.

REMOTE NETWORK ACCESS

Managing Remote Networks Access
In order to determine and/or alter the connected status of remotely networked RP1 units, the user selects the **System Settings> Remote Networks** entry in the sub-menu on the left side and is shown in the image in Fig 1.

The list of remote networks are identified by the RP1 unit name and its primary / secondary IP addresses as entered in the 'Configure' application.

For further Information about setting up and operating RP1 refer to the **'Remote Production RP1 System Manual Impulse Edition (926-308)'**.

Everything other than the 'Try to Connect' field and the 'Block Fader/Cut Control' field from RP1 is read only and the 'Status' and 'Latency' fields for the primary and secondary IP addresses are updated by occasional polling of each of the remote networks but no connection is established by the host until the **'Try to Connect'** switch is selected.

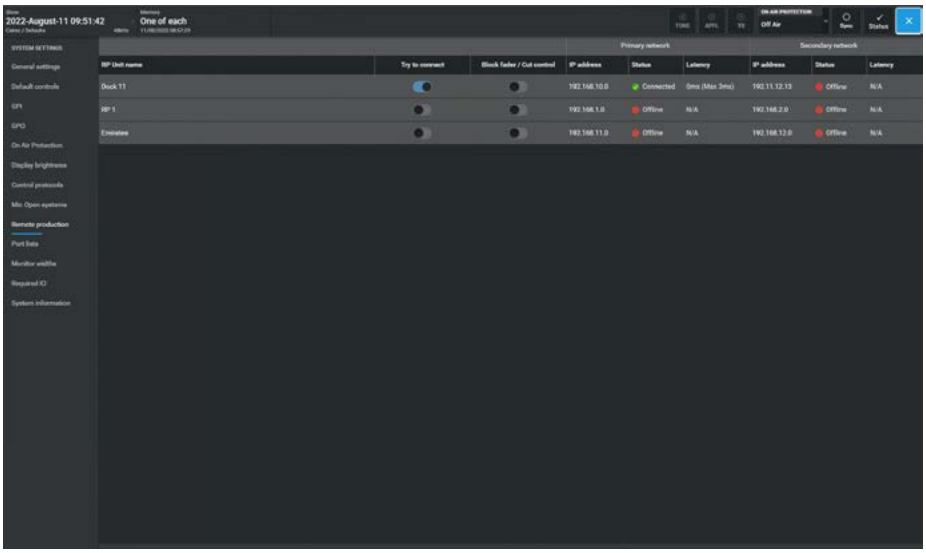
The latency fields represent the current time taken to send commands from the console and get an acknowledgement (Ping). The status fields have one of 5 states:- 'Offline', 'Available', 'Connected', 'In Use' or 'Incompatible'.

Clicking the **'Try to Connect'** switch into an ON state sends a request to connect to that remote network. If 'Available', the remote network responds with a connect message which changes the status to 'Connected'.

If the request to connect is sent to a remote network which is 'Offline' or 'In Use' or 'Incompatible' then the system continues to poll that remote network at a higher frequency rate until a connected message is received.

Note: 'In Use' means that someone else is using the selected RP1 unit and 'Incompatible' means that there is a software mismatch between the RP1 unit and the host preventing correct operation.

FIG 1 - REMOTE NETWORKS ACCESS



Once connected, the RP1 Fader and RP1 Aux master fader parameters and the routing between them is established and sent from the remote network to setup the remote faders and remote aux master parameters and the routing between them on the host console.

If the 'Block Fader/Cut Control' switch is OFF (which is the case during setup), the RP1 parameters are sent to the host. If the **'Block Fader/Cut Control'** switch is ON, (which is usually the case during a transmission), the RP1 parameters are sent from the host.

A further description of the 'Block Fader/ Cut Control' function is described in the **'Remote Production RP1 System Manual Impulse Edition (926-308)'**.

Clicking the **'Try to Connect'** switch into an OFF state sends a request to disconnect to that remote network. As its status was 'Connected', the remote network responds with a disconnect message which changes its status to 'Available'.

At this point the host releases the remote network which can then respond to other requests to connect from other hosts.

If a remote network that was 'Connected' goes 'Offline' then its status is reflected in the display and the latency value becomes indeterminate as shown for the Secondary Network in the image above.

If the 'Try to Connect' field is still in the ON state then it will poll that remote network again at a higher frequency rate until a connected message is received.

If a remote network has its 'Try to Connect' field set to the OFF state there will be no attempt to connect made although the system will continue to poll it at a low frequency rate to establish its status.

The status of the 'Try to Connect' field is stored in the system settings of the host and as such is not affected by show or memory loading.

Reserving Connectivity between an RP1 unit and a Host console
The current design allows any host to connect to any RP1 unit in its list.

If a connection is lost to a RP1 unit and another host has its 'Try to Connect' switch set for the same RP1 unit the other host could steal the connection (unintentionally).

Note: to avoid this each user is expected to manually disconnect from an RP1 unit when finished with it, so that it is available for another host console.

REMOTE PRODUCTION RP1 OPTION

Argo Consoles have the ability to act as 'Host Consoles' for the RP1 remote production unit.
The RP1 remote production unit is designed to be a self-contained compact mixing console without a control surface.

RP1 gives you the power to manage I/O and create zero-latency monitor mixes at venues all over the world, all from the comfort and familiarity of the Calrec console at the host production facility over long distance using IP services.
For an overview of remote production see '**Guide to remote production (926-253)**' downloadable from the Calrec website.

Once the RP1 unit has been setup at the remote site using a Web browser interface called '**Calrec Assist'** which can be accessed and controlled from the surface of an Argo console at the host studio, either as a standalone system or as part of a network after it has been added as a 'Remote Network' in the host networks application. The operation and integration of the RP1 remote production unit with the Argo console range is the subject of a separate manual :- **'Remote Production RP1 System Manual Impulse Edition (926-308)'** which is downloadable from the Calrec website. In that manual, is a chapter called 'Operation Via Host Console' which shows how to setup and operate the RP1 remote production unit via a host console, in this case Argo.

Function Table for Parameter Control of Remote Paths

Once the RP1 is connected, the Argo consoles currently allow the user to control a range of functions for the 'Remote Faders' & 'Remote Aux Masters' from the host as shown in Fig 1.

The table is arranged as Mono, Stereo & 5.1 remote fader types and Mono & Stereo remote aux master types arranged in columns. Each of the rows across the table represent a different parameter that can be controlled from the host console.

In addition to the table, all the controls that are relevant to the RP1 remote faders and remote aux masters are available as wild controls.

FIG 1 - REMOTE PATH PARAMETER CONTROLS FROM HOST

Mono RP1 Fader	Stereo RP1 Fader	5.1 RP1 Fader	Mono RP1 Aux	Stereo RP1 Aux
Fader Level	Fader Level Master	Fader Level Master	Fader Level	Fader Level Master
Cut	Cut Master	Cut Master	Cut	Cut Master
	Spill Fader Levels For L&R	Spill Fader Levels For LR, C, Lfe & LsRs		Spill Fader Level For L & R
	Spill Cuts For L&R	Spill Cuts For LR, C, Lfe & LsRs		Spill Cut For L & R
		Downmix Fader Levels For LR, C, Lfe & LsRs		
On the	***Processing page***	***Overview***		
IP Trim Level	IP Trim Level Master	IP Trim Level Master		
	Spill IP Trim Levels For L&R	Spill IP Trim Levels For LR, C, Lfe & LsRs		
IP1-IP2 Switch	IP1- IP2 Switch	IP1- IP2 Switch		
Link IP1 & IP2 Trims	Link IP1 & IP2 Trims	Link IP1 & IP2 Trims		
Polarity M	Polarity L&R			
	IP Bal/IN	IP Bal/In on LR & LsRs		
	L>B & R>B	L>B & R>B on LR & LsRs Spill Legs		
	MS Decode	MS Decode on LR & LsRs Spill Legs		
	ST Width/In	ST Width/In on LR & LsRs Spill Legs		
Mic Gain (Protected)	Mic Gain (Protected) Master	Mic Gain (Protected) Master		
48v (Protected)	48L&48R (Protected) Master			
	Spill Mic Gains (Protected) For L&R	Spill Mic Gains (Protected) For LR, C, Lfe & LsRs		
	Spill 48v (Protected) For L&R	Spill 48 L, 48R or 48v (Protected) For LR, C, Lfe & LsRs		
SRC (Protected) AES	SRCL&SRCR (Protected) Master			
	Spill SRC (Protected) For L&R	Spill SRC, SRCL, SRCR (Protected) For LR, C, Lfe & LsRs		
On the Sends &	***Routes page for***	***RP1 Aux Sends***	***1-12 from***	***each RP1 fader***
RP1 Aux Send Level	RP1 Aux Send Level Master	RP1 Aux Send Level Master		
RP1 Aux Send On/Off or Route on TFT	RP1 Aux Send On/Off Master or Route Maste on TFT	RP1 Aux Send On/Off Master or Route Maste on TFT		
RP1 Aux Send Pre-Fader/Post in Focus Window	RP1 Aux Send Pre-Fader/Post Master in Focus Window	RP1 Aux Send Pre-Fader/Post Master in Focus Window		
	*RP1 Spill Aux Sends Levels, On/Off & Pre/Post	*RP1 Spill Aux Sends Levels, On/Off & Pre/Post	*Note these are now Aux Sends*	*as yet undefined, for are Masters only*
RP1 Stereo Aux Send Pan Position/In	RP1 Stereo Aux Send Pan Position/In Master			
	RP1 Spill to Stereo Aux Send Pan Positions/In For L&R	RP1 Spill to Stereo Aux Send Pan Positions/In For LR, C, Lfe & LsRs		
On the Strips	***IP subpage***	***for each Remote***	***RP1 Fader***	
IP1/2 Trim Level	IP1/2 Trim Level Master	IP1/2 Trim Level Master		
Mic Gain	Mic Gain Master	Mic Gain Master		
Polarity M	Polarity L&R			
	Stereo Width			
	IP1/2 Bal			
IP2 button	IP2 button	IP2 button		
On the Strips	***Aux subpage***	***for each Remote***	***RP1 Fader***	
RP1 Aux Send Level	RP1 Aux Send Level Master	RP1 Aux Send Level Master		
RP1 Aux Send On/Off	RP1 Aux Send On/Off Master	RP1 Aux Send On/Off Master		
RP1 Aux bank buttons	RP1 Aux bank buttons	RP1 Aux bank buttons		

Note: strips mode under development

PORT LISTS

Port lists

Ports can be assigned to various lists. Port Lists provide a way of filtering and ordering the information shown when patching ports. The user can put a specific set of ports into their own list rather than having to search through the hundreds of ports that may be available on the network.

To access ports lists, go to **System Settings>Port Lists** from the sub-menu as shown in Fig 1. The pages are arranged into Input Port Lists as shown above right and Output Port Lists as shown in Fig 2. In either case the left side of the screen shows the Receivers or all the User port lists that have been created. If the user has not yet created any the right side of the screen will be empty otherwise it shows the last selected port list. Tapping on the header folder opens the current set of port lists on the right side of the screen, each of which contains the user defined subset of input or output ports available from the IO network.

Note: the Receivers & Transmitters cannot be deleted and is only affected by the IO streams available in the system. When IO boxes are brought online, these IO streams become available for use.

The right side of the screen is used to manage the selected port list and allows the user to create a New port list, Add or Move ports to an existing port list, Label ports in a port list or Remove ports from the various existing port lists.

Creating lists

To create a new user port list, the user can either tap the '**New port list**' button from the right side of the footer. A popup will appear prompting for the name of the new list as shown in Fig 3. Once created using the On-screen keyboard, the new list will appear below the default lists and will initially be an empty list. The next step would be to add ports into this new list from the Default list. Alternatively the user can select ports first from the left side of the screen and then tap the '**New port list**' button creating a new port list with the selected ports already added.

FIG 1 - INPUT RX RECEIVERS & USER RX PORT LISTS

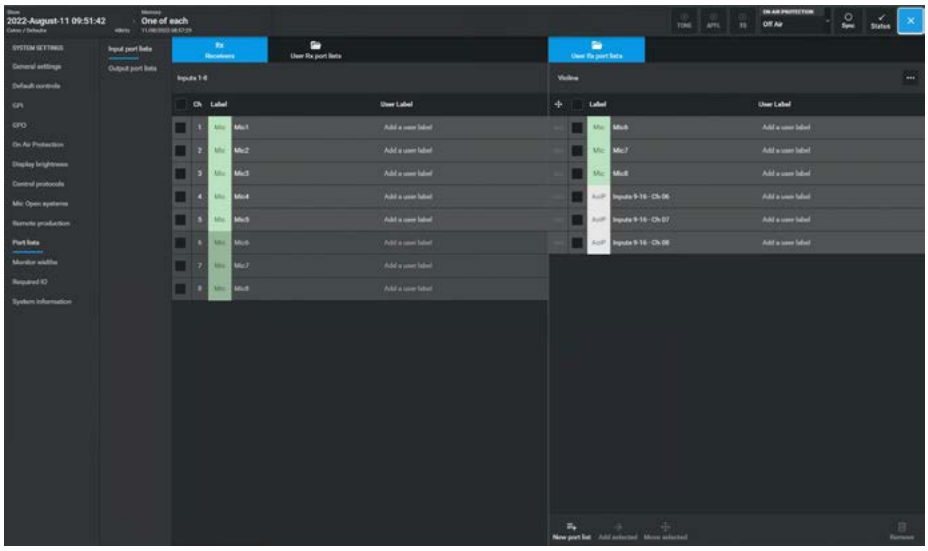


FIG 2 - OUTPUT TX TRANSMITTERS & USER TX PORT LISTS

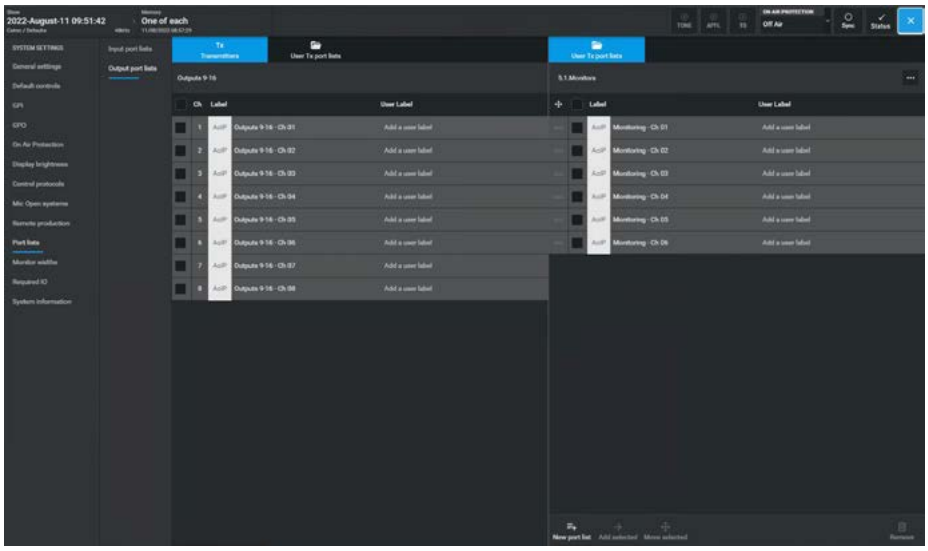
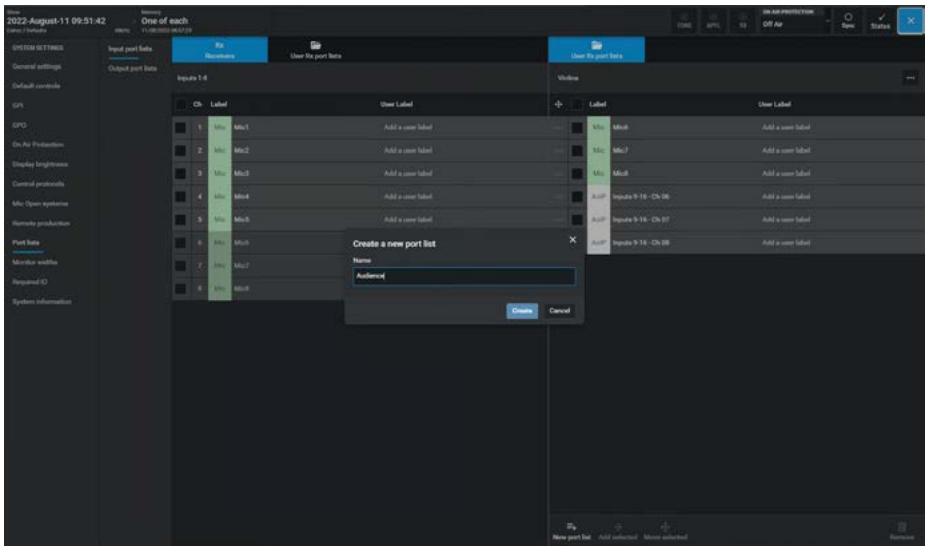


FIG 3 - CREATING A NEW USER PORT LIST



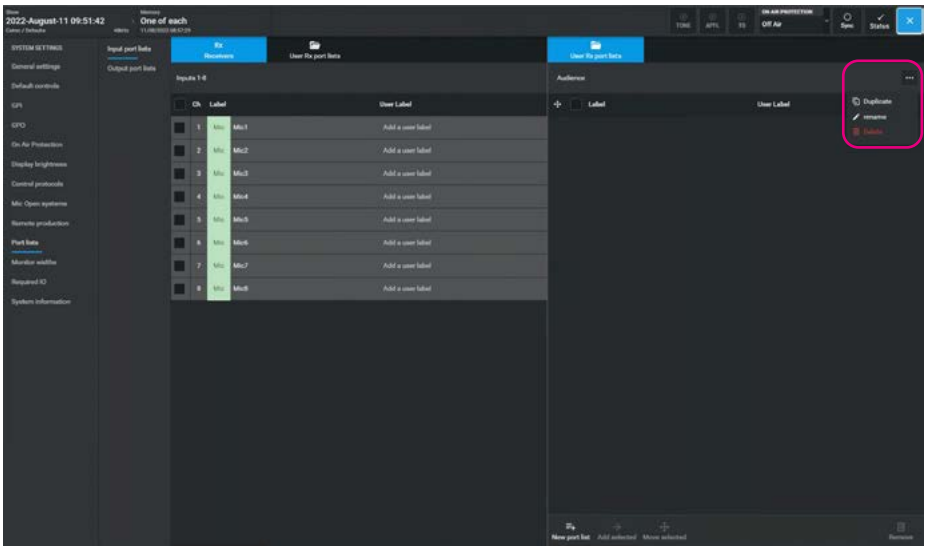
Port List Options

The Port Lists displayed in the right side of the screen can have various options applied to them. These are accessed by tapping on the **'. . .'** area as highlighted in the image in Fig 4.

When tapped the Port List options dropdown appears, this allows the user to either:-

- Rename the Port List
- Remove/Delete the Port List
- Duplicate the Port List

FIG 4 - PORT LIST OPTIONS



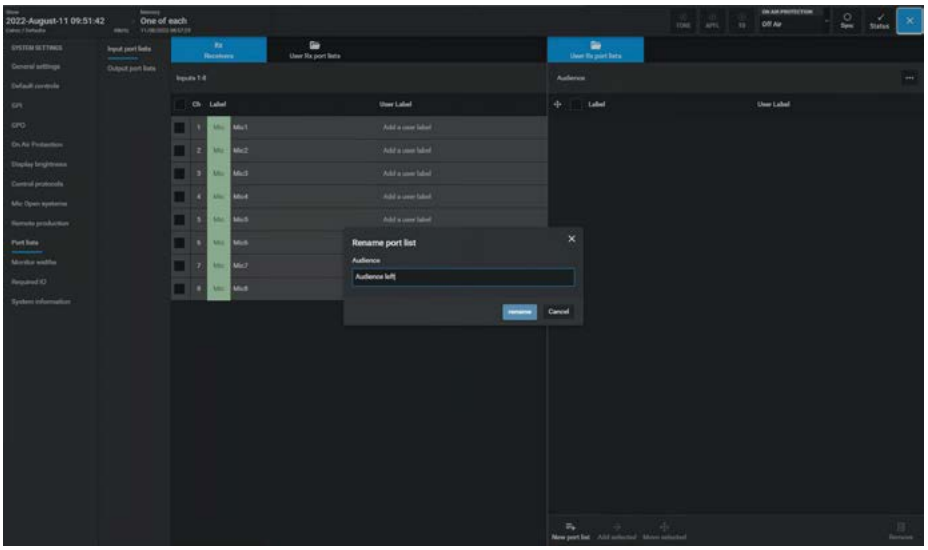
Renaming Port Lists

To rename a port list the user selects the required port list and then taps on the port list options **'. . .'** area. From the dropdown the user then taps on the '**Rename**' button to bring up a popup dialogue.

The "Rename port list" dialogue allows the user to enter a different name for the Port List using the On-screen keyboard.

The user then either taps on **'Rename'** in the dialogue box or they can **'Cancel'** if not required as shown in Fig 5.

FIG 5 - RENAME PORT LIST

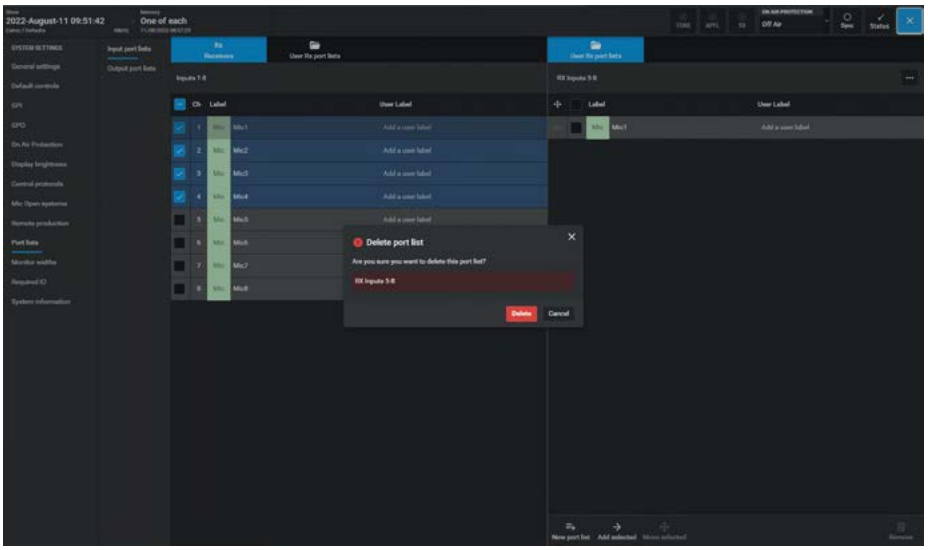


Removing Port Lists

To remove a port list, the user selects the required port list and then taps on the port list options **'. . .'** area. From the dropdown the user then taps on the **'Remove'** button to bring up a pop-up dialogue.

The "Delete port list" dialogue asks for confirmation of the removal. The user then either taps on **'Delete'** in the dialogue box or they can **'Cancel'** if not required as shown in Fig 6.

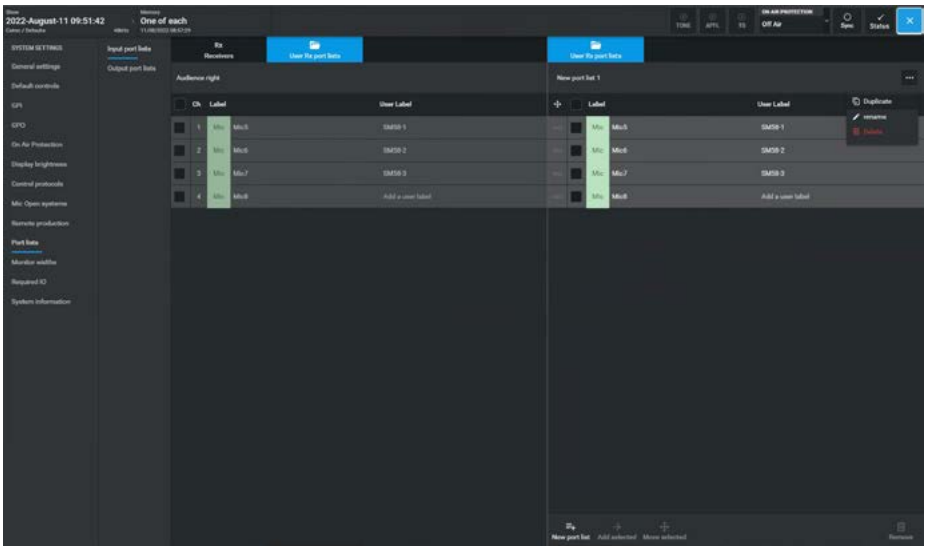
FIG 6 - REMOVE PORT LIST



Duplicating Port Lists

To duplicate a port list, the user selects the required list and then taps on the port list options **'. . .'** area. From the dropdown the user then taps on the '**Duplicate**' button. This creates an exact copy of the selected port list and names it as **'New port list 1'** as shown in Fig 7.

FIG 7 - DUPLICATE PORT LIST



Port Labelling

Each port in the system can be given a local port label so that they can be more easily identified than when using the network port label e.g SM58-3 rather than Mic7 as shown in Fig 8.

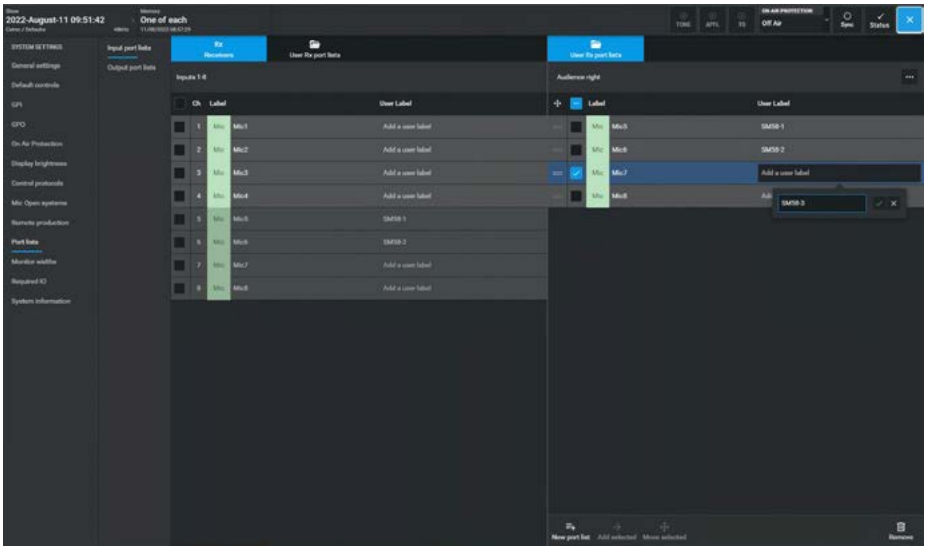
The user selects a port to highlight it on the right side of the screen and then taps on the **"Add a user label"** area of the port**.**

This opens the label dialogue adjacent to the port entry which allows the user to enter the required name in the entry field using the On-screen keyboard..

Each label is updated when the "tick" is selected, the 'X' cancels the change.

The image in Fig 9 shows the user entering labels for a Transmitter port list which is an 8 channel stream feeding a 5.1.2 Monitor. Label entry is again inputted using the On-screen keyboard.

FIG 8 - PORT LABELLING - INPUTS



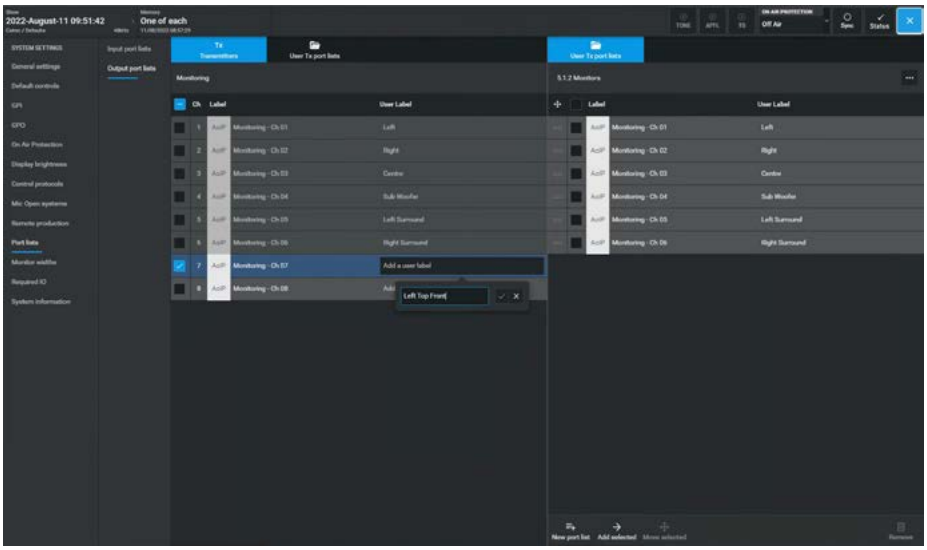
Reordering ports in a port list

In the right side of the screen each port has an ordering icon **':: : :'** , the user may want to reorder the ports as they appear in the port list for ease of IO patching later on.

If the user taps and drags on the icon the associated port entry can be moved up and down the list enabling the user to reorder the ports as required.

In the case shown in Fig 9 the ports have been arranged so that they follow the ITU speaker order for a 5.1.2 monitor port list.

FIG 9 - PORT LABELLING OUTPUTS



Adding ports to port lists
Ports can be added to port lists either directly from the Receiver or Transmitter streams or from other port lists by selecting the required ports in the required list such as the Receivers list or the User Rx port list.

Here the **"Rx Inputs 1-4"** port list in the left side as shown in the image in Fig 10 has the 'Mic3' port selected and touching the **'Add selected'** button in the right footer will add it to the port list.

The selected ports will appear in the port list on the right side of the screen.

Moving ports to other port lists
Ports can be moved to other port lists by selecting the required ports in the list such as another User Rx port list.

Here the **"Rx Inputs 1-4"** port list in the left side as shown in the image in Fig 11 has the 'Mic4' port selected and touching the **'Move selected'** button in the right footer will move it to the 'Rx Inputs 5-8' port list in the right side.

The selected ports will appear in the port list on the right side and be removed from the port list on the left side. The main difference between Add and Move is that in the move process the ports are also removed from the source list.

Note: in the case of the Receiver or Transmitter streams, the ports cannot be removed from it via the move or remove process.

Removing ports from lists
To remove ports from a port list, select the required ports from that list and touch the '**Remove**' button in the footer shown in Fig 12, as the ports still exist in the Receiver or Transmitter streams, the selected ports are removed without confirmation.

To select/deselect all the ports in a port list, tap on the icon box in the Label header area, this in combination with the '**Remove**' button will remove all the Mic selected ports from the port list.

FIG 10 - ADDING PORTS TO PORT LISTS

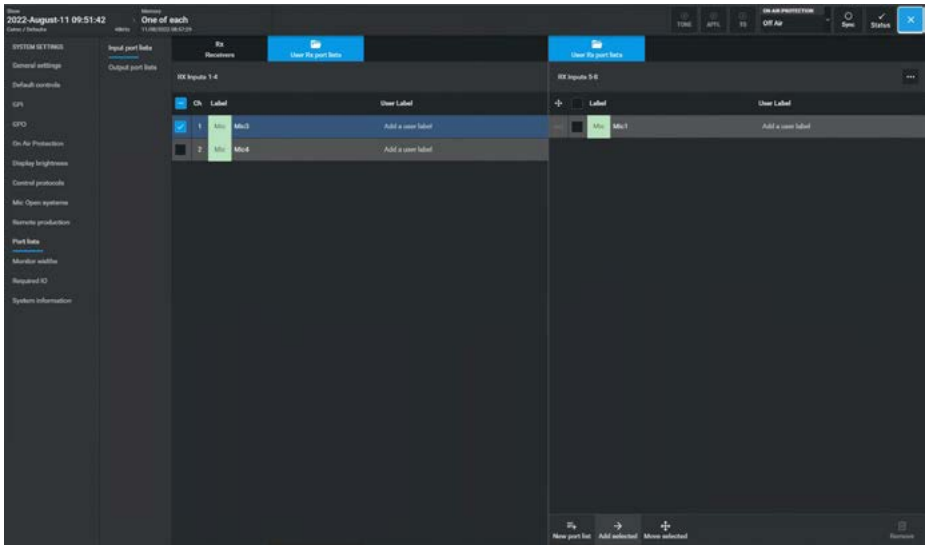


FIG 11 - MOVING PORTS TO OTHER PORT LISTS

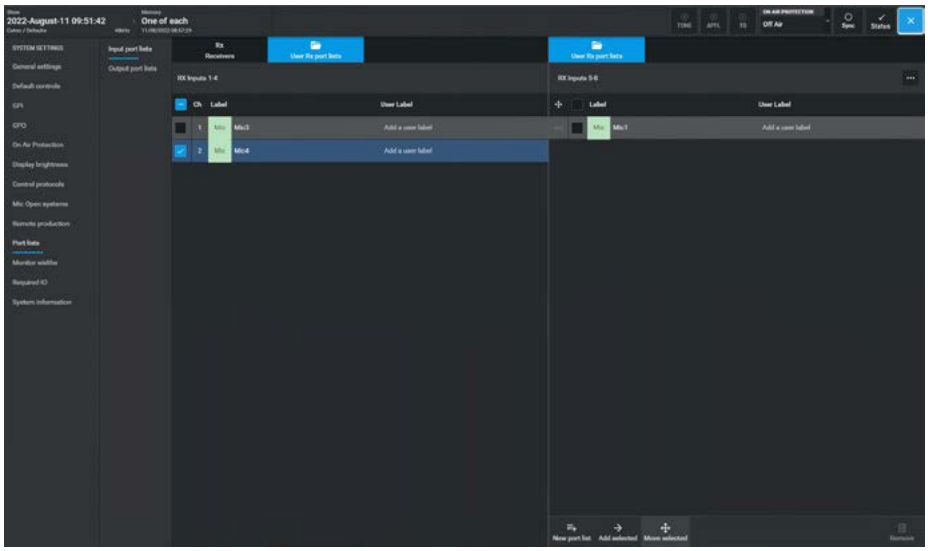
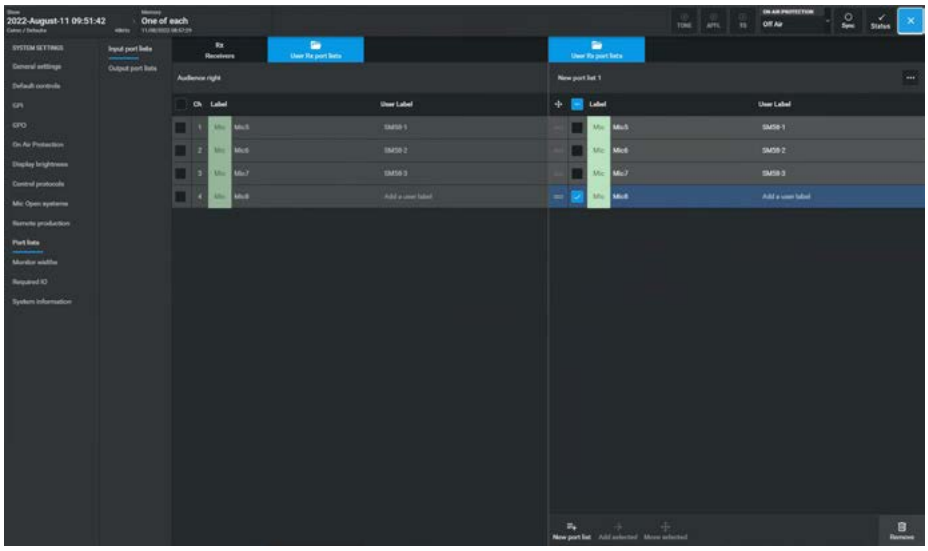


FIG 12 - REMOVING PORTS FROM PORT LISTS



MONITOR WIDTHS

For Argo the monitoring system provides fully immersive monitoring up to a 7.1.4 width in a 3D space for a variety of monitor outputs.

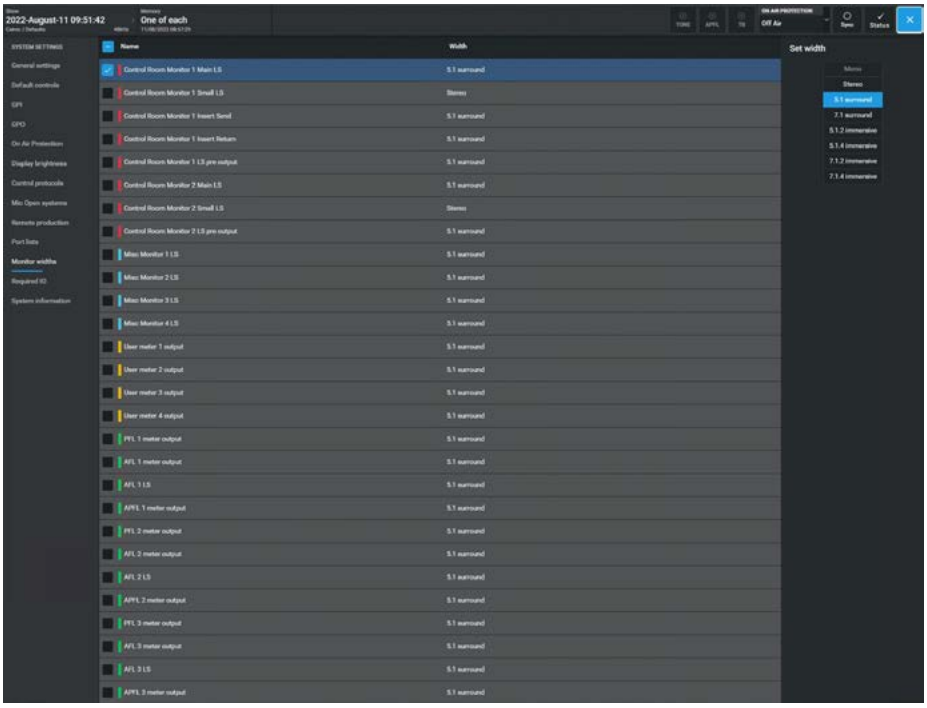
Each of the monitoring and metering outputs shown above right are capable of having their widths set not only to the Mono, Stereo & 5.1 settings but also incorporates 7.1 surround and immersive monitoring widths that include height based speakers to provide a 3D sound field monitoring arrangement from 5.1.2 up to 7.1.4 widths. The final .2 or .4 indicates that there are either 2 or 4 speakers placed at ceiling height to provide a truly immersive experience.

The 5.1.2 width and 7.1.2 width monitoring system includes 2 height speakers, placed Left top front & Right top front, whilst the 5.1.4 and 7.1.4 width monitoring system includes 4 height speakers, placed Left top front, Right top front, Left top back & Right top back.

Channel Inputs, External Inputs, Groups and Mains are all capable of being set to immersive widths and so the monitoring system is designed to allow the user to listen to those inputs and mix outputs at those widths.

Note: Groups can also be set to height widths only e.g. 0.0.2 and 0.0.4.

FIG 1 - MONITOR WIDTHS SELECTION



The monitor widths are setup on the **System Settings>Monitor Widths** page as shown in Fig 1, selecting an output in the list highlights its current width in the Set Width column on the right. The user then selects its new width as required remembering to patch the outputs for that output as needed.

The Control Room Monitor 1, & Control Room Monitor 2's Main, Small LS and LS pre outputs, Misc Monitors 1-4, User Meter Outputs 1-4 and the PFL, AFL & APFL systems 1-3's metering and loudspeaker monitoring outputs can all be individually set to the required widths to listen to the immersive paths being monitored.

REQUIRED IO BOXES

The IO Box resource page shows the IO resources that are currently online and available to this Argo system.

To access the required I/O screen, tap the **System Settings>Required IO** entry in the sub-menu on the left side as shown in the image in Fig 1.

The screen is spilt in two halves:- the left side shows the "Online Resources" available and the right side shows the "Resources Required by this Console"

Note: if the required resource does not appear in the right side list then it will NOT be available for use by this console.

Resources are automatically added when the Audio streams are created in the Connect application and the Virtual Patchbays are created in the Configure application, they becomes available.

In order to remove a resource from the required list, as shown in Fig 2, the user taps on the resource that is no longer required from the list on the right side of the screen which then highlights, the **'Remove'** button becomes available in the footer of the right side of the screen.

Tapping on this opens the 'All required resources selected will be removed. Are you sure you want to do this?' dialogue in the right side of the footer.

If the user wants to proceed they tap on the **'Remove'** button which removes those resources from the right side of the screen, if not they can the **'Cancel'** operation.

Note: When resources are removed they cannot easily be re-added. Some resources are re-added on re-detection (TX/Rx) and others may require a reboot.

FIG 1 - IO BOX RESOURCES ONLINE AND REQUIRED

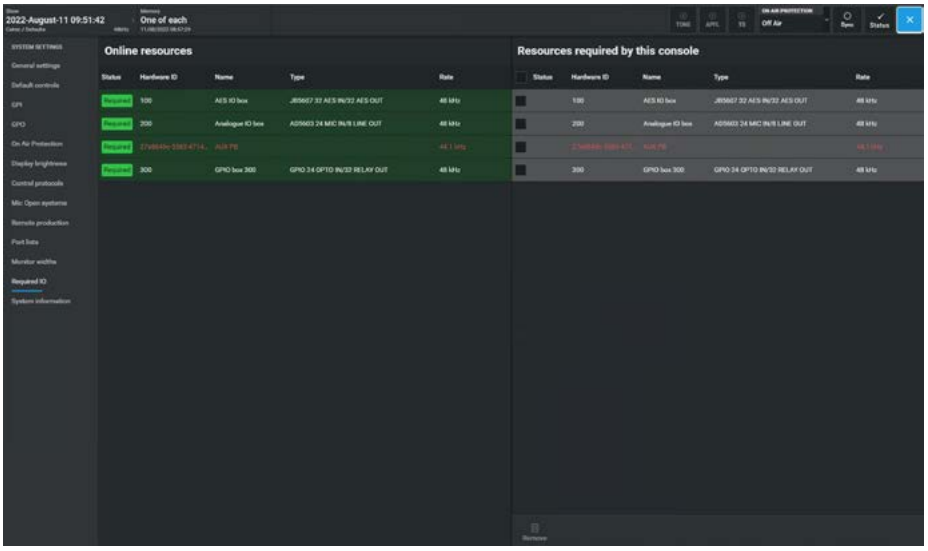
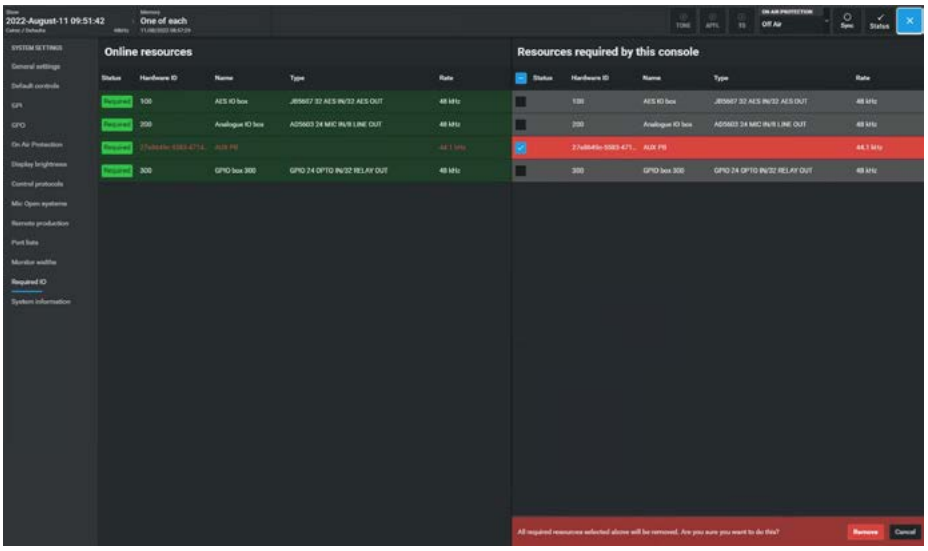


FIG 2 - REMOVE RESOURCES



SYSTEM INFORMATION

To access the system information screen, tap the **System Settings>System Information** entry in the sub-menu on the left side shown in the image in Fig 1.

It contains general information about:-

- System Type
- Mixer A/B/C/D
- Software Version
- Number of Faders
- DSP Licence
- List of 3rd party licences used to create this application.

FIG 1 - SYSTEM INFORMATION

ARGO
HEADER FACILITIES & TOOLS FOOTER

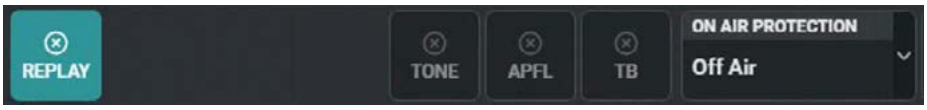
STATUS CLEAR FACILITIES

In the header of each Touchscreen there is a set of Status clear buttons.

Replay Clear

The Replay button in the header is lit when the Replay switch in **Processing>Input** -Settings dropdown is active to indicate that all the selected channels have been switched to Input 2 as shown in Fig 1. Tapping on this button clears the Replay status and the button is removed from the header.

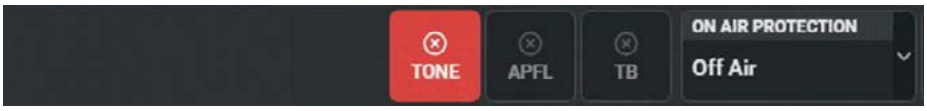
FIG 1 - REPLAY CLEAR



Tone Clear

The Tone button in the header is lit when any path has Tone applied to it as shown in Fig 2. Tapping on this button clears all active tone assignment and then greys out.

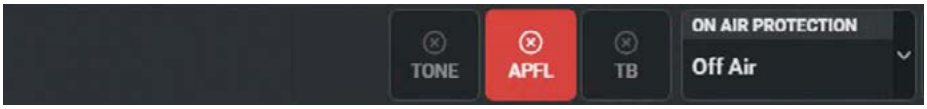
FIG 2 - TONE CLEAR



APFL Clear

The APFL button in the header is lit when any path has either PFL or AFL applied to it as shown in Fig 3. Tapping on this button clears all PFL and AFL active assignments and then greys out.

FIG 3 - APFL CLEAR



TB Clear

The TB button in the header is lit when any path has Talkback applied to it as shown in Fig 4. Tapping on this button clears all latched Talkback assignments (such as Direct outputs) and then greys out.

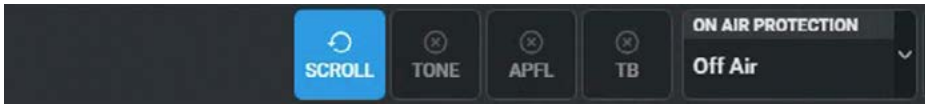
Note: For momentary talkback on the surface the TB indicator lights for as long as the selected TB button is held down and when released deactivates the talkback, unless there is another active talkback in use. It is also possible to Trigger Talkback via GPI.

FIG 4 - TALKBACK CLEAR

Fader Scroll Clear

The Scroll button in the header is lit when the faders on the surface has been scrolled away from its default position as shown in Fig 4. Tapping on this button returns the faders to their default surface positions and the button is removed from the header..

FIG 5 - FADER SCROLL CLEAR



Contribution Clear

The Contribution button in the header is lit when the routing contribution mode is active as shown in Fig 6. Tapping on this button cancels the contribution mode and the button is removed from the header.

FIG 6 - CONTRIBUTION CLEAR

ON-AIR PROTECTION

In the header of each Touchscreen there is an On-Air Status box which can set the On-Air, Rehearse and Off-Air condition for the Argo system.

The images to the right show the three states of the On-Air status.

The On-Air status determines a number of other functional states in the system for instance when **'On-Air'** is activated as shown in Fig 1, the tone and talkback to main is disabled and the three On-Air status states have an effect on the mic open systems, see **"Mic Open Systems" on page 281.**

The Rehearse and Off-air status images are shown in Fig 2 and Fig 3 respectively.

The user can set the On-Air state by tapping on the **'On-Air Protection'** status box in the Access header which provides a dropdown to select one of the three states or the user can switch states at any time using GPIs.

Argo provides two GP inputs which are labelled '**Ext On Air Signal'** and **'Ext Rehearse Signal'**, the relevant function is active while the selected GPI signal is active.

If both a GPI function and a user selection of state are active, then the highest selection will take priority. From high to low this is:- On-Air, Rehearse, Off-Air.

If both GPI functions are active, the **'On-Air'** GPI function will take priority over the **'Rehearse'** GPI function.

Argo also provides two GP outputs which are labelled **'On Air Signal'** and **'Rehearse Signal'**, when the relevant function is active the selected GPOs can be used to provide external control signals such as to control indicators outside a Control Room or Studio.

FIG 1 - ON-AIR STATUS

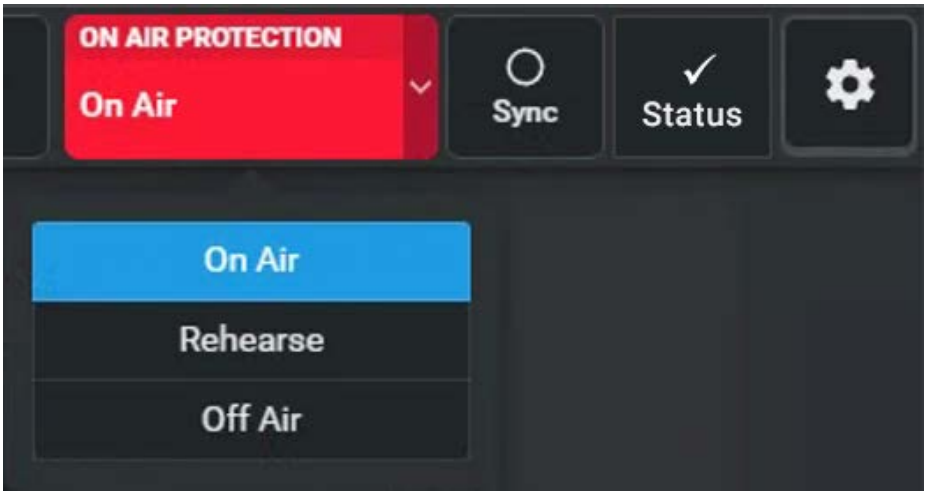


FIG 2 - REHEARSE STATUS

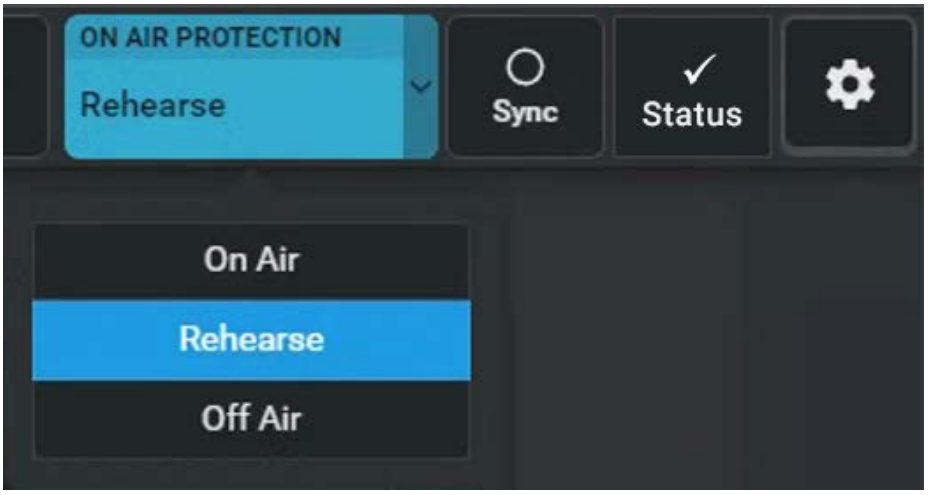
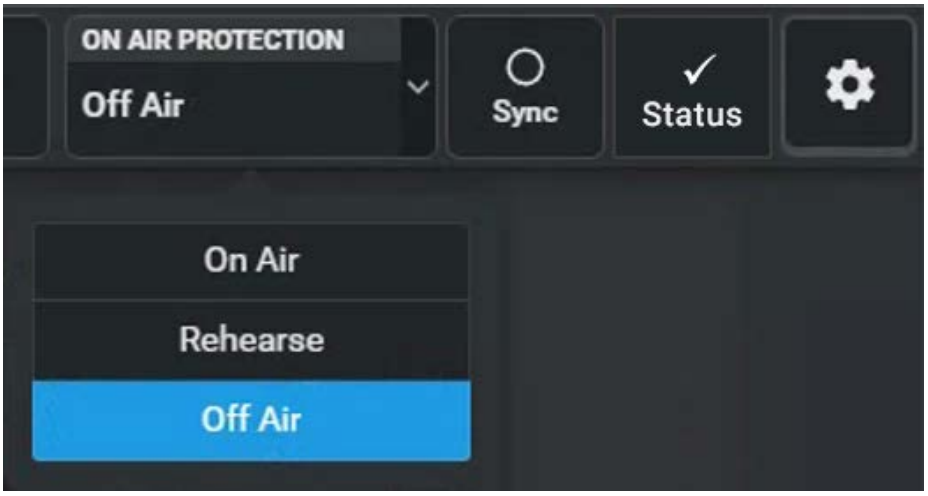


FIG 3 - OFF-AIR STATUS



SYNC STATUS

Argo features Sync Status messaging which reports the current sync state and is accessed from the header on each touchscreen.

The System monitors all sync components with respect to PTP clock sources.

Sync status notifications
Under normal operating circumstances, the system status notifications area to the right of the On-Air Protection block in the Access header will show a “tick” mark to show that everything is OK and that a valid PTP clock source is being received.

Tapping on the Sync button in the Access header provides a dropdown displaying the Current PTP Sync state of each core as shown in Fig 1.

The active sync source also indicates whether the core is acting as a PTP master or as a PTP slave as well as which source the core’s clock is currently referenced to.

Note: the PTP settings are configured from the Connect application and are also shown in the Configure application which offers additional Synchronisation options.

In addition to acting as a PTP slave, there are Wordclock and a number of Video sync input selections available in the ‘Configure’ application which can be used to provide a sync reference to a core but only whilst that core is acting as a PTP master.

The image in Fig 2 shows that the Sync status has changed and that whilst the Secondary core is still synced as a PTP slave, the Primary Core is now acting as a PTP master but referenced to a 48kHz Wordclock sync input.

Note: these sync inputs are unused when the core is acting as a PTP slave (as shown above right). In this case the core’s clock is being referenced to one of the PTP inputs (P1) instead which is coming from an external AoIP IO box.

FIG 1 - CURRENT SYNC STATUS PTP SLAVE FROM EXTERNAL PTP CLOCK

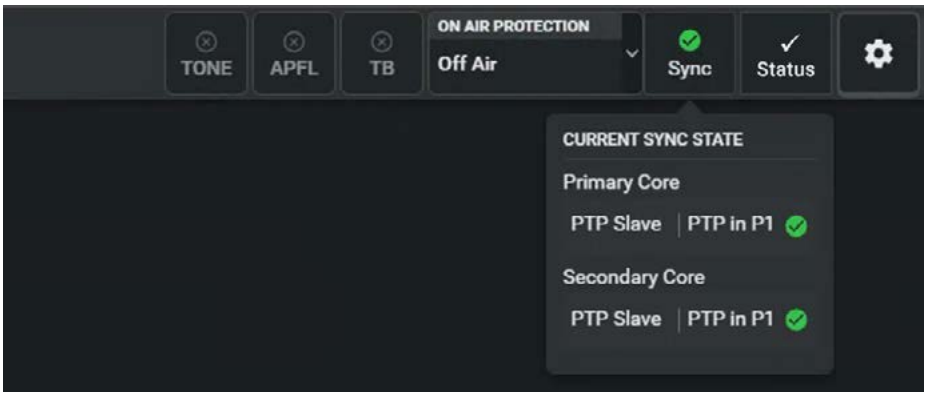
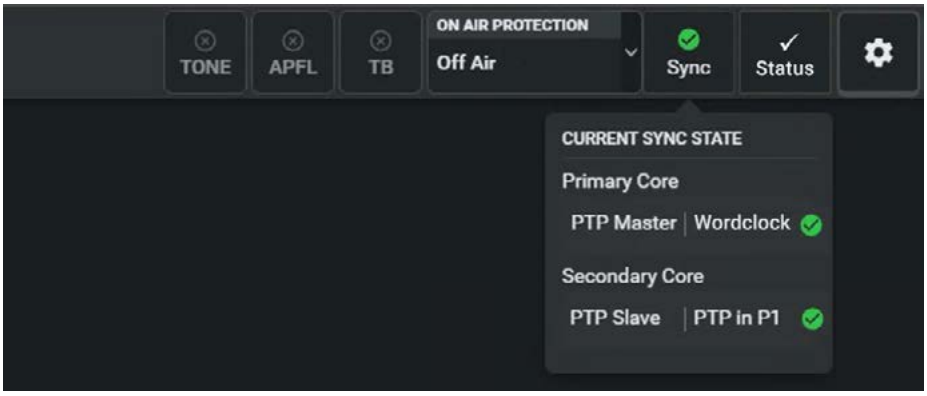


FIG 2 - CURRENT SYNC STATUS PTP MASTER FROM CORE REFERENCED TO WORDCLOCK



SYSTEM STATUS

Argo features System Status messaging which reports warnings, errors and system information, which is accessed from the header on each touchscreen.

System status monitors all system components and connections.

System status notifications

Under normal operating circumstances, the system status notifications area to the right of the header will show a “tick” mark to show that everything is OK and that there are ‘No events to display’’, see the image in Fig 1.

In the event that a message needs to be displayed, the notifications area will display the relevant colour depending on the message type.

Information (blue), a warning (amber) or an error (red) message.

Tapping on this notification area will bring up the system status screen.

The most serious notification will be shown as a priority i.e. error messages then warning messages then information messages as shown in Fig 2 with a red indicator.

Message types

Three types of message are reported by system status:-

Error Messages

Reports serious errors that could cause, or has caused the system to fail.

Normally this requires user intervention to correct the problem before operation can continue.

FIG 1 - SYSTEM STATUS DROPDOWN FROM ACCESS HEADER - OK STATE

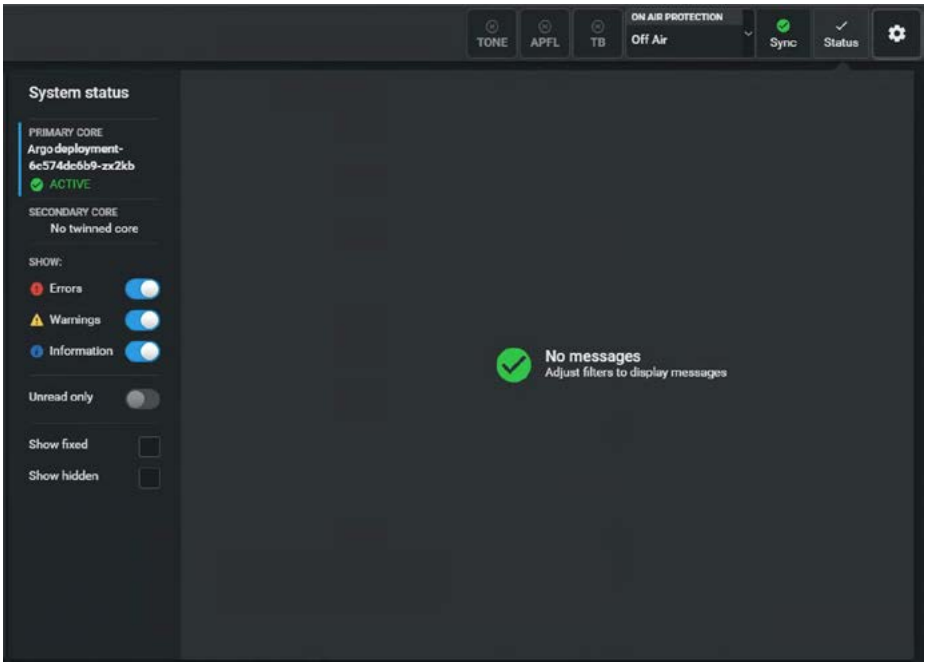
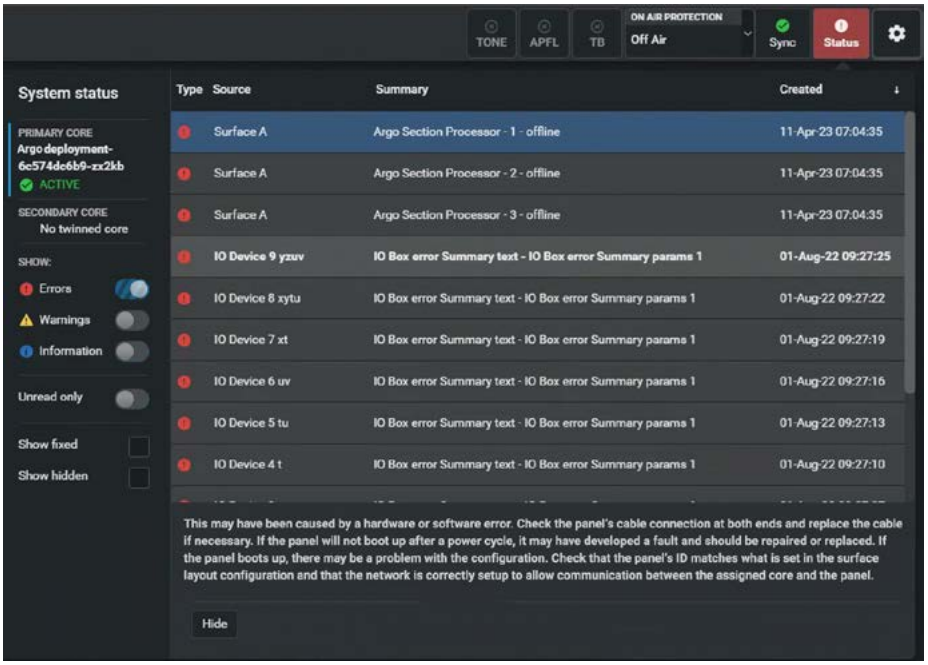


FIG 2 - SYSTEM STATUS DROPDOWN FROM ACCESS HEADER - ERROR STATE



Warning Messages
Indicates where the system has located a fault or failure but will still operate without intervention from the user, see the image in Fig 3 with a yellow warning indicator.

Certain messages should be checked as the system may be running on its secondary components.

Information Messages
Informs the user when certain actions take place. They do not report errors and no action needs to be taken to respond to them. See image in Fig 4 with a blue indicator.

Managing Messages
The messages are reported in a list and 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 in the left hand panel. The top 3 slider switches are used to select **Error**, **Warning** & **Information** message types either individually or in combination.

The 4th switch labelled **Unread only** allows the user to hide messages that have already been read. Read messages have a darker background as shown as an example in Fig 4, second entry down.

In addition items that have been "Fixed" or "Hidden" can be included or excluded from the status list using the '**Show fixed**' and '**Show hidden**' check boxes.

Selecting a message in the list will update the selected entry description window area on the bottom right of the display to show the message in greater detail.

Figs 2, 3 & 4 all show a hide button when a message is selected. If the **'Hide**' button is pressed the "Eye" icon appears to show it is hidden as shown in Fig 3 and with the 'Show hidden' checkbox active those messages are removed from the list.

To "Unhide" them again uncheck the 'Show hidden' check box and select the message(s) with the "Eye" icon.

FIG 3 -SYSTEM STATUS DROPDOWN FROM ACCESS HEADER - WARNING STATE

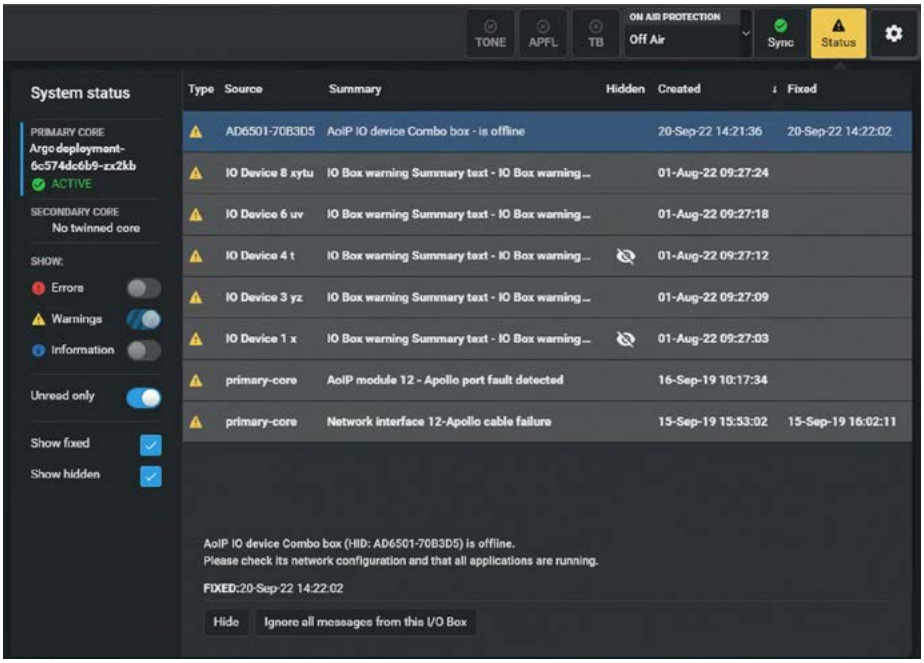
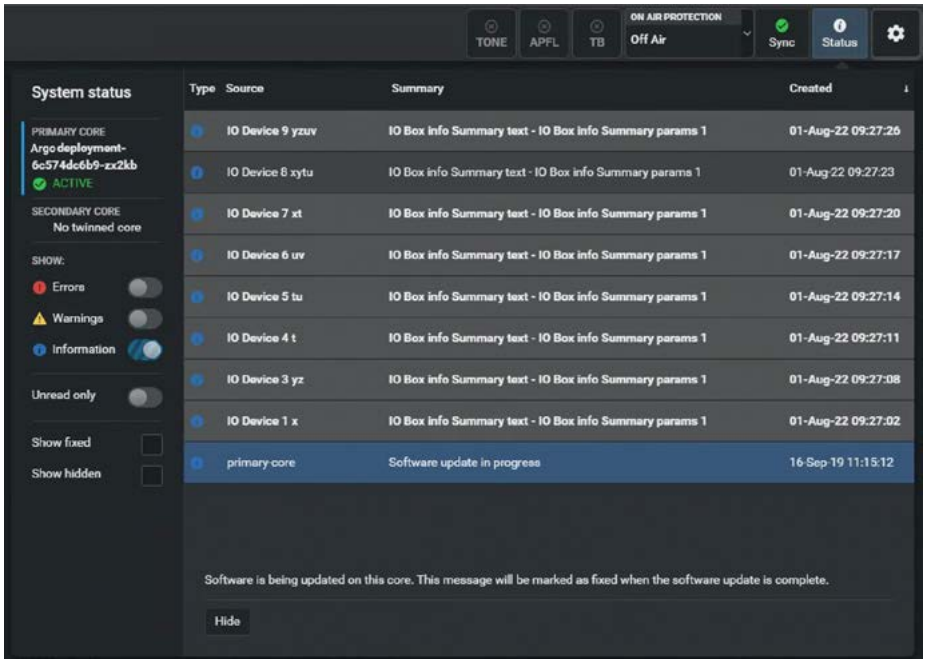


FIG 4 -SYSTEM STATUS DROPDOWN FROM ACCESS HEADER - INFO STATE



The **'Hide'** button below will now act as an **'Unhide**' button.

In some situations an I/O box may be connected to the system but not be required for this production. In order to avoid receiving unwanted messages from that box, as it would if it goes offline and starts sending error messages, the user can select it and click on the **'Ignore all messages from this I/O Box'** button as shown in Fig 3. This then blocks all its messages to the system.

COPY AND PASTE

This tools facility in the footer makes it quick and easy to copy properties from one path and paste them to another.

The user accesses the path to copy the properties from and taps **'Copy'** as highlighted in the tools footer as shown in Fig 1.

This opens the "Copy path parameters" dialogue box as shown in Fig 2.

The user then selects the parameters to copy or can tap on **'Select all'** or **'Select none'** if required and then taps on **'Copy'** or **'Cancel'**.

Note: if 'Select None' is selected the 'Copy' button will grey out.

To apply the copied properties, the user selects the path(s) sequentially to paste the properties to and taps **'Paste'** in the Function Header. The **'Paste'** selection remains available until the **'Cancel'** button in the footer is tapped.

If the user wishes to alter the contents of the Paste buffer they can tap on the **'Edit Selection'** button in the footer.

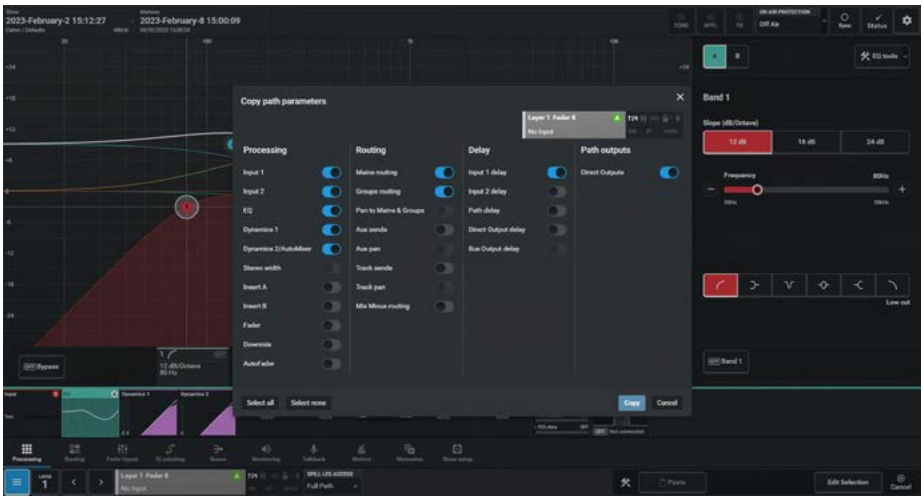
This reopens the Copy path parameters dialogue box. The user will need to tap on **'Copy'** again to update the paste buffer ready for further copying.

Once the user has finished copying the required parameters they tap on the **'Cancel'** button in the footer to close the Copy & Paste tools.

Note: When pasting path parameters that have been copied to a path that is in a Control Link it is important to realise that ALL the paths in the control link will have their settings overwritten.

FIG 1 - COPY FROM TOOLS FOOTER

FIG 2 - COPY TEMPLATE DIALOGUE BOX



ISOLATE

This tools facility in the footer allows the user to Isolate parameters in the selected paths from change due to memory loads.

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 **'ISO'** button in the Tools footer as highlighted in the image shown in Fig 1. With this function selected on a fader, the paths on that fader will keep their current settings when a new memory is loaded.

The MEM ISO function may either be set as ISO full in blue as shown in the footer image in Fig 2 or ISO partial in green as shown in the footer image in Fig 3.

ISO Full means that all parameters of the selected path are isolated from memory loads whereas ISO Partial means that only selected parameters have been chosen to be isolated from memory loads, the selection of which is determined by individually setting the various parameters to be included/excluded from isolation.

Setting the scope of 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 '**^**' part of the ISO button in the tools footer. This will open the Isolate path parameters dialogue box as shown in Fig 4.

The selected path has all the parameters applicable to it selected and therefore a Full Isolate would be applied.

To change the selection tap the relevant switches to toggle the elements which should be isolated when the accessed path is isolated, the selected elements will illuminate.

FIG 1 - ISOLATE FROM TOOLS FOOTER

FIG 2 - ISOLATE FULL ACTIVE STATE AS SHOWN IN TOOLS FOOTER

FIG 3 - ISOLATE PARTIAL ACTIVE STATES AS SHOWN IN TOOLS FOOTER

FIG 4 - ISOLATE SCOPE DIALOGUE BOX FROM TOOLS FOOTER

The **'Isolate all'** and **'Isolate none'** buttons in the dialogue box switch all the elements on or off respectively.

When only a subset of the path parameters are set the ISO button has a 'Partial' suffix in place of the 'Full' suffix.

Once he required isolate elements have been set, tapping on the '**^**' part of the ISO button in the tools footer again or anywhere else other than the dialogue box on the display will exit the dialogue.

PRESETS

A preset is a complete copy of a path from which you can choose elements to load onto another path.
Using presets can speed up the workflow when several paths with similar settings are required.

When a new preset is made a full copy of the path is taken. Setting the scope of a preset defines which elements of the path are copied to a path when the preset is loaded. The scope of the preset can be set at any time.

The image in Fig 1 shows the Preset Dialogue box which is accessed when the user taps on the **'Presets'** button in the tools footer.

FIG 1 - PRESET DIALOGUE BOX FROM THE TOOLS FOOTER

Creating a Preset Folder

To create a preset folder:

1. Tap **'Presets'** in the tools footer.
2. On the left side of the dialogue box tap on **'New'** and the "Create preset folder" popup appears.

The user enters a label for the folder and then taps on **'Create'** to make the folder as shown in Fig 2.

FIG 2 - CREATE PRESET FOLDER

Editing a Preset Folder Label

To Edit a Preset Folder label with the Preset dialogue box opened:

1. Select the Preset Folder to relabel.
2. On the left side of the dialogue box tap on **'Edit'** and the "Edit preset folder" popup appears.
3. The user enters a different label for the folder and then taps on **'Save'** to rename the folder as shown in Fig 3.

FIG 3 - EDIT PRESET FOLDER LABEL

Deleting a Preset Folders

To delete a preset folder:

1. Tap **'Presets'** in the tools footer.
2. On the left side of the dropdown select the folder(s) to be deleted.
3. Tap on **'Delete'** and the "Delete selected folders" pop-up appears.
4. The user taps on **'Confirm'** to delete the folder as shown in Fig 4.

Note: all the Presets contained in the folder will also be deleted & 'tickboxes' next to each entry can be used to select multiple folders & files to be deleted.

Creating Presets

To create a preset from the currently accessed path:

1. Tap **'Presets'** in the function footer.
2. Navigate to where you wish to save the preset, by first selecting a preset folder or making a new preset folder if necessary.
3. Tap **'New'** on the right side of the screen and the "Create Preset" pop-up appears as shown right.
4. The path identifier block inset top right shows the source for the preset.
5. Slide the switches to the right for those parameters to be loaded when Load is tapped on.
6. The image shown right, shows all the parameters that can be loaded for this path type, also the **'Select all'** or **'Select none'** buttons can be used for quick selection/deselection.
7. The user enters a label for the preset in the top left corner.
8. Then taps on **'Create Preset'** to create the preset and place it in the selected folder as shown in Fig 5.

Editing a Preset Label

To Edit a Preset label with the Preset dialogue box opened:

1. Select the Preset to label.
2. On the right side of the dialogue box tap on **'Edit'** and the "Edit preset" pop-up appears.
3. The user enters a label for the preset and then taps on **'Save'** to rename the preset as shown in Fig 6.
4. The user may also alter the settings to be applied on loading the preset by changing the switch settings on the elements in the Edit preset box.

FIG 4 - DELETE PRESET FOLDERS

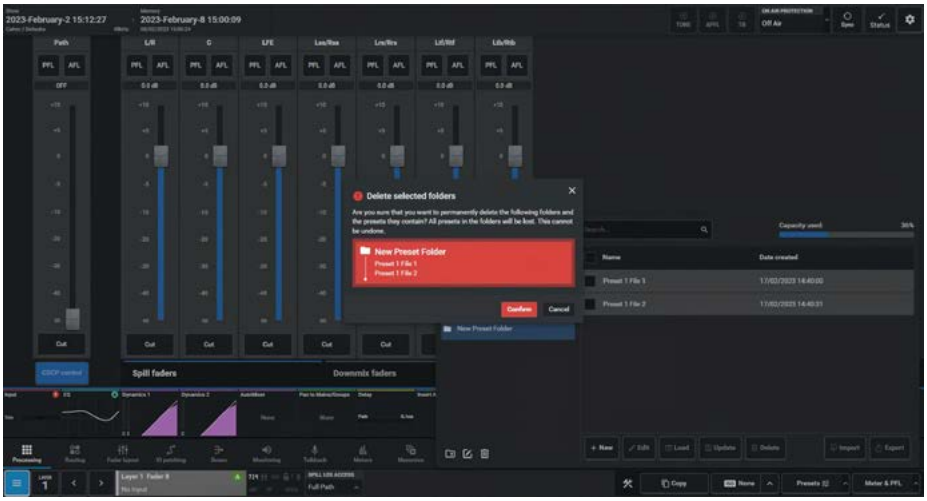


FIG 5 - CREATE PRESET PARAMETERS

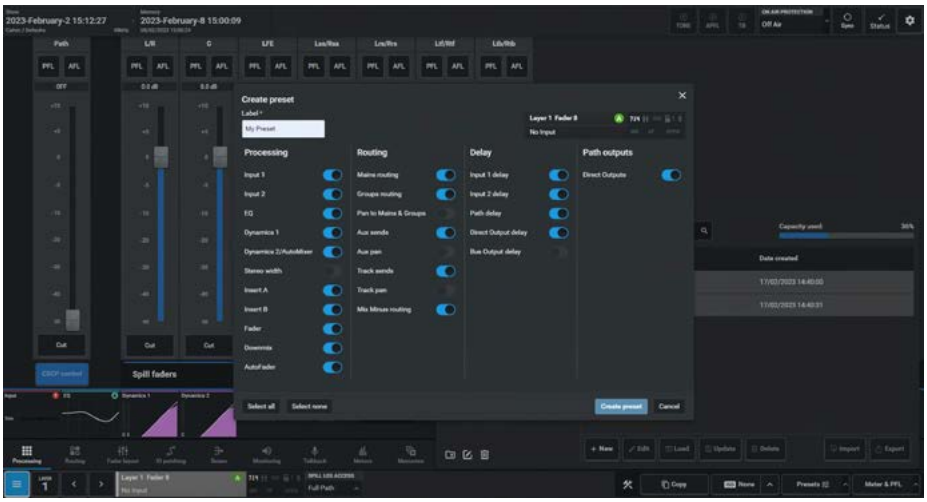
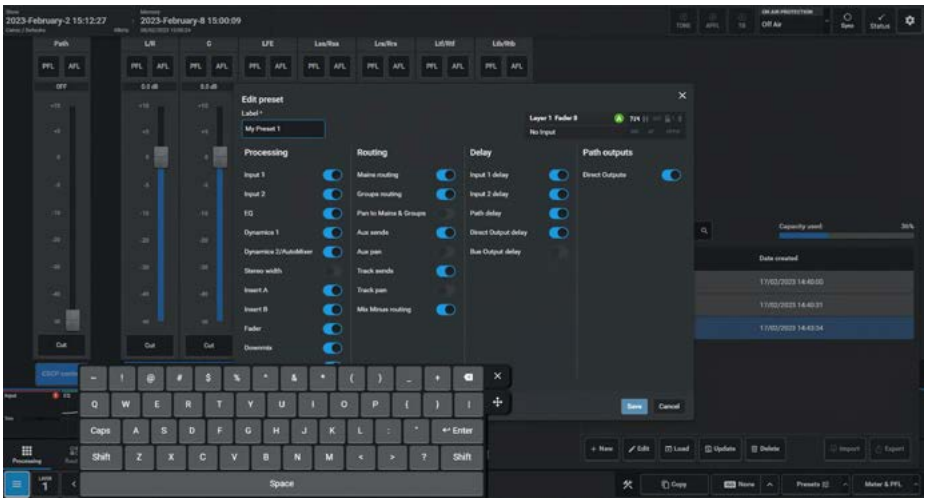


FIG 6 - EDIT PRESET LABEL AND/OR PATH ELEMENTS



Loading a Preset

To Load a Preset:

1. Select the access path the Preset is to be applied to.
2. Tap **'Presets'** in the tools footer to open the dialogue box.
3. Select the Preset to be loaded.
4. On the right side of the dialogue box tap on **'Load'** and the "Load" confirmation popup appears as shown in Fig 7.
5. The user taps on **'Load'** to apply the preset to the selected path.

Updating a Preset

To Update a Preset:

1. Select the access path the Preset is to be updated from.
2. Tap **'Presets'** in the tools footer to open the dialogue box.
3. Select the Preset to be updated.
4. On the right side of the dialogue box tap on **'Update'** and the "Update" confirmation popup appears as shown in Fig 8.
5. The user taps on **'Update'** to copy parameters to the preset from the selected path.

Deleting Presets

To delete a Preset with the Preset dialogue box opened:

1. Select the Preset(s) to be deleted.
2. On the right side of the dialogue box tap on **'Delete'** and the "Delete selected presets" confirmation popup appears shown in Fig 9.
3. The user taps on **'Confirm'** to delete this preset from the system.

Note: that the "tickboxes" next to each entry can be used to select multiple presets to be deleted.

Import Presets

This is not available in V1.0.x, however this can be carried out using Assist.

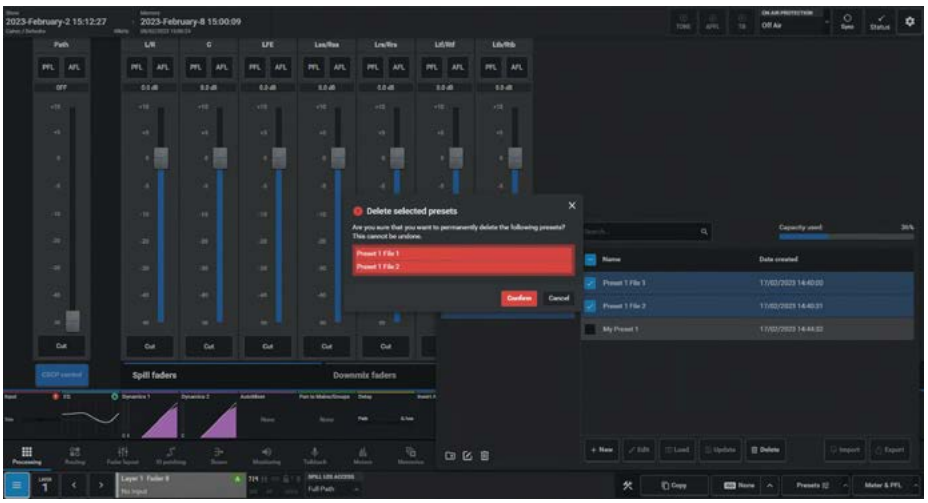
Export Presets

This is not available in V1.0.x, however this can be carried out using Assist.

FIG 7 - LOAD PRESET

FIG 8 - UPDATE PRESET

FIG 9 - DELETE PRESETS



METER & PFL OPTIONS

The Meter and PFL path positions dialogue box in the tools footer allows the user to select where the Metering or PFL point in the selected audio path is taken from.

The '**Meter & PFL**' button is located in the tools footer as highlighted in Fig 1.

Once accessed this opens the Meter & PFL dialogue box from the footer as shown in Fig 2.

Meter Source

The metering pick off point can be taken from :

- Input (at the start of path processing)
- Pre EQ
- Post EQ
- Pre Fader
- Post Fader
- Post (at the end of path processing)

Note: this selection only applies to the currently selected audio path.

Optionally there is an **'Apply to all paths in user area'** button at the bottom of the Meter source list if this is to be applied globally.

PFL Source

The PFL pick off point can be taken from :

- Input (at the start of path processing)
- Pre EQ
- Post EQ
- Pre Fader

Note: this selection only applies to the currently selected path.

Optionally there is an **'Apply to all paths in user area'** button at the bottom of the PFL source list if this is to be applied globally.

The Meter and PFL path positions dialogue box is closed by tapping again on the **'Meter & PFL'** button.

FIG 1 - METER AND PFL PATH ACCESS BUTTON IN THE TOOLS FOOTER

FIG 2 - METER AND PFL PATH DIALOGUE BOX FROM THE TOOLS FOOTER

ARGO
GLOSSARY OF TERMINOLOGY

CALREC

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

ADC (Analogue to Digital Conversion)
The process by which continuous analogue 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 dependent 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 bus. AFL does not affect the main outputs, so can be seen as being similar to 'safe solo'.

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

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

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.

Aux / Auxiliary
An Aux is a bus 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 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 3
The next generation of Calrec's High Density Signal Processing (HDSP) system. Capable of upto 2048 input channel paths from just a single module.

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

Button Cell
A collection of four buttons around a display.

Calrec Assist
This is a web browser application which when connected to a console, allows an alternative control interface which works in parallel.

Channel Faders
Channel Faders are located on the Standard or Short throw Fader Panels. Note that this is a generic term, as Channels, Groups, Mains, Auxes and Tracks can all be attached to them allowing assignment and level control. They may also be used to control VCA groups with or without an underlying path.

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 Bed
The main, shallow angled area of the control surface as opposed to the upstand. The Argo control bed can be fitted with a row of standard fader panels and a second row, mainly populated with Wild assign control panels.

Control Cell
The collection of controls consisting of a small TFT display, a rotary control and one or more buttons.

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

Core
Processing rack for a mixing console or standalone router.

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

Desk Output
Type of Main bus output which does not receive the output tone or talkback switching that affects Main Line outputs.

Direct Output
Output from a channel or group path with level control and pre EQ / pre fader / post fader selection. By default a direct output contains only the audio present on the path, but can be switched to output mix-minus - everything routed to the mix-minus bus apart from the path's own audio.

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 centre 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 Impulse rack which performs all the DSP functions of the system.

Expansion Router
The Impulse Rack supports up 4 router modules each capable of handling 1024 channels with full AoIP redundancy within the rack.

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

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

Fader Panel
A panel containing TFT Displays button cells and motorised touch sensitive faders.

Touchscreen
The TFT touchscreen display in the mid section of a console section, provides flexible options for displaying and controlling information directly through touch.

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 of information over copper or fibre 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 fitted to various AoIP device I/O boxes.

Group Bus
A bus 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 bus for easy access. Buses can be patched to physical outputs and have full EQ and dynamics processing. For a non-summing group see VCA Groups.

Host Console
A Host console is one which is configured to act as a remote controller for RP1 units.

Impulse Router Module
All AoIP I/O boxes connect to the network via a router. The router module contains 8 SFP sockets that can accept either copper or a range of fibre connections by using the appropriate adaptor.

Interrogation/Contribution
Interrogating a bus reveals all contributing paths. For example an Aux bus 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 bus. (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 buses.

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 Argo surface arranged as 12 layers each with and A and B sublayer. Given an example surface containing 84 faders and using 12 layers, the user may control up to 1008 paths with the faders simply by changing layers.

Line Output
A type of Main output bus, that is interruptible with output tone and talkback selections.

MADI (Multichannel Audio Digital Interface)
A coaxial or optical transmission medium providing a 56 or 64 channel capacity. The MADI standard (AES 10) allows simple high density connectivity between different manufacturer's equipment. MADI is interfaced with an Argo system via a MADI card in an AoIP Modular I/O Rack or on the Argo Combi IO boxes.

Main
A main is an output bus, 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.

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. It is set per device using Connect. In Devices, select the IO box then select the ... options menu in the top right corner. A dialog appears, select Mic Input Headroom. You can choose a level from 20dB to 36dB in steps of 2dB. A high headroom offers greater safety at the expense of slightly more noise.

Mix Bus
When multiple signals are routed to a bus they are mixed together. This allows the combined signal to be processed, routed or have its level controlled from a single location.

Mix Minus Bus
A dedicated bus 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 bus, 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 section on the surface to be switched.

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

Port
A port refers to any physical audio input or output in an AoIP device. Ports can be of any form of analogue or digital I/O. In the case of analogue 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 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 via stream receivers to one or more channel inputs, or a main output may be patched to one or more output ports via stream transmitters.

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 bus.

Presets
Path presets allow you to save a complete copy of all a path's parameters. This preset can be recalled onto any other path at any time.

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

Rack (ImPulse)
The single 5U enclosure containing all power, control, processing and routing modules for up to 4 Argo systems.

Receiver/Transmitter
Audio data, when passed via AoIP/AES67 streams are sent from an AoIP device channel which is known as a Transmitter and is received by another AoIP device channel which is known as a Receiver.

Redundancy
All main components of the system can be provided with Redundancy, meaning that with the provision of a Twinned Core 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.

Remote Aux Masters
When a RP1 unit is being controlled from a console, the RP1 Aux Masters can be mapped onto the console surface which act in parallel with the RP1 Aux Masters, these are called Remote Aux Masters.

Remote Faders
When a RP1 unit is being controlled from a console, the RP1 channel inputs are placed on the RP1 Faders. These faders can be mapped onto the console surface which act in parallel with the RP1 faders, these are called Remote Faders.

Reverse Routing
When a bus is interrogated, routes to that bus may be made in reverse by specifying which paths will be routed to it. This is also known as Contribution mode. Normal routing involves specifying which buses a certain path is routed to. (See Interrogation/Contribution).

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 a rotary control.

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 displays at the top of a standard fader panel is called the 'Modes Row'.

RP1
This is a Remote Production unit designed to be a self-contained compact mixing console without a control surface. Its purpose is to provide latency free mixing at a remote site for commentary mixes.

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. Calrec SDI de-embedders can decode all groups and extract up to 16 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 fibre connectivity. This allows units fitted with SFP sockets to be customised to meet a range of requirements. Many of the network connections in a Argo system make use of SFP sockets.

Spill Faders
Allow control of legs of a multichannel signal. For example the overall level of surround or immersive 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 accessed fader, then processing can also be applied to that component using the assign panels. For example a 5.1 channel its legs are separated 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 synchronised 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 12 faders, 2 rows of 12 quad button cells each of which surround a 160px X 80px TFT, Access & On/Cut buttons, B-Layer, AFL, PFL, 2 User buttons and 3 further TFTs for each fader. Along with the Wild assign panel which has 4 rows of 12 control cells, each of which contain a button and a rotary control, the standard fader panel is the most common panel on a surface.

Strip (Channel Strip)
Strip refers to a vertical arrangement of controls on the surface which can be a combination of fader and assign panels. There are twelve strips on an Argo standard or short fader panel.

Surface
The surface is the physical control surface for an Argo 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, Desk or Board.

System
The term 'system' encompasses the rack, surface, and AoIP devices. From the moment a signal enters an AoIP device input it is in the system and remains there until it is passed out of an AoIP device output.

System Status
This system provides information, warning and error logs of any developing or occurring faults in the system.

TFT display
Generally refers to the larger display screens in the control surface - the upstand meter panels and the large display on Argo Touchscreen panels.

Tracks
Multi function buses 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 bus. This occurs when monitoring a mono signal through a stereo bus. Hence the pan control can be considered an upmix parameter as it varies the resultant stereo upmix.

Upstand
The upper, steeply angled section of the control surface, mainly fitted with TFT and meter panels. Often referred to as the meter bridge.

VCA Groups
The term VCA stands for Voltage Controlled Amplifier. A VCA group, unlike a group bus 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 multiple cells with rotary controls, buttons and displays. The function of this panel can be altered during operation of the surface.

Wild Assign Touchscreen
The TFT touchscreen display located in the mid section of an Argo console, provides flexible options for displaying and controlling information directly through touch.

Wild Custom controls
Allows the user to assign any combination of path controls to the rotary controls and buttons controls on any Wild Assign panel, Monitor label or Customised area of a Standard fader panel, in each fader section.

ARGO
FURTHER READING AND USER NOTES

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FURTHER READING

Impulse has a number of Manuals associated with it. This is the Argo Operator Manual:-

1. Impulse - Argo Product Info Sheet (926-320)
This information sheet shows how to collect information on Impulse.

2. Impulse - Argo Start Up Guide (926-321)
This guide shows how to Power Up and Access/Configure the Impulse core, Configure the Surface IP connections, Connect the Surface to the Impulse Cores, Power Up the Surface & Create a New Show, Configure Network Switches & Devices, Access the Configure/Connect/Software Updater/Assist* applications, Update the Core Software to the latest version (optional), Configure AoIP Router & AoIP Device IP addresses, Connect Audio Switches & AoIP Devices to the Core and Examine an example system.

3. Impulse Installation Manual (926-288) * Updated for Argo S & Argo Q
This contains a number of chapters including an overview of the Impulse system, Defining the system elements of an Impulse core, Core DSP pack options, Synchronisation, Surface Connections, AoIP network connections, Redundancy, AoIP network examples, External Control connections and Technical specifications.

4. Impulse Configure Application Guide (926-290) * Updated for Argo S & Argo Q
This defines how Impulse system Core(s) can be configured and partitioned into different mixing surfaces with varying amounts of DSP processing channels available in different 'Pack' sizes under licence. It provides guidance on updating the system software, backing up and restoring user data, setting the sample rate, controlling the application containers that run the system and provide maintenance logs. It's also used to configure the IP addresses of the Network Interface Controllers for the application containers, manage the Remote Network interfaces such as the RP1, AoIP interfaces for the Audio Routers, PTPv2 interfaces for synchronisation, setting up synchronisation sources and Core I/O Virtual Patchbays.

5. Connect Guide (926-292)
This defines how the Impulse/Type R Core IP Input and Output streams are connected to AoIP based interfaces and how the AoIP streams are managed including GPIO devices. These can be connections to and from either Calrec AoIP Devices or other 3rd party AoIP streams.

6. AoIP I/O Manual (926-293)
This contains information about AoIP devices available for use with Impulse/Type R in terms of Control, Audio & GPIO Connections.

7. Argo Installation Manual (926-312)
This contains technical information about the configuration, installation and setup of the Argo surface for use with Impulse systems.

8. Argo Operator Manual (926-313)
This defines how an installed Argo console is configured and controlled via its surface. It includes creating/managing shows, setting up shows in terms of configuring paths, displaying and controlling the fader surface, saving and loading snapshots and patching inputs and outputs to the channels and buses. There are then various sections about parameter access including:- processing, routing, configuring and controlling the buses & outputs and setting up the monitoring & metering. The show setup and system settings sections provide configuration tools for both show and system configuration.

9. Argo Assist Manual (926-317)
This defines how an Argo with or without a physical console is setup and controlled via Calrec Assist, which is Calrec's web-based user operation tool.

USER NOTES

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