BRIO 36 USER MANUAL V1.1

brio·36

Audio Production System with Optional Networking

calrec.com

CALREC

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PRODUCT INFORMATION

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INFORMATION

Should you require any technical assistance with your Calrec product 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.

Telephone (9:00am–5.30pm): +44 (0) 142 284 2159
Email – Technical: support@calrec.com
Email – General: enquiries@calrec.com
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UK

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.

Product Warranty

A full list of our conditions and 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

We strive to ensure the highest possible standards. 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.

Whenever you contact Calrec Customer Support please have the following information to hand:

- Name
- Company
- Email address
- Full details of enquiry (e.g. fault report)
- Serial number of faulty hardware (if applicable)

Once this information has been provided, a service ticket will be created to log your enquiry. The service ticket reference number will be given via email.

Serial Numbers

All units produced by Calrec are given a serial number and are booked into a central record system at the time of manufacture. These records are updated whenever a piece of hardware is dispatched to or received from a customer. When contacting Calrec Customer Support with a hardware inquiry it is important that the correct Calrec serial number is provided to enable the customer support team to provide a high level of service. Brio 36 serial numbers can be found on the label on the rear of the chassis as shown in Figure 1.

FIGURE 1 - LABEL ON REAR OF CHASSIS

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 consoles 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 Class B 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.

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.

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.
In the unlikely event of a customer having to carry out any re-soldering on Apollo, Artemis, Summa, Brio 36 or Hydra2 hardware, 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. Circuit boards assembled with lead-free solder can be identified (in accordance with IPC/JEDEC standards) by a small oval logo 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 ANAB Registered

Calrec Audio Ltd has been issued the ISO9001: 2008 standard by the Governing Board of ISOQAR.

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

FIGURE 2 - LEAD FREE

FIGURE 3 - LEAD FREE STICKER

FIGURE 4 - UKAS REGISTRATION

FIGURE 5 - ANAB REGISTRATION

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 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.
- 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).
- 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 in Figure 1, is intended to alert the user to the presence of dangerous voltages and energy levels within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock or injury.
The exclamation mark within an equilateral triangle, as shown below, is intended to prompt the user to refer to important operating or maintenance instructions in the documentation supplied with the product.

FIGURE 1 - DANGEROUS VOLTAGES

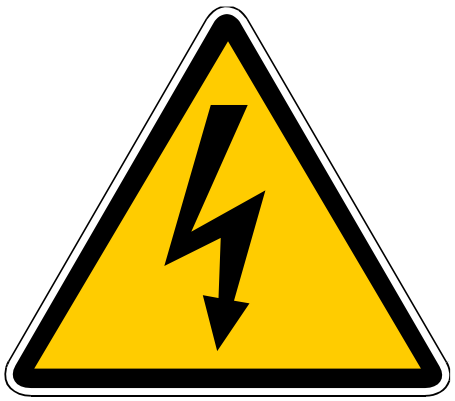


FIGURE 2 - IMPORTANT INFORMATION

Earthing

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

The Earth Bolt connection at the rear of the console should be connected to Earth using Earth cable at least 6mm^2 in cross section (10 AWG), this connection is optional and is NOT a requirement to comply with safety standards.

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.

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.

Other Symbols in Use

For apparatus intended to be used at altitude not exceeding 2000m, a warning label containing the following symbol shown in Figure 3, shall fixed to the equipment at readily visible place.

FIGURE 3 - ALTITUDE WARNING SYMBOL

Lifting and Carrying Brio 36

Brio has two lifting handles on the rear of the unit. These should be used when lifting the unit into place. Note: this unit weighs approximately 30kG and requires at least 2 persons to lift or carry the unit.

Levelling or Fixing Brio 36 on a surface for table mount.

Brio has four adjustable feet on its base which can be used to level the console on a surface. Alternatively these can be removed and four M6 screws fitted to fix the console in place. Note: the screws should not screw in further than 20mm into the body of the unit.

PACKAGE CONTENTS

There are a number of options when ordering Brio 36 systems: connectivity type and I/O options.

Every system includes a control surface which contains the processing core. Small format pluggable transceivers (SFPs) are required for Hydra2 I/O box connections with the optional Hydra 2 module and can be provided by Calrec. I/O packages are optional. The following table shows all Brio 36 options:-

	Surface and Core Packs
Brio 36 Surface	Brio is supplied with 36 physical faders, arranged as 3 sets of 12 fader panels and a TFT screen with its associated controls. Each fader has a dedicated fader meter display, 2 user definable local Switches S1 and S2 and a user rotary control cell above, as well as the usual AFL/PFL and Access switches. Brio is supplied with On/Cut button caps fitted for each fader and a software option determines if this acts as a CUT or ON switch. The top right hand area contains the Access display area complete with touchscreen TFT, 8 context based rotary controls, 12 Global user switches G1 to G12, A/B layer selection, Link Switch, Monitor Controls, PFL level, Reset switch and a USB port used for data transfers. In the front of the console is provided a further USB connector and a 1/4" stereo headphone socket.
Brio 36 Core	Power, Router, Control Processor, and DSP are all self contained within the unit which has 2 x IEC connectors to provide PSU redundancy. The core operates at 44.1, 48, 88.2 & 96 kHz and supports: 64 legs as mono, stereo and 5.1 Input channels 36 legs as mono, stereo and 5.1 Mains & Groups, (Max of 4 Mains and 8 Groups) 24 legs as mono or stereo Auxes 64 legs as Direct or Mix-minus outputs 64 legs as Insert sends & 64 legs as Insert returns Automatic Mix-Minus and an Off-Air Conference bus for Mix-minus.
Cabling	One Y-Split IEC cable for supplying power to the surface.
	I/O packs
Fixed I/O	Brio comes fitted with the following I/O: 24 x Analogue Mic/Line Input (XLR) 16 x Analogue Line Output (XLR) 8 x AES Digital Inputs with SRC (BNC) 8 x AES Digital Outputs (BNC) 4 x GPIO 9-Pin (D-SUB) connectors each with either 4 GPI or GPO giving a total of 8 in and 8 out.
Optional I/O	The unit also has 3x double sized expansion slots in which any of the modules from the Modular I/O range can be fitted. In addition there is an optional Hydra 2 module to allow either further I/O to be connected or to network audio with other consoles.
	SFP Packs
SFPs	One of the following options may be selected: LX SFP Pack; SX SFP Pack; Bi-Directional SFP Pack; Copper SFP Pack or none if no Hydra 2 module fitted.
LX SFP Pack	4 x Single Mode SFPs
SX SFP Pack	4 x Multimode SFPs
Bi-Directional SFP Pack	2 x Bi-Directional SFPs (type A) and two Bi-Directional SFPs (type B)
Copper SFP Pack	4 x copper SFPs

BRIO 36
SYSTEM OVERVIEW

CALREC

SURFACE OVERVIEW

Brio 36 is supplied with 36 physical faders, arranged as 3 sets of 12 fader panels and a TFT screen with its associated controls.

Each fader strip has a dedicated 5.1 capable meter display, 2 user definable local switches S1 and S2 and a user rotary control cell, as well as the usual AFL/PFL and Path Access switches. Brio is supplied with a Path Enable button labelled 'On/Cut' that can be configured to act as a Cut, or and ON button. The top right hand area contains the touchscreen UI area complete with touchscreen TFT, 8 context based rotary controls, 12 Global user switches G1 to G12, A/B layer selection, Link Switch, Monitor Controls, PFL level, Reset switch and a USB port used for data transfers.
In the front of the console is provided a further USB connector and a 1/4" stereo headphone socket. All surface sections of the Brio are described in detail in the following pages.

FIGURE 1 - BRIO 36 SURFACE

CONTROL SURFACE SECTIONS

Fader Strip

Each Brio 12 fader section is made up of 12 fader strips, each containing a motorised fader, several push buttons, a rotary control knob with built-in switch and a small TFT fader display. The image below explains the operation of each button.

FIGURE 1 - FADER STRIP

The Fader Display shows the 5.1 capable meters selectable to show input or post fader audio. Input channels default to showing input, buses default to displaying output, path label, status icons and the function of the rotary control which has been set by the user. When touched the display changes to show the rotary control settings.

Push the Path 'Access' button to make that path the focus of the touchscreen UI.

Push PFL (pre fader listen) to send the path's pre-fader feed to **Brio 36**'s PFL output. This output is usually connected to **its own external loudspeaker ports,**

If PFL to MON is selected within the monitoring options, the path's pre-fader feed will replace the signal being sent to the main monitors.

The rotary control may be set to delay, trim,gain, aux sends1-24 and a number of other controls. There is a switch in the knob which is used to quickly reset a control when held.

The S1 and S2 user buttons can be configured to perform various functions and can be assigned to control GPIO, when not controlling console functions the button can be lit by GPI in user selectable colours to reflect both on and off state.

The Path enable button, 'On/Cut' can be configured to act as either Cut or On from System-Settings>General, or be disable entirely from Show-Settings>General. When configured as a 'Cut' the audio feed is cut when the button is lit and when configured as an 'On' the audio feed is cut when the button is not lit.

Push AFL (after fader listen) to replace the signal being sent to the main monitors with the path's post-fader feed.

Fader Display

Each fader strip includes a small TFT display. Figure 2 shows highlights each icon which can appear on the display.

FIGURE 2 - FADER DISPLAY

If any of the meter legs go into overload the background of the meter display turns RED until the level is back in range.

The DYN symbol shows that there is a dynamics element in circuit and active.

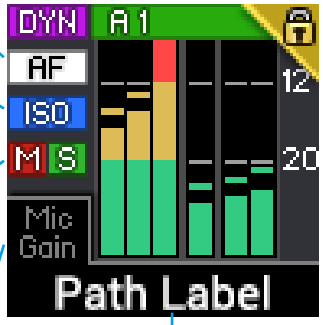
The A1 or A2 shows that an AutoMixer is in operation on this path. The brightness of the coloured bar indicates the input 'strength' .

The AF symbol shows that there is an AutoFader in circuit and active.

The link symbol is displayed in the same space as the lock symbol if this path is control linked with another.

The ISO symbol is displayed if the path has been isolated from changes made by memory loads. The ISO icon will be green if the path is partially isolated.

The lock symbol is displayed for a short period on faders that are locked to the surface when changing layers.



The VCA group status indicators show whether a fader or path is a:-

Master MR

SubMaster M S

or Slave SL

The input meter is a small bar graph which displays the path's signal level in Mono, Stereo or 5.1 Surround as shown here Note when the signal is off the bottom a label shows the name of the leg. The position of the scale markers and colour change points, as well as PPM or VU ballistics is selectable from System-Settings General, under meter style.
The meter can be selected to display input or post fader audio, per path from the Meter and PFL button in the Access view's sub-header.

If this area of the display is labelled then it means that Path's rotary control has also been set up as a control cell. See next page for examples.

The Path label is either the native label, or the H2O user label generated within H2O or the User label which can be edited from the Brio surface.

The control label is always visible if assigned and the control value is displayed when the control is adjusted.

Control Cell Display

The Fader Display changes mode when its rotary control is altered and the bottom of the fader display shows a bargraph with control values for the selected user function. The combination of the Fader display and the rotary control is defined as the control cell situated at the top of each fader strip. The function of these control cells varies depending on which control mode you have selected.

In normal mode, all control cells on the surface show the same control if valid for that path, e.g all input trim.
In custom mode, each of the control cells can be set to a different function, e.g. fader 1 Aux 1 send, fader 2 Mic Gain etc. See Figure 3.

FIGURE 3 - CONTROL CELL

Rotary controls can be turned to set levels. When setting levels the colored bar and solid **white** line shows the current level and the small **black** notch indicates the parameter's default value. Pushing and holding the rotary control sets the parameter to its default.

The image to the left displays two different rotary control cells when the rotary control is altered.

The upper display shows a Mono channel with the rotary controlling its Aux 1 send level.

The lower display shows a 5.1 channel with the rotary controlling its Mic Gain levels.

Screen Area

The top right hand area contains the Access display area with Touchscreen Interface TFT, Talkback Microphone, 8 context based rotary controls, 12 Global User buttons G1 to G12, A/B layer selection, Link Switch, Monitor Controls, PFL level, Reset switch and a USB port used for data transfers. The Touch Interface is described later see "TOUCH INTERFACE" on page 28.

FIGURE 4 - ACCESS DISPLAY AREA

Talkback Microphone

Brio has a built-in Talkback microphone which is situated above the G1 Global User Button in the rotary controls area.

Context Based Rotary Controls

Brio has 8 rotary controls that change function in context with the display shown on the touchscreen TFT above it.

Console Monitors

The large rotary control bottom centre adjusts the console (main) monitor level, the level indication is shown at the bottom of the touchscreen. To the left of the monitor level control are 2 buttons labelled 'Mono' and 'Stereo' pressing either of these will replace the normal 5.1 surround output with a Mono or Stereo Downmix. To the right of the monitor level control are 2 buttons labelled 'Dim' and 'Cut' which reduce the level of the monitor output by a set amount or mute it altogether. Just to the right of the Dim & Cut buttons is the 'PFL' level control the level of which is also displayed at the bottom of the touchscreen. There is also provision for separate loudspeakers for monitoring the console's 5.1 PFL feed /Return Talkback LS and 5.1 AFL LS. The level controls for these appear on the context based rotary controls together with the Dim level and Dim, Cut and 'PFL to Mon' buttons when the Console Monitor Page is accessed.

Studio Monitors

Brio has two dedicated monitor feeds for relaying signals back to the studio floor or anywhere you need a monitor feed such as the picture gallery or for headphone feeds. Studio 1 monitor is 5.1 wide, whilst Studio 2 monitor is Stereo. The level controls for these appear on the context based rotary controls together with the Dim, Cut and Talkback buttons when either Studio Monitor Page is accessed.

Linking Paths

When paths are linked, adjustments to the parameters of one linked path are also made for all other linked paths. Adjustments are made relatively across all paths, preserving any offsets. The **Link (Set/Clear)** button, as shown in Figure 4, bottom left (next to the Fader Layer buttons) provides a quick way to set/clear all path linking on the surface. See "CONTROL LINKING" on page 140 for more information.

Surface Layers

The Brio surface has two layers, allowing fader-control of twice as many paths as there are faders on the surface, i.e. 72 fader paths. You can switch between layers using the Fader Layer selection buttons A & B on the surface. When selecting a layer, all fader positions, button states and control cell states change immediately to reflect faders on the newly selected layer. It is important to note that paths on the layer that is not visible are still active and will pass audio if left faded up.

Surface Reset

The surface reset button is recessed to avoid it being pressed accidentally. If a reset is required a pen or similarly pointed implement should be used to push it.

USB Ports

Brio's USB ports can be used to connect a QWERTY keyboard or a mouse, or a keyboard/mouse combo to the system and for data backup and restore to USB memory.

Global User Buttons

Brio's 12 Global User Buttons can be configured to perform a whole range of functions which are described in the "GLOBAL USER BUTTONS" on page 64 section of this manual.

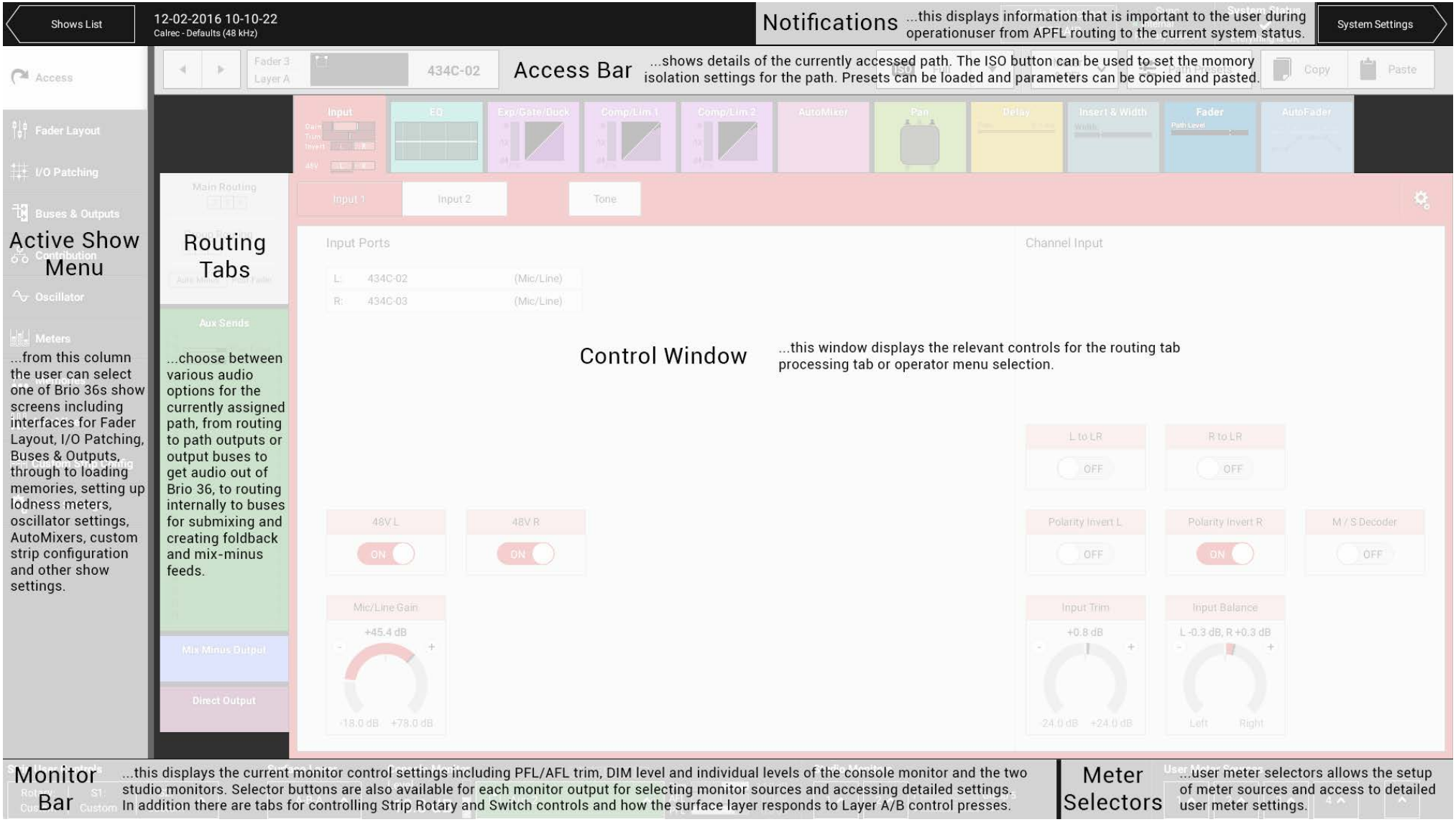
TOUCH INTERFACE

The touch display interface is simple and intuitive. The touchscreen active show image on the following page should help you get familiar with the names used to describe various sections of Brio 36's touch interface.

Touch Display Views

There are three main views within the Brio 36 Touch Display interface. The Active Show view is the main page and provides access to operation screens and settings for the currently loaded Show. The Shows List button on the top left in the header provides access to the list of Shows stored on the Brio console, shows can be loaded, edited, saved and backed up here. The System Settings button on the top right in the header provides access to Brio's settings that are stored outside the Show. These settings are still recalled in the event of a surface reset as they are stored within Brio's continuous memory. See "SHOWS" on page 54 and "MEMORIES" on page 60 for more information.

FIGURE 1 -BRIO 36 USER INTERFACE DISPLAY



INPUTS, OUTPUTS AND BUSES

Path is a term used to represent an audio signals route through a DSP process within the Brio 36 system, which carries audio and enables it to be processed. Paths include channels, groups, mains and auxes.

All paths can be controlled by faders and channel paths must be attached to faders to exist.

Identifying Paths

Paths can be identified easily on the surface; they are colour-coded as follows:

Channels - black background - white label, Groups - blue background - white label, Mains - red background - white label and Auxes - green background - white label.

Inputs

Input Channels

Input channels take audio signals into the mixing console for processing, mixing and onward routing.
Input signals can be patched directly to channels from built-in or expansion slot I/O, or from external I/O boxes connected via the optional Hydra2 module, Hydra patchbay outputs or directly from Brio's own output buses.
Any signal present at an input port must be connected to a channel path before it can be processed and routed.

FIGURE 1 - INPUT SIGNAL FLOW – MONO CHANNEL

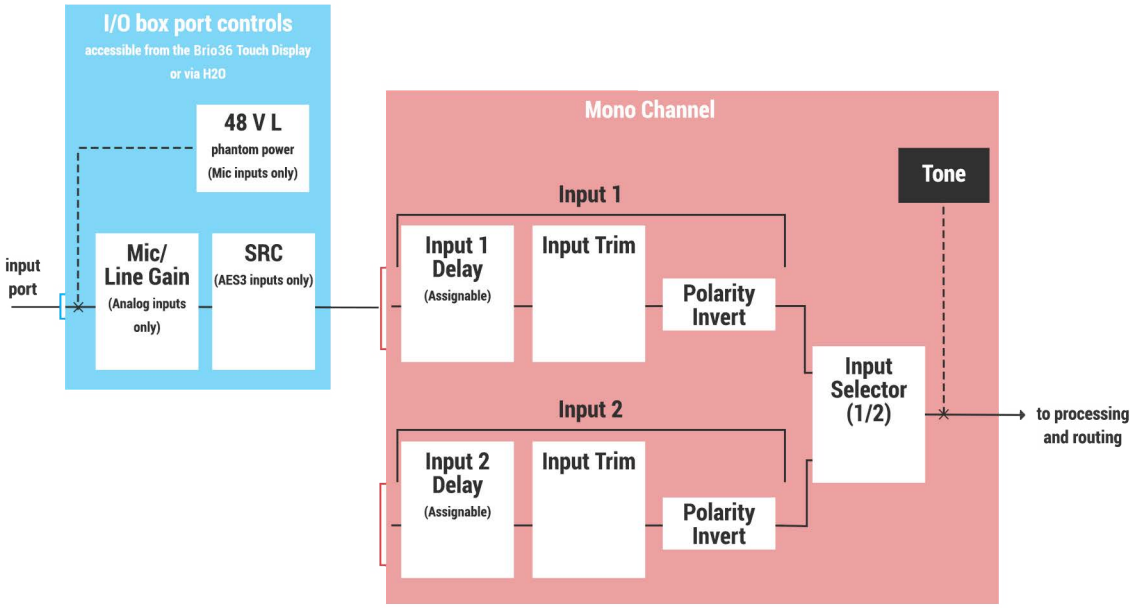
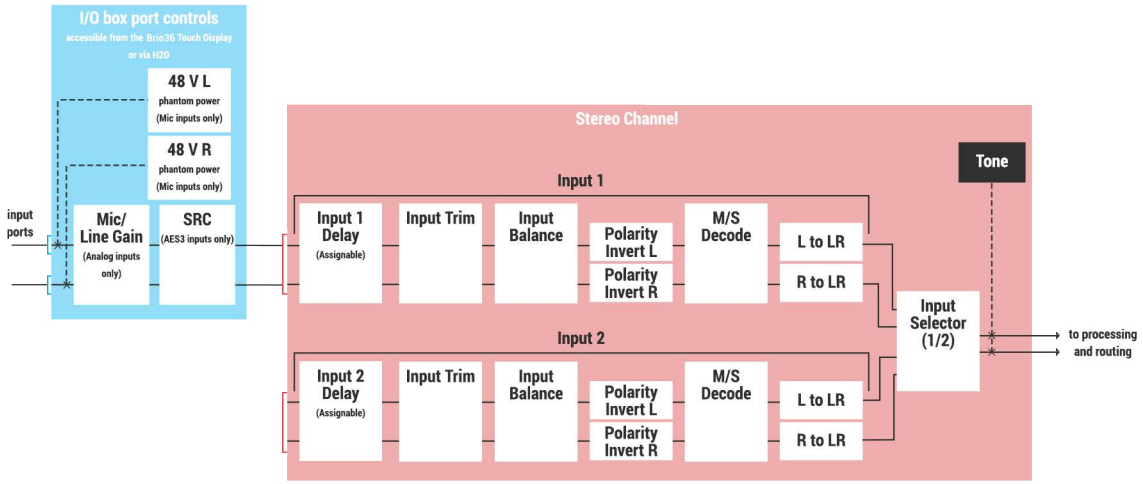


FIGURE 2 - INPUT SIGNAL FLOW – STEREO CHANNEL



External Inputs

- External inputs take signals into Brio 36 from it's own Input ports, other I/O box input ports, Hydra patchbay outputs or Brio's own output ports, and make them available for monitoring and metering.

External Tone Input

- Patching a third party tone generator to the external tone input allows the external tone to be used as the tone source across the console, rather than the internal oscillator.

Talkback Input

- Patching to the talkback input allows any microphone connected to any of its own Input ports or other I/O box input ports to be used as the talkback source. The built-in talkback microphone connects to Brio's internal I/O and may then patched to the talkback input in order to be used.

Buses

Groups

- Multiple channel Inputs can be sub-mixed by routing them to groups.
- Groups can be processed.
- Groups can be routed to any other output or bus.
- Groups are not available for patching, but can have direct outputs and mix-minus outputs made available to them.

AFL

- When paths are AFL'd the console monitor feed is replaced by the AFL bus, providing a non-destructive solo.
- The after fader level signals from multiple paths can be sub-mixed by routing them to the AFL bus.

PFL

- When paths are PFL'd the PFL bus outputs a pre-fader version of the incoming signal and is used to check the presence of the incoming signal prior to opening the fader.
- Pre fader level signals from multiple paths can be sub-mixed together by routing them to the PFL bus.
- Settings are available to output the PFL bus to its own dedicated loudspeaker or the console monitors.

Output Listen

- The output listen bus uses the same bus as AFL although signals are routed post any output delay.
- Bus outputs including Mains, Auxes & Direct Outputs can have their post output delay listened to.

See "PFL, AFL AND OUTPUT LISTEN" on page 153 for more information.

Bus Outputs

Main Outputs

- Mains are primarily used to feed transmission and/or recording devices.
- Multiple paths can be routed to mains. Mains can be routed to other mains.
- Mains are available for patching and can have Equaliser, Dynamics and Delay processing applied.

Aux Outputs

- Multiple mixes can be created by routing paths to auxes.
- Each channel has individual send level and position controls for each of the 24 Aux outputs.
- Auxes can be used in conjunction with mix minus outputs to create Interruptable Foldback feeds (IFBs).
- Auxes can be controlled by logic functions to cut the pre fader send to each individual Aux, for controlling foldback feeds in on/off air situations.
- Auxes cannot be routed to any other bus/output.
- Auxes are available for patching and can have Equaliser, Dynamics and Delay processing applied.

Path Outputs

Mix Minus Outputs

- Each channel can have one mix minus output assigned to it, from a pool of 64 mono legs (shared with direct outputs), providing an easy way to create a mix for a contributor using any aux, or the dedicated auto minus bus. See "MIX MINUS" on page 167 for more information.

Direct Outputs

- Each channel can have one direct output assigned to it from a pool of 64 mono legs (shared with mix minus outputs) to make signals available for patching. Direct outputs can be pre EQ, pre fader or post fader.

Console Outputs

Monitor Outputs

- Each monitor output is available for patching to any I/O output port which can, in turn, be connected to a loudspeaker.
- Monitor source controls are available from the touch display footer when in 'active Show' view allowing you to quickly change monitor sources and the global user buttons can also be assigned as monitor source selectors.
- Brio 36 has several monitor outputs available. For more detailed information see "MONITOR CONTROLS" on page 150.

Meter Outputs

- In addition to the Console Monitor Prefade, PFL,AFL & APFL Meter outputs, there are four user meter outputs available for patching directly to I/O box output ports to feed external, third party meters.

Talkback Output

- The talkback output feed is provided to allow you to patch the talkback feed from the console operator to a specific location, e.g. a comms system.

Tone Output

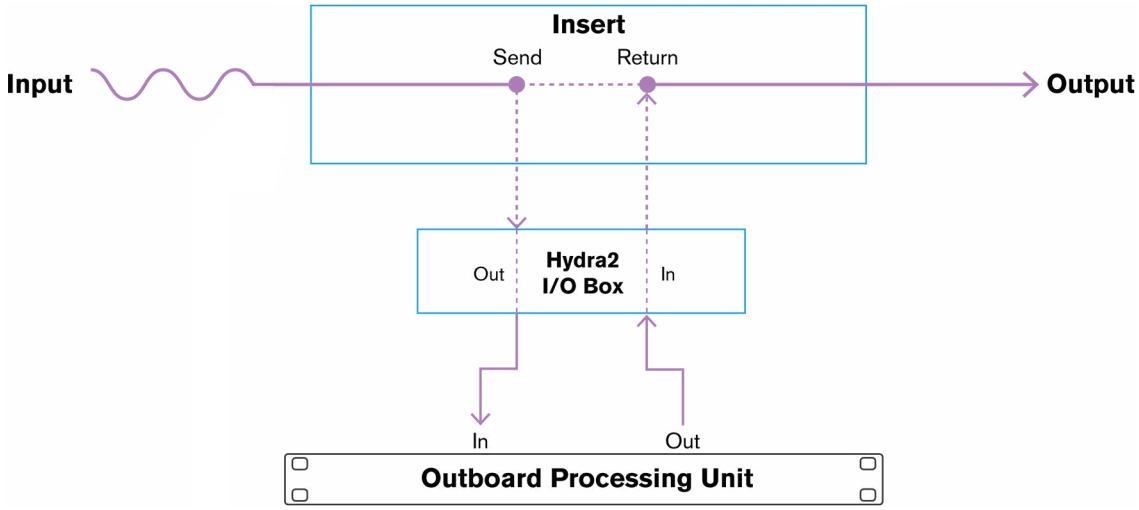
- As well as being routed to paths, tone can be hard-patched to an I/O box or Hydra patchbay output using the tone output.

Inserts

- Inserts provide a quick way to insert third-party signal processing equipment into a path.
- Each Insert can be placed pre EQ, pre fader or post fader. When switched in, an insert breaks the signal path, providing a send out and a return back in, allowing devices like external effects processors to be placed within the signal flow of a path.
- Insert sends and returns appear in the I/O patching screen from where they can be patched to I/O box ports for connection to external devices.
- Inserts are available for faders, mains, groups and the console monitor.
- 2 fader inserts are available for each path. If the path is moved to a different fader, the insert will move along with it.
- Each insert has an individual 'IN/OUT' switch.
- Monitor inserts are used to insert processing into monitor feeds, such as surround processors and renderers.

See "INSERTS" on page 124 for more information.

FIGURE 3 - INSERTS—GENERAL OPERATION



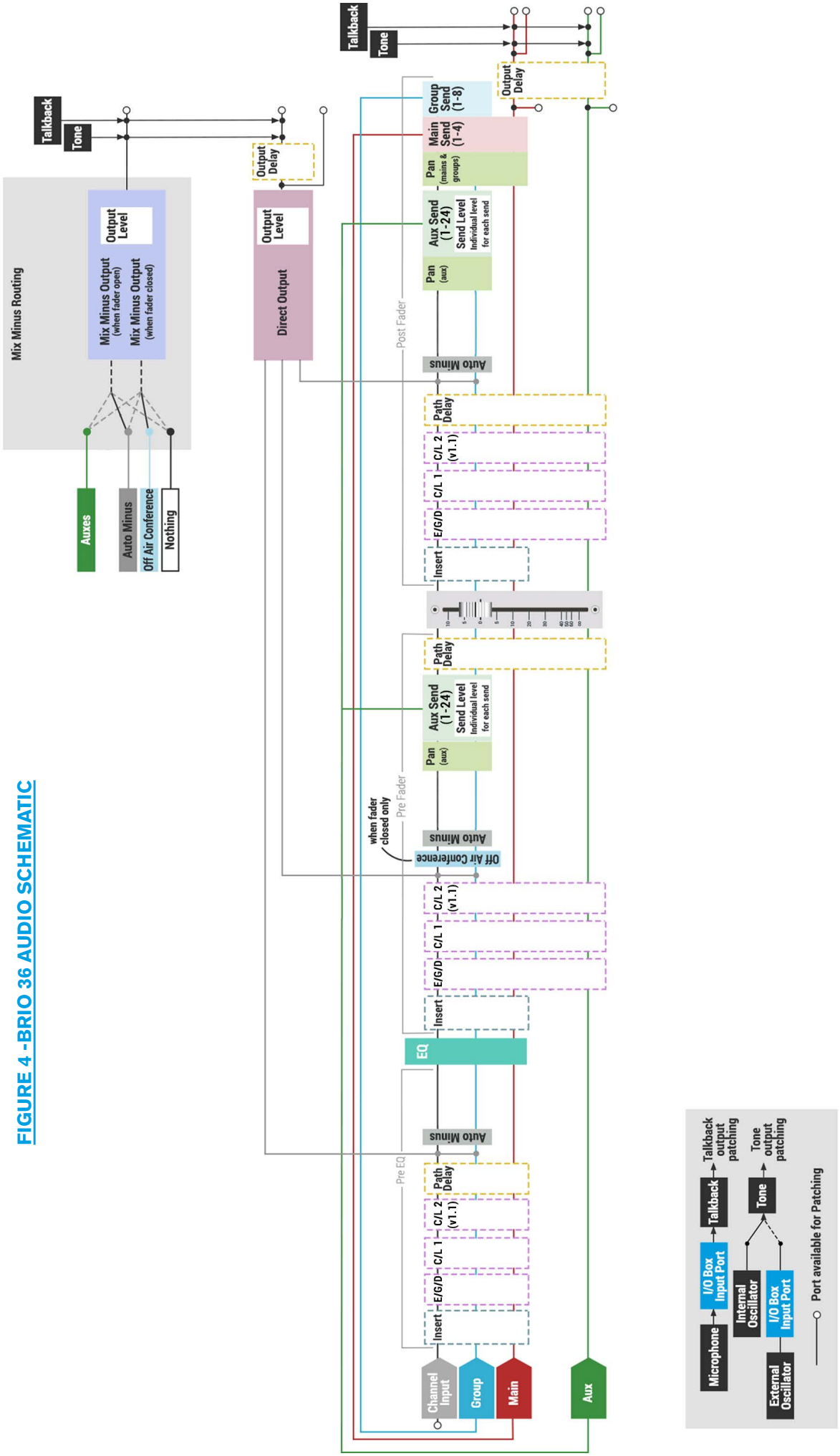


FIGURE 4 -BRIO 36 AUDIO SCHEMATIC

HYDRA2 PATCHBAYS

Hydra2 patchbays (HPBs) allow console users to make selected DSP audio outputs available across the Hydra2 network, allowing other Hydra2 users to access them, as well as allowing console input sources and output feeds to be changed remotely. Hydra2 patchbays are created from the H2O user interface. See the H2O user guide for more information.

HPBs are virtual patchbays which exist within the Hydra2 domain. Like physical patchbays, HPBs have a number of input ports which are 'hard wired' to their corresponding output ports. For port patching purposes, Hydra2 patchbay inputs are destinations and Hydra2 patchbay outputs are sources.

When a source is patched to a Hydra2 patchbay input, it immediately becomes available at the corresponding Hydra2 patchbay output. For example, if a console user patches a direct output to a Hydra2 patchbay input, the direct output is available to all Hydra2 users (who have been granted access), in the form of the corresponding Hydra2 patchbay output.

Console Specific or Shared

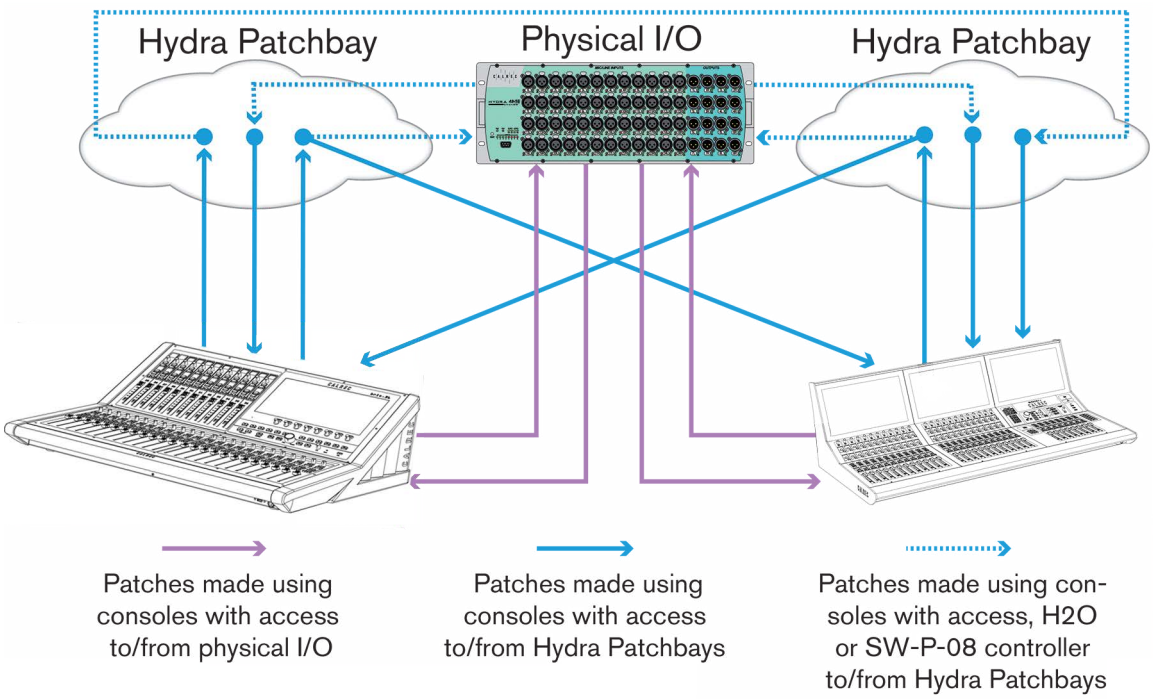
There are two types of HPB: 'console specific' and 'shared'. Console specific HPBs are available to H2O, 3rd party controllers (via SW-P-08) as well as the console that they have been created for. Shared HPBs are available to all Hydra2 users who have been granted access as well as H2O and 3rd party controllers (via SW-P-08). You can patch signals to your own, or shared Hydra2 patchbay inputs, in the same way as patching to physical output ports.

Remote Patching

HPBs allow network administrators (via H2O) to patch console inputs and outputs that have been patched to HPB ports to physical I/O ports. H2O users can choose physical input ports to connect to console HPB inputs, and physical output ports to connect to console HPB outputs, allowing them to choose and change console feeds and output destinations.

External routers, supporting the SW-P-08 protocol, can also access HPBs, enabling 3rd party control over console patching. Once created, HPBs can be made available for patching. They appear 'online' and can be added to the console's 'required list'. See "REQUIRED I/O BOXES" on page 52 for more information.

FIGURE 1 - HYDRA PATCHBAY OPERATION

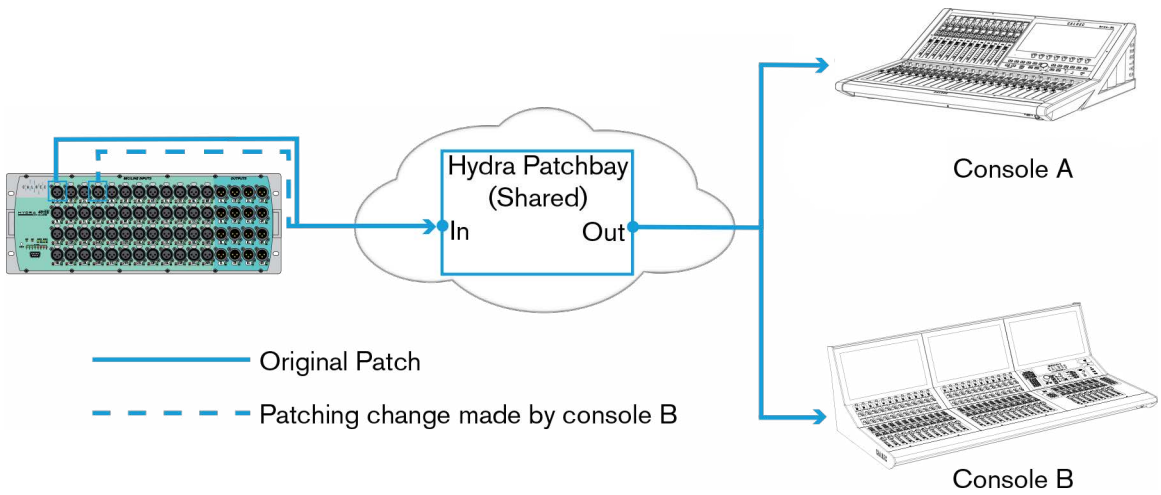


Port Sharing

Source and destination protection works as normal when dealing with HPBs for both console and H2O users. In situations when two or more consoles are using the same feed from a HPB it is possible for one console to change the patching of the other by changing the I/O box port which is feeding the shared Hydra2 patchbay input, either through a memory load, or through changing the individual patch. In these circumstances it is important that you understand the contents of the source and destination protection pop-up before accepting any changes, as these changes directly affect other network users.

To create a fully flexible system, you can change the source feeding a HPB, which is also feeding other consoles. However, we advise that all I/O box port to Hydra2 patchbay input patching is controlled from H2O or a third party controller to avoid unwanted changes to other consoles' source feeds.

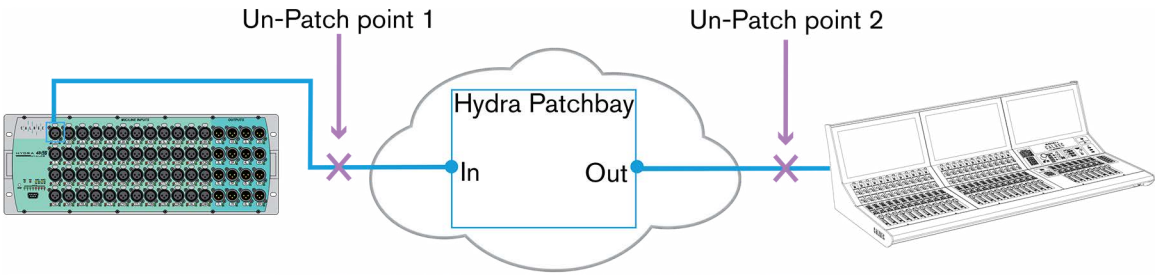
FIGURE 2 - HYDRA PATCHBAY PATCH CHANGE



Unpatching

Under normal circumstances, when I/O box ports are unpatched, their input settings (Mic Gain, SRC, 48 V) are reset to their default values. However, when using HPBs, it is possible to un-patch a port at two points in the signal chain, as shown in Figure 3 below. If the port is first unpatched at point 2, the I/O box port's input settings will be retained, even when the port is also unpatched at point 1.

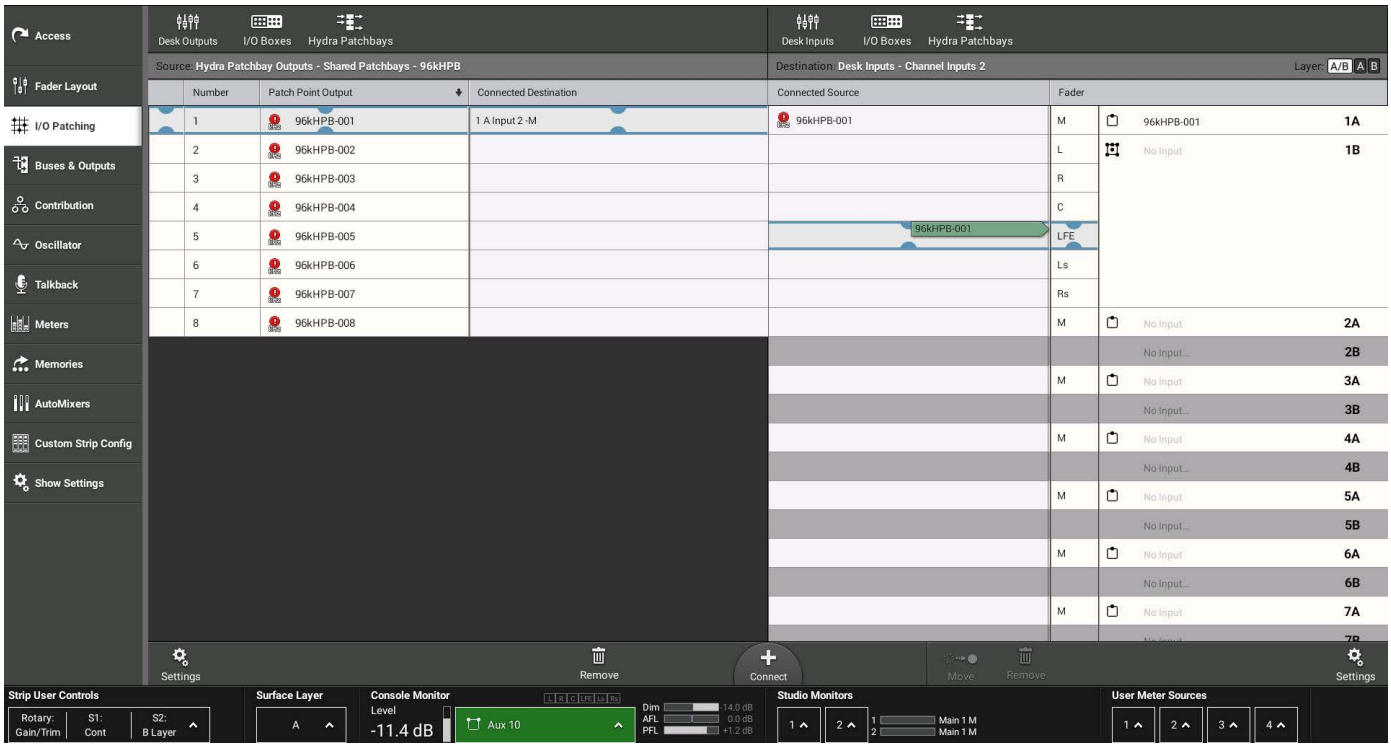
FIGURE 3 - HYDRA PATCHBAY UN-PATCH



Hydra2 Patchbays at different sample rates

Note: now different sample rates are available, Hydra2 patchbays can be created to operate at a different sample rate (as shown in Figure 4) to that of the current show which is at 48kHz. HPBs and I/O Ports at a different sample rate to the console appear with a Sample Rate kHz warning icon to indicate it cannot be used unless the sample rate of the Hydra2 patchbay is changed in H2O or a different show is loaded into the console, using the correct sample rate.

FIGURE 4 - HYDRA PATCHBAY AT A DIFFERENT SAMPLE RATE



INTERFACING STYLES

Interfacing with Brio 36 is simple and the touch display will be familiar from using consumer technologies such as smartphones and tablet PCs.

Aspects of the interface will be referred to throughout this manual but this section should give you a good starting point from where you can start exploring Brio's intuitive interface for yourself.

Physical Controls

Faders

- Faders are used to control signal levels, either by having paths attached for direct control or as VCA master faders for controlling the overall level of a range of paths.

Buttons

- All buttons on the Brio surface are labelled and LED back-lit to indicate their 'on' statuses. Buttons can either be momentary (they trigger the function until you release them), latching (switch on or off each time they are pressed) or auto (they latch if you tap them or act as momentary buttons if you hold them).

Rotary controls

- All physical rotary controls on the Brio surface are continuous—they have no stopping point at either extreme. This allows the surface to be fully flexible, as all physical controls are able to control a wide range of functions within one project.
- When a rotary control is attached to a function or parameter, the function name and options are displayed,either on the touch display, or in the smaller fader displays.
- Once a function's extreme—either lower or higher—is reached its value will stop updating when the rotary is turned. When a rotary is controlling a level value or a value which has a default setting, press and hold the rotary control for a short time to return to the default value.

Touch Display

Brio's touch display uses the same general interfacing styles as a smartphone or tablet computer.
Below is a run down or the main gestures that you will use:

Tap

- Buttons, switches, selection fields and table column labels (for ordering purposes) can all be accessed with a short light tap.

Two Finger Tap

- Tapping with two fingers can reset settings to their default level. For example, within the fader processing tab, the fader can be set to zero by tapping on the fader space with two fingers.

Drag

- To turn a rotary control up or down, simply drag it vertically up/right to turn it up, or down/left to turn it down.

Touch and Drag

- To select more than one item in a table or list, touch your first selection, hold your finger in place for a short time then drag in any direction to extend your selection. Selections are always in order, usually numeric, so if you drag to the left or right in a vertically arranged grid, such as the external inputs screen, you will select all cells between your first and last selection. Touch and drag can also be used to move a selection around, for example in the fader layout screen, make a selection then hold and drag to move paths to a different set of faders.

Scrolling

- Whenever a screen is too large to be fully displayed on the touch display, drag the screen to scroll in any direction. Scrolling and 'flinging' will allow the screen to scroll quickly, then decelerate to a stop.

Drag Handles

- A multiple selection can be made by dragging the selection handles once an initial selection has been made, as shown in Figure 1.

FIGURE 1 - DRAG HANDLES TO SELECT MULTIPLE ITEMS

Buttons

Switches

Keyboard

- There are several Brio 36 functions which require the use of a Qwerty keyboard.
- Whenever the keyboard function is needed the software keyboard will appear from the bottom of the touch display.
- If there are several text fields to complete, **NEXT** and **PREVIOUS** buttons are provided to move between text fields in order, alternatively, just tap the text fields on the touch display to move between them.
- **SAVE** and **CANCEL** buttons are provided to exit the text input mode, either saving or discarding any changes. Alternatively tap the touch display outside the text fields to exit.
- Standard **CUT**, **COPY** and **PASTE** functions are available using the keyboard.
- If preferred an external keyboard or keyboard/trackpad combo can be attached to one of Brio 36's USB ports.
- When an external keyboard is connected the software keyboard does not appear.

LAYERS

The Brio 36 surface has two layers allowing fader-control of twice as many paths as there are faders on the surface. You can switch between layers using the fader layer selection buttons A or B on the surface. The A/B buttons switch layer globally across the whole console, or can be set to switch chosen banks of faders. The Fader Layer button in the footer also allows layer switching. Setting a bank to be "linked" in this menu sets them to follow the A/B hardware buttons on the surface.

Layer linking options are set from the Surface Layer pop-up which is accessible from the Monitor bar along the bottom of the Touch Display. This should be used along with Layer Switching Options which are located within Show settings.

As well as switching layer globally, or in banks, the layer can be toggled on individual faders by setting the S1 or S2 Strip User buttons to act as a B layer toggle switch.

When changing layer, all fader positions, button states and control cell states change immediately to reflect faders on the newly selected layer. Paths are active and can pass audio on both layers, regardless of whether they are currently in view

Layer Switching Options

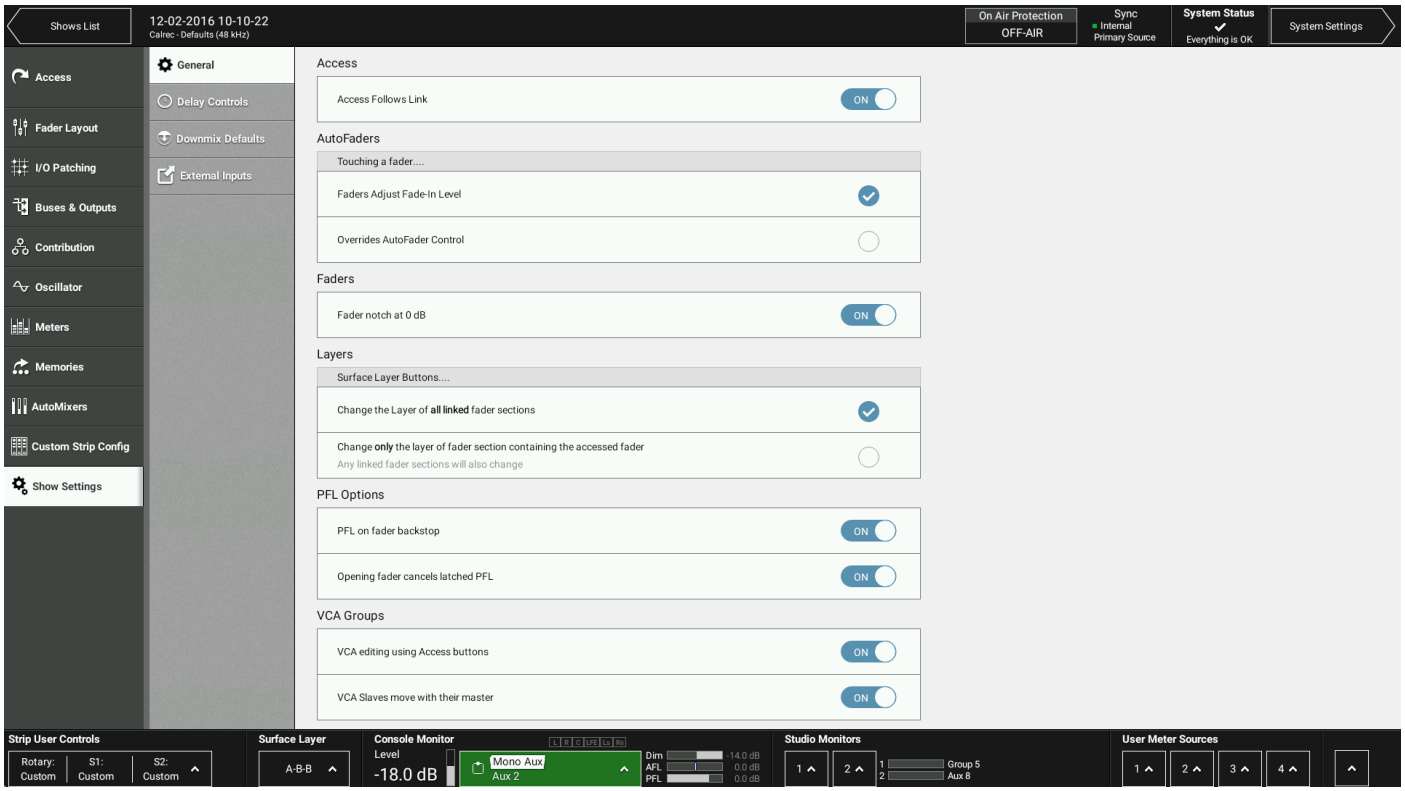
To access layer switching options, tap **SHOW SETTINGS** in the Show menu and select 'General'. One of these two options can be chosen:

- Change the layer of all linked fader sections
- Change only the layer of the fader section containing the Accessed fader (any linked fader sections will also change too)

The first option can be used if you wish to prevent a section of the desk from ever switching layers. For example, on a Brio linking sections 1 and 3 and selecting the first layer switching option means that all surface sections, other than section 2, will switch layers when surface layer buttons or pop-up layer buttons are pressed. Fader section 2 will stay on which ever layer you select for it within the Surface Layer pop-up.

The second layer switching option should be chosen if you always want the section containing the currently accessed fader to switch layers (along with any linked surface sections) regardless of whether you have set some fader sections to lock to a specific layer.

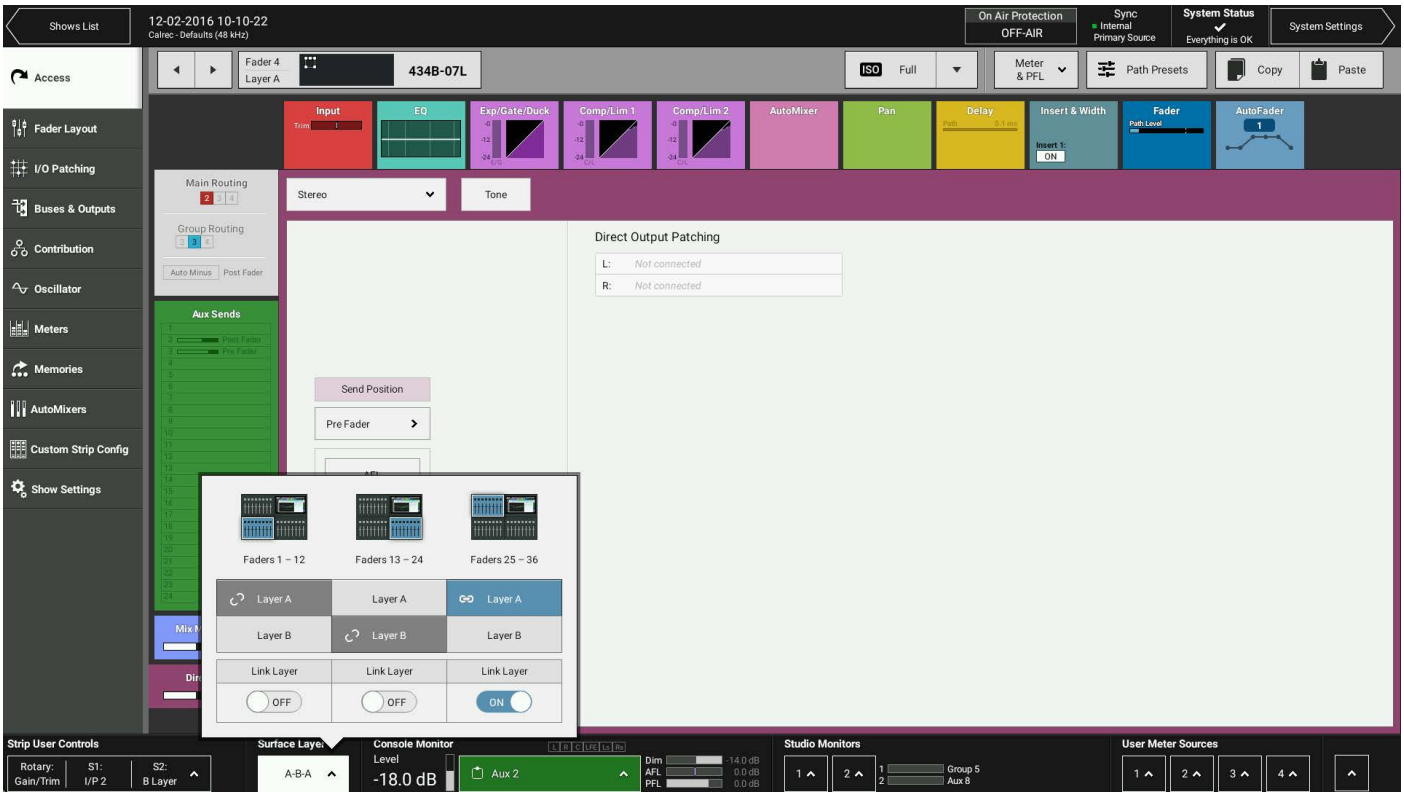
FIGURE 1 - LAYER SETTINGS



Surface Layer Pop-up

Each surface section is represented along the top of the pop-up. Link layer switches along the bottom of the pop-up can be set to 'on' or 'off' to enable or disable layer linking. Linked layers will always be on the same surface layer.

FIGURE 2 - SURFACE LAYER POP-UP



96KHZ OVERVIEW FOR BRIO 36

From version v1.1, Brio 36 can now also work at 96kHz sampling frequency (sample rate), over a Hydra2 Network.

The following list is a quick overview of the impact of running Brio36 consoles at 96kHz

- The consoles can switch between 48kHz & 96kHz working as required.
- Consoles switch sampling frequency by loading a show at the required sample rate built from a template at that rate.
- The numbers of channels and buses are the same on Brio 36 at 96kHz as at 48kHz, i.e. the same as before.
- There is no reduction in the numbers of monitor inputs and outputs at 96kHz.
- I/O boxes can be set to 48kHz or 96kHz, or to follow the sample rate of a specific console, via H2O.
- The Hydra2 network supports 48kHz and 96kHz consoles and I/O boxes simultaneously.
- Hydra2 runs at 48kHz irrespective of whether the consoles and I/O boxes are running at 96kHz or not. It simply uses 2 samples per 96kHz signal.
- Because Hydra2 always runs at 48kHz, the system will still require a 48kHz sync (if using its AES3 & Wordclock inputs) even if all consoles and I/O are at 96kHz.
- The console patching screens and required list indicate which ports, HPB, aliases, or boxes are at a different sample rate to the desk. These ports etc. can be patched (except for System level patches) but will not work until the sample rates are matched.
- The H2O patching screens filter the ports visible by sample rate, as it can make patches at either rate.
- Consoles cannot successfully make port to port patches (including via aliases) for I/O that is at a different sample rate to the desk. Note: these patches can be made in H2O and by SW-P-08 and will work if patched there.
- System Status messages are produced for I/O boxes & HPB that are in the required list but are not set to the same sample rate as the desk.
- An I/O box can run at 48kHz or 96kHz irrespective of which rack it is plugged into. If a console is running at 48kHz, an I/O box plugged into that rack could be running at 96kHz with another console.
- Fixed format 1U MADI boxes do not support 96kHz. They are shown offline when the box is at 96kHz.
- SDI de-embedder modules do not support 96kHz on the SDI stream. They are shown offline if the box is at 96kHz.
- SDI embedder modules do not support 96kHz on the SDI stream. They are shown offline if the box is at 96kHz.

BRIO 36
SETTING UP

CALREC

GENERAL

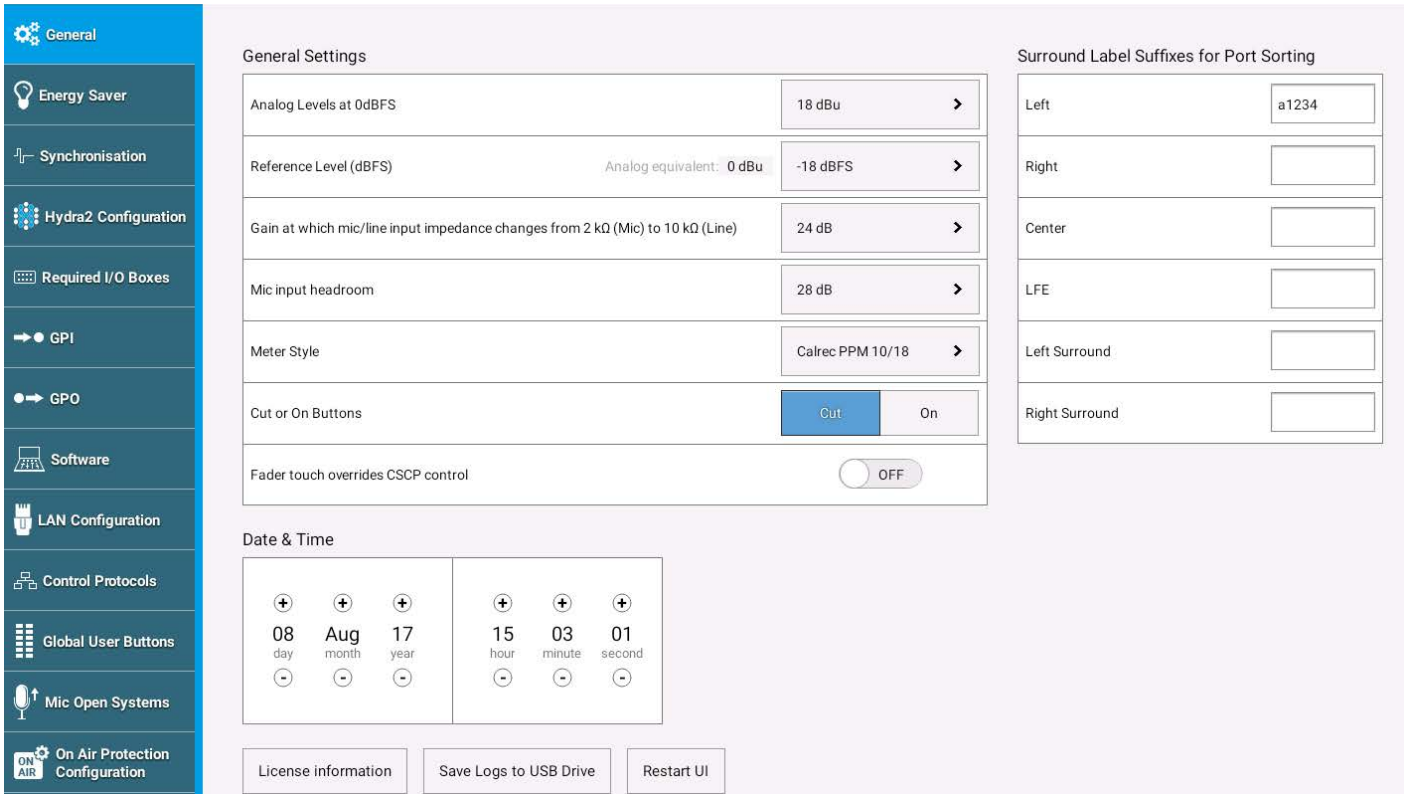
To access Brio 36's general settings, from the 'active Show' view, tap SYSTEM SETTINGS in the top right of the screen and then select 'General" from the menu on the left hand side. To edit these settings you must be logged in as an administrator.

General Settings

The following general settings are available:

- The analogue level at 0 dBFS can be calibrated to 15, 18, 20, 22, 24 or 28 dBu.
- The reference level (dBFS) can be set to an integer value between -6 and -32 dBFS. The reference level sets default level values for the dynamics and oscillator modules.
- The point at which the input impedance changes between mic and line level can be set to 18, 20, 22 or 24dBu.
- The mic input headroom for the system can be chosen. Options range from 20 dB to 36 dB.
- The default meter style can be set for all meters on the meter displays. PPM or VU scales can be chosen along with various colour split points, controlling the level ranges of the green, yellow and red elements of the meter bar graphs.
- Cut/On button functionality can be set: With cut selected, paths are cut when cut/on buttons are active; with on selected, paths are switched on when the cut/on buttons are active, and so paths are cut when cut/on buttons are not active.
- When faders are under CSCP control, this can be overridden when the fader is touched; Brio 36's faders are touch sensitive. This feature can also be disabled.

FIGURE 1 - GENERAL SETTINGS



Surround Leg Suffixes

You can enter suffixes to be automatically displayed at the end of the individual legs of surround path port labels within the I/O patching screen. Suggested suffixes are L, R, C, LFE, Ls, Rs. These suffixes help to keep the surround legs together and in the correct order when sorting tables within the I/O patching screen.

Date and Time

The current date & time are displayed at the bottom of the General settings page and can be modified in Admin mode.

ENERGY SAVER

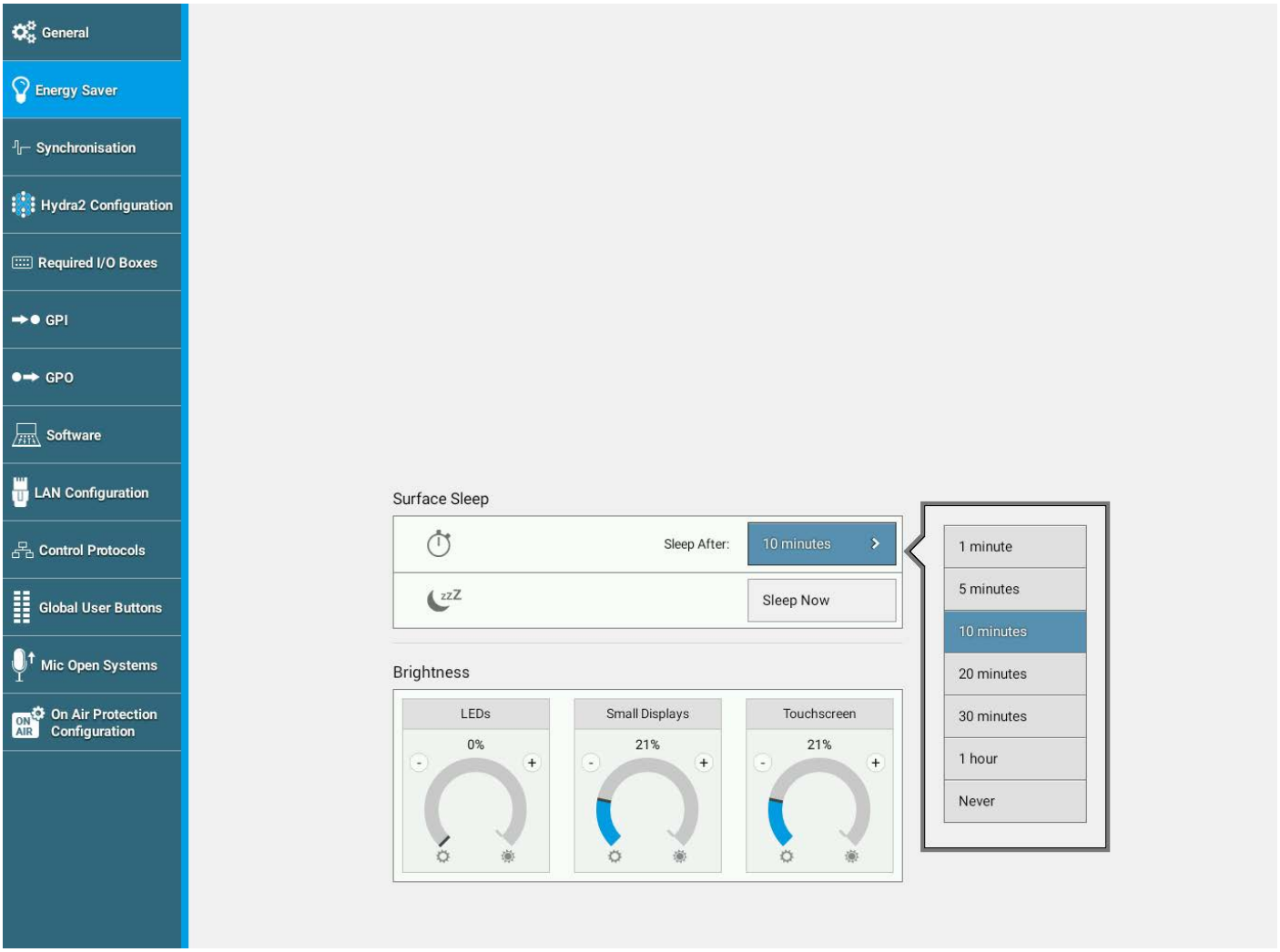
Brightness

Brio 36's energy saver settings allow you to control the brightness of all surface buttons and displays. There are three rotary controls to independently set the brightness of LED's, small displays, and Touchscreen display. Adjust these rotary controls to see the relevant brightnesses change.

Surface Sleep

Putting Brio into surface sleep turns off all lights across the surface it has no effect on audio or operation.
Surface sleep can be set to activate after a specified duration of inactivity, ranging from one minute, to an hour.
Alternatively you can select **NEVER**.

FIGURE 1 - ENERGY SAVER SETTINGS

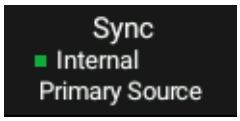


SYNCHRONISATION

General rules of good practise require that all equipment connected to the audio console's digital inputs and outputs are locked to the same referenced sync source as the console to ensure clean audio.

In systems with multiple Calrec processing cores connected together, it is of paramount importance that all connected processing cores are locked to the same referenced sync source.

The Brio 36 processing engine has six synchronisation inputs and six levels of synchronisation source priority. The sixth priority is always set to 'internal reference', so that, as a last resort, if all other sync sources fail, Brio can always run off its own internal clock. If a clock source does fail, Brio will automatically jump down to the next sync source in the priority list. One is the highest priority, six is the lowest.



In 'active Show' view, the current sync source is always displayed within the notifications area at the top right of the touch display.

Setting Synchronisation Source Priorities:

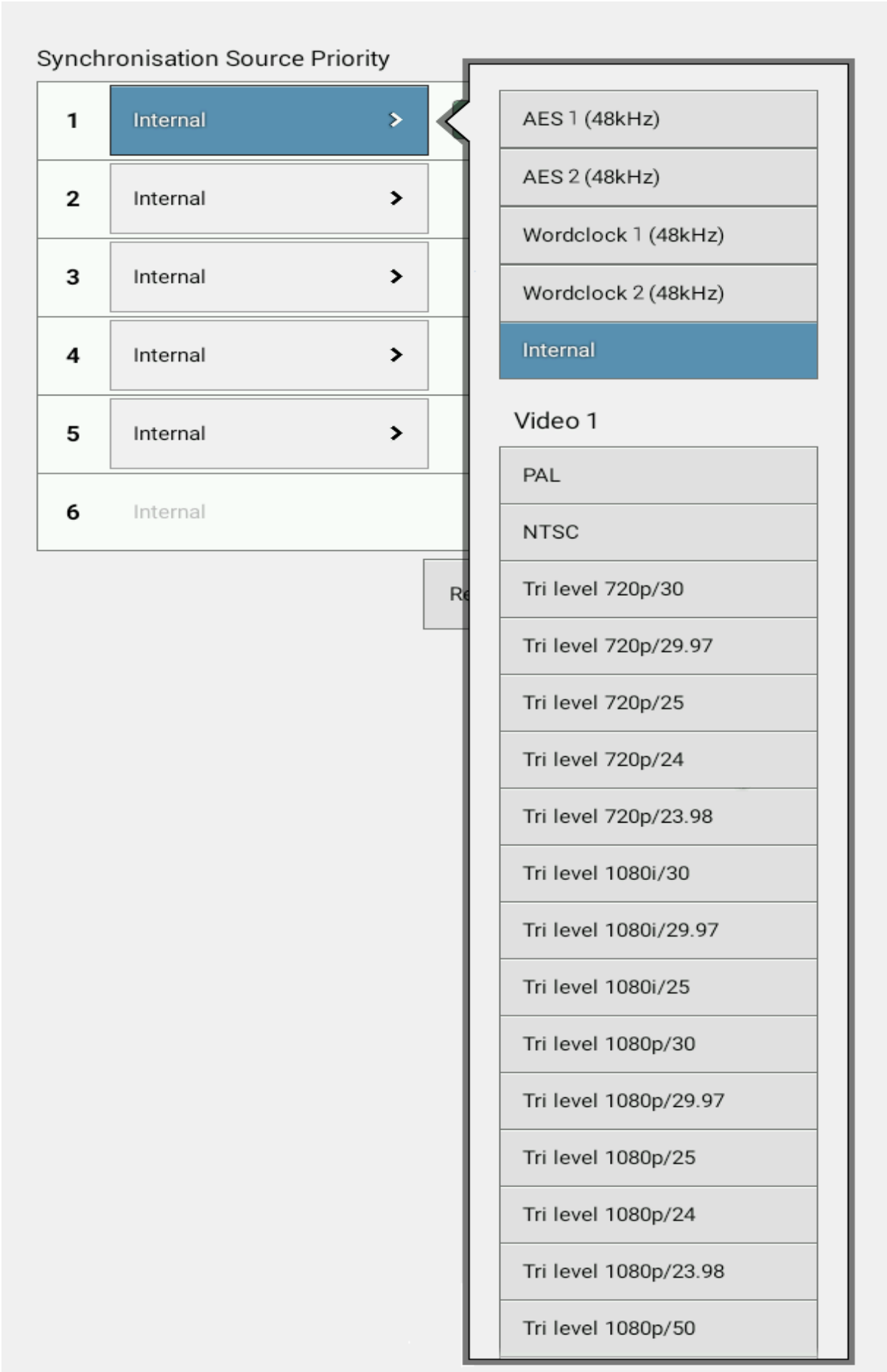
- Tap SYSTEM SETTINGS in the top right of the touch display and select 'synchronisation' from the menu.
- Tap the selection cell for the sync priority level that you wish to alter. A pop-up appears with a scrolling menu of possible sync sources. (The following figure shows the pop-up when selecting sync source priority 1).
- Tap to make your selection, scrolling down if necessary.
- The pop-up closes and Brio refreshes and syncs to the highest priority viable source.

Synchronisation at different sample rates:

Hydra2 runs at 48kHz irrespective of whether the consoles and I/O boxes are running at 96kHz or not. It simply uses 2 samples per 96kHz signal.

Hydra2 always runs at 48kHz, the system will still require a 48kHz sync if using its AES3 or Wordclock inputs even, if all consoles and I/O are operating at 96kHz.

FIGURE 1 - SYNCHRONISATION OPTIONS

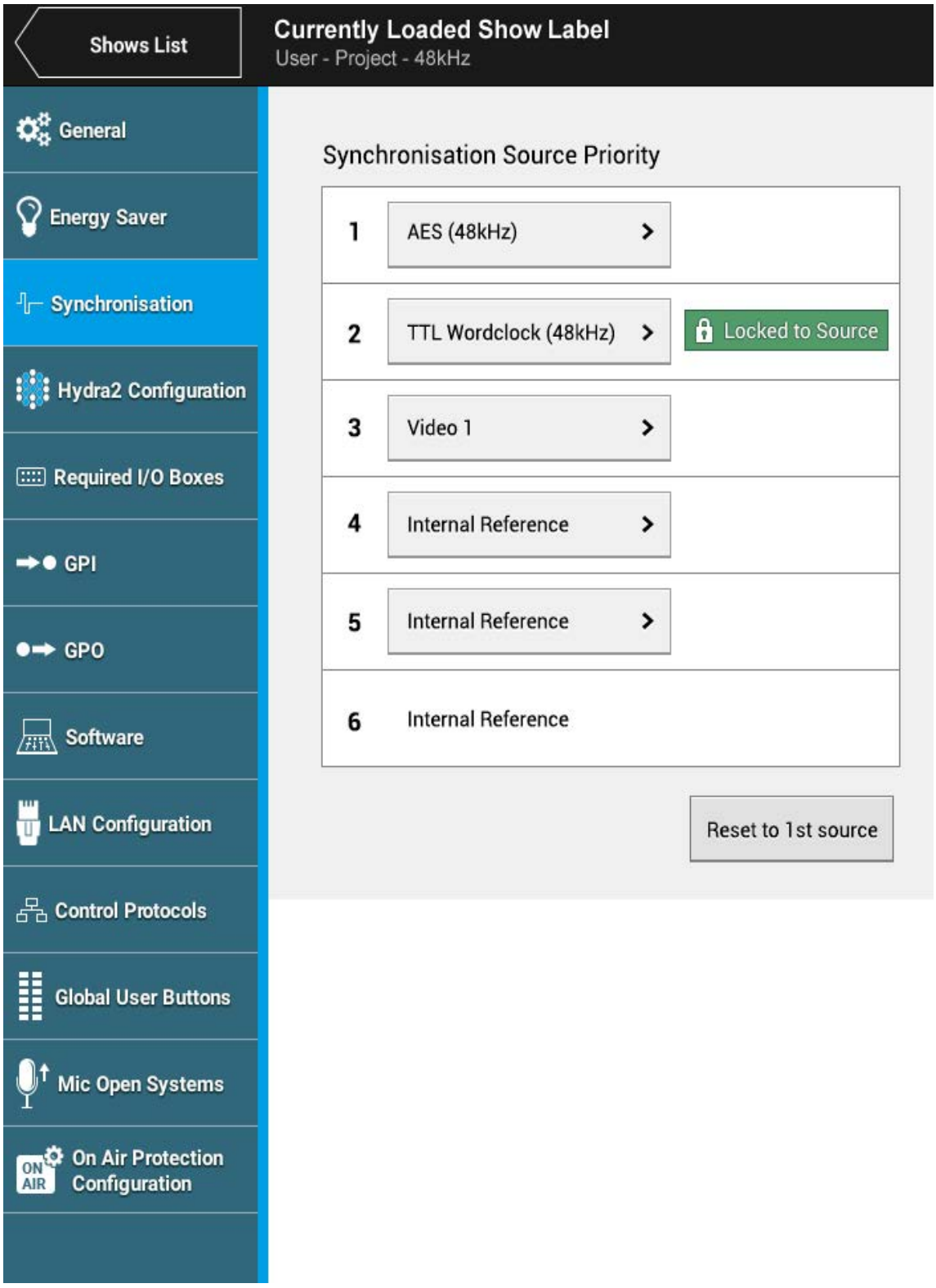


Reset to First Source

It may sometimes be necessary to reset Brio's synchronisation. To start the synchronisation reset process tap **RESET TO 1ST SOURCE**. Brio will attempt to synchronise to each source in priority order, starting at priority one. Once a viable synchronisation source is found the process will stop and the new sync source will display the 'locked to' tab as shown here.

It is important that the required sync source is available before the console boots up otherwise it won't be locked to the correct sync, if this occurs press the 'Reset to first' button after the sync generator is running.

FIGURE 2 - RESET TO FIRST SOURCE



Sources and Frame-Rates

Brio has 7 sync source options:

- Video 1
- Video 2
- AES3 1 (48 kHz)
- AES3 2 (48kHz)
- TTL Wordclock 1 (48 kHz)
- TTL Wordclock 2 (48kHz)
- Internal Reference

Brio supports the following video formats:

- PAL
- NTSC
- 720p/30
- 720p/29.97
- 720p/25
- 720p/24
- 720p/23.98
- 1080i/30
- 1080i/29.97
- 1080i/25
- 1080p/30
- 1080p/29.97
- 1080p/25
- 1080p/24
- 1080p/23.98
- 1080p/50
- 1080p/59.94
- 1080p/60

HYDRA2 CONFIGURATION

System ID Change

From version 1.1 Brio 36's can be used as part of a Hydra2 Network and have access to the resources of that network.

In order to facilitate this the System ID has to be altered so that it is no longer set to 192.1 which is the default for a Standalone console as shown in Figure 1. In order to do this the user has to enter Administrator Mode. Note: a Brio cannot be the master of the network and requires a 4U or 8U core system to connect to which acts as the network master.

This is usually a separate core, but could equally be an Apollo, Artemis or Summa Console core. Figure 2 shows the Brio now set to a new System ID of 192.150, it has been connected to a master core and now the Brio appears as a Networked Console. Note: it's AutoPromote value has been increased to 70 seconds to cope with any reset of the master core before AutoPromote takes effect otherwise the Brio might self promote when it needs to stay on the network.

FIGURE 1 - SYSTEM ID STANDALONE

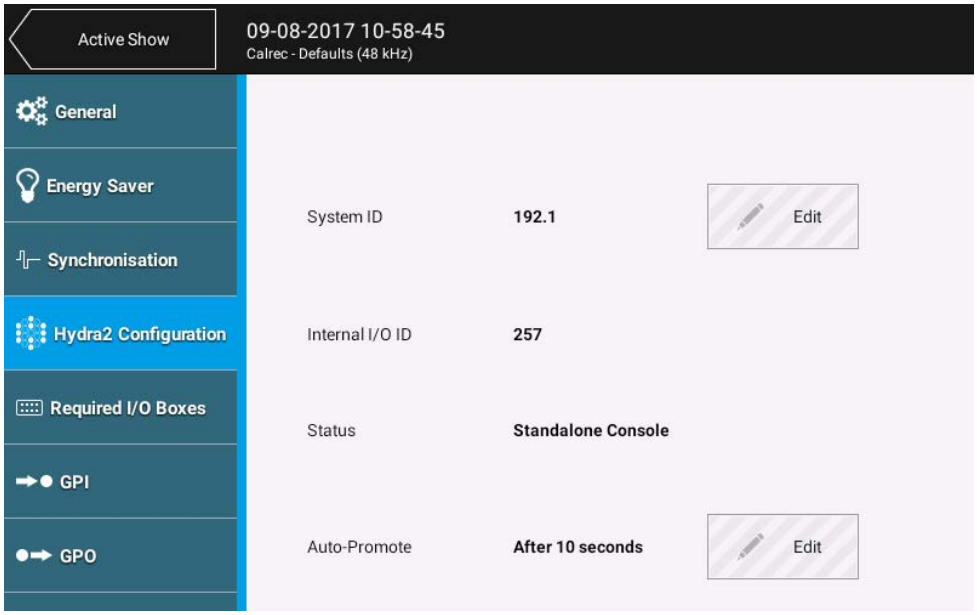
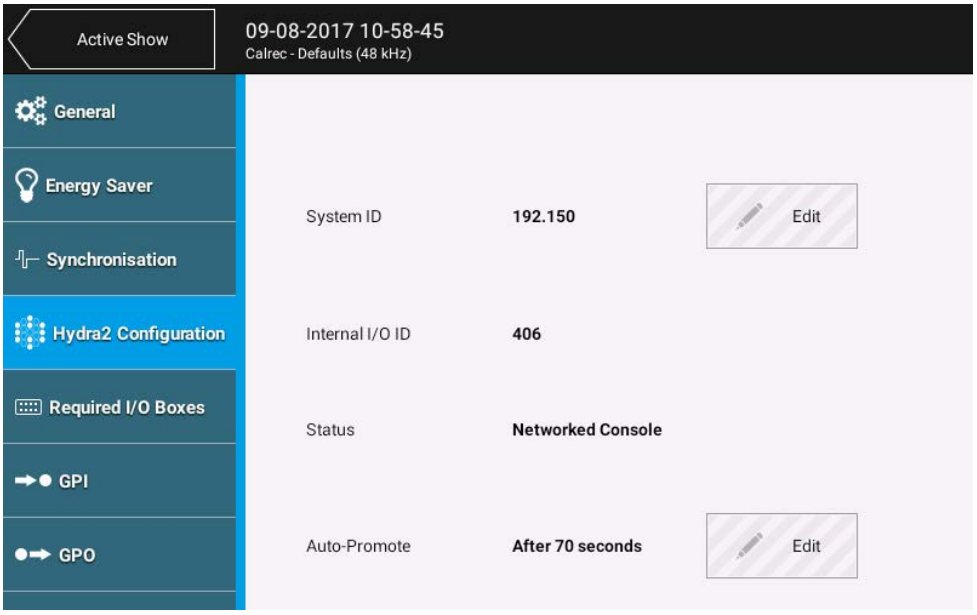


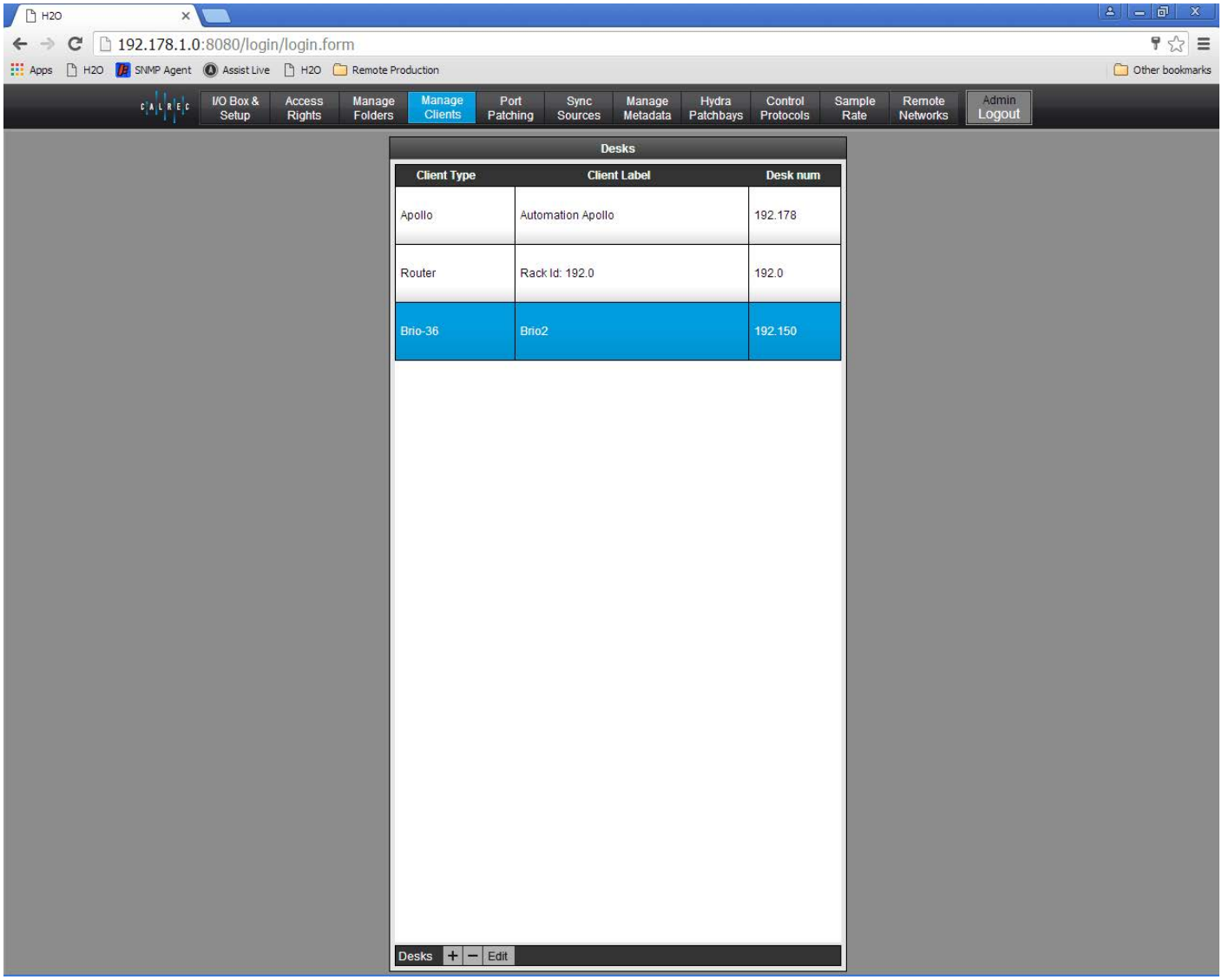
FIGURE 2 - SYSTEM ID NETWORKED



H2O Change

In addition to changing the Brio's System ID, the Brio needs to be added as a Client on the Hydra2 network .
This needs to be setup in H2O as shown in Figure 3, before it can be seen as part of a Hydra2 Network and have access to Hydra2 I/O resources.

FIGURE 3 - BRIO ADDED AS CLIENT IN A MASTER CORE VIA H2O



Auto Promote

A Hydra2 network needs one master router to function correctly. If anything causes the master router to go off-line, another router on the network must be promoted to be the master to keep the system running.
Auto Promote allows this to happen automatically.
To avoid losing valuable data the Hydra database is copied from the master router to any routers in the network which may auto promote themselves. The Hydra database stores the following information:

Details of I/O connected on network.
Patches made via H2O.
Patches made via SW-P-08.
Port labels.

A system of levels and time delays is used to control which routers can take over the master router status and in which order. Auto Promote is setup by Calrec engineers and so should be planned with your Calrec project engineer during the ordering process.

REQUIRED I/O BOXES

BRIO 36 has its own built-in I/O but this and all other I/O resources on a Hydra2 network can be used by all consoles as long as they have been granted access from the network administration tool, H2O, and the resources have been added to the consoles 'required list'.

If connected to a network, and due to the scalable nature of Hydra2 the user may have access to a large amount of I/O resources, some of which they won't always need. The 'required list' provides a way to narrow the scope for individual consoles, speeding up work-flow and making port identification easier.

Only I/O resources in the 'required list' will be available for patching to and from the console. If not connected to the network only the Built-in I/O box will be shown in the required list. Brio's internal I/O is identifiable as a console image. The ID for internal I/O is automatically generated, based on the consoles ID in order to prevent conflict with other I/O on the network

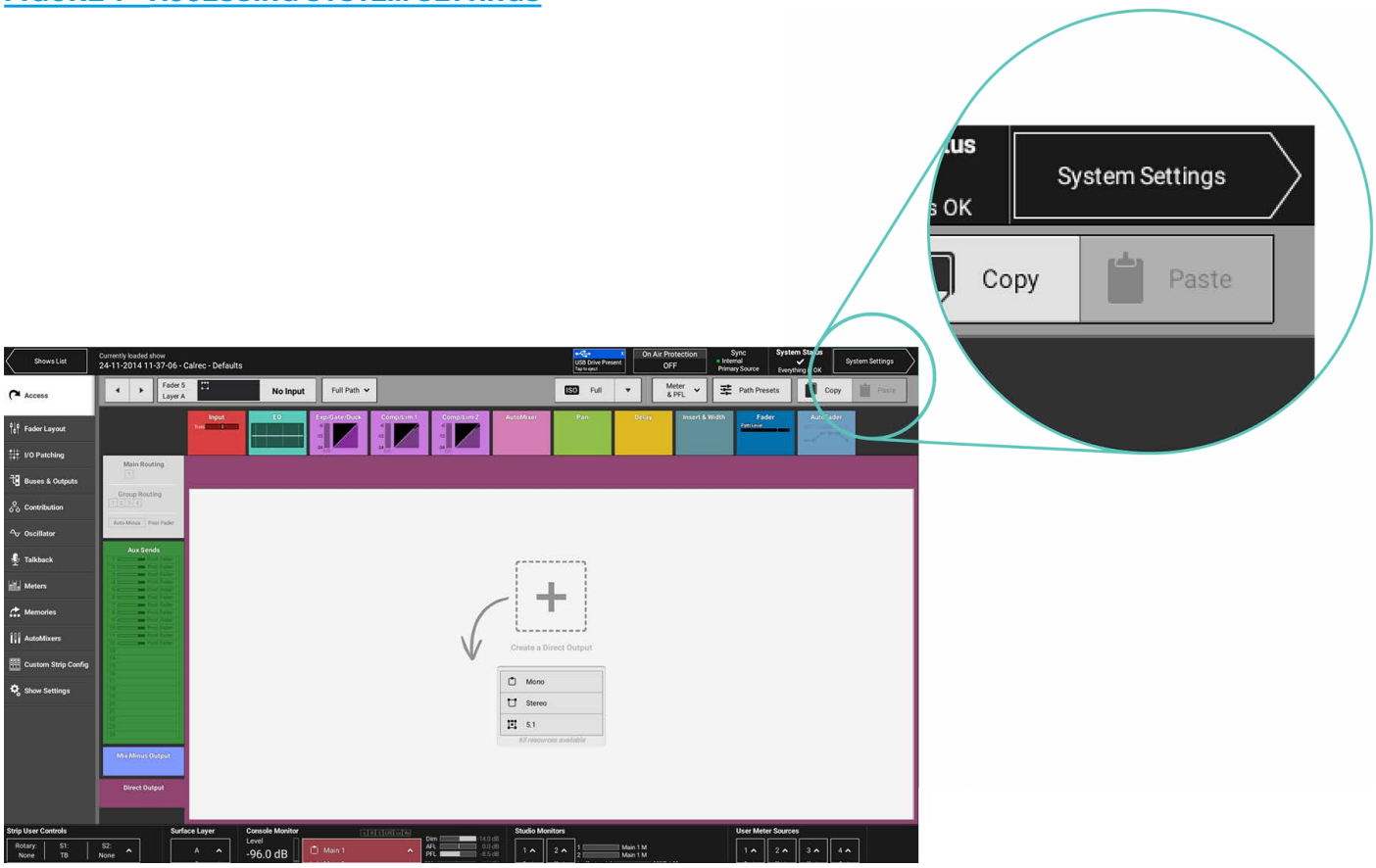
Viewing Resources

Tap **SYSTEM SETTINGS** in the top right of the touch display, then select 'Required I/O Boxes'. The user will see a split screen with all online resources on the left and the 'required list' on the right.

Both lists are held in tables with 3 columns: Hardware ID, label and type. It may help to sort these tables by tapping on column headers. Multiple taps will switch sorting to be either ascending or descending.

Hardware IDs for physical I/O boxes are set from the dip switches on the back of the units (See "Audio I/O Connections" in the Installation manual for more information). Hydra patchbay IDs are taken from H2O and are related to folder names. Labels are explained in detail, here: "INPUT AND OUTPUT PATCHING" on page 74.

FIGURE 1 - ACCESSING SYSTEM SETTINGS



Tap to select a single online resource on the left (hold and drag or drag handles to select multiple resources) then tap **ADD TO REQUIRED LIST** at the bottom left of the online resources screen. The resources will then appear in the Required List on the right. Note: they are shaded green, with a green 'required' tag attached.

This is mirrored in the online list on the left so the user can quickly see which resources they have already added.
If any of the resources in the Required List go offline, they will be shaded red with an 'offline' tag attached.

The 'require' tag can be seen in the image below.

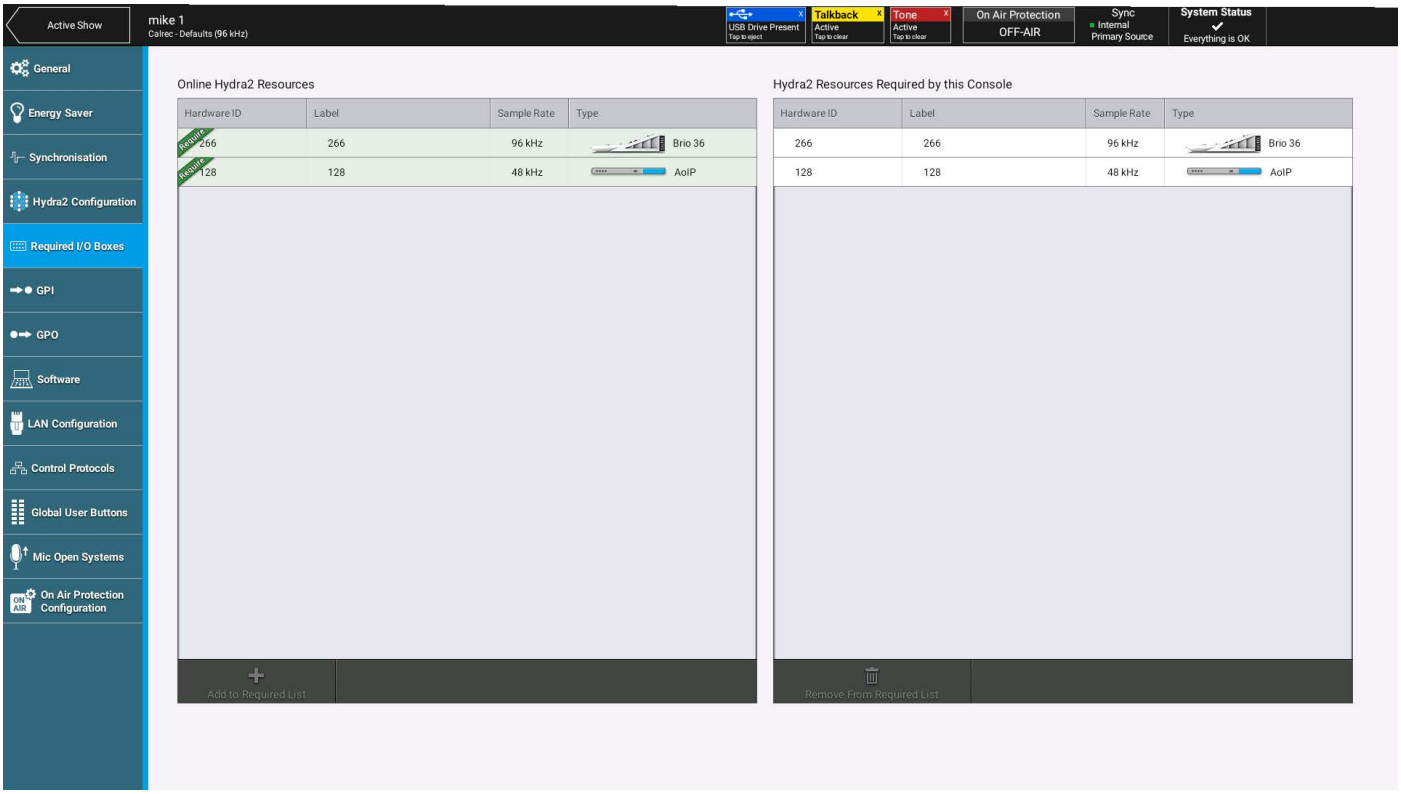
Adding and Removing Resources

To remove a resource from the list, select it, then tap **REMOVE FROM REQUIRED LIST**.
Note: the built-in Brio I/O is always present and is shown in Figure 2 at the top of the list.

Boxes at Different Sample Rates

The show in Figure 2 is a 96kHz show, the sample rate field shows that although the Brio is set to the correct sample rate the AoIP box isn't, this is because AoIP boxes do not currently operate at 96kHz

FIGURE 2 - THE 'REQUIRED LIST'



SHOWS

Brio 36 uses a system of Shows, user memories and continuous memory to store settings for later recall. Shows are used to organise user memories into sub-categories making them easier to manage, rather than having to search through a long list of varied memories each time, you can select a Show and view the user memories associated with that Show.

A possible use for this would be to create Shows for each type of production, e.g. 'Morning News', 'Football', 'Chat Show' etc.. and then create multiple user memories within each Show for different users and situations. Before saving multiple memories into a Show, it is good practice to create one default user memory, test it, and use it as a template to create multiple user memories. This avoids the repetitive and time consuming task of having to make the same changes to multiple memories.

During operation, Brio constantly updates its continuous memory, which is also saved within the currently active Show and that the user is actually saving memories within shows. When a Show is recalled, it is this continuous memory that is recalled, not a user memory.

Note: loading a Show recalls the last-used settings, not the last-saved settings. So in order to get to a particular user memory this will need to be loaded once the show is loaded.

FIGURE 1 - SHOWS AND MEMORIES

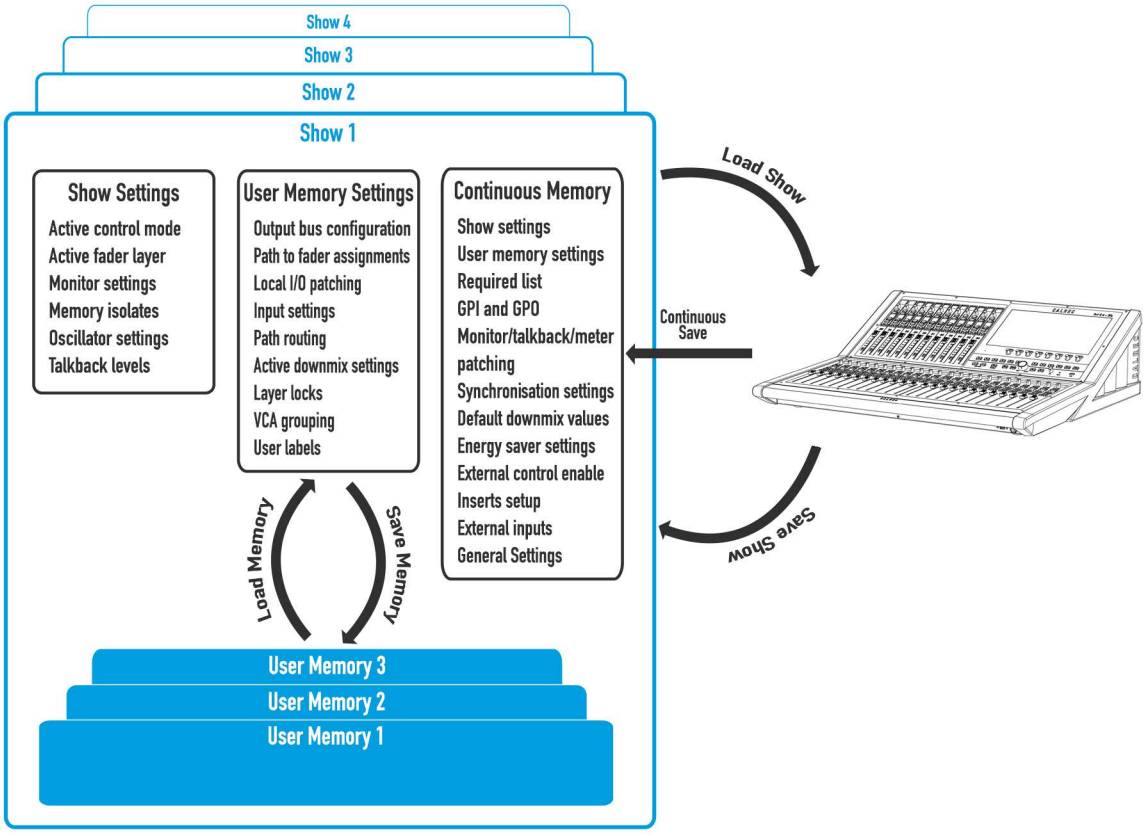


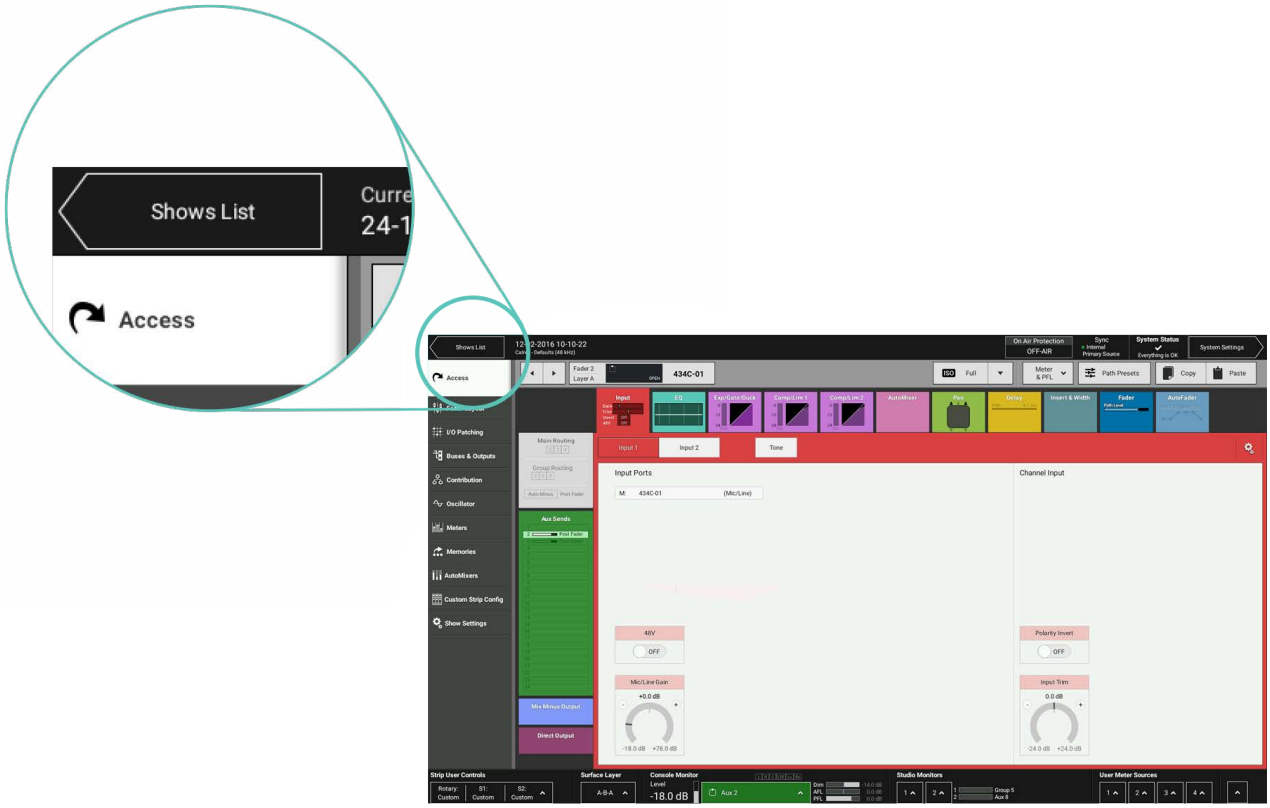
FIGURE 2 - WHERE THINGS ARE SAVED

	Show	Continuous Memory	User Memory
Output bus configuration		X	X
Path to fader assignments		X	X
I/O patching (from Summa)		X	X
Input settings		X	X
Path routing		X	X
Path processing		X	X
Active downmix settings		X	X
Layer locks		X	X
VCA grouping		X	X
User labels		X	X
Required list		X	
GPI and GPO		X	
Monitor, talkback, meter patching		X	
Synchronisation settings		X	
Default downmix values		X	
Energy saver settings		X	
External control enable		X	
Inserts setup		X	
External inputs		X	
General System Settings		X	
Active control mode	X	X	
Active fader layer	X	X	
Monitor settings	X	X	
Memory isolates	X	X	
Oscillator settings	X	X	
Talkback levels	X	X	

Entering the Shows List

Tap **SHOWS LIST** to the top left of the touch display. All available Shows are presented within a sortable table.
To return to 'active Show' view, tap **ACTIVE SHOW** in the top right of the touch display.

FIGURE 3 - ACCESSING THE SHOWS LIST



Active Show

The Show that is currently active is identified by the 'active' tab. See Figure 4 on the next page.

Loading a Show

Locate and select the Show, then tap **LOAD** in the control screen footer, then **LOAD** again to confirm the choice.

Setting up a New Show

All new Shows are based on pre-configured Show templates. To set up a new Show:

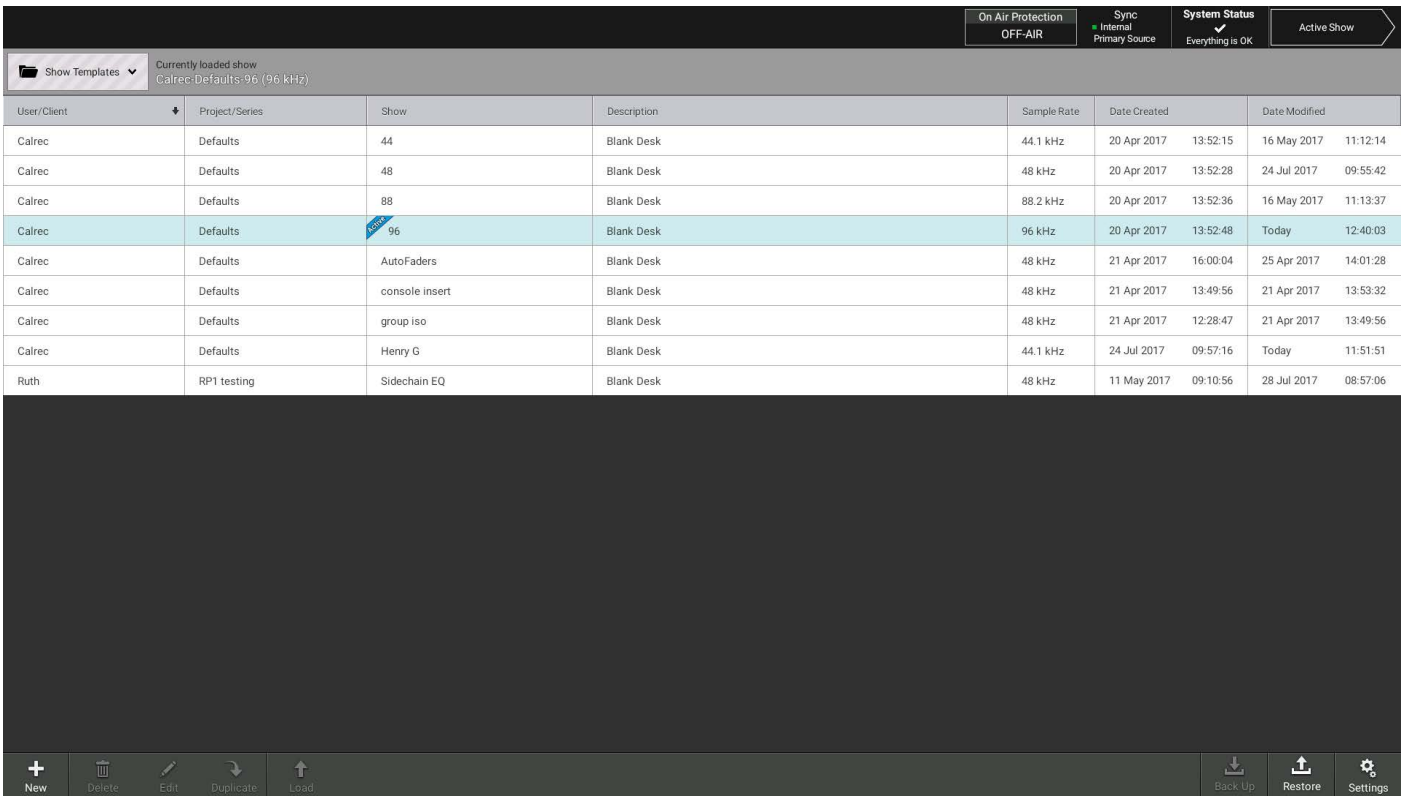
1. Tap **NEW** in the control screen footer.
2. Pick a template within the 'new Show' pop-up.
3. Enter a label and some details for the Show and tap **CREATE SHOW**.

The client and series text fields will already be populated as they are taken from the template.

Deleting a Show

1. Tap to select one or more Shows within the list.
2. Tap **DELETE** in the control screen footer.
3. Tap **DELETE SELECTED**, or **CANCEL**.

FIGURE 4 - THE SHOWS LIST



Shows List for Different Sample Rates

The Shows List in Figure 4, is displaying a variety of shows including the 4 default shows at 44.1kHz, 48kHz, 88.2 kHz and 96kHz. These shows were subsequently used to provide a show template for each operating frequency..

Note: there are 2 separate processes required for a show, loading a show sets up the DSP resources to run at the required sampling rate is one. The other is to set the sampling frequency of each I/O box and Hydra Patchbay in H2O. See "I/O Boxes & Hydra Patchbays Sample Rate Selection in H2O" on page 73.

Editing a Show

Once a Show has been created it is possible to edit its label and description:

1. Select the Show to edit and tap EDIT in the control screen footer.
2. Make changes to the label and description in the pop-up.
3. Tap **SAVE** or **CANCEL** .

Duplicating a Show

Duplicating Shows can save time when several very similar Shows are needed:

1. Select a Show and tap **DUPLICATE** in control screen footer.
2. Enter a new label.
3. Tap **DUPLICATE** or **CANCEL**.

Moving Shows between Systems

Shows can be transferred between Brio 36s but cannot be transferred to Apollo, Artemis or Summa consoles.

Show Templates—Admin Only

Whenever the user creates a new Show it must be based on a template. The generic Calrec template is always available. Additional templates can be created by Brio 36 administrators. Show templates hold the same data as Shows but they cannot be opened, edited or deleted without logging in as an administrator.

Setting Up and Editing Templates—Admin Only

Enter the shows list screen and tap **SHOW TEMPLATES** to the left of the screen header. The user is required to enter the admin username and password for the system, then tap **LOG IN** and the user will have access to the available Show templates.

From here the user can create a new template by tapping **NEW** and entering client, series and label information. They can delete a template (other than the Calrec default template) by selecting it and tapping **DELETE** . They can edit a template's details by selecting it and tapping **EDIT** .

Updating Templates—Admin Only

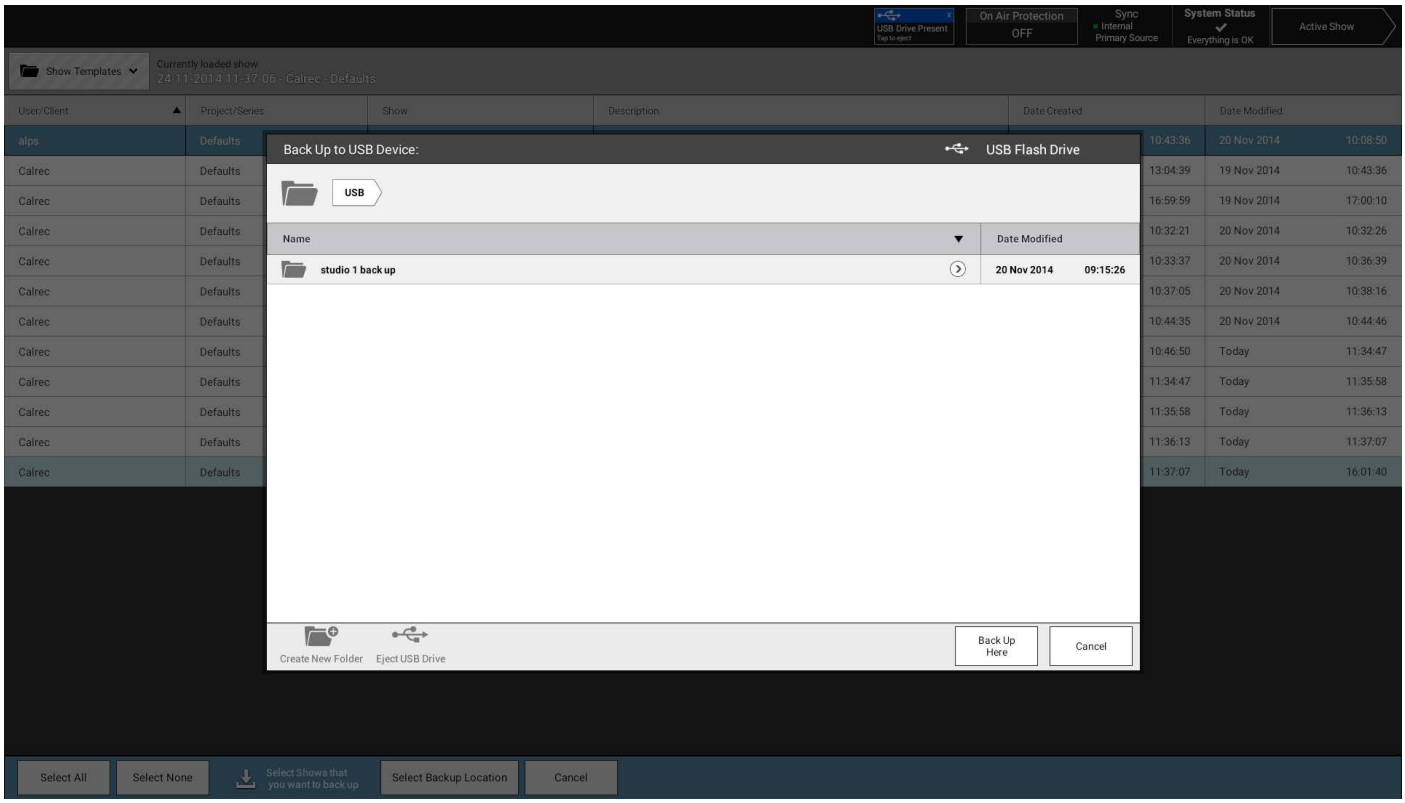
The user can update Show templates to reflect the current System Settings by tapping **UPDATE**. The user will then be asked to confirm or cancel the update.

Backing Up Shows

Shows & their user memories can be backed up to a USB drive connected to Brio 36's USB ports. To back up a Show:

1. Select the Show to backup from the Shows list.
2. Tap **BACKUP** toward the bottom right of the display. To select multiple Shows, select them all now.
3. Tap **SELECT BACKUP LOCATION** and select a destination for back up, making a new folder if necessary.
4. Tap **BACKUP HERE** or **CANCEL**. If there is a previously saved version of the same Show a pop-up will appear to ask if the user wants to **OVERWRITE** the show or **CANCEL** the backup.

FIGURE 5 - BACKING UP SHOWS



Restoring Shows

1. Tap **RESTORE** in the footer of the Shows List and navigate to select the Show to restore.
2. Tap **RESTORE**.

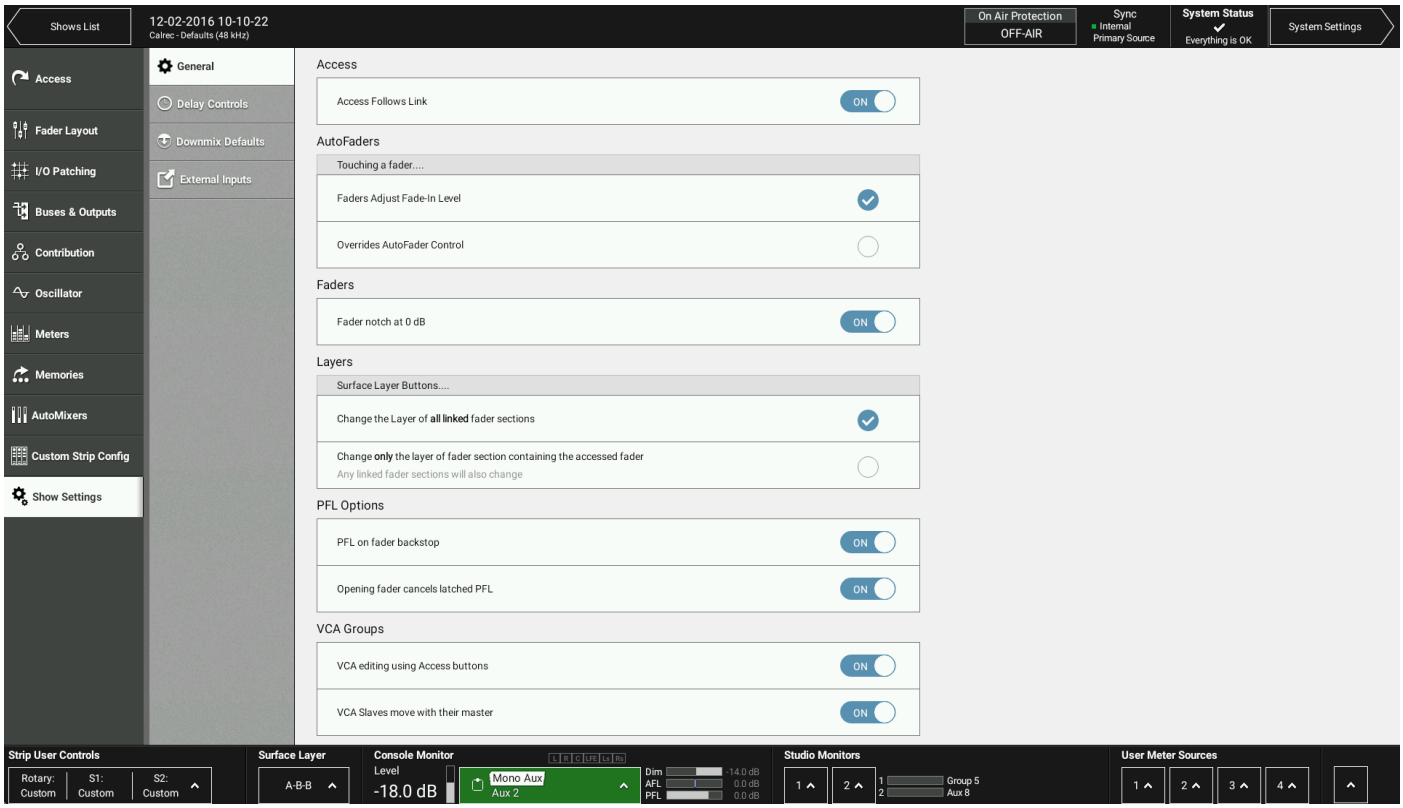
Settings Stored within Shows

Tap Show Settings within the Show menu on Brio 36's touch display and the user will see four options: General, Delay Controls, Downmix and External Inputs.
General Settings:

- Access Follows Link defaults to on, but when turned off allows the access path to stay where it is when creating a link using the Access buttons.
- For AutoFaders touching a fader whilst fading has two options, by default the Fader adjusts the fade-in level or alternatively it overrides AutoFader Control.
- By default, a notch can be felt at the '0' point on the fader scale. This can be switched off if required.
- The surface layer buttons can be set to operate in one of two ways. They either change all linked fader sections or only the sections which contains the accessed fader, plus any sections which are linked to that section.
- By default, PFL can be activated momentarily by pulling the fader down below its lowest point, and deactivated once released. This feature can be switched off for the whole surface.
- By default, if a fader is closed and it's PFL is activated, it will be automatically deactivated once the fader is opened. This feature can be switched off for the whole surface. (See "PFL, AFL AND OUTPUT LISTEN" on page 153 .
- VCA groups are generally made and dissolved by pressing fader access buttons but this process can be disabled to protect all VCA assignments or to stop VCA groups being made accidentally.
- By default, VCA slave faders move automatically when their levels are changed by their masters. If you would rather, this functionality can be switched off and instead slaves will remain stationary. Combined master/slave levels will still be indicated by the nulling indicators in the fader displays. (See "VCA GROUPS" on page 127)

Other settings are explained in the relevant sections: "DELAY" on page 122, "DOWNMIXING" on page 180 and "EXTERNAL INPUTS" on page 89.

FIGURE 6 - SHOW SETTINGS



MEMORIES

User memories are files which store processing, routing and patching information which can be recalled at any time.

Loading a User Memory

1. Tap **MEMORIES** in the Show menu and a list of all user memories will appear that are available within the current Show.
2. Tap to select the user memory that to use and tap **LOAD** .
3. The footer changes to ask for confirmation, tap **LOAD SELECTED** or **CANCEL**.

Creating a new User Memory

To create a new user memory with current surface settings:

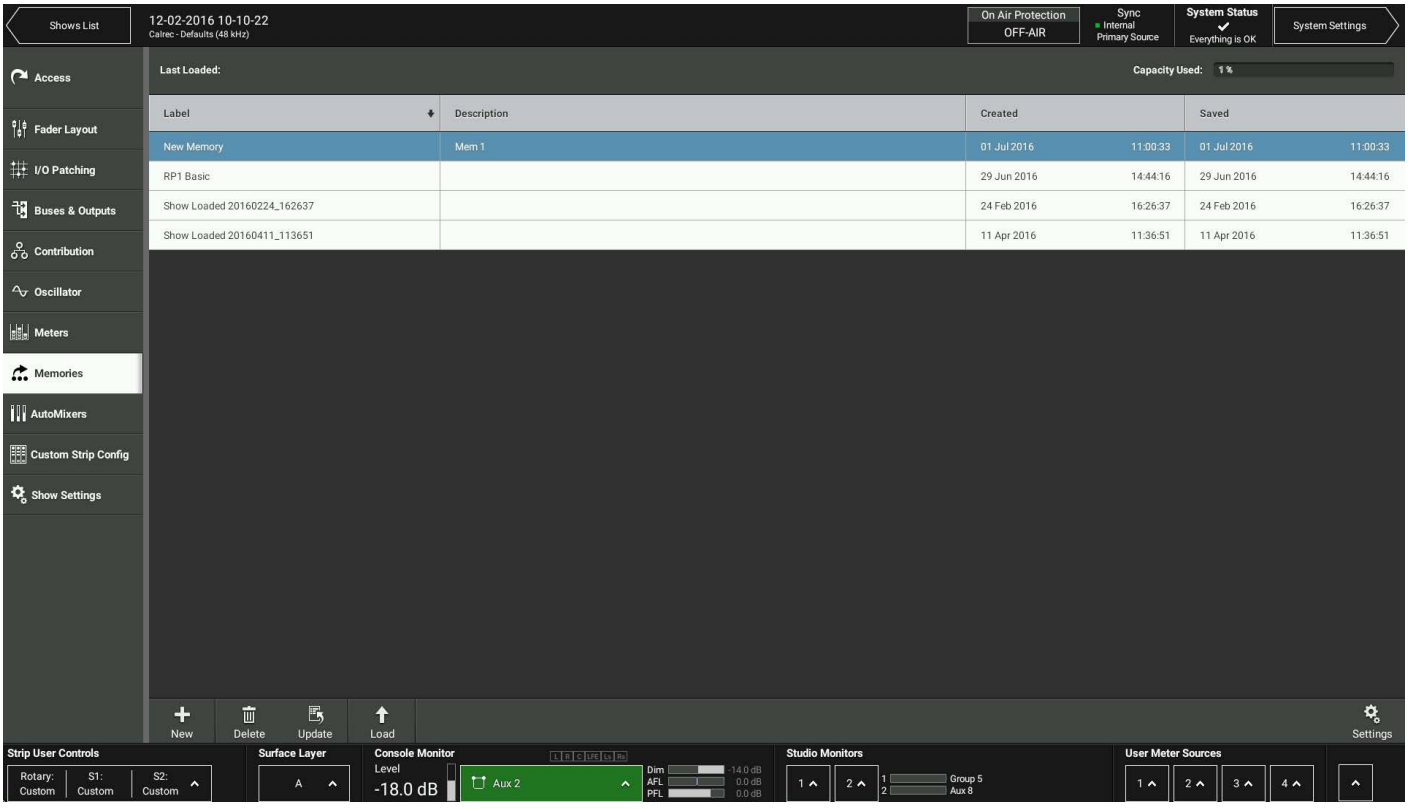
1. Tap **NEW** in the memories screen footer.
2. Enter a name and a short description for the new user memory.
3. Tap **CREATE** or **CANCEL** .

Updating a User Memory

To update a previously saved user memory with the current surface settings:

1. Select the user memory to update and tap **UPDATE** in the memories screen footer.
2. The user will be prompted to confirm by tapping either **UPDATE SELECTED**, or **CANCEL**.

FIGURE 1 - MEMORY PAGE



Creating Multiple User Memories

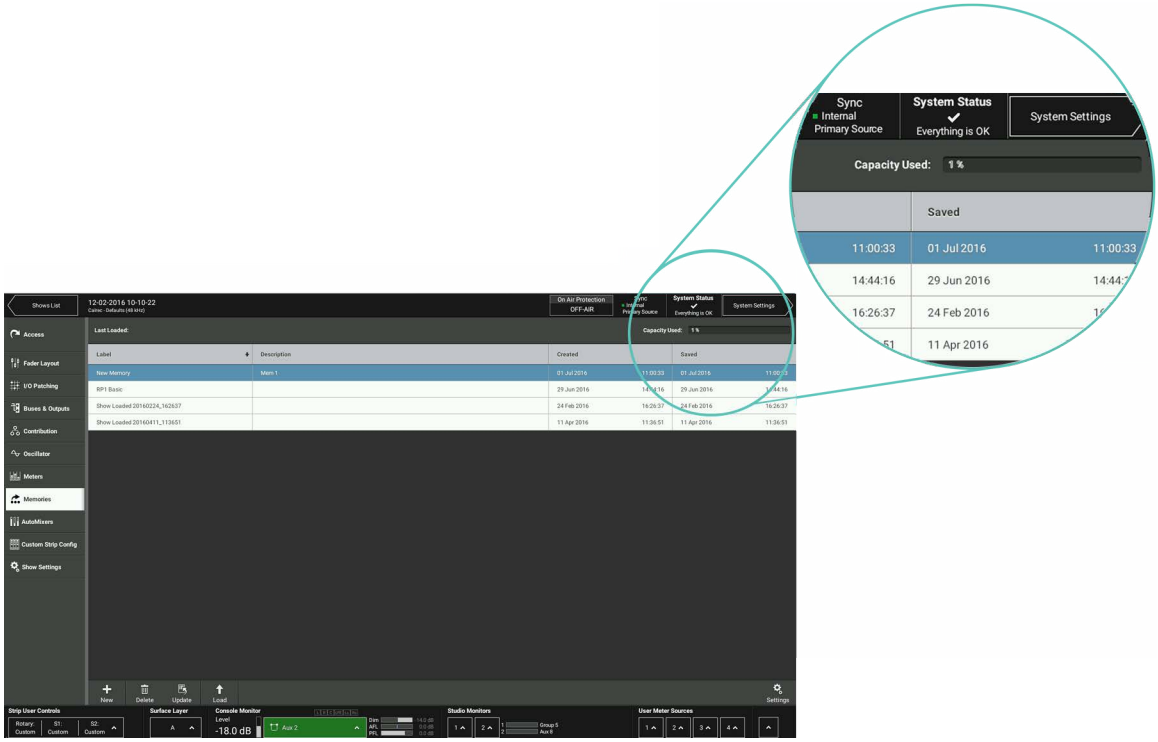
Best practice is to create one ‘default’ user memory, test it, make any necessary changes, and then use this as the basis for all other user memories within the Show. This speeds up the process by reducing the need to make the same changes to many different user memories.

To do this, create, test and update what is to be the ‘default’ user memory as described above, then, with the this user memory still loaded on the surface, tap **NEW**, and the information will be saved into a new user memory, effectively duplicating it.

Storage Capacity

There is a capacity indicator at the top of the memories screen which shows how much storage space is available.
If more space is required, delete any old Shows and user memories which are no longer needed. The capacity indicator shows the amount of space available on the controller card for storing Shows and Memories, however, the controller card memory is also used for other files and folders and so the capacity may vary.

FIGURE 2 - MEMORY CAPACITY

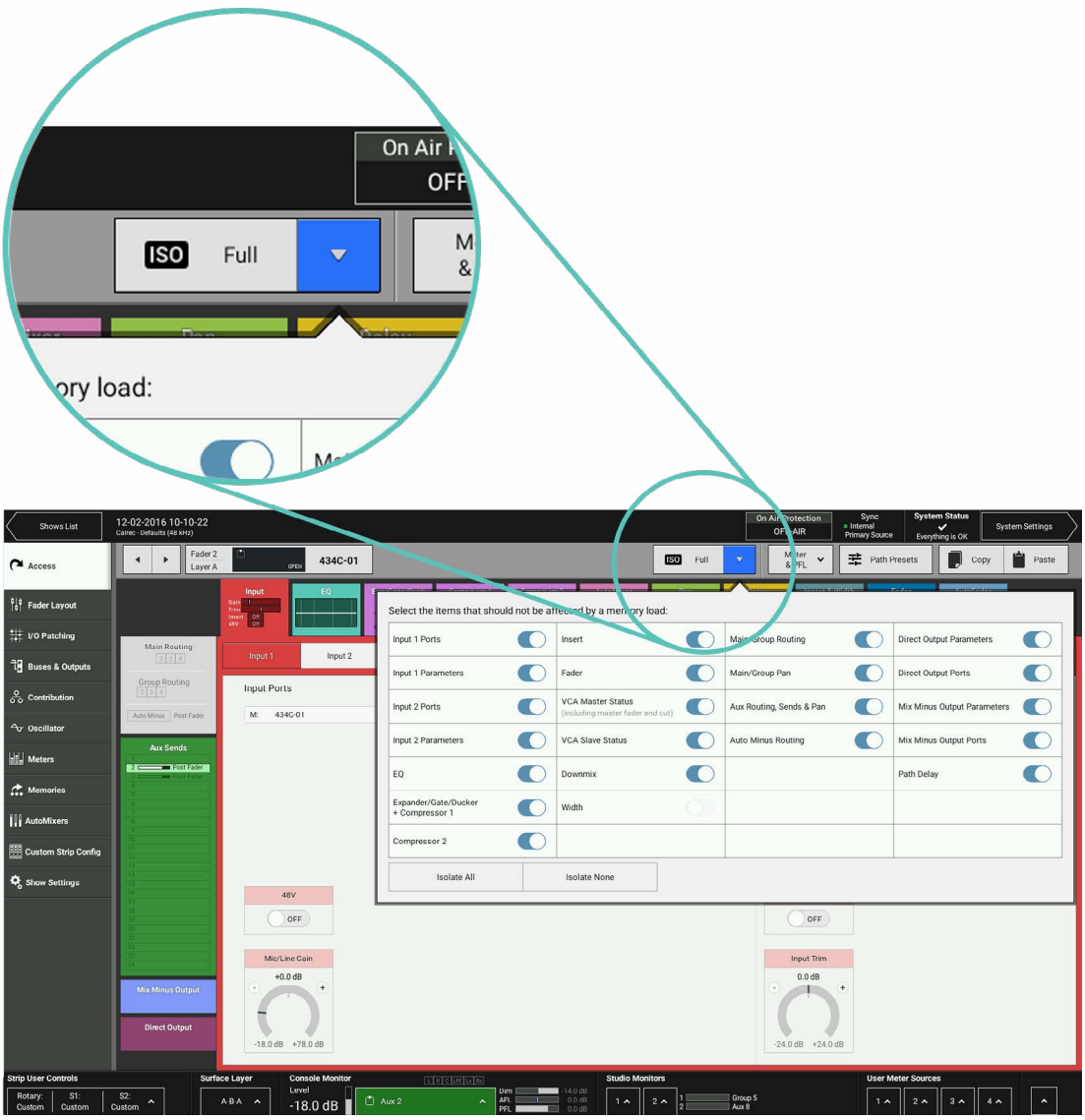


Memory Isolation

Memory Isolation is a system whereby paths or individual path parameters can be protected from being updated when a user memory is loaded. When in ‘active Show’ view, memory isolation options are available per-path from the ISO drop-down menu in the right hand side of the access bar: use the drop-down menu to select which parameters to isolate for the currently accessed path. **ISOLATE ALL** or **ISOLATE NONE** options are also available.
Isolate can also be assigned as a function to be switched by the S1 or S2 Strip User Buttons on the surface

Note: Paths that have been isolated from memory loads can be moved around the surface.

FIGURE 3 - LOCATION OF ISOLATION CONTROLS



The Isolation status of each path is indicated on its fader display—a blue ISO icon indicates a fully isolated path and a green ISO icon indicates partial isolation is in operation for that path.

FIGURE 4 - ISO ICONS

The following settings can be isolated:

- Input 1 ports
- Input 1 parameters
- Input 2 ports
- Input 2 parameters
- EQ Settings
- Expander /Gate /Ducker + Compressor 1
- Compressor 2
- Insert
- Fader position
- The VCA master status of the fader
- The VCA slave status of the fader
- Downmix settings
- Path width settings
- Main/Group routing
- Main/Group pan
- Aux routing sends and pan
- Auto Minus routing
- Direct Output parameters
- Direct Output ports
- Mix Minus Output parameters
- Mix Minus Output ports
- Path delay

GLOBAL USER BUTTONS

The 12 Global User Buttons in Brio 36's touchscreen section each have RGB LED indicators in them. They can be assigned to directly control a range of functions through the touchscreen UI.

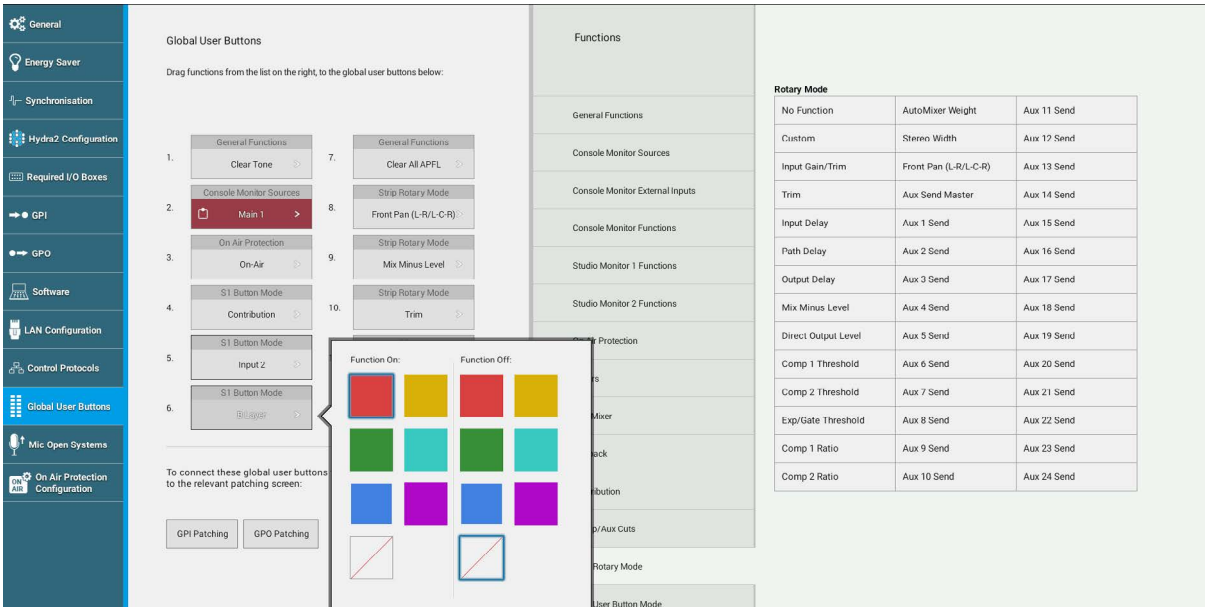
FIGURE 1 - GLOBAL USER BUTTONS

These buttons can be set up to change General Functions such as clearing Tone or Talkback or APFL, change monitor source sources including External Inputs, change Console and Studio Monitor functions, select Talkback destinations, Control Group and Aux Cuts that are not on the surface, start and stop loudness meters, bypass AutoMixers, select contribution buses and interact with the On-Air protection system. If switching a console function, that function's state lights the button. If no console function being controlled, the buttons can be lit by GPI tally as described below.

Global User buttons controlling any of these functions can also be connected to GPOs to simultaneously trigger external equipment. For example a Global User button that is set up to switch a monitor source, could also connect to a GPO to trigger a vision switcher to switch to an appropriate video feed. The indicators within the Global User buttons can be used as Tallies to indicate that a corresponding GPI has been activated.

This can also be used as a method for checking the correct operation of a GPIO circuit. In addition they can be used to change the functions of the Strip Rotary Mode and the S1 and S2 Strip User Button Modes.

FIGURE 2 - GLOBAL USER BUTTONS SET UP



Global User Buttons are setup by dragging and dropping the function onto the required button.
Note: at the bottom of the page there are links to GPI and GPO patching, GPIs can be connected to the Global User Button indicators to show that a particular GPI has been activated and GPOs can be triggered from the Global User Button switches to control external or internal functions. Buttons default to lighting red for the on state, regardless of function. The colour can be changed, and a colour for the off-state selected by tapping the button in the touch UI .

CUSTOM STRIP CONFIGURATION

Each Fader strip has a Rotary control and 2 Strip User Buttons each of which have RGB LED indicators in them. They can be assigned to directly control a range of functions console wide, using the button in the left side of the touch UI's footer. The 'Custom' option allocates functions defined by the Custom Strip Configuration screen which allows for different functions on each strip as well as connecting with GPIO.

FIGURE 1 - FADER STRIP ROTARIES & USER BUTTONS

The Fader Display shows the rotary control which has been set by the user. When turned the display changes to show the rotary control settings.

The rotary control may be set to delay, trim,gain, aux sends1-24 and a number of other controls. There is a switch in the knob which is used to quickly reset a control

The S1 and S2 user buttons can be configured to perform various functions or can be assigned to control GPIO and set to custom colours for On and Off states.

To create or change a Custom Strip Configuration, select the desired fader/s on screen, then choose to apply functions using the Rotary, S1 or S2 buttons below.

GPIO can be assigned to the buttons as well as console functions. If a console function is assigned, the state of that function will determine whether the button is lit. If no console function being controlled, the button can be lit by GPI tally, and the illumination colour for both on and off state can be chosen. GPIO is connected to buttons via triggers. Select a GPIO trigger to work with the S1 or S2 buttons from the footer. Go to the GPI and GPO patching screens in System Settings to connect the specific GPI and or GPO to the user button triggers.

A separate Custom Strip Configuration is available to each user memory. The custom configuration is only active on the surface when Custom is selected from the button in the bottom left of the UI footer. Users can choose to apply the custom configuration to the rotary and/or each of the buttons independently.

FIGURE 2 - CUSTOM STRIP CONFIGURATION-ROTARY FUNCTIONS

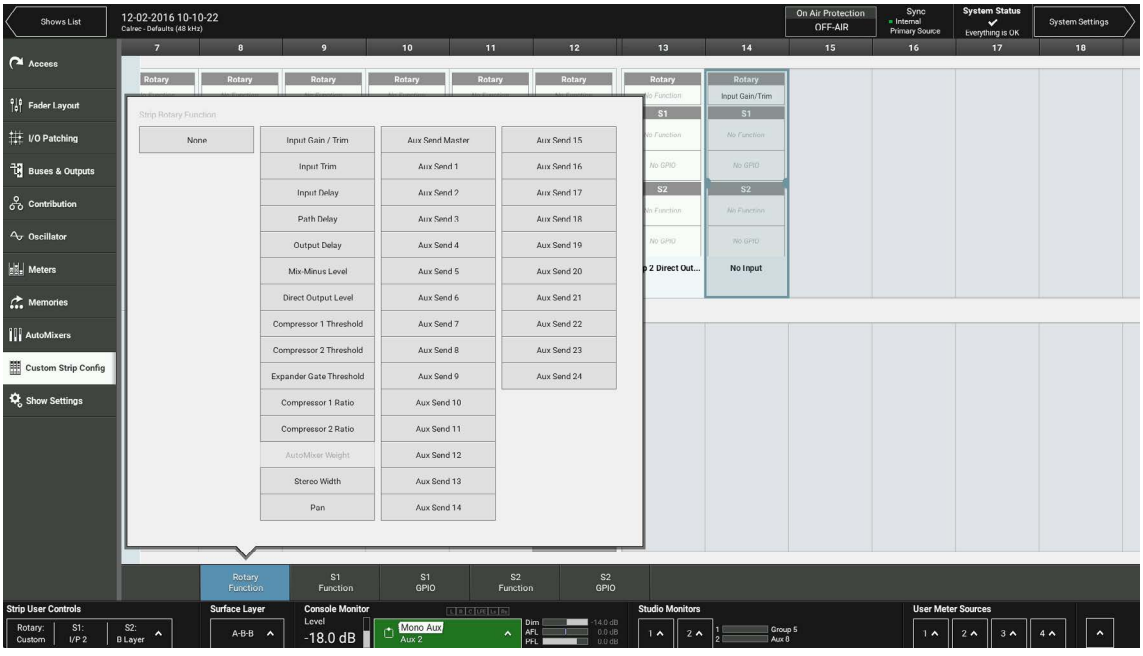


FIGURE 3 - CUSTOM STRIP CONFIGURATION-S1 AND S2 USER BUTTON FUNCTIONS

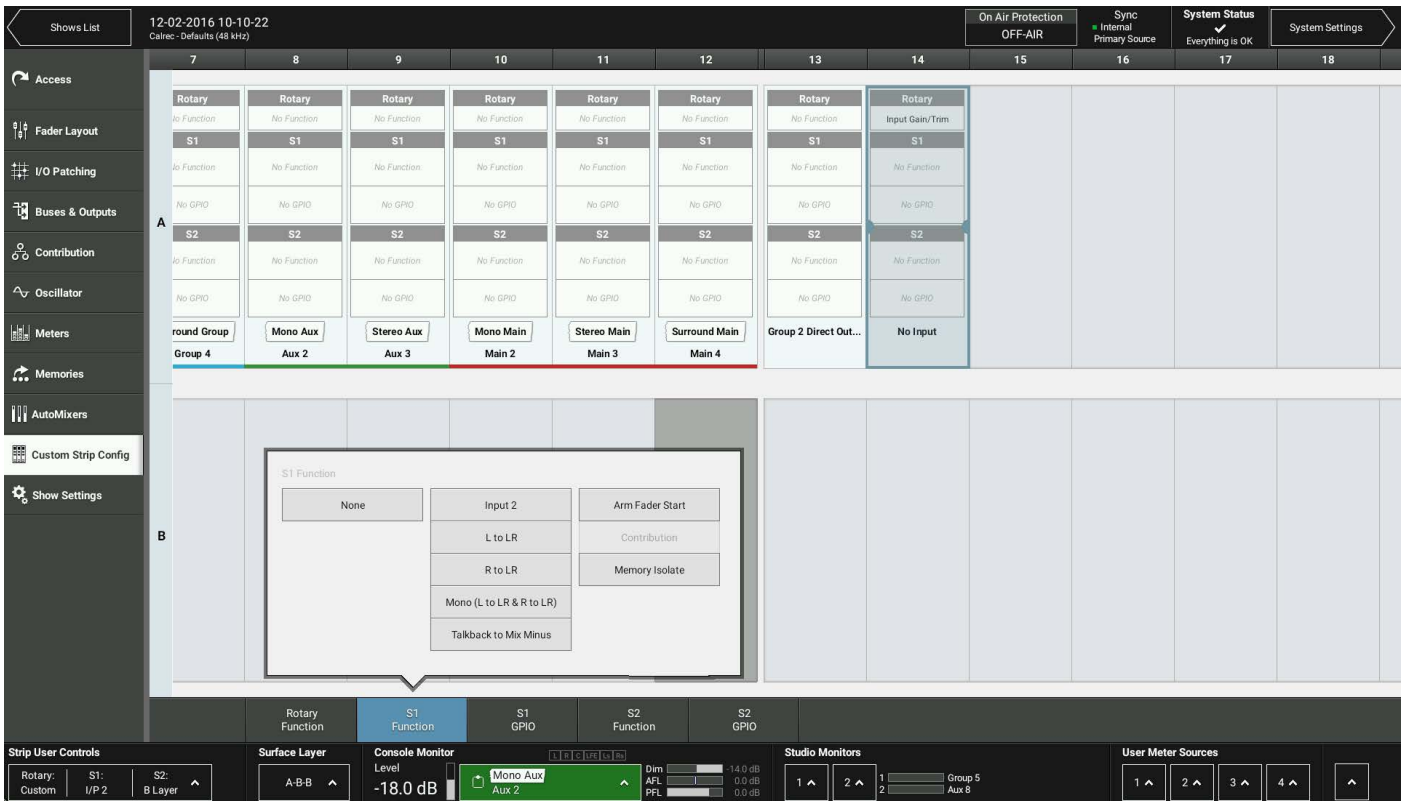
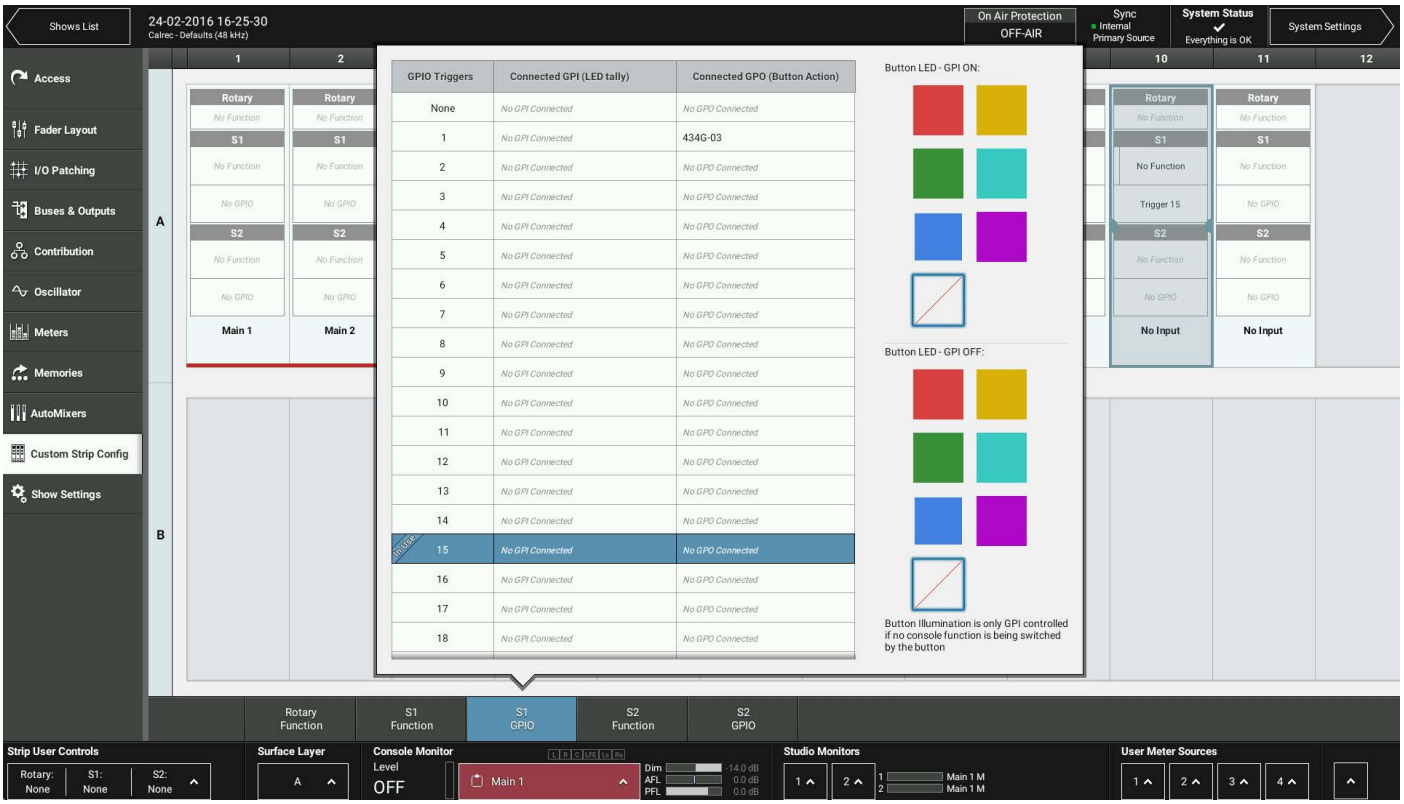


FIGURE 4 - CUSTOM STRIP CONFIGURATION-S1 AND S2 USER BUTTON GPIO



Custom Strip Functions / Console Wide Functions Selection

Each rotary, S1 & S2 buttons “Custom” function is stored separately so that after selecting any other console wide function from the Strip User Controls pop-up menu (shown in the bottom left of the UI footer), the individual “Custom” function can be returned to by reselecting “Custom” from the Strip User Controls pop-up. See “Providing Console Wide Strip User Controls” on page 81 .

BRIO 36
GETTING SIGNALS IN AND OUT

CALREC

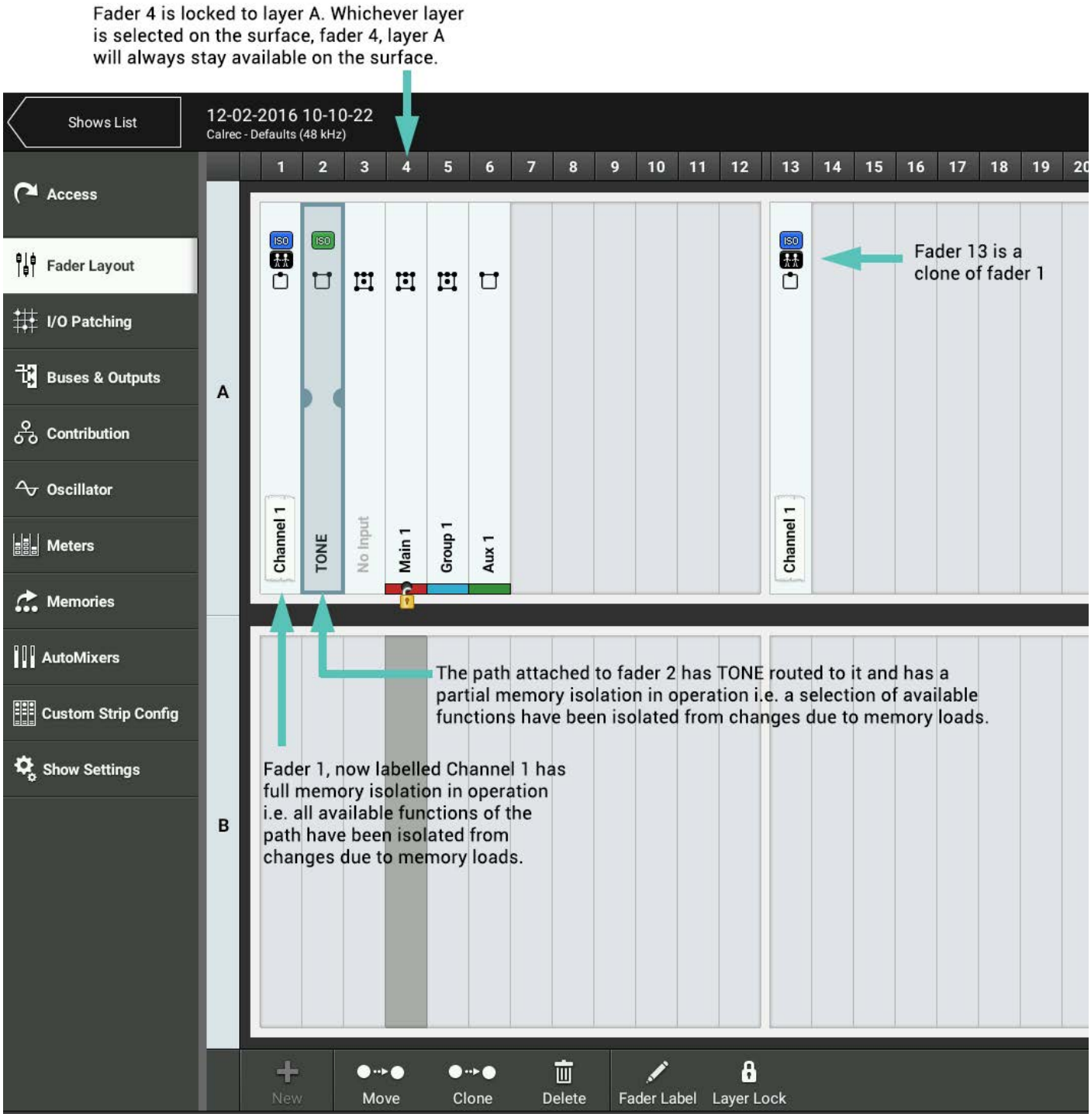
FADER LAYOUT

The first stage of passing audio into the Brio 36 system is to attach a channel to a fader. Audio feeds to input ports must then be attached to channels in order to be processed and routed; channels must be attached to faders to exist. Faders can be used to control input channels, mains, groups and aux outputs.

Tap **FADER LAYOUT** in the Show menu. The user will see a visual representation of all faders on both layers.

Figure 1 shows examples of all path types as viewed in the fader layout screen.

FIGURE 1 - THE FADER LAYOUT SCREEN



Attaching a Path to a Fader

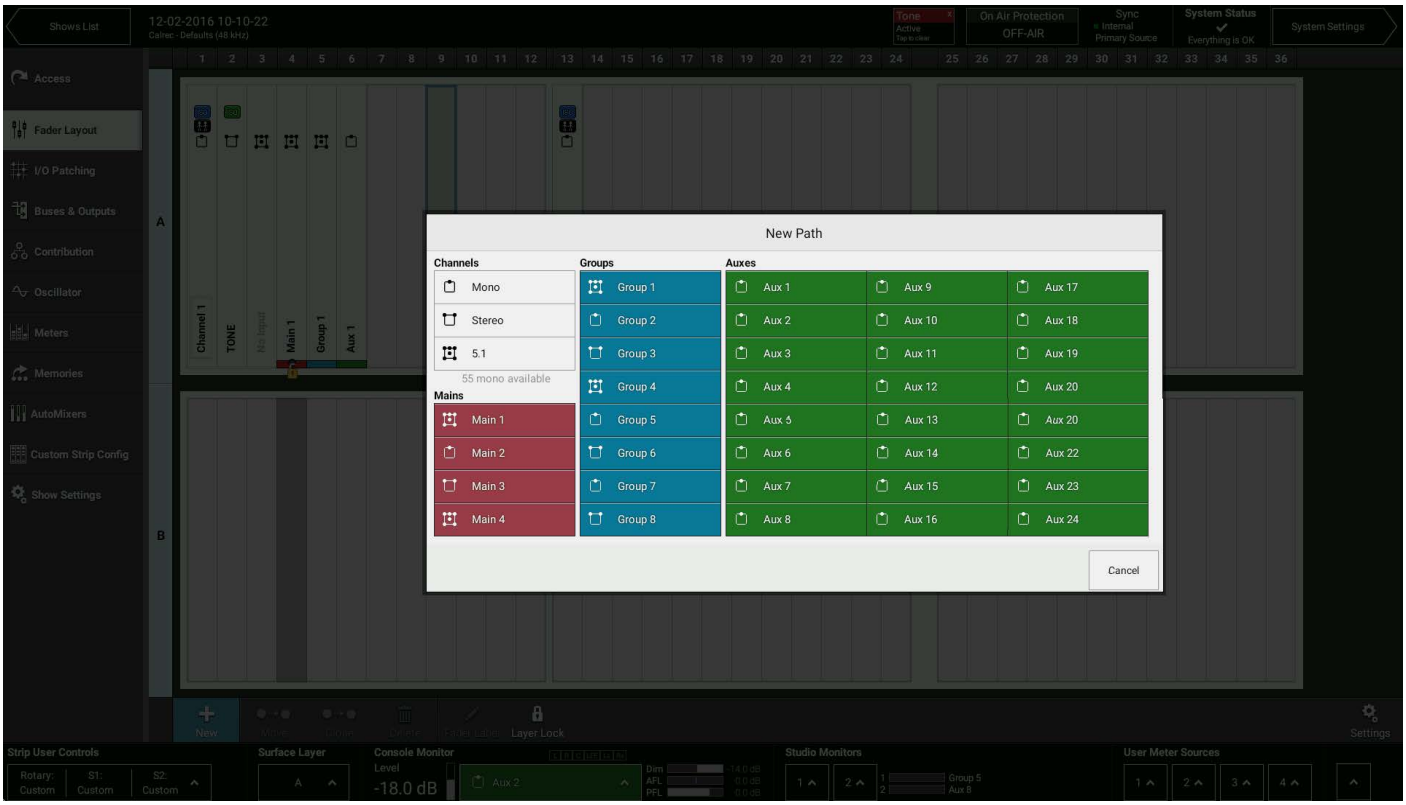
To attach a path to a single fader:

1. Tap an empty fader space to select it.
2. Tap **NEW** in the control screen footer.
3. A pop-up opens to show all path options, ranging from different widths of channel to mains, groups and auxes. Tap to select the desired width/type and the pop-up closes, or tap **CANCEL** to return to the fader layout screen without making any changes.

To attach paths to multiple faders:

1. Either hold and drag or tap and drag selection handles to select the desired range of faders.
2. Tap **NEW** and select a path/width choice from the pop-up. All selected faders will then be populated with the chosen path type/width. If a main, group, aux is chosen, the selected faders will be populated with buses in consecutive order. For example, if the user selects four faders, and then choose aux master 4, the faders will be populated with aux masters 4, 5, 6 and 7.

FIGURE 2 - FADER LAYOUT — NEW PATH POP-UP



Note: when viewing the access screen, if a fader with no path allocated is accessed, the screen provides a short cut to assign a path and will work in conjunction with linked faders to allocate multiple path at a time.

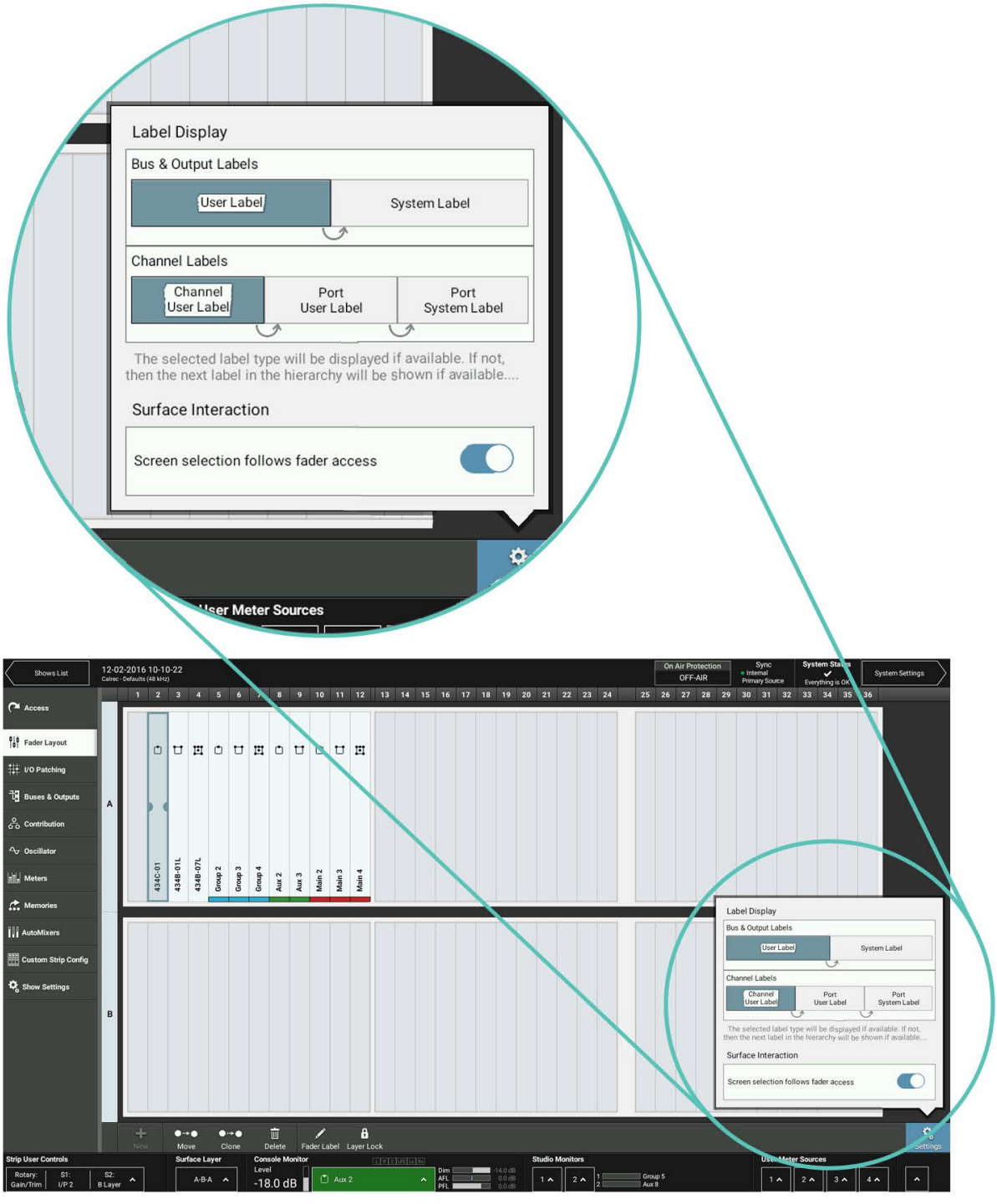
Settings

Tap **SETTINGS** in the bottom right of the fader layout screen and a pop-up appears containing settings for controlling how information is displayed. The top half allows the user to set how fader/port labels are displayed. Tap to select which of the three label types the user would prefer to view. The choice of label type will then be displayed if possible, if not, the next type in the priority order will be displayed, and so on.

The bottom half of the pop-up, 'surface interaction', provides a check box option:

- **SCREEN SELECTION FOLLOWS FADER ACCESS** allows the screen to scroll to bring the currently accessed fader into focus.

FIGURE 3 - FADER LAYOUT SETTINGS



Editing Labels

To edit a user label:

1. Select one or more faders and tap **USER LABEL** . The footer changes to display a text entry field and four buttons, **PREVIOUS**, **NEXT** , **DONE**, **CANCEL** .
2. Enter fader labels using either the software keyboard or an external keyboard connected via one of the two surface USB ports.
3. Scroll through the fader label fields by tapping them, or by tapping **PREVIOUS** and **NEXT** .
4. Once happy with the changes, tap **DONE** .

Port Labels

User Label:

A label given to a fader or bus from the Brio 36 interface, if labelling a channel, it just labels that fader, if labelling a bus, that label is applied everywhere you see the same bus. This is only viewable on the console that it was made on.

Port User Label:

A label given to a port by the network administrator via H2O. This label is viewable across the Hydra2 network.

System Label:

A port label generated within an I/O box and viewable across the Hydra2 network.

Cloning Paths

To clone a path:

1. Select one or more faders, at least one of which must have a path attached.
2. Tap **CLONE** in the control screen footer.
3. Tap the fader(s) that are required to clone the selected path(s).
4. Tap **CLONE** again to confirm the choice.

As the user taps possible destinations, previews of the potential placements appear to help with their decision. A colour indication system is used to indicate the possible outcome of their choice: green when the destination is empty, orange when a path other than a channel is assigned to the fader, and red when a channel path is assigned to the fader. Red is used to indicate channel paths because if a channel is removed from a fader it no longer exists.

Once the user has selected the destination they are presented with two options, **CANCEL** or **CLONE & OVERWRITE** which replaces the destination path with a clone of the original selection and removes the original path(s) from the surface. As channels don't exist once they are removed from faders, a pop-up appears if an attempt to overwrite a channel occurs, requiring a confirmation of choice.

Moving Paths to Different Faders

1. Select one or more faders, at least one of which must contain a path.
2. Tap **MOVE** in the control screen footer and tap the fader that is to be used to move the selected paths to.
3. Tap **MOVE** again to confirm choice.

Alternatively, once the chosen faders are selected, touch and hold again to make the selection float over the fader layout screen. From here drag the selection across the screen to the desired location. As the user taps or drags across possible destinations, previews of new path placements appear to help with their decision. The colour indication system described above is used.

Once the user has selected the destination they are presented with three options: **CANCEL**; **SWAP**—swaps the original paths with those on the chosen destination faders; **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 an attempt to overwrite a channel occurs requiring a confirmation of choice.

Deleting Paths from Faders

To remove a path from a fader:

1. Select one or more faders, at least one of which must have a path attached.
2. Tap **DELETE** in the screen footer.

As channel paths don't exist once they are removed from faders, if the user attempts to delete a channel, a pop-up appears showing the paths that will be deleted, requiring a confirmation of selection.

Lock a Fader to the Surface

Layer lock allows the user to ensure some faders are always present on the surface, regardless of which layer is selected.

1. Select one or more faders (with or without paths attached).
2. Tap **LOCK** in the screen footer.

The selected faders are then locked to the surface and will remain there regardless of layer selection.

I/O BOXES & HYDRA PATCHBAYS SAMPLE RATE SELECTION IN H2O

From Version 1.1 Brio36 Consoles can now work at 96kHz sampling frequency (sample rate).

There are 2 elements to 96kHz operation of Brio36 consoles:- Configuring the DSP and configuring the I/O to run at different sample rates.

Consoles at 96kHz

The consoles can switch between 48kHz & 96kHz working as required and they switch their sampling frequency by loading a show at the required sample rate built from a template at that rate. For Brio, the numbers of channels and buses are the same at 96kHz as they are at 48kHz. There is no reduction in the numbers of monitor inputs & outputs at 96kHz.

I/O and Hydra2 Patchbays at 96kHz

Before the I/O can be used with a 96kHz console its sample rate has to be changed to match. In H2O a new button labelled “Sample Rate” is made available, selecting this opens the list of I/O boxes connected to the Hydra2 Network.

The list shown in Figure 1 shows the sample rate set for each I/O box or Hydra2 Patchbay. In order to change the sample rate the user first selects the required I/O box or Hydra2 Patchbay box, this enables the Set Sample Rate button at the bottom left of the screen.

Clicking on this opens the ‘Set Sample Rate’ pop-up, allowing the I/O boxes and Hydra2 Patchbays to be set to 48kHz or 96kHz, or to follow the sample rate of a specific console. This is shown in Figure 2, please note that certain older I/O boxes cannot be set to run at 96kHz such as the fixed format MADI box.

The Hydra2 network supports 48kHz and 96kHz consoles and I/O boxes simultaneously, it achieves this by running at 48kHz irrespective of whether the Consoles and I/O boxes are running at 96kHz or not.

It simply uses 2 samples per 96kHz signal.

FIG 1 - I/O BOXES & HYDRA2 PATCHBAYS SAMPLE RATE SCREEN IN H2O

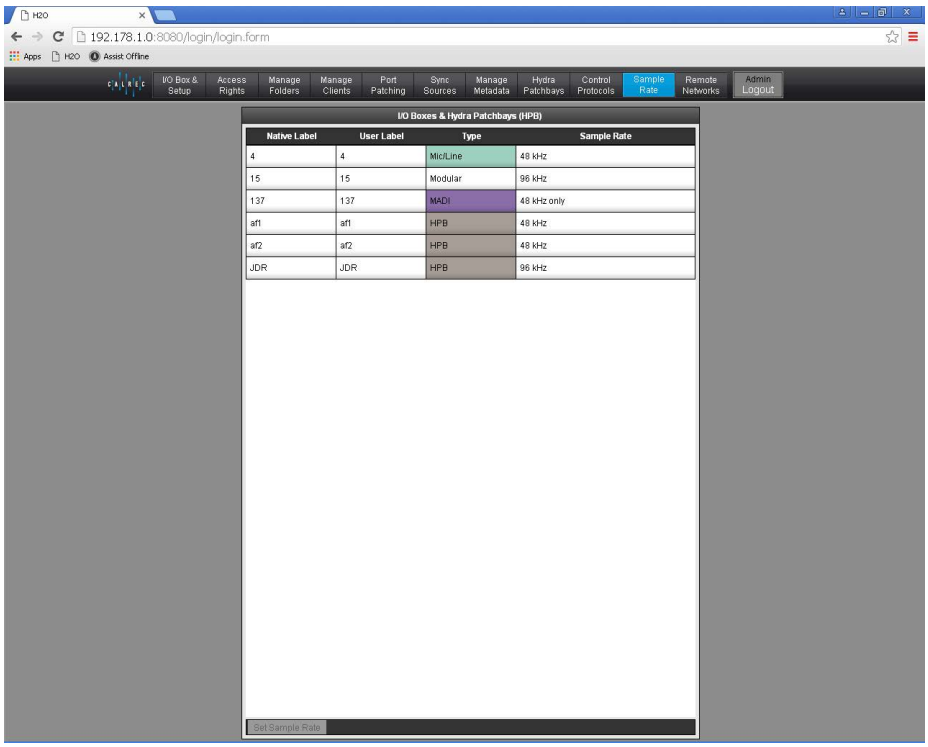
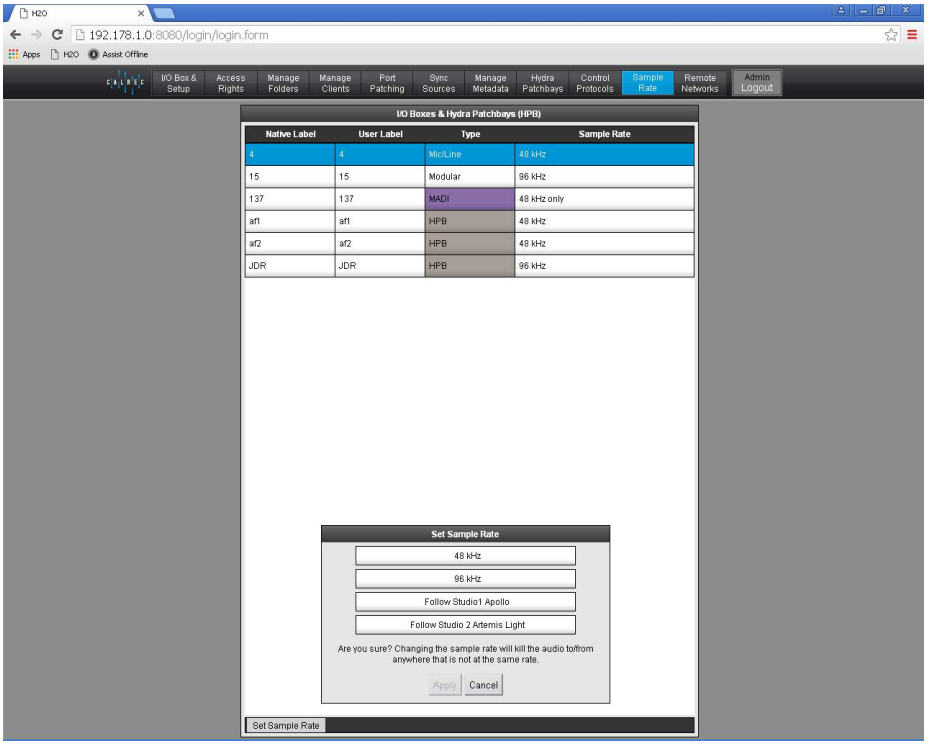


FIG 2 -SET SAMPLE RATE POP-UP SCREEN IN H2O



INPUT AND OUTPUT PATCHING

Brio 36 desk inputs and outputs can be patched to physical I/O ports or virtual Hydra patchbay ports, or to each other. To enter the I/O patching screen, tap 'I/O patching' in the Show menu.

Patches are made between sources and destinations.

- A source can be an I/O input port, Hydra patchbay output, or console DSP output from the local Brio console.
- A destination can be an I/O output port, Hydra patchbay input, or console DSP input from the local Brio console.

Each source can be patched to multiple destinations but a destination can only have one source. When patching an input port to multiple input channels it is important to remember that phantom power (48 V), input gain and sample rate conversion are all set within the Hydra2 domain and so altering these controls from any point on the surface will affect that feed for every instance of it across the surface and across the Hydra2 network.

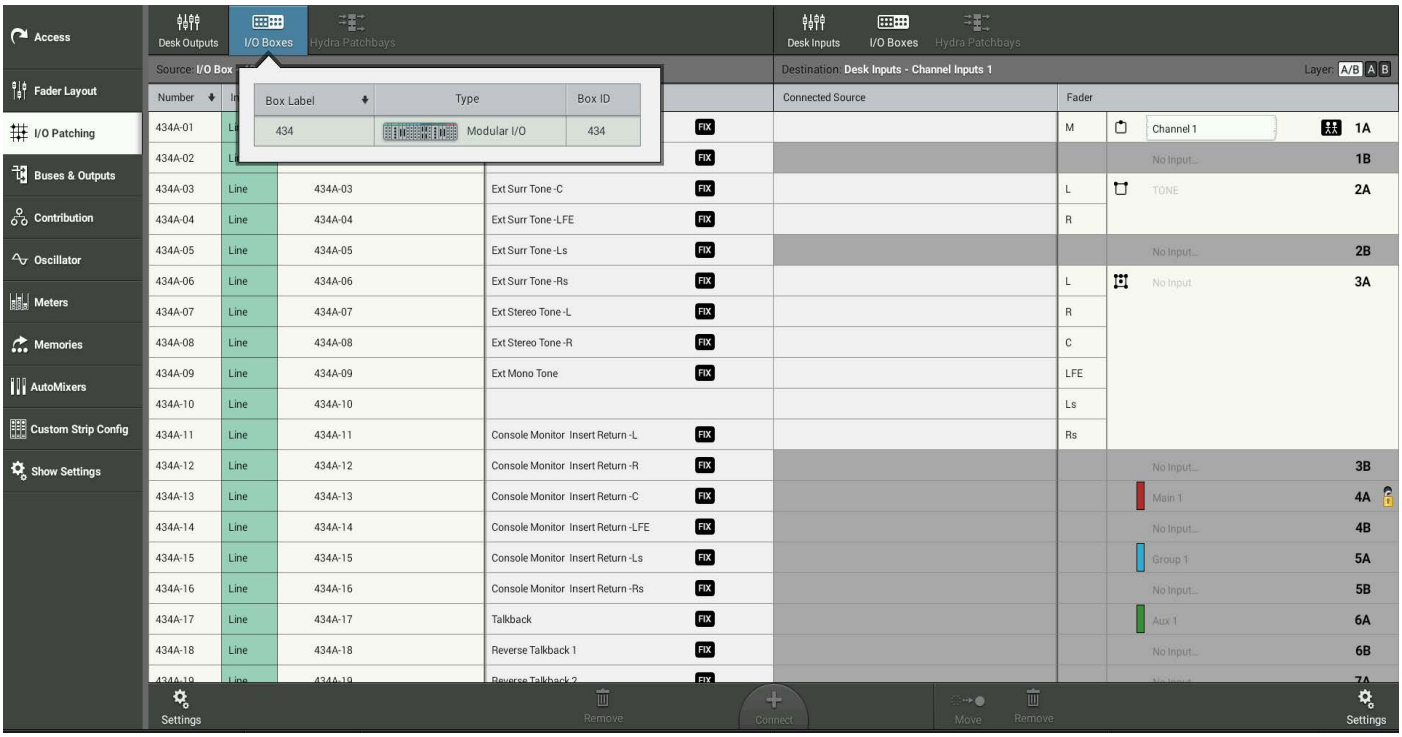
The I/O Patching Screen

The I/O patching screen is split into two halves, sources are displayed on the left and destinations on the right. Each side has a series of buttons running along the top for you to select which source/destination type you wish to access.

Selecting Sources and Destinations

Tap a source or destination selection button and a pop-up reveals all available options of that type, either as a set of buttons, or, in the case of I/O boxes, within a sortable table. Tapping to select one of these options, i.e. 'Aux Outputs', populates the source/destination screen with the associated ports.

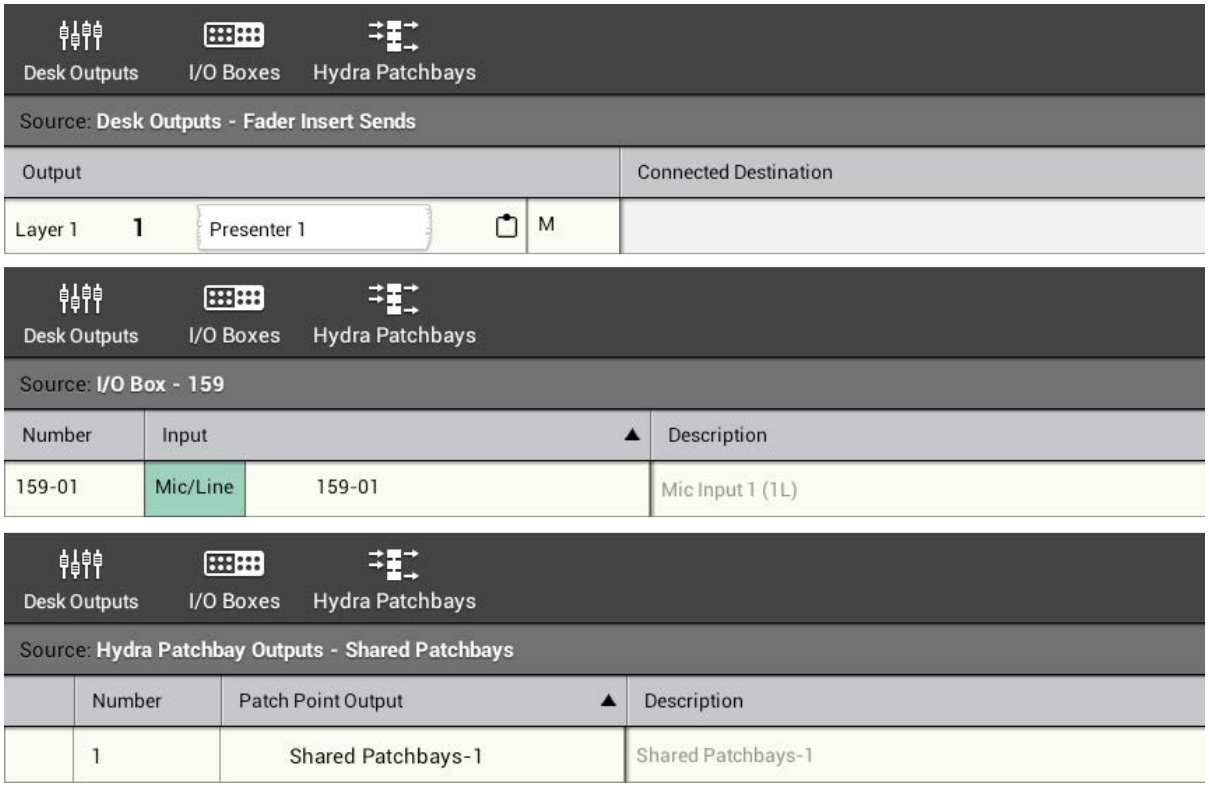
FIGURE 1 - I/O PATCHING SCREEN—SELECTING A PORT TYPE



Understanding Ports

Figure 2 shows how different port types are displayed within the I/O patching screen.

FIGURE 2 - PORT TYPES AS VIEWED IN THE IO PATCHING SCREEN



Port groupings are always displayed within sortable tables under the following headings:

Numbers

The port number is a combination of the I/O box hardware ID (HID) and the port number within the box—See H2O user guide for more detailed information. This is the port's native label and is generated directly from the I/O box itself.

Port labels

The port label can be either the port user label or the system label. See the port labels information box on this page for more information.

Description

The network administrator can include a brief description of a port, if so, this will be included in the I/O patching screen table. The description cells can be changed to display the connected source/destination if preferred.

Connected Source/Destination

The label of the source/destination that is connected to the port is displayed.

Icons

The following icons can be displayed in the I/O patching screen:

This symbol will be displayed if you have been denied access to the port via H2O by the network administrator.

Whenever a port goes offline this icon is displayed.

Whenever a box or port is set to a different sampling frequency to the console.

If a port has been patched to/from by another Hydra2 user this icon is displayed.

If a port has been patched to/from via H2O this icon will be displayed.

If a port has been patched via a 3rd party controller this icon will be displayed.

Within the I/O patching screen, sources and destinations have separate settings, which are accessible from the left and right of the control screen footer. The available settings vary depending on which port type is in view:

Channel Settings

If channel inputs are in view, the user can globally switch between viewing input 1 or input 2.

Layer View

When viewing fader specific paths, such as channel inputs or fader inserts, layer view options will be available. Select layers A or B to view only faders on that layer.

Surface Interaction

When viewing fader specific paths, such as channel inputs or fader inserts, surface interaction options are available. Checking the **FADER SELECTION FOLLOWS FADER ACCESS** check box brings the currently accessed fader directly into view within the I/O patching screen at all times.

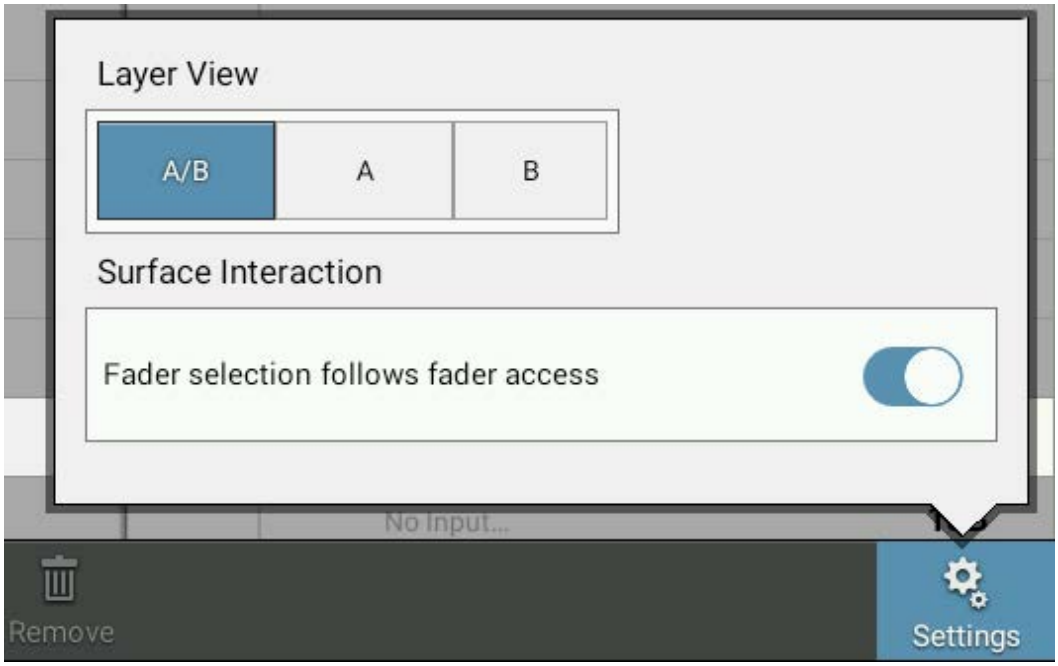
Connected Destination

The user can view connected destinations from sources and view connected sources from destinations. Both are displayed within the centre columns with this option selected.

Information Display

When viewing Hydra patchbays or I/O boxes, the information display split-selection button is available to choose between viewing path descriptions or connected source/destinations within the two centre columns of the screen.

FIGURE 3 - SETTINGS POP-UP



Viewing and Sorting

Ports are displayed within sortable tables. The sorting options vary between port types:

- Fixed format and modular I/O boxes can be sorted by number (native label), port label or description (if available). To keep I/O boxes together in the viewing table, sort by 'number' as this includes the box's HID which will be the same for all ports in that I/O box.
- Hydra patchbays can be sorted by patchbay name or patch-point number.
- Desk connections can only be sorted by resource number, e.g. Main 1 to 4.

In order to keep the individual legs of a 5.1 path together within the display the user can add a suffix to each leg, for example L, R, C LFE, Ls, Rs. See "GENERAL" on page 44 for more information.

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 **CONNECT**.

Moving a Destination

Once a patch has been made, the destination can easily be changed:

1. Select a destination.
2. Tap **MOVE** in the screen footer.
3. Select an alternative destination, (at this point you can select a new destination type).
4. Tap **MOVE** once more.

Protect a Patch from Memory Loads

Patches can be 'fixed', isolating them from memory load changes. Fixed patches are also protected under the port protection system in the same way as ports which are in use by multiple Hydra2 network users (See "SOURCE AND DESTINATION PROTECTION" on page 86).

To Fix a patch:

1. Select one or more patched destinations.
2. Tap **FIX** in the screen footer.
3. To un-fix the patch, tap **FIX** again.

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 on the local Brio 36 console. Isolated patches can still be over-patched by other Hydra2 users and by memory loads on other consoles on the network.

To isolate a patch:

1. Select one or more patched destinations.
2. Tap **ISO** in the screen footer.
3. To de-isolate the patch, tap **ISO** again.

Removing a Patch

To remove a patch from the system:

1. Select either the source or destination (or one of the destinations if the source is patched to more than one).
2. Tap **REMOVE** in the screen footer. The patch is automatically removed, unless it is 'fixed' on the surface or was made by another Hydra2 user, in which case a pop-up appears requiring confirmation of the removal.

Inputs 1 and 2

Every Brio 36 channel has two inputs, 1 and 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 and buses can be connected directly back into channel inputs. This method of control is different to just attaching a console output to a fader. From the I/O patching screen select DESK OUTPUTS in the sources screen and DESK INPUTS in the destinations screen and patch as normal.

INPUT CONTROLS

The input controls screen is split into three sections, the header contains general controls, the physical I/O box port controls are on the left and Brio 36's input channel controls are on the right. With the touch display in 'active Show' view, tap the input processing tab to view all input controls for the currently accessed channel or group.

Depending on the type of input port that is connected to a channel, the user will see some or all of the controls described here. In the control screen header the Input 1/Input 2 toggle button allows the user to switch between two entirely separate I/O box input ports which may be patched to the currently accessed path. The tone switch toggles tone on and off to the channel.

I/O Box Input Port

Controls and information fields on the left of the Input screen relate to the physical I/O box input port; at the top, the port's native/user label is displayed. The rotary control and switches control mic/line gain and phantom power settings for the connected physical input port.

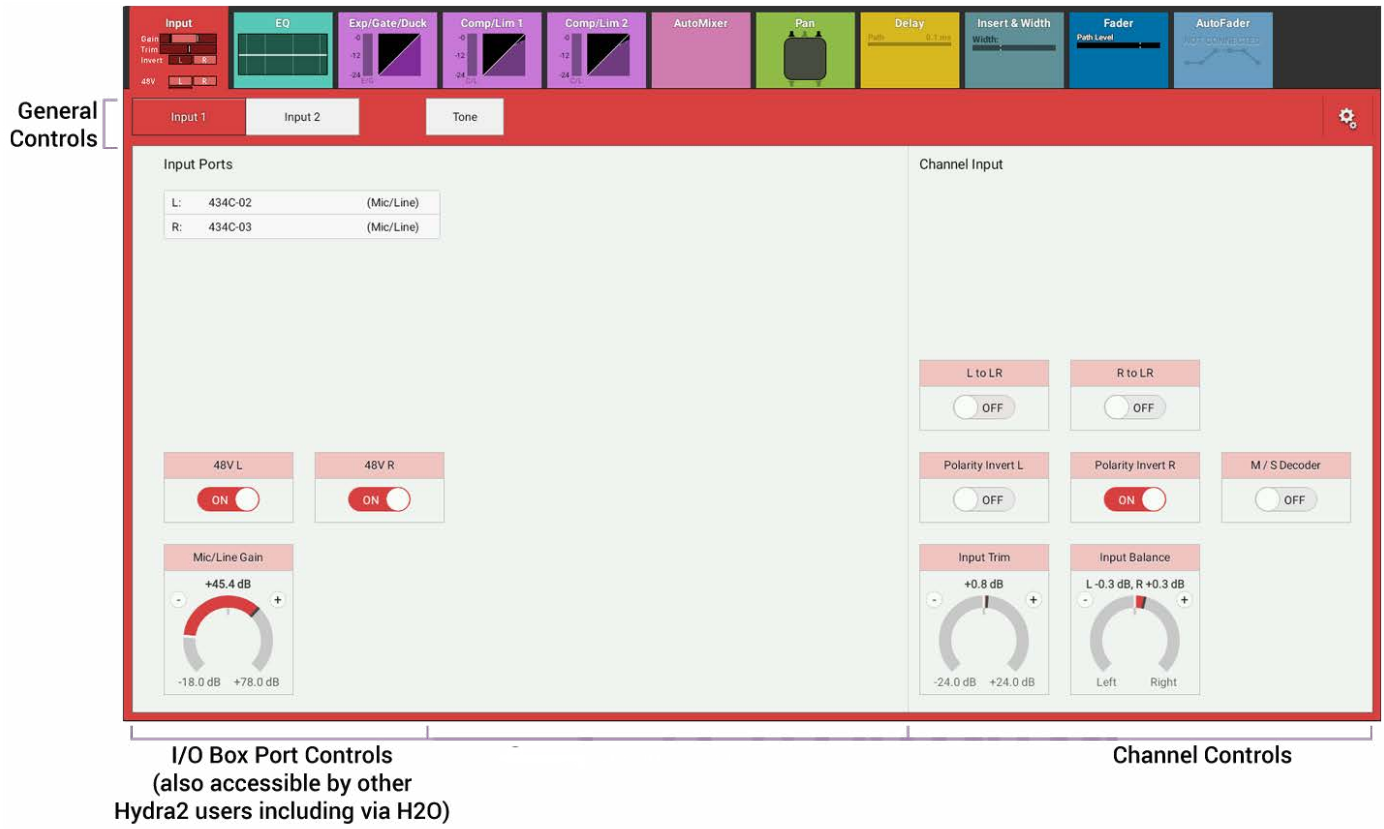
If the port is shared with other Hydra2 network users this will be indicated, as shown in the image below, with a padlock icon along with a list of all network users who are sharing the port. The **ENABLE TEMPORARY CONTROL** button is used when altering shared port controls, see "SOURCE AND DESTINATION PROTECTION" on page 86 for more information.

The Channel Input

The channel input controls on the right of the screen control the DSP settings within the Brio 36 processing core for the currently accessed path:

- Input Trim increases or reduces the level of the incoming signal between -24 dB and +24 dB.
- There are polarity invert switches for each leg of the path.
- If a stereo path is accessed, a middle and side (M/S) decoder will be available. Switching this on automatically treats the incoming stereo signal as a middle and side microphone array.
- Input balance allows alteration of the weighting of the stereo signal between the left and right legs of the path.
- Path leg routing options **L TO LR** and **R TO LR** allow the user 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 **L TO LR** to the on position feeds the left signal to both left and right sides of the stereo path, and switching on **R TO LR** 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 the it is a full range balance control, i.e. turning the dial all the way to the left just outputs the 0 dB left hand signal from the left leg of the path. With either **L TO LR** or **R TO LR** switched on independently, the balance control is unavailable as it would have no effect as the left and right portions of the signal would be the same.

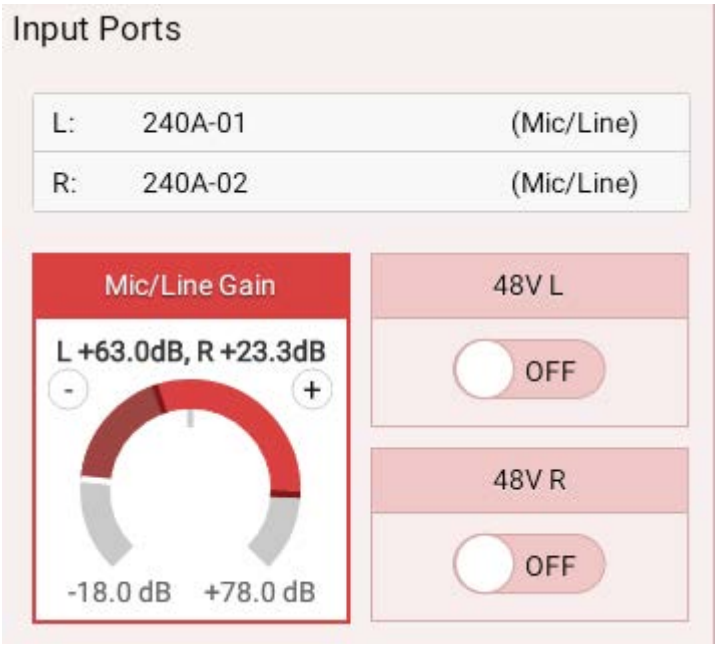
FIGURE 1 - INPUT CONTROLS



Mic/Gain

If the gain of any connected mic/line input is not the same on all legs of a stereo or surround channel, then the gain display will show the highest and lowest value for surround sources, left and right values for stereo sources , as shown in Figure 2.

FIGURE 2 - MIC/GAIN



Providing Console Wide Strip User Controls

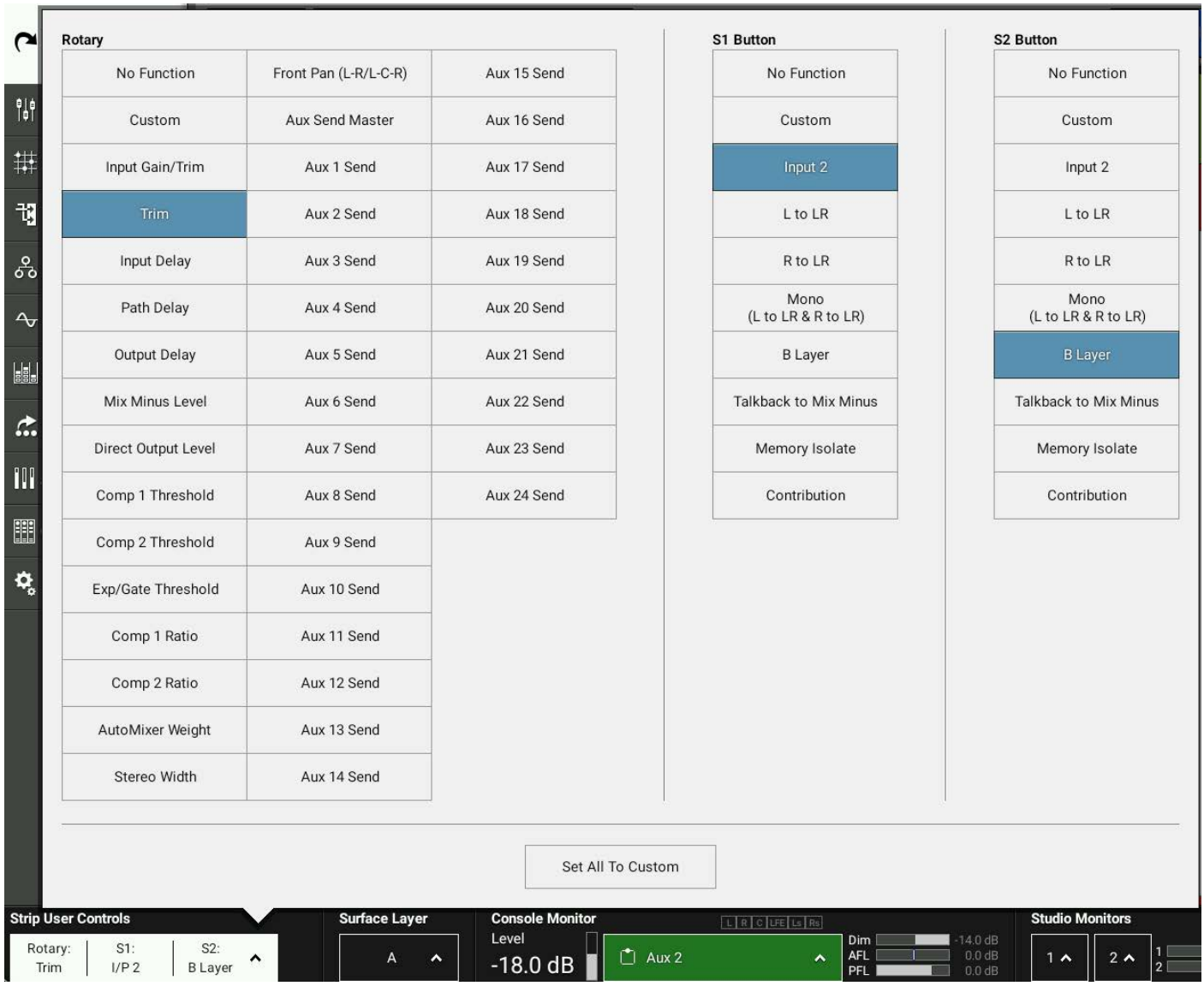
Tap the Strip User Controls area on the bottom left of the touchscreen. This presents the user with a selection of controls that the Rotary Control, S1 and S2 buttons can be set to as a console wide function.

Setting the Rotary Function to **Trim** will change the Rotary control on all the fader strips to be a Trim control. The S1 & S2 buttons can be configured for various functions or GPIO control.

Figure 3 shows all the rotary controls controlling Input trim, all the S1 buttons switching Input 1/2 and all the S2 buttons switching Layers A / B. In addition to console wide function each rotary, S1 & S2 button can be set to perform a different function or GPIO control using Custom Strip Configuration.

This custom function is kept separately and overridden by selecting any function other than “Custom”. When “Custom” is reselected its custom function is restored. See “CUSTOM STRIP CONFIGURATION” on page 65.

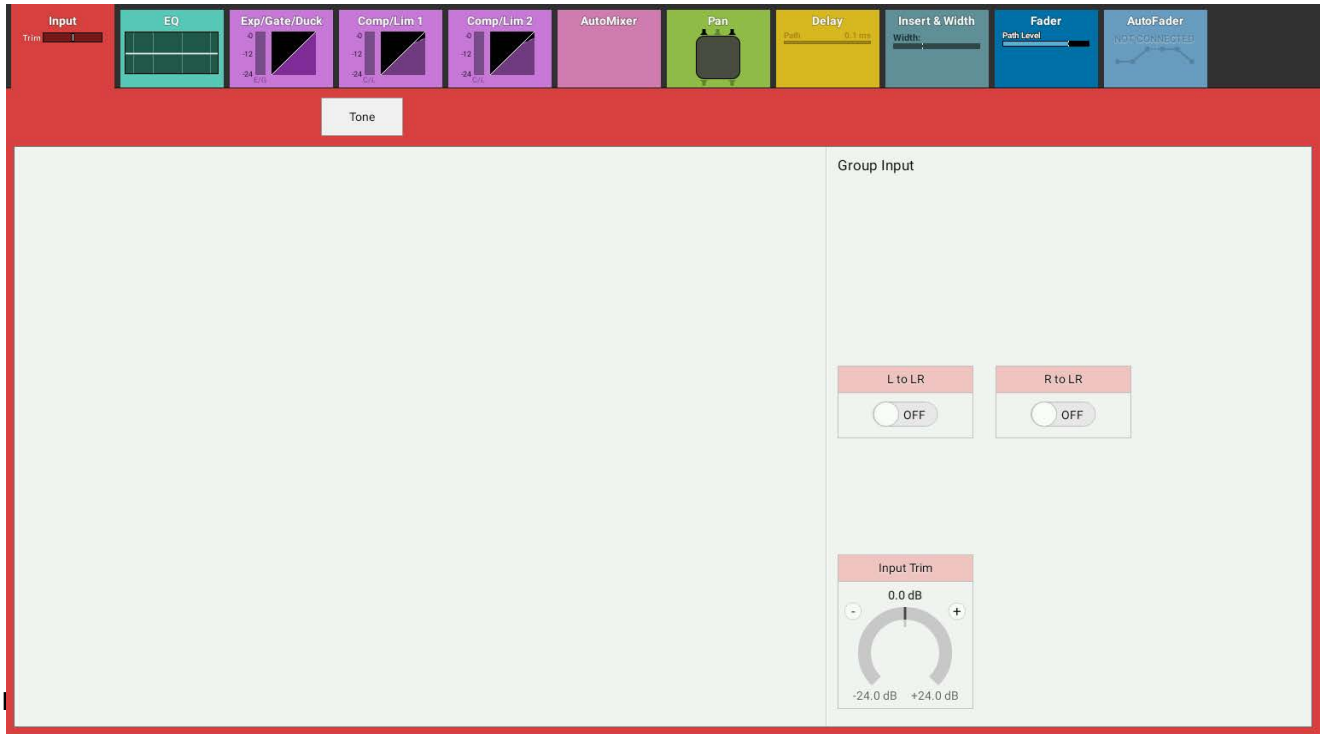
FIGURE 3 - STRIP USER CONTROLS



Group Input Controls

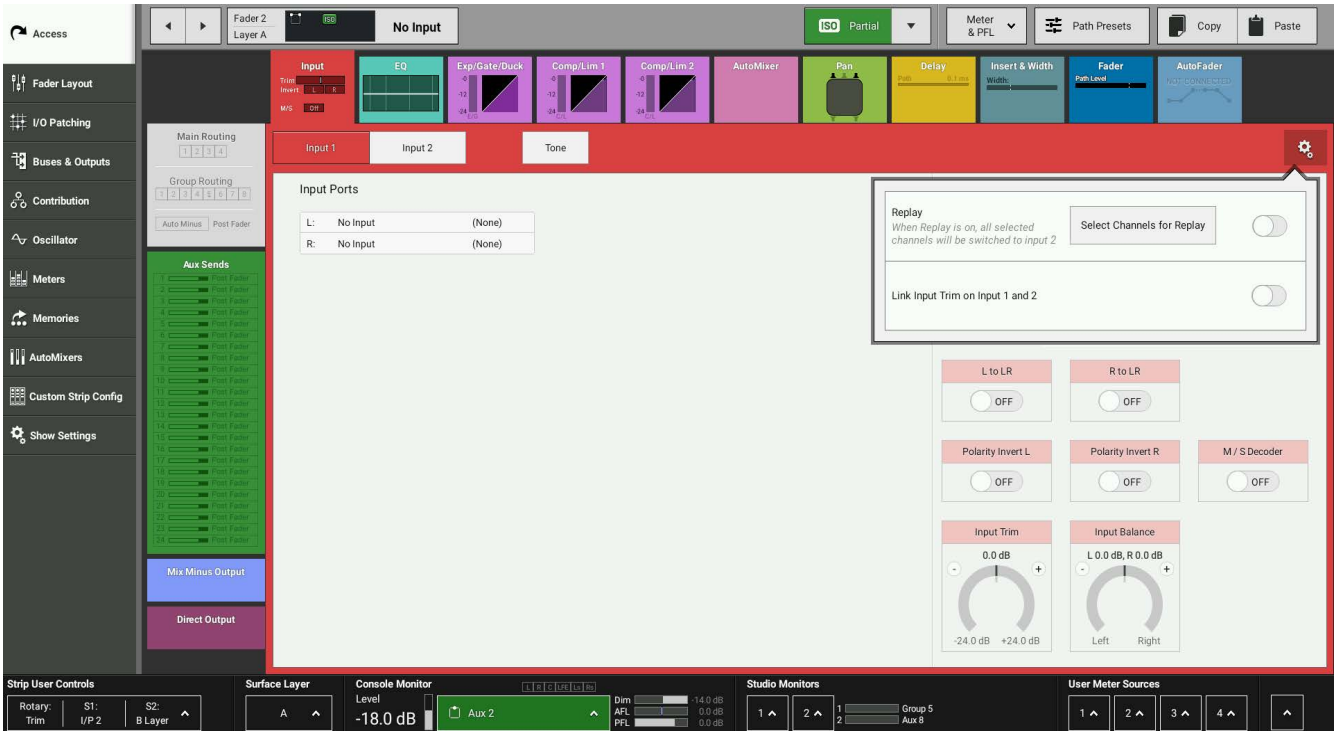
When a stereo or mono group is accessed an input trim control is available from the input screen as shown in Figure 4. Path leg routing buttons are also provided for stereo groups:

FIGURE 4 - GROUP INPUT CONTROLS



Inputs 1 and 2 have separate input trim controls. These can be linked from the Tools menu on the Access> Input screen as shown in Figure 5. The wording on the Control Cell changes to show the words 'Trims Linked' between the Input 1 and Input 2 source identifiers. The display on the screen also shows the fact that the Input trims are linked.

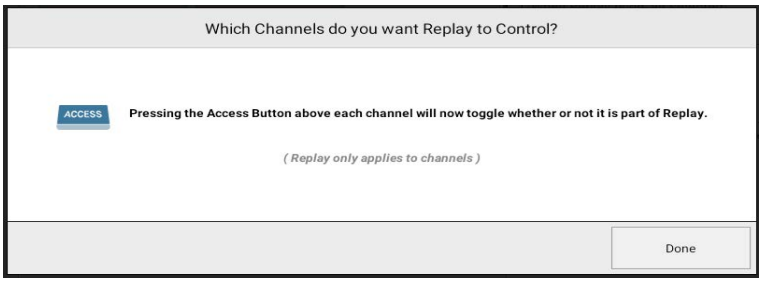
FIGURE 5 -LINK TRIMS



Replay

Replay allows the user to select a number of channels to switch between input 1 and input 2 from one control which can be a user button or be controlled from the screen. This is also achieved from the Settings menu on the Access>Input screen shown in Figure 5 above. The user then selects paths for replay using the ACCESS keys. See Figure 6.
The fader displays change to say 'REPLAY' rather that not in replay' as appropriate.

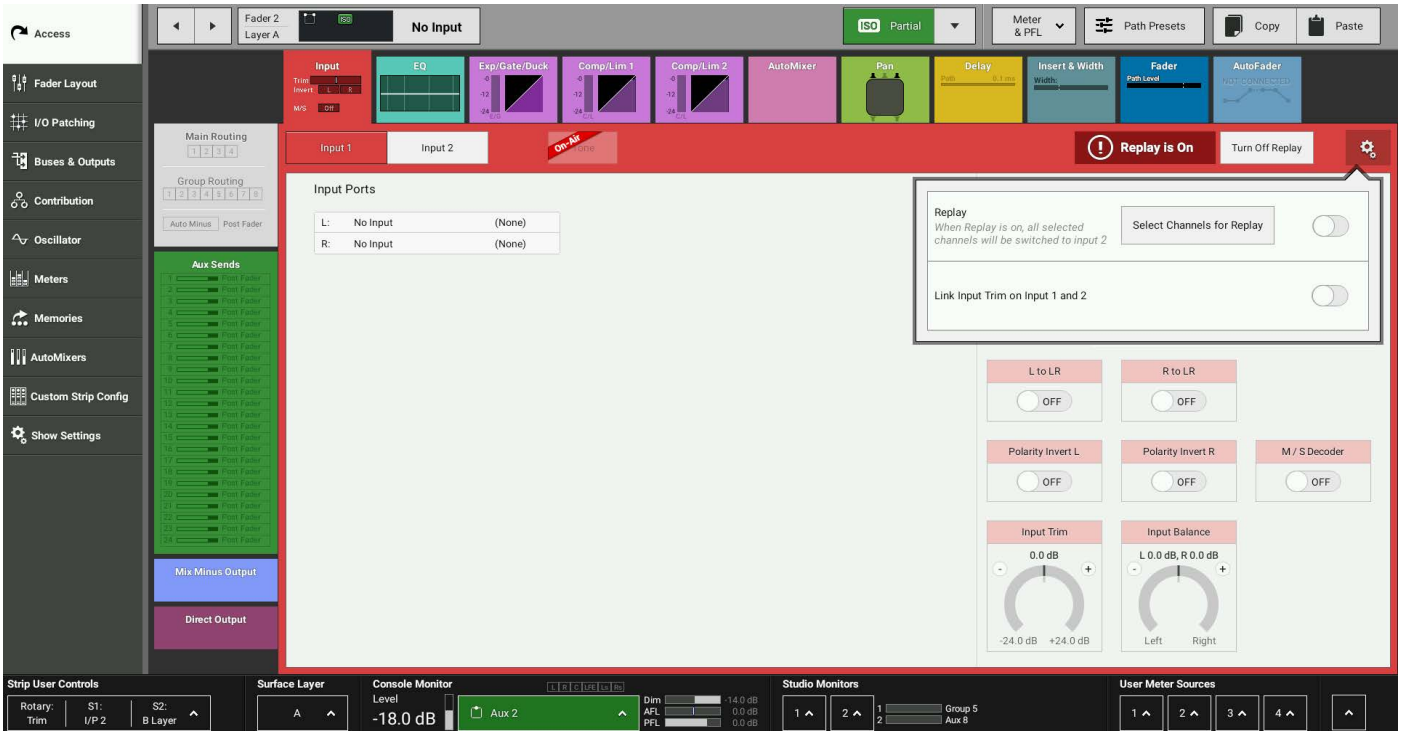
FIGURE 6 -REPLAY CHANNEL SELECTOR



When Replay is active these channels will switch to Input 2, when Replay is turned off the input channels switch back to input 1. Replay makes setting up a virtual sound check easy. With the sources connected to input 1 each source is sent to a recorder and its returns are connected to input 2.

When the talent leaves the user can turn replay on, play the recording and continue the sound check. On completion the replay is turned off to switch all the inputs back to the live sources. Note: Replay can also be controlled from a GPI if required. Figure 7 shows system in Replay.

FIGURE 7 -SYSTEM IN REPLAY



Stereo & 5.1 path spill leg access and independence for Input settings

From version v1.1 Brio can access each spill leg of a Stereo or 5.1 path and allow parameter changes to be made on each spill leg. Figure 8 shows the 'Full Path' button being pressed which brings up the Spill Legs Access pop-up. The user selects which spill leg they wish to examine/alter and the screen then accesses that leg as shown in Figure 9. Note: this button appears on all access pages.

FIGURE 8 -SPILL LEG SELECTOR

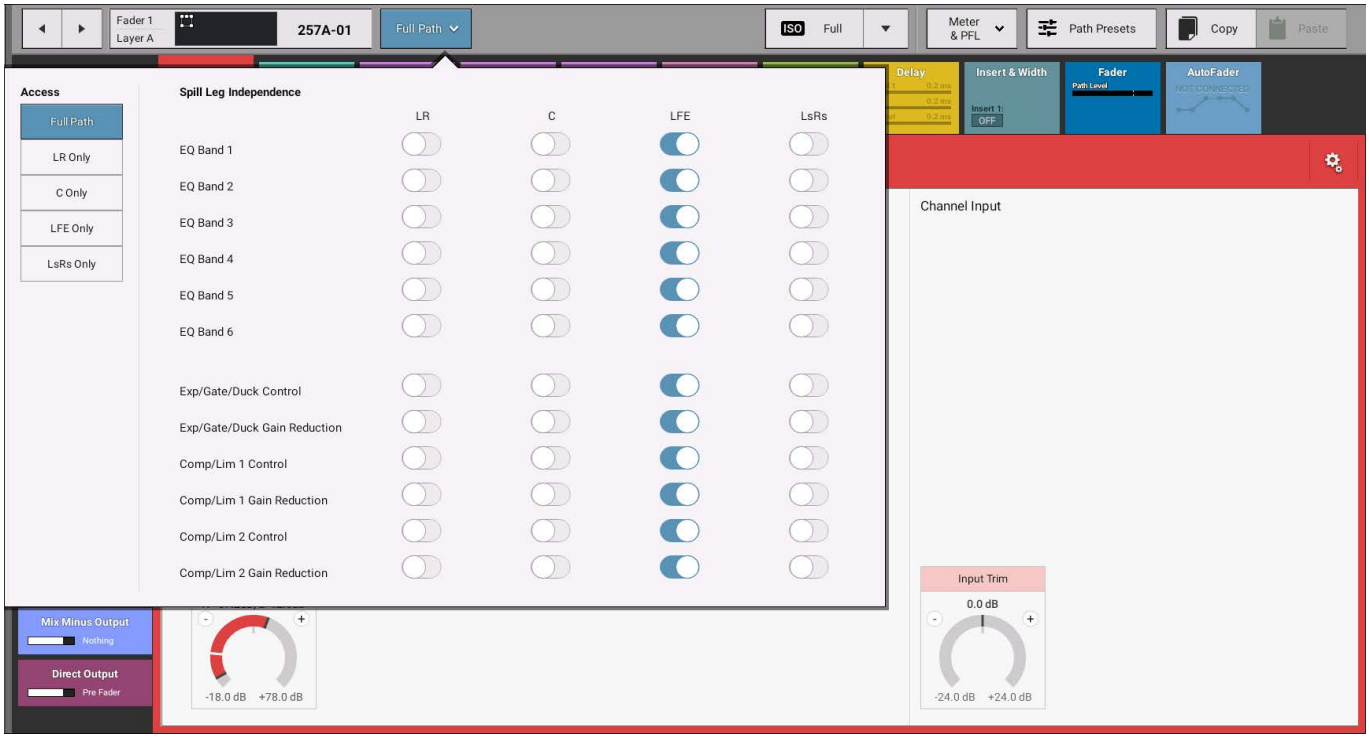


Figure 9 shows the 'LR Only' spill legs on the Input page. As this is a Stereo spill leg all the controls that would normally appear for a Stereo path are made available. The 'LsRs' spill leg appears with the same stereo parameters controls as shown here for the LR spill legs. Note the Mic Gain for this spill leg.

FIGURE 9 -LR ONLY SPILL LEG SELECTED

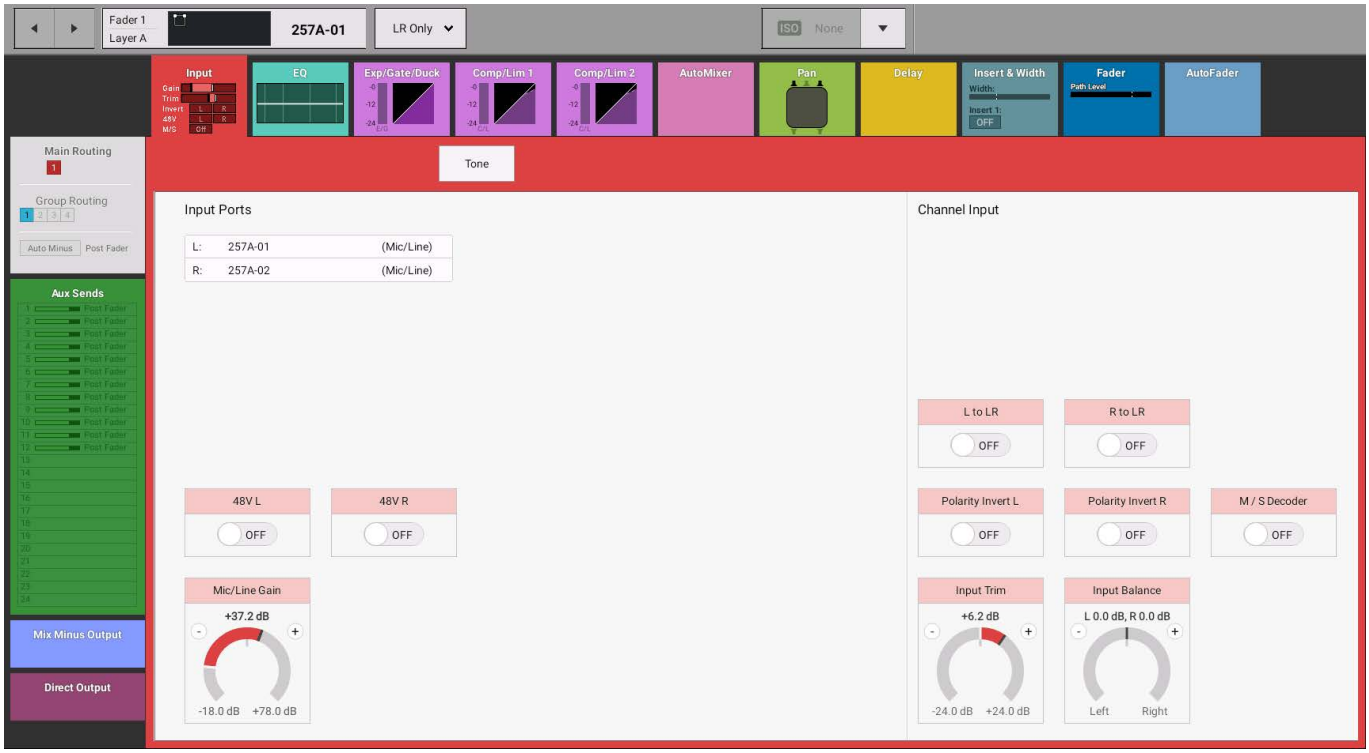


Figure 10 shows the ‘C Only’ spill leg on the Input page. As this is a Mono spill leg all the controls that would normally appear for a Mono path are made available. The ‘LFE’spill leg appears with the same mono parameters controls as shown here for the C spill leg. Note the Mic Gain for this spill leg.

FIGURE 10 -C ONLY SPILL LEG SELECTED

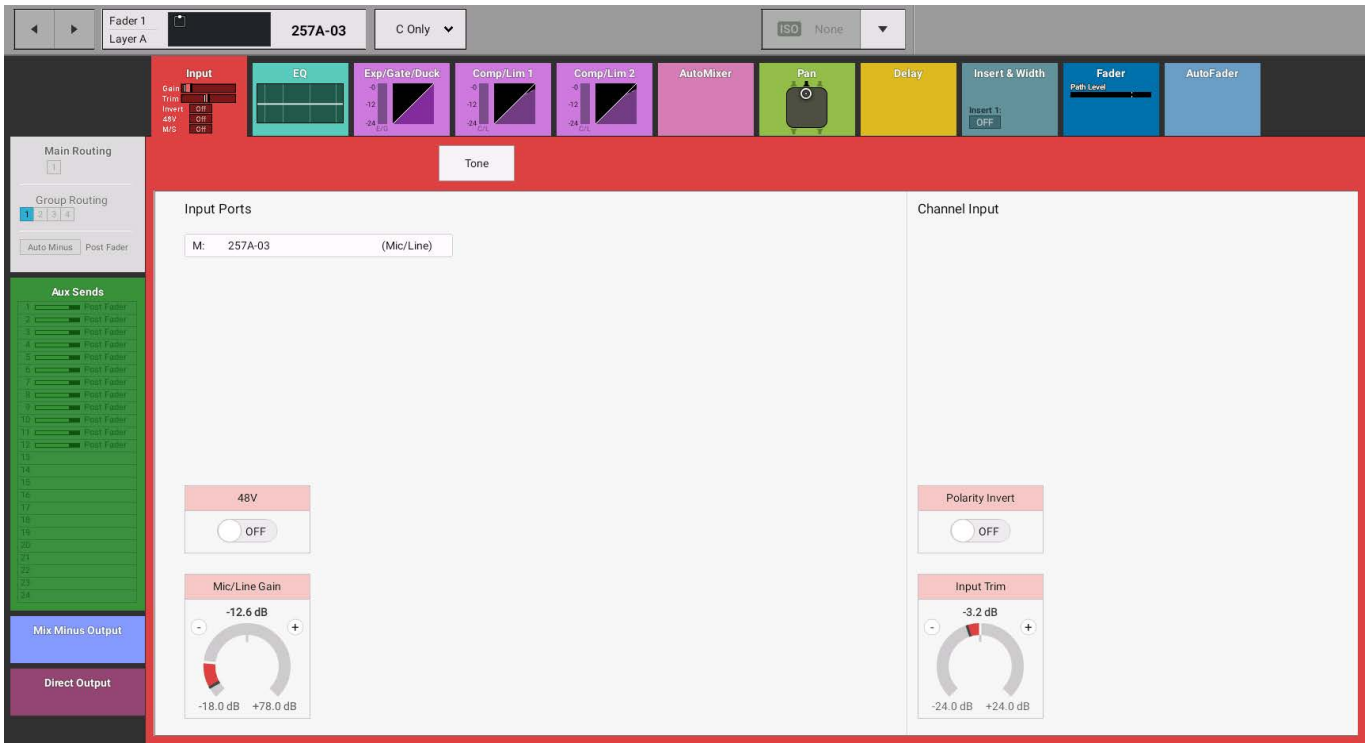
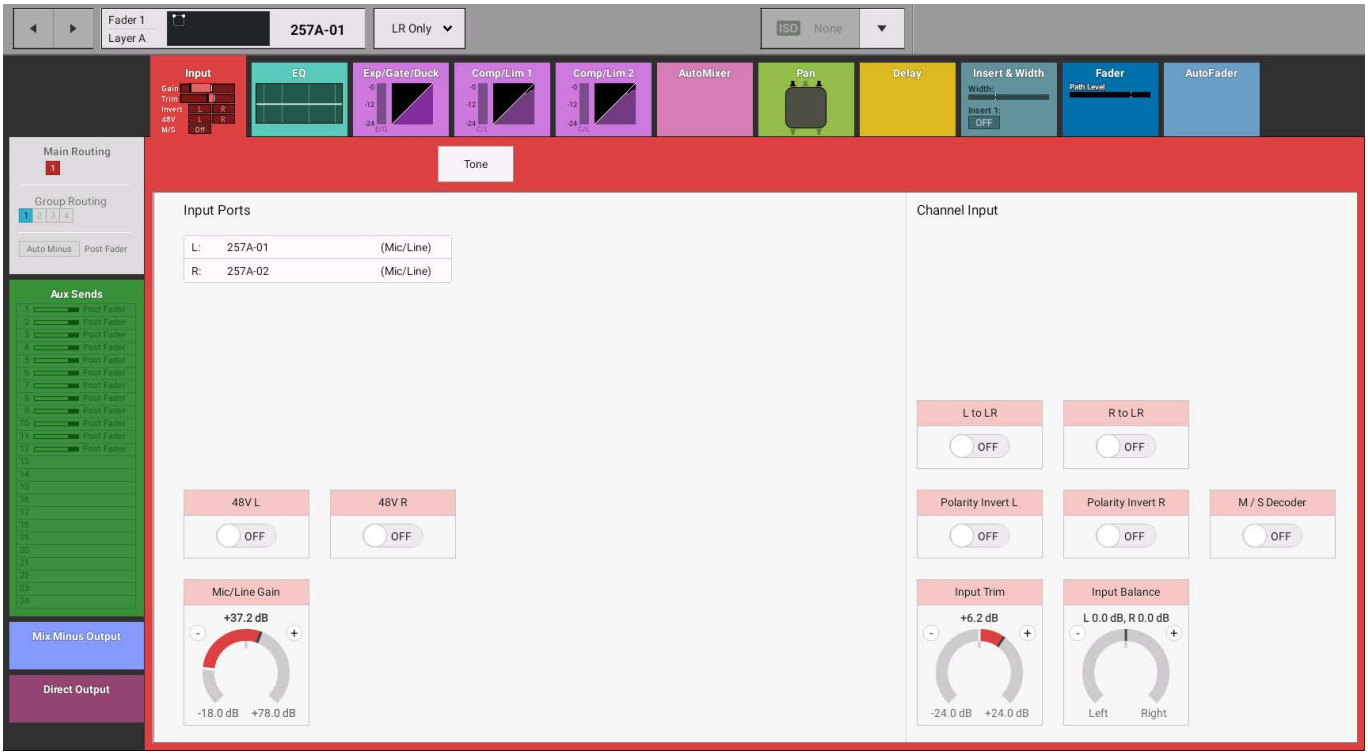


Figure 11 shows the ‘Full Path’ on the Input page. As this is the 5.1 Channel it shows the combined effect of the changes made on the spill legs. For instance the Mic Gain shows the Highest and Lowest Mic Gain setting made on the spill legs as a combined display..

FIGURE 11 -FULL PATH SELECTED

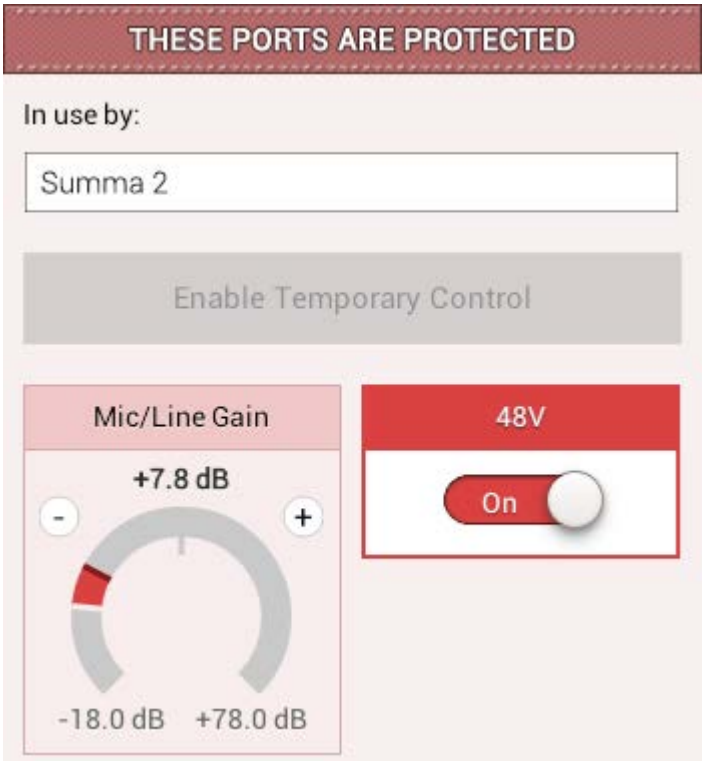


SOURCE AND DESTINATION PROTECTION

Source and destination protection is a simple system using pop-ups and buttons to protect input parameter settings and output destinations when ports are in use by multiple users across a Hydra2 network.

When viewing inputs on Brio 36, the user will notice if it is being shared, as the following label will be displayed:

FIGURE 1 - INPUT PROTECTED



The same protection applies if the port has been 'protected' within H2O, in this case, the following will be displayed:

FIGURE 2 - INPUT PROTECTED BY H2O

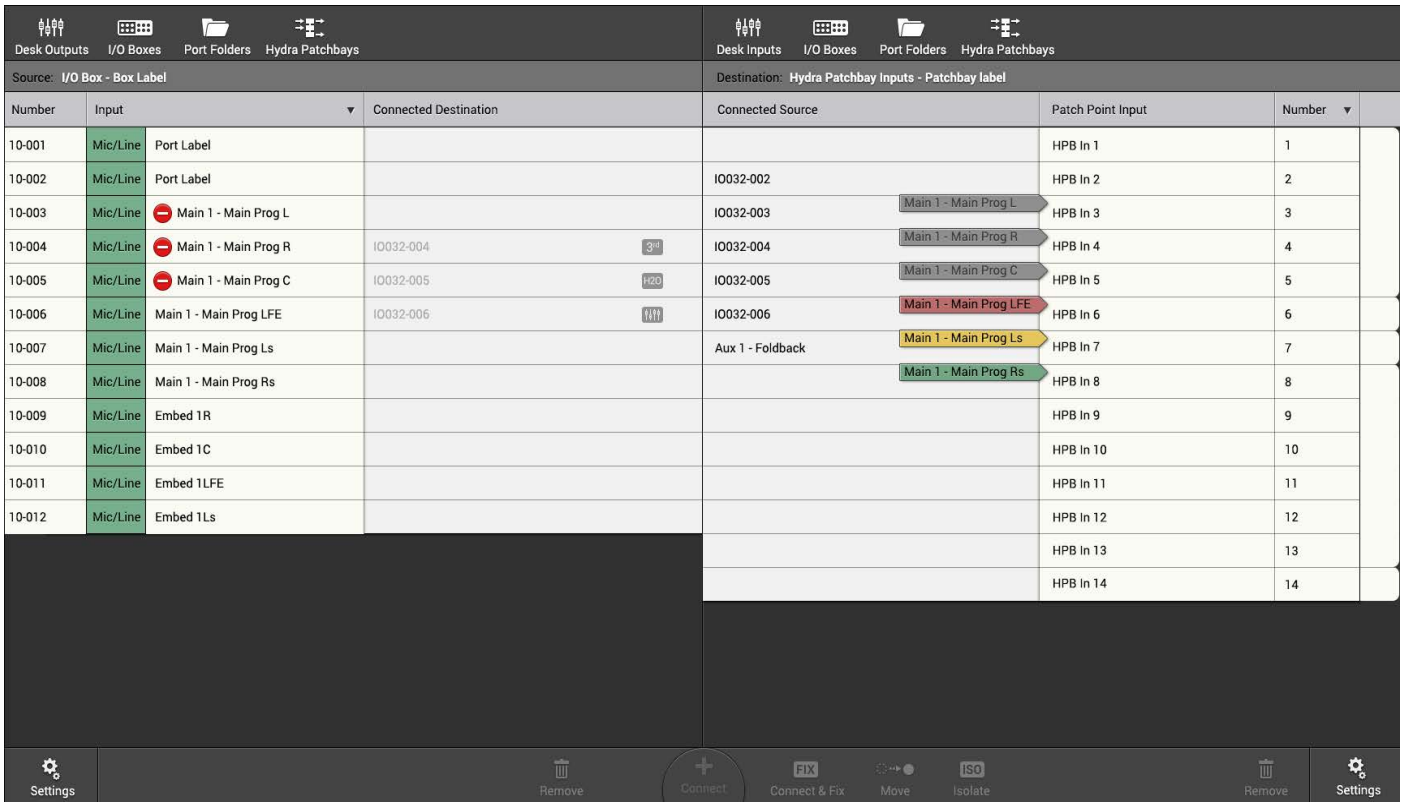
Destination Protection

Figure 3 shows the I/O port patching screen during the process of making a source to destination connection.
A 'traffic-light' colour coding system is used. The coloured arrows indicate any issues associated with the potential source to destination patch.

- A green arrow indicates that there is no source currently connected to the destination so the patch can be made with no issues.
- The yellow arrow indicates that currently the destination has a local source connected to it.
- The red arrow indicates that the destination has had a source patched to it by another user on the network.
- The grey arrow indicates that the patch will not be made because the user has been denied access to the port by the network administrator.

If the user decides to go ahead with the patch and the indication arrow is either red or yellow, the protection pop-up shown below will appear as an extra level of protection, allowing them to review all potential changes before committing.

FIGURE 3 - PROTECTION ARROWS



Source Protection

Audio sources can be shared by all consoles on the Hydra2 network. Source protection adds an layer of protection when making changes to the following input controls:

- Mic/line gain.
- Phantom power (48 V).
- SRC (if using AES sources).

As indicated in the input control screen, to make changes to these protected input controls, simply tap **ENABLE TEMPORARY CONTROL** , then make the desired changes. This remains active until the user touches any control outside the input screen, at which point it will need to be activated again to make any changes to the protected input controls. Alternatively hold the Access button for the strip to temporarily enable control over the gain. If adjusting input gain from a strip rotary for a shared input port, the strip display will show that the port is protected.

User Memory Load Protection

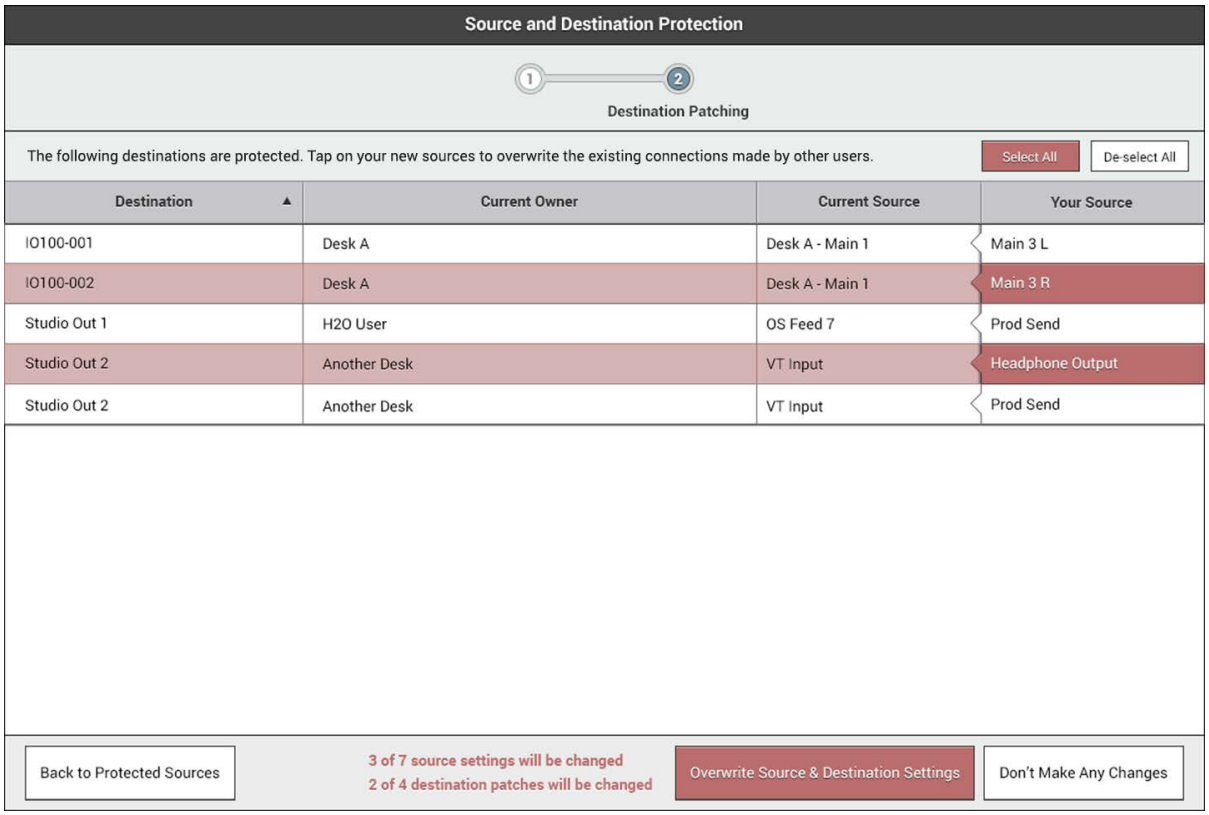
Loading a user memory will generally include changes to patching and input controls, if these changes affect shared/ protected inputs, or patching to outputs which are already in use by other users on the network, source and destination protection will come into play.

When a user memory with conflicting settings/patching is loaded, a pop-up, like the one shown below, is displayed on the touch display. The number of pages within the pop-up depends on whether there are conflicts relating to sources, destinations or both.

Once the user has checked all conflicts and selected those that they wish to accept, they tap **OVERWRITE SOURCE & DESTINATION SETTINGS**. Tapping **DON'T MAKE ANY CHANGES** rejects all changes to shared sources and destinations, but makes all other changes associated with the memory load.

It is important to ensure that the user fully understands the effect of any accepted changes as they will be directly affecting other users on the network.

FIGURE 4 - SOURCE AND DESTINATION POP-UP—MEMORY LOAD



EXTERNAL INPUTS

Brio 36 has a pool of 48 mono external input resources from which the user can create any combination of mono, stereo and 5.1 inputs, using one, two or six resources respectively. External inputs can be monitored and metered and are available as patching destinations within the I/O patching screen.

External inputs are typically used to monitor down-stream feeds or 'off-air' returns to ensure the console output is not being compromised on its way to its intended destination.

To view the external inputs screen, tap **SHOW SETTINGS** at the bottom of the Show menu, then tap **EXTERNAL INPUTS**.

Creating External Inputs

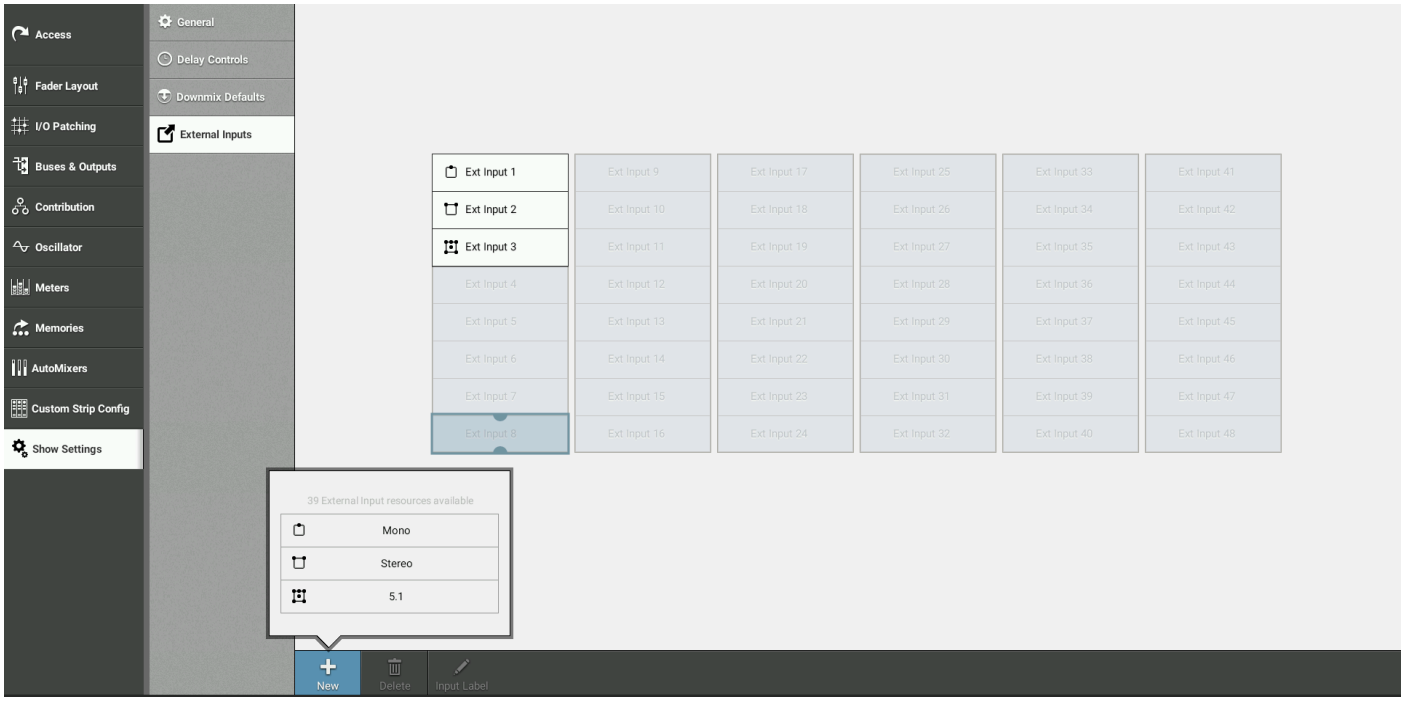
Within the external inputs screen, select one or more cells using one of the following options:

- Tap to select a single cell.
- Touch and drag to select multiple cells.
- Tap, then drag selection handles to select multiple cells.

... then tap **NEW**.

Select a path width from the pop-up—mono, stereo and 5.1—and the selected cells are populated with that choice. Note: within the pop-up the number of remaining external input resources is displayed.

FIGURE 1 - CREATING EXTERNAL INPUTS



Removing External Inputs

To remove external inputs:

1. Select one or more external input cells using one of the methods described above.
2. Tap **DELETE** .
3. A pop-up appears showing all external input paths to be deleted, tap **DELETE** to accept. The deleted resources are returned to the resource pool to allow more external inputs to be created.

Labelling External Inputs

By default, external inputs have labels which correspond to the cell that they were created in, for example “External Input 5” in cell 5. The user may wish to add your own labels. To do this:

1. Select one or more external inputs using one of the methods described above.
2. Tap **EDIT LABEL** .
3. The control screen footer changes to text input mode, with navigation buttons: **PREVIOUS**, **NEXT** , **DONE** and **CANCEL** . Move between the external inputs and edit each label individually either by using these buttons or by tapping on the individual text fields.
4. Once happy with your labels, tap **DONE** .

Patching to External Inputs

External inputs appear within the ‘desk connections’ patching destination list. They can be patched-to using the usual method, as described here: ”INPUT AND OUTPUT PATCHING” on page 74.

Monitoring External Inputs

To monitor an external input:

1. Tap the console monitor source selection button in the monitor bar.
2. Select the EXTERNAL INPUTS tab within the pop-up.
3. Select the external input that you would like to monitor.

Monitoring is explained in detail here: “MONITOR CONTROLS” on page 150

FIGURE 2 - MONITORING POP-UP—EXTERNAL INPUTS

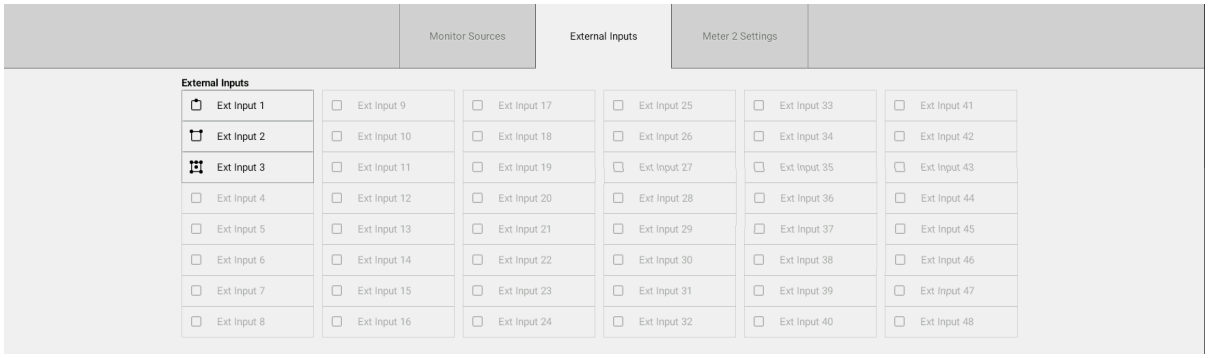
Metering External Inputs

To meter an external input:

1. Tap one of the four meter selectors to the bottom right of the touch display.
2. Select the external input tab within the pop-up.
3. Select the external input that you wish to meter.

Metering is explained in more detail here: "METER TYPES" on page 158.

FIGURE 3 - METERING EXTERNAL INPUTS



DIRECT OUTPUTS

Direct outputs are path specific desk outputs, available to Channels and Groups, which are available for patching. Brio has a pool of 64 resources, which is shared between direct outputs and mix minus outputs.

Assigning a Direct Output

To assign a direct output to a path:

1. In 'active Show' view, tap the direct output routing tab.
2. Tap **MONO**, **STEREO** or **5.1** to choose a direct output width.
3. If not enough resources are available for the output that the user wants to create they can remove other direct / mix minus outputs to free-up resources.

Note: within the pop-up the number of remaining direct / mix minus resources is displayed.

Removing a Direct Output

To remove a direct output:

1. Tap to choose **NO PATH** from the path width drop-down menu in the direct output control screen header.
2. A pop-up will appear asking the user to confirm the removal of the direct output, tap either **REMOVE OUTPUT** or **CANCEL** .

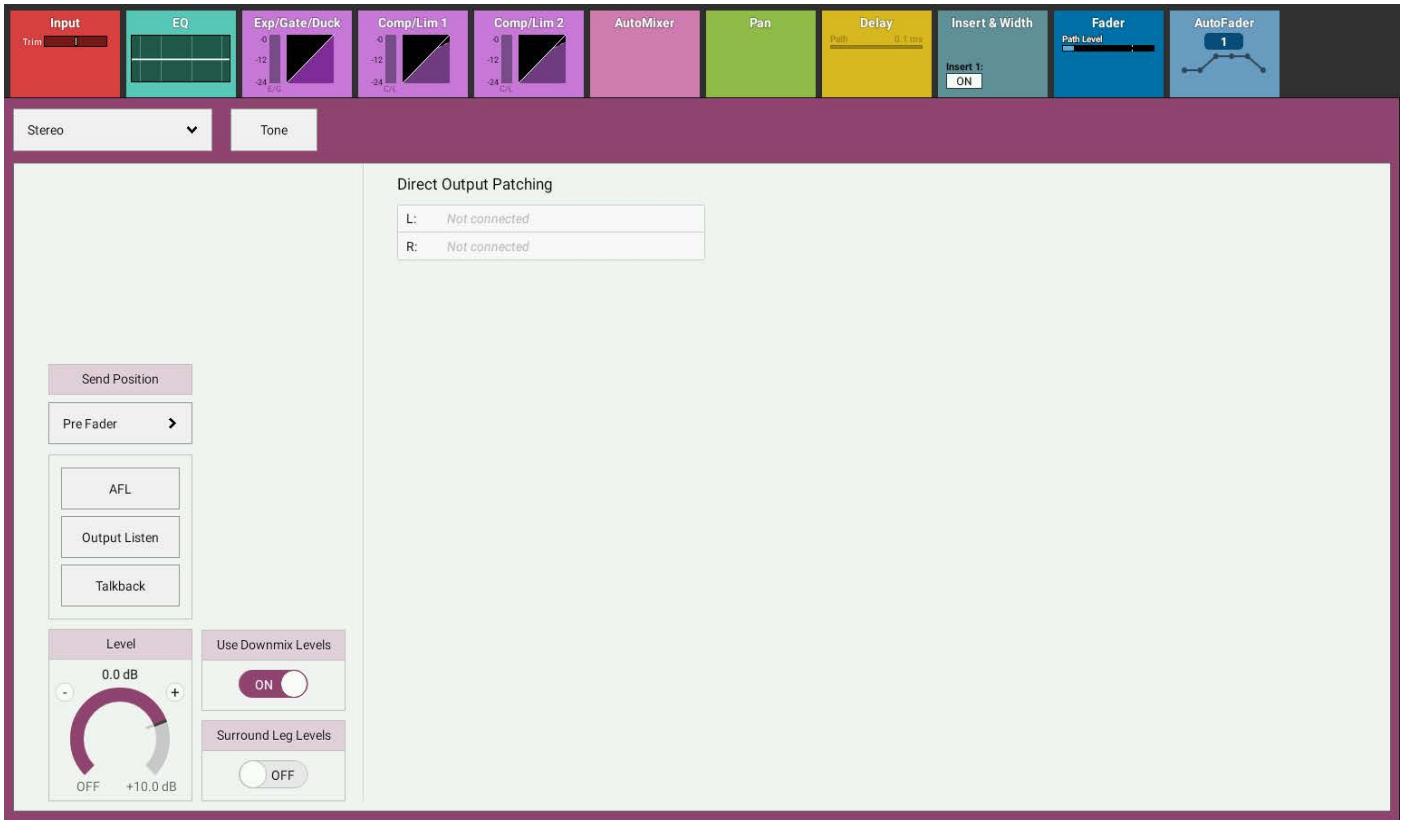
Downmix/Spill

If a direct output is assigned to a surround path, that is narrower than the path width, two options appear to the bottom of the direct output screen that allow the user to set whether the downmix or spill faders are used for downmixing the path to mono or stereo.
See "DOWNMIXING" on page 180 for more information.

Direct Output Controls

- Tap the width drop-down menu to change the width of the direct output or select 'no width' to remove it.
- Tone: Tap to inject tone into the direct output, replacing the direct output feed with the correct tone for the width of the path.
- Direct Output Patching: The direct output's patch destination is displayed.
- Level: Turn the level rotary control to alter the level of the direct output between 'off' and +10 dB.
- Send Position: Direct outputs can be taken at different points in the associated path's signal flow, pre EQ, pre fader or post fader.
- Use Downmix Levels: If the direct output's associated path is 5.1 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.
- AFL: Tapping 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: Similar to AFL but the feed is taken post output delay.
- Talkback: Replaces the direct output feed with whatever is routed to the talkback input.

FIGURE 1 - THE DIRECT OUTPUT SCREEN



MIX MINUS OUTPUTS

Mix minus outputs are path-specific desk outputs, which are available for patching. Brio has a pool of 64 resources which is shared between mix minus outputs and direct outputs.

Mix minus outputs are used to create foldback feeds using a comprehensive contribution system for defining the paths or buses that feed the output. See "MIX MINUS" on page 167 for detailed information on how to set up and use the mix minus system, including a list of all mix minus controls.

Assigning a Mix Minus Output

To assign a mix minus output:

1. In 'active Show' view, tap the mix minus output routing tab.
2. Tap **MONO** or **STEREO** to select the mix minus output width to be created for the currently accessed path.

If not enough resources are available for the desired output, the user can remove other direct/mix minus outputs to free-up resources. Note: at the bottom of the pop-up the number of remaining resources is displayed.

Removing a Mix Minus Output

To remove a mix minus output:

1. Choose **NO PATH** from the path width drop-down menu in the mix minus control screen header.
2. A pop-up will appear asking the user to confirm the removal of the mix minus output. Tap either **REMOVE OUTPUT** or **CANCEL** .

BUS OUTPUTS

Brio 36's bus outputs—up to 4 mains & up to 24 auxes—are available for patching from the I/O patching screen. Bus outputs appear under desk outputs in the sources screen.

Multiple paths can be routed to each bus using the routing tabs down the right hand side of the control screen.

See "ROUTING A SIGNAL" on page 176 for more detailed information.

Mains

Mains are generally used as main broadcast outputs of the system as well as to feed monitoring systems.
Two versions of each main are available for patching out of the system: main and main (pre talkback and tone).
Main (pre talkback and tone) is generally used for monitoring output, for example, during rehearsals.

Auxes

Auxes are generally used to feed external signal processing devices or to create Interruptable foldback feeds. For each path, auxes have individual level controls and send position switches for each of the 24 aux feeds, allowing a high level of control over up to 24 separate mixes. Auxes also have an additional level of logic control, allowing you to set conditions under which each pre fader aux send should be cut.

See "BUSES AND OUTPUTS" on page 174 for more detailed information on using and configuring buses.

Note: If Group Bus Outputs are required then this is achieved by assigning Direct Outputs to the Group paths.

TONE AND OSCILLATOR

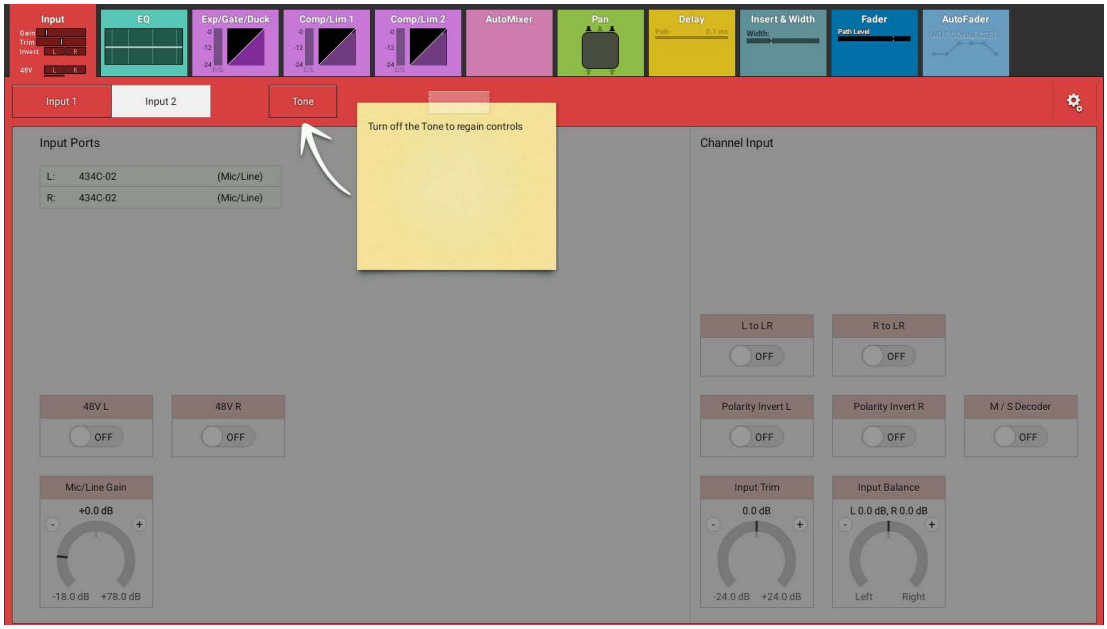
Brio 36 provides many ways to inject tone within the system to help with path-checking and line-up.

Routing Tone to a Channel

1. Press the fader **ACCESS** button for the channel to inject tone into.
2. Tap the input processing tab.
3. Tap **TONE** in the input control screen header.

It is easy to see if tone has been routed to a channel input as a note appears in the input screen as shown in Figure 1.

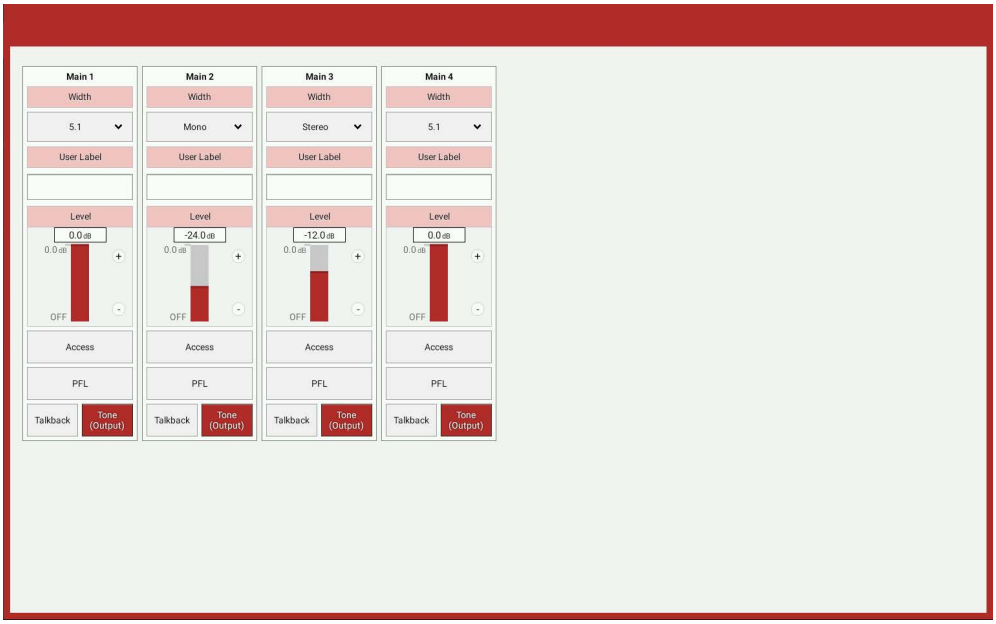
FIGURE 1 - TONE TO CHANNEL INDICATOR



Routing Tone to Buses

1. Tap **BUSES & OUTPUTS** in the Show menu.
2. Select the Group/Aux/Main tab depending on which bus/output type to route tone to.
3. Tap **TONE** for the chosen bus/output. (Tone is shown routed to Main 1,2,3 & 4 in Figure 2).

FIGURE 2 - ROUTING TONE TO A BUS OR OUTPUT



Routing Tone to Path Outputs

1. Select either the mix minus or direct output routing tab.
2. Tap **TONE** in the control screen for mix minus outputs or in the control screen header for direct outputs.

FIGURE 3 - ROUTING TONE TO A MIX MINUS OUTPUT

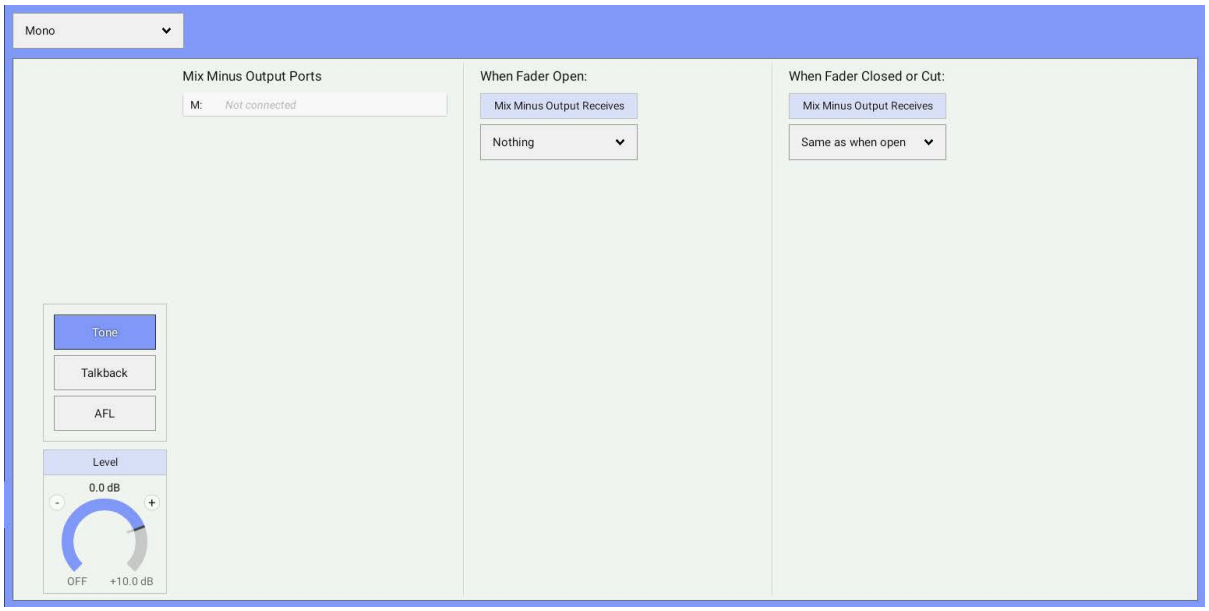
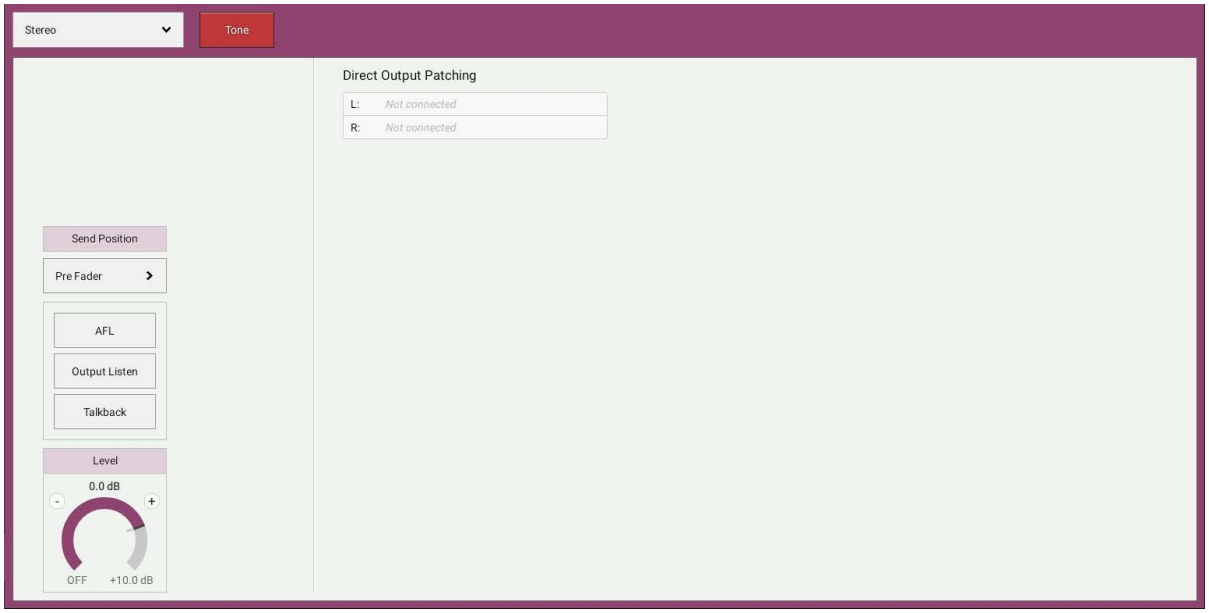


FIGURE 4 - ROUTING TONE TO A DIRECT OUTPUT



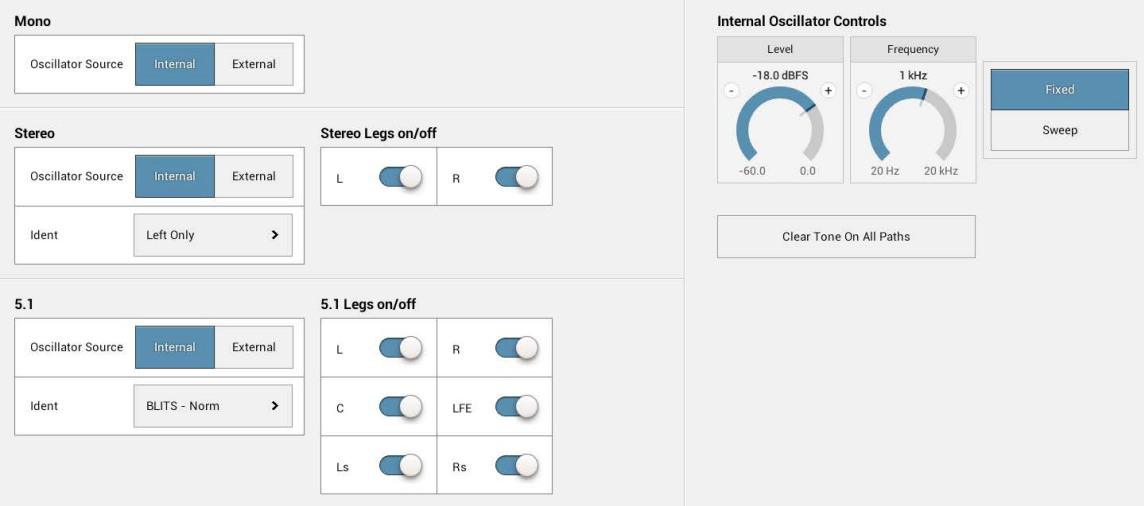
Note: buttons that route tone to audio paths are disabled whilst the console is in On-Air mode, and entering on-Air mode will also clear any tone routing that is active.

Oscillator Controls

Internal tone signals are generated by Brio 36's oscillator which can be controlled from the oscillator setup area. To access this, tap **OSCILLATOR** in the Show menu. Brio has one internal oscillator which is controlled using the two rotary controls towards the bottom of the screen: level and frequency. The user can set the oscillator to generate a fixed tone at the specified frequency, or a stepped 20 Hz to 20 kHz tone sweep.

Different tone sources can be set for each path width (mono, stereo and 5.1) using the internal and external tone source buttons. Selecting **INTERNAL** uses Brio internal oscillator as the tone source for that path width, whereas selecting **EXTERNAL** uses the feed that is currently patched to Brio 36's external tone input. Each leg of a stereo or 5.1 tone source can be muted individually.

FIGURE 5 - OSCILLATOR CONTROLS



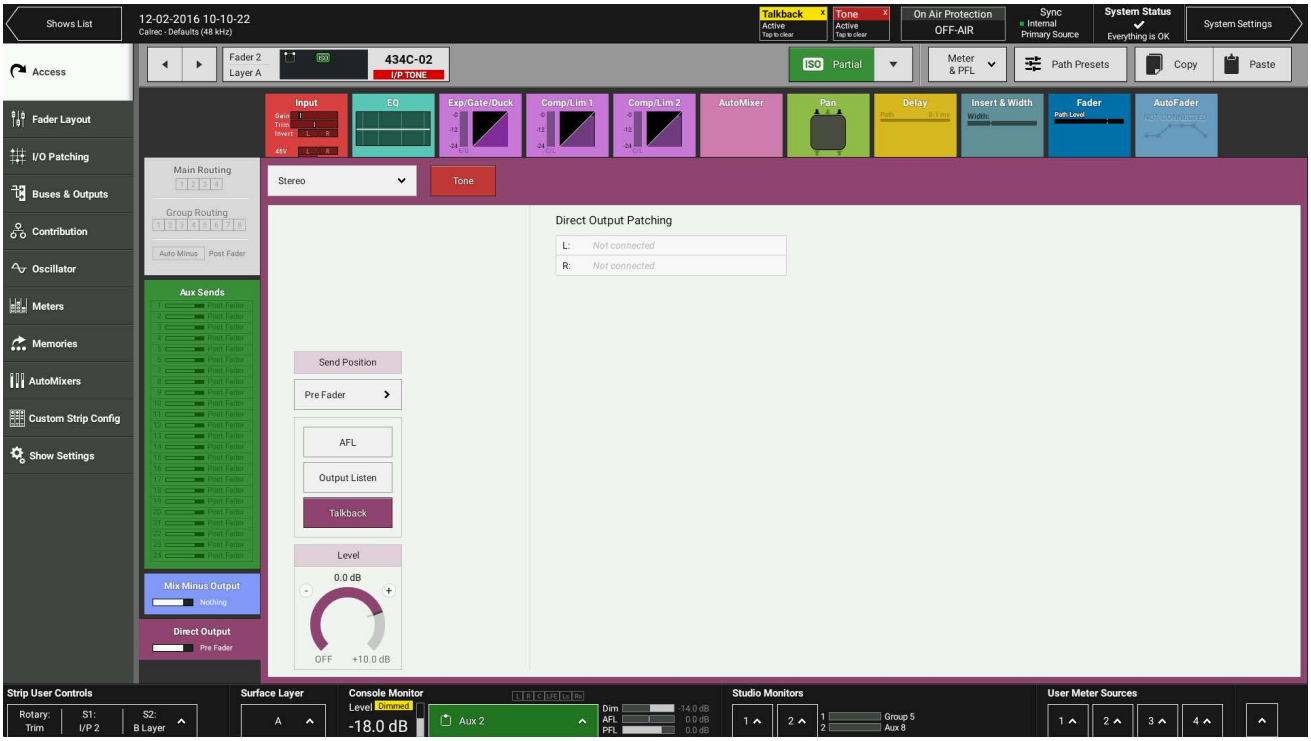
Clearing Tone

Tap **CLEAR TONE** at the bottom of the **OSCILLATOR** screen to quickly switch off all tone on all paths.

Tone and Talkback Active Notification

Notifications appear in the main header when any tone or talkback is active. The notifications can be tapped to clear all tone or talkback. See Figure 6.

FIGURE 6 - TONE AND TALKBACK ACTIVE NOTIFICATIONS



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 or 5.1 path, tap the **IDENT** selector button in the oscillator screen for the chosen path width to display a pop-up menu populated with path width specific ident options, as shown in the following table:

FIGURE 7 - TONE IDENT TABLE

Ident	Description	Width
L Only	Similar to the EBU ident specification. The tone routed to the left hand audio channel is repeatedly interrupted while the right channel remains constant (stereo paths only).	Stereo
L=1, R=2	Similar to the GLITS ident specification. Tone is repeatedly inter rupted on both left and right channels. Each interruption on the left channel is followed by two interruptions on the right channel.	Stereo
BLITS "NORM"	First, a short burst of tone is applied to each of the six channels, one at a time, in order. Four different frequencies of tone are used at this stage to help ID the channels—L/R outputs at 880 Hz, center at 1320 Hz, LFE at 82.5 Hz, Ls/Rs at 660 Hz. This is followed by 1kHz tone on the L and R legs only. The right channel is continuous, whilst the left channel is repeatedly interrupted. The last stage of the cycle applies 2 kHz tone on all six channels simultaneously before begin- ning the cycle again. Each cycle lasts approximately13 seconds. The different frequencies used help to identify each part of the cycle, for example, if 1 kHz can be heard anywhere other than front L/R, there must be a problem with routing or patching.	5.1

BRIO 36
PROCESSING

CALREC

EQUALISER

A four band parametric EQ + LF & HF filters module is available on every channel, group, aux and main.

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.

Equaliser controls are accessed from the touch display.

- With the touch display in 'active Show' view, tap the EQ processing tab to access the relevant controls.
  Note: the appropriate context sensitive controls under the touchscreen illuminate to provide physical controls
- From the surface, push the **ACCESS** control mode button to select which path the controls will act upon.
  The equaliser context based controls and page are shown in Figure 1.

FIGURE 1 - CONTEXT CONTROLS—ACCESS MODE—EQUALISER-BAND 4

Touch Display EQ Controls

Tap on any of the 6 EQ band tabs along the top of the control screen to 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 all EQ parameter changes.

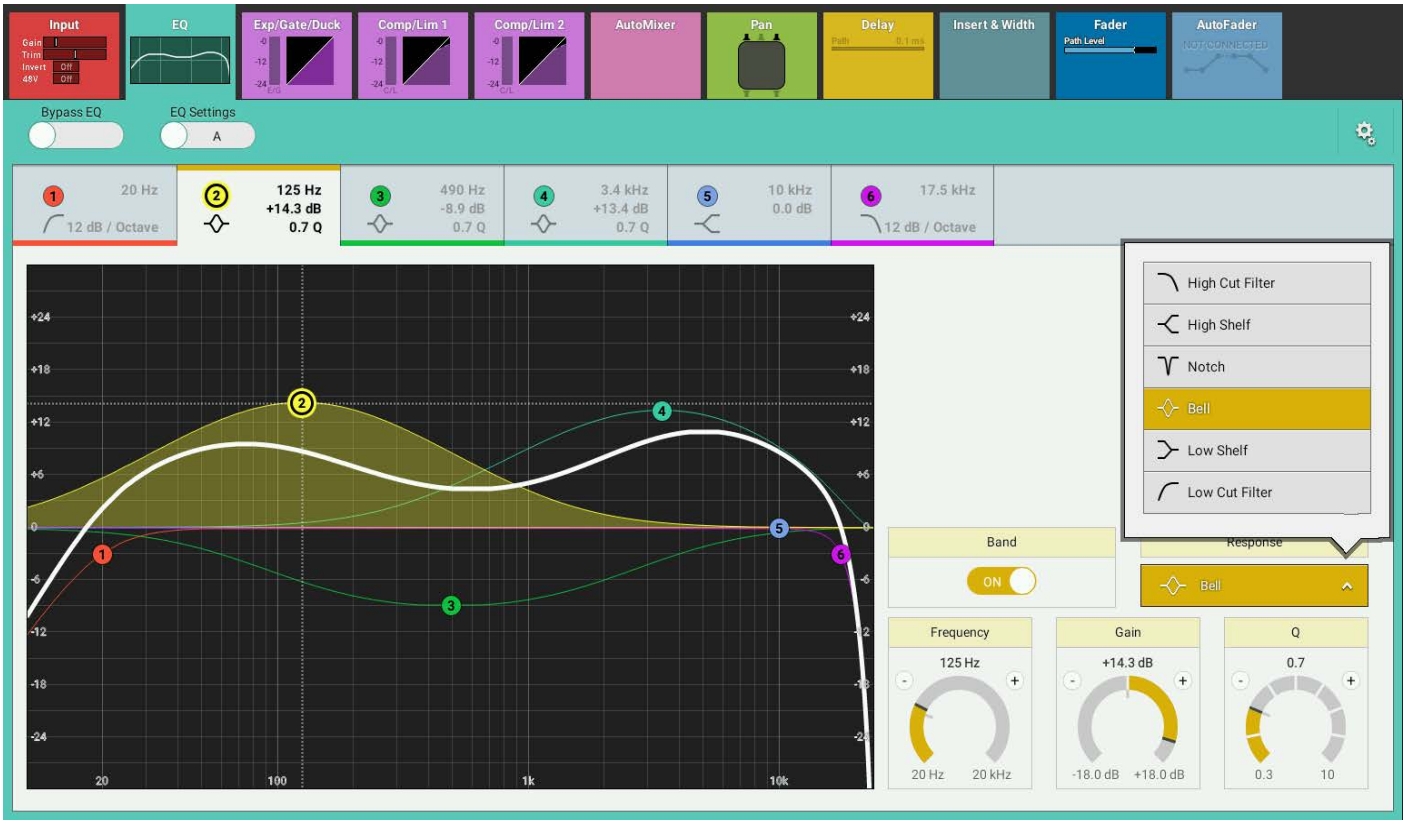
Any EQ band can be set to any response type but good practice is to set them in a logical, frequency-based order. Bands 1 & 4 are fixed as filters, but can switch between 12 & 24dB/octave. Bands 2-5 are full parametric EQ but if set to filters are 12dB/octave only.

- Each EQ band has a dedicated on/off switch.
- Response: Select the desired EQ response curve for the selected band, from high cut filter, high shelf, notch, bell, low shelf, low cut filter. See Figure 2
- Frequency: Sets the frequency that the EQ band is operating around.
- Gain: Sets the gain increase or reduction for the band.
- Q: Sets the width of the frequency band for the selected response. The higher the Q, the narrower the bandwidth.

Once a response type is selected, the relevant Frequency/Gain/Q controls become active. There are several ways to manipulate these controls:

- Drag up and down or left or right on the touch display to turn the rotary control.
- Drag the band node up, down, left or right within the EQ graph.
- Use the context sensitive controls under the touchscreen.

FIGURE 2 - EQ RESPONSE CONTROLS



Bypass and Alternate EQ

BYPASS in the EQ screen header bypasses the whole EQ module.

The A/B alternate EQ button allows the user to compare two EQ set-ups, simply tap to switch between EQ A and EQ B and change the parameters within each. Then tap to switch between the two to compare.

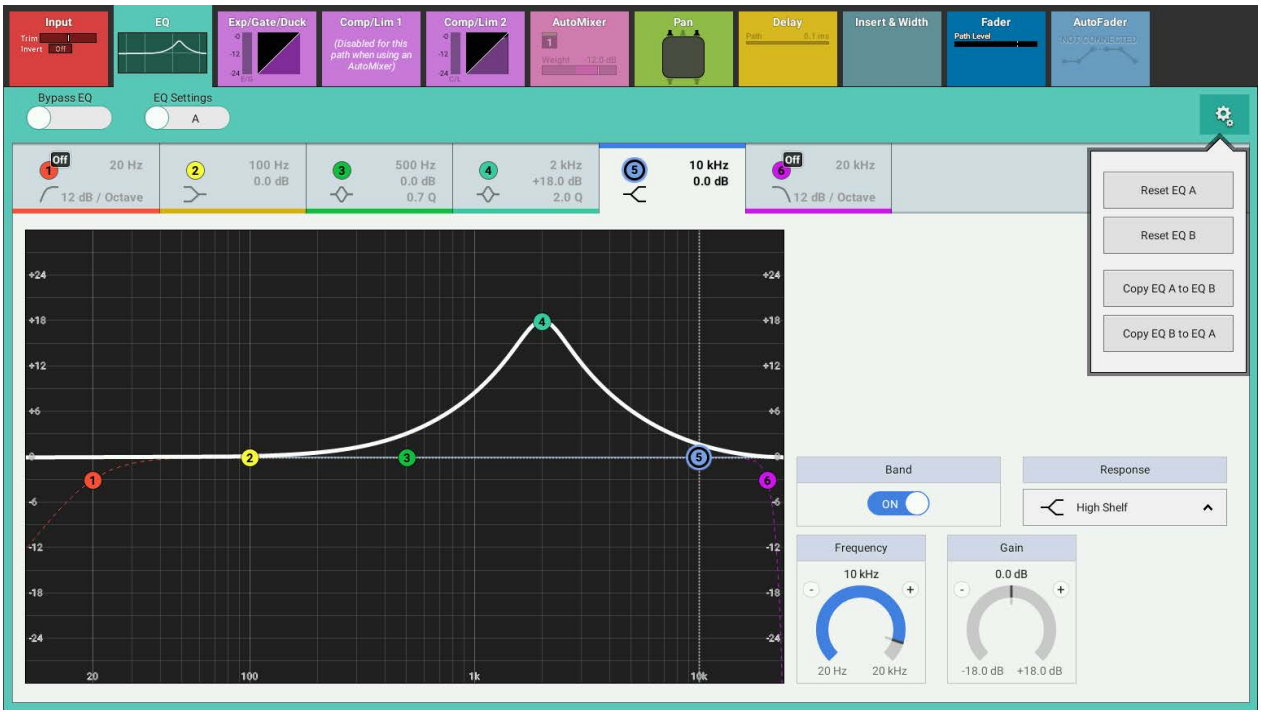
EQ Settings

Tapping the cog icon in the top right of the EQ screen header displays three EQ settings options:

- **RESET EQ A AND B** returns all EQ settings to their defaults.
- **COPY EQ A TO EQ B** and **COPY EQ B TO EQ A** allows the user to duplicate EQ settings which can be useful in auditioning subtle differences in EQ. Modify either EQ A or B, copy these settings to the other EQ module and use the EQ A/B switching button towards the top right of the EQ screen header to quickly switch between the two.

See Figure 3 on the next page.

FIGURE 3 - EQ SETTINGS

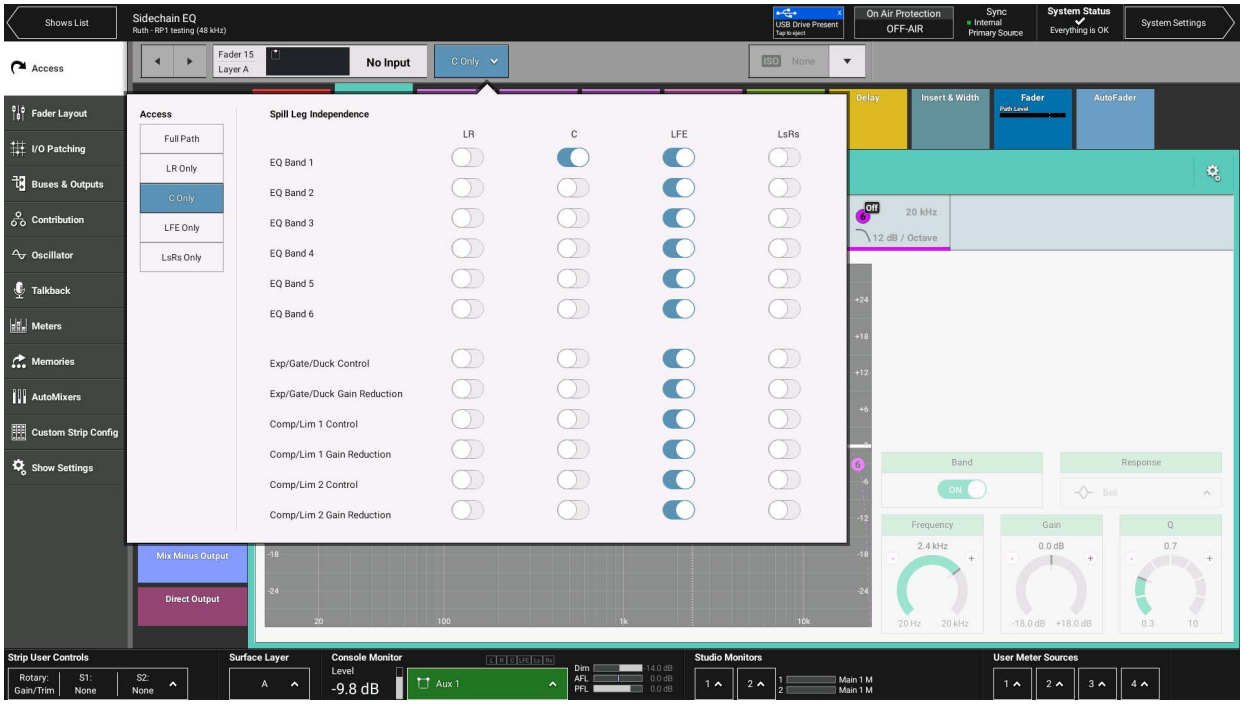


EQ Independence Controls for Stereo and 5.1 Paths

For Multichannel paths such as Stereo and 5.1 paths it is now possible to apply Equaliser processing independently for each L or R spill leg in the case of a Stereo path, or LR, C, LFE, LsRs spill legs in the case of a 5.1 path.

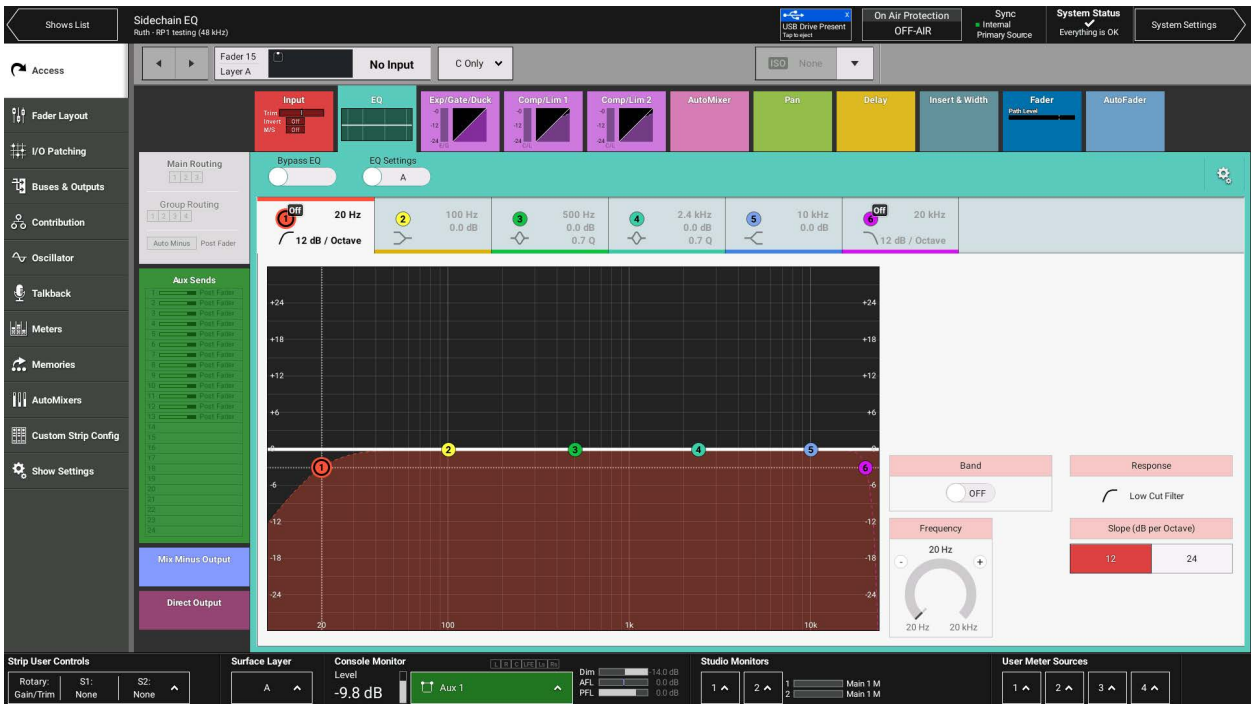
Figure 4 shows the EQ page for a 5.1 path, in the path header is shown a drop down box which normally says 'Full Path'. Tapping on this opens an independence control table which is used to determine which spill leg controls will be made independent of its multichannel master for any of the 6 EQ bands shown down the Spill Leg Independence column. Sliding any of these switches makes a particular Equaliser Band for a particular spill leg will be made independent.

FIGURE 4 - INDEPENDENCE CONTROLS



As shown in Figure 4 all the controls for the LFE spill leg are independent, this is by default. The user has just made EQ band 1 independent for the C Only spill leg of this 5.1 channel. Figure 5 on the next page shows the EQ control for Band 1 of the C Only spill leg.

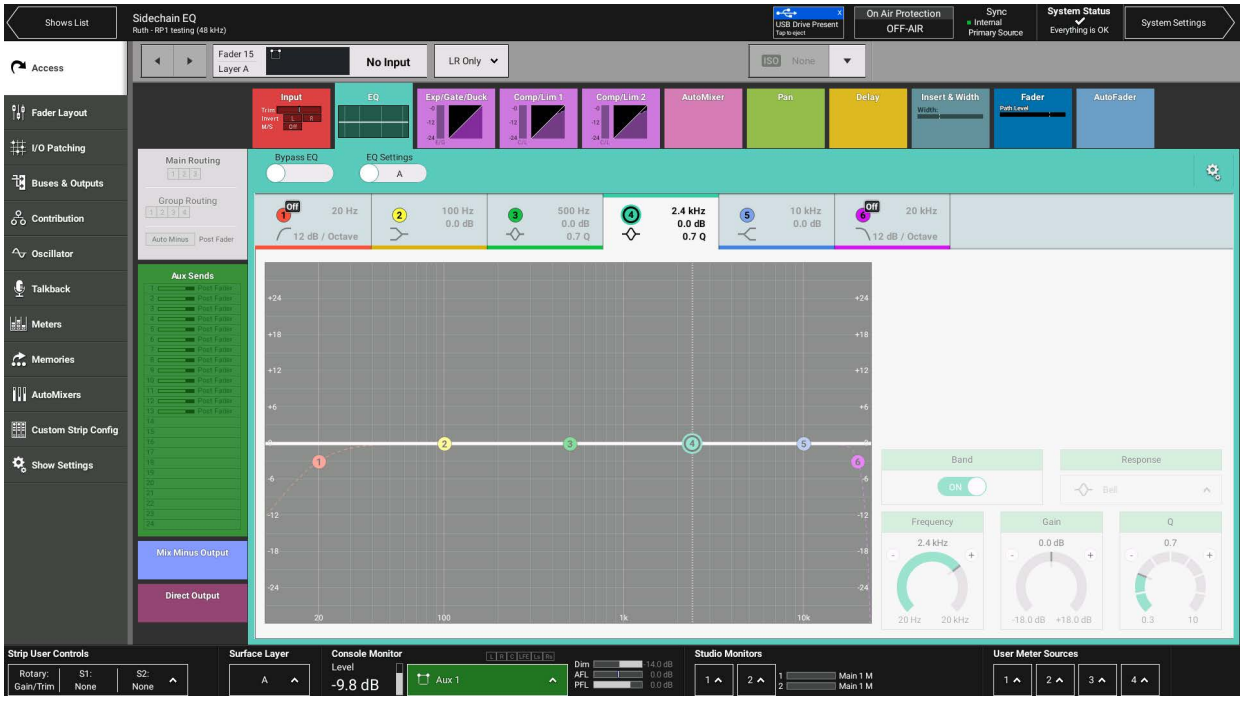
FIGURE 5 - INDEPENDENT EQ BAND 1 FOR THE C ONLY SPILL LEG OF A 5.1 PATH



EQ displays of Non-independent Controls for Stereo and 5.1 Paths

If the user selects a spill leg that has not been made independent from its master or selects an Equaliser band that has not been made independent then the EQ display is 'Greyed Out' meaning that no controls are available from this page. Figure 6 shows the EQ page for the LR Only spill legs of a 5.1 path which have not been made independent.

FIGURE 6 - NON-INDEPENDENT CONTROLS



Removing Independence from Spill Legs

Clicking on the spill legs button to the right of the Access display shown as 'LR Only' in Figure 6, reopens the independence control switch table as shown in Figure 4. Turning off the independence switches overwrites the independent control settings that this EQ Band had for this Spill Leg and replaces it with its master's settings.

DYNAMICS

Every channel and group has three dynamics processing modules available to it:
Module 1 is an expander/gate/ducker and module 2 is a compressor/limiter 1 which act in parallel and can be used simultaneously, module 3 is either a single band or a multi-band compressor/limiter 2 and is a separate processor. Modules 1 & 2 act in series with module 3 on the associated path. Auxes do not have module 3 and mains do not have module 1.

Dynamics controls are accessed from the touch display.

- With the touch display in 'active Show' view, tap the Exp/Gate/Duck*, Comp/Lim1 or Comp/Lim2* processing tabs to access the relevant module controls. Note: the appropriate context sensitive controls under the touchscreen illuminate to provide physical controls. See Figure 1.
- From the surface, push the **ACCESS** control mode button to select which path the controls will act upon. The dynamics context based controls and page are shown in Figure 1.

FIGURE 1 - CONTEXT CONTROLS—ACCESS MODE—EXPANDER/GATE/DUCKER

Compressor/Limiter 1 & 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 50 dB above the threshold in order for the output to increase by a negligible 1 dB. Brio's Comp1, Comp 2 in singleband compressor mode and the three compressor bands in Comp 2 multiband compressor mode all have the same control parameters as shown in Figure 2.

FIGURE 2 - TABLE OF CONTROL PARAMETERS FOR DYNAMICS MODULES

	Compressor 1 & 2 (Inc Multibands 1, 2 & 3)
Threshold	-48 dBFS – 0 dBFS
Ratio	1:1 to 4:1 in steps of 0.1 4:1 to 10:1 in steps of 0.2 10:1 to 20:1 in steps of 1 20:1 to 40:1 in steps of 5 50:1 (Limiter)
Attack	50 µs – 0.2 s
Release	Auto, 75 ms – 4 s
Make Up Gain	0 dB – 20 dB
Knee	Hard, 0.4 dB, 0.8 dB, 1.5 dB, 3.6 dB, 12 dB, 24 dB
	Crossover Frequencies
Band1<>2	20 Hz – 20 kHz
Band2<>3	20 Hz – 20 kHz
	Expander
Threshold	-60 dBFS – -6 dBFS
Depth	40 dB – 0 dB
Attack	50 us – 0.2 s
Release	0 ms – 4 s
Knee	Variable soft knee or 2:1 hard knee
	Gate / Ducker
Threshold	-60 dBFS – -6 dBFS
Depth	40 dB – 0 dB
Attack	50 µs – 0.2 s
Release	0 ms – 4 s
Delay	0 ms – 1 s

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.

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. 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.

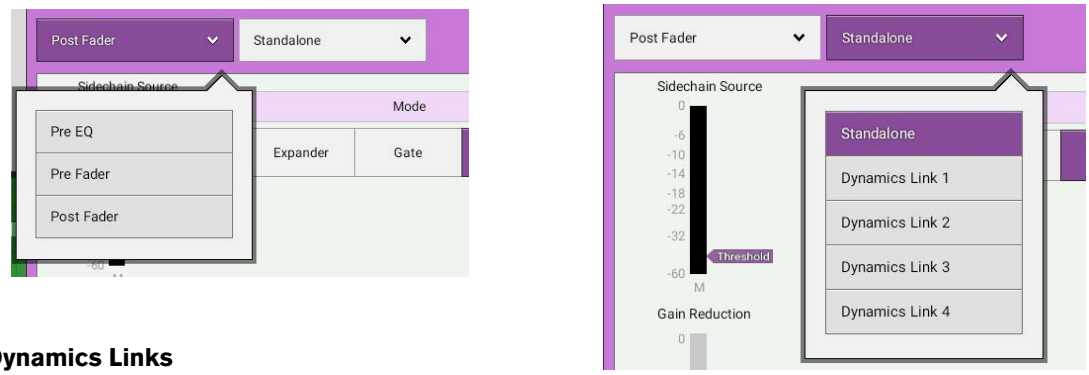
Calrec's expander/gate/ducker processing has 6dB of built-in hysteresis to avoid unwanted 'chatter' (constant on/off switching) resulting from an input signal residing on or around the threshold.

Global Module Controls

When looking at a dynamics module, any control situated within the screen header affects the whole module as shown in Figure 3. This includes the following:

- Each Dynamics module can be inserted either pre EQ, pre fader or post fader. Tap the dynamics position button in the screen header and select an option.
- By default, dynamics modules operate as standalone units. The second button in the screen header allows the module to be put into one of four Dynamics Links.

FIGURE 3 - GLOBAL DYNAMICS CONTROLS FOR POSITION AND DYNAMICS LINKS



Dynamics Links

Dynamics Links allow multiple audio feeds to have the same dynamics processing applied. When multiple paths' dynamics modules are set to be part of a Dynamics 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 Dynamics Link, if one path's signal is causing 5 dB of gain reduction and another is causing a reduction of 10 dB, all signals within the Dynamics Link will have a gain reduction of 10 dB applied. When expander/gate units are used within a Dynamics Link and one feed within the link reaches the threshold level to open the expander/gate, all expander/gates within the link open regardless of the audio levels of their feeds.

Compressor/Limiter Controls

- 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 4 dBFS, the gain will be reduced so it exceeds the threshold by only 2 dBFS. 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 focus the compressor on more long term level issues, such as level differences across various sections of a program.

- 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.
- Make Up Gain: Allows the gain of the whole compressed signal to be increased by up to 20 dB.
- Knee: Controls the dB range over which the threshold is active on the incoming signal. With knee set to 'hard', a signal which exceeds the threshold will instantly have the full gain reduction applied, which leads to a very noticeable compression. Setting a softer knee 'smooths' the point at which the threshold acts, for example, a 6 dB knee setting means that the threshold is active over a 6 dB spread leading to a less noticeable compression effect.

See Figure 4 below.

FIGURE 4 - COMPRESSOR/LIMITER CONTROLS

Expander/Gate/Ducker Controls

- Mode: The expander/gate module has a dual mode button for switching between expander and gate functionality.
- Ratio (expander only): Controls the amount of gain reduction applied to the signal. Hard uses a ratio of 2:1, meaning 1 dB of gain reduction is applied for every 1 dB that the signal falls below the threshold, for example, a signal 10 dB below the threshold will have 10 dB of gain reduction applied. Soft ratio is a variable ratio dependent on the level of the input signal, the final ratio of 3:1 being applied when the signal drops to 20 dB below the threshold.
- 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.
- Attack: Time taken for the expander/gate takes to open. Short attack times help to preserve natural transient attack but can result in a 'clicking' sound due to the rapid transition. A long attack time ensures a smoother transition but some of the transient information will be lost.
- Release: Time taken for the expander/gate to close. Longer release times create a smoother more natural transition.
- Delay (Gate/Ducker Only): The minimum time the gate or ducker will be held open before closing once the threshold is reached.

See Figures 5, 6 & 7 over the page for images of Expander, Gate and Ducker pages.

FIGURE 5 - EXPANDER CONTROLS

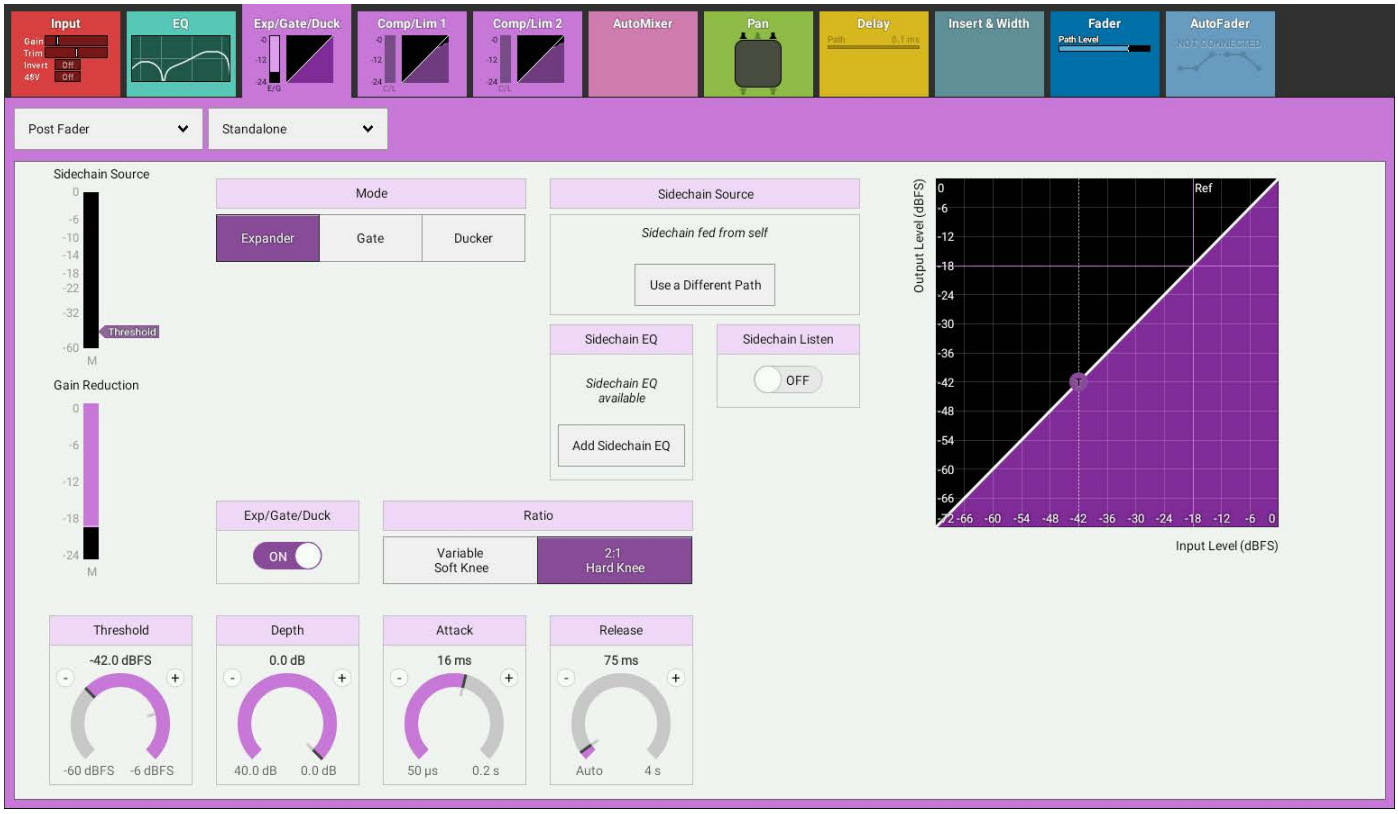


FIGURE 6 - GATE CONTROLS

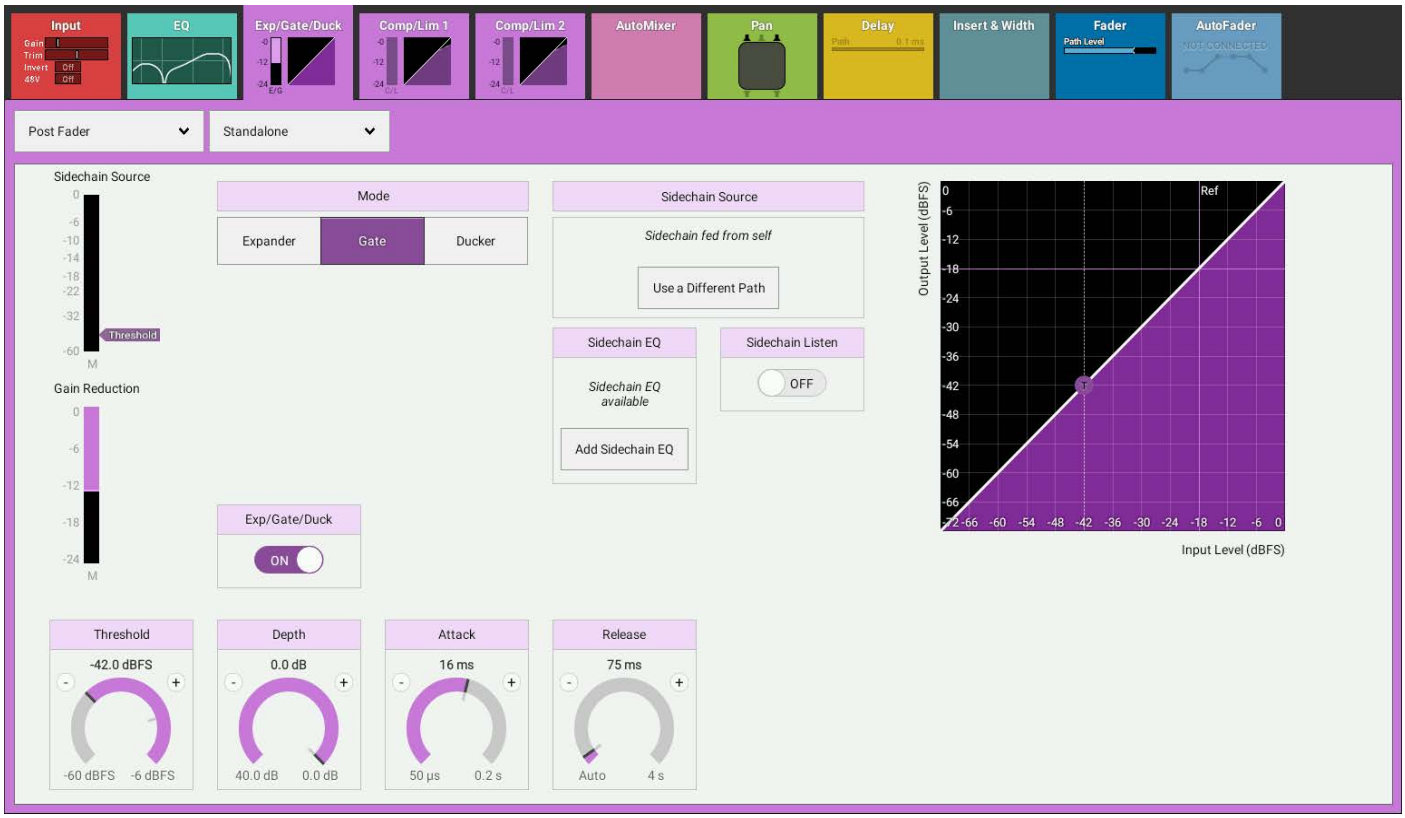
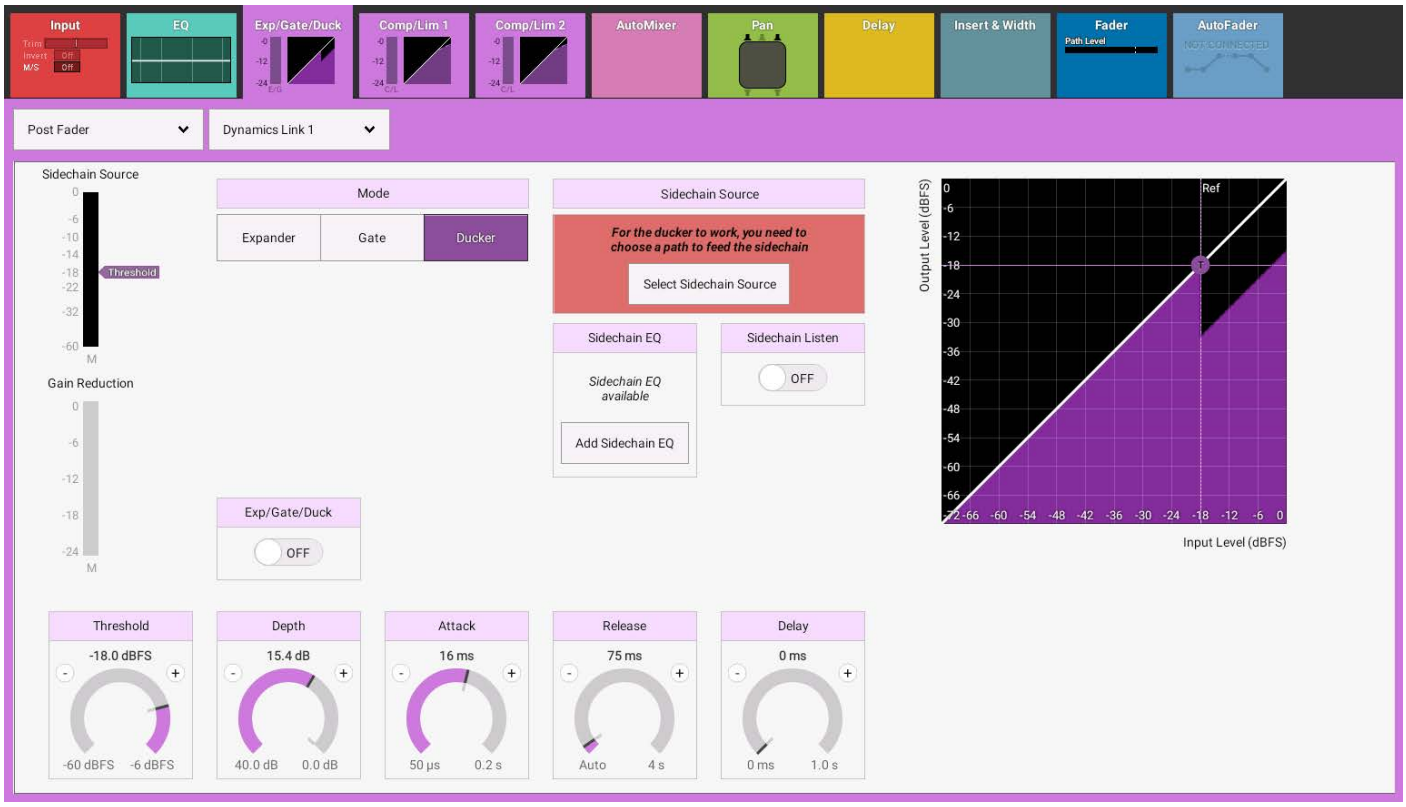


FIGURE 7 - DUCKER CONTROLS



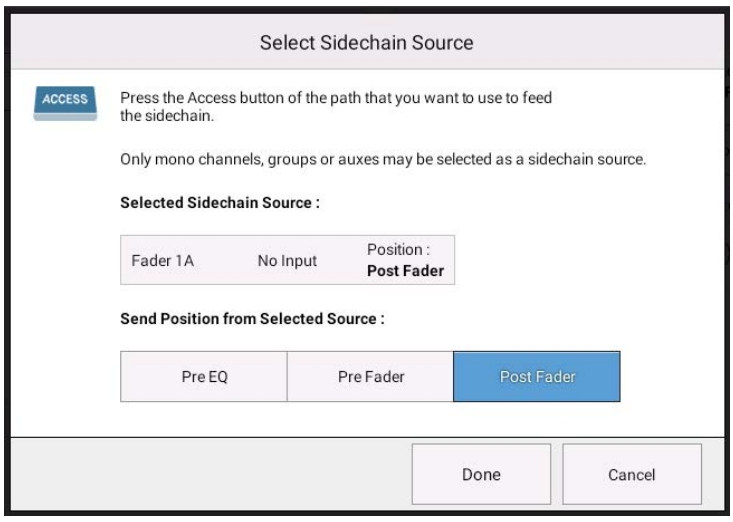
Sidechain Source

Figure 7 shows the sidechain Source box in Red to indicate that in order for the Ducker to affect the audio a sidechain source other that itself needs to be selected. Tapping the 'Select Sidechain Source' button opens a pop-up box as shown in Figure 8. Note: only mono channels, groups or auxes can be used as sidechain sources.
The user can then select mono sources from the surface by pressing applicable mono path access keys. Those paths that can be used have their fader displays lit in the dynamics purple colour with the following message
'Press Access to select a sidechain source', the other paths display the message 'Cannot be used as a sidechain source'.

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

Note: Compressor 2 does not use a Sidechain in Singleband or Multiband modes.

FIGURE 8 - SIDECHAIN SOURCE SELECTOR



Sidechain EQ

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

With the Exp/Gate/Duck or Comp/Lim 1 processing tab selected, tap **SIDECHAIN EQ** within the control screen to see the sidechain EQ controls. The **SC LISTEN** toggle button towards the bottom right of this screen allows the user to listen to the sidechain signal whilst altering the EQ parameters. The sidechain **BYPASS** button in the screen header allows the user to switch the sidechain EQ controls in and out, allowing the user to hear the difference the EQ processing makes. The rest of the controls are explained in more detail here: See "EQUALISER" on page 102. Sidechain EQ is available to either the Exp/Gate/Duck or Comp/Lim 1 of each path - but cannot be used on both modules at the same time.

FIGURE 9 - SIDE CHAIN OPERATION

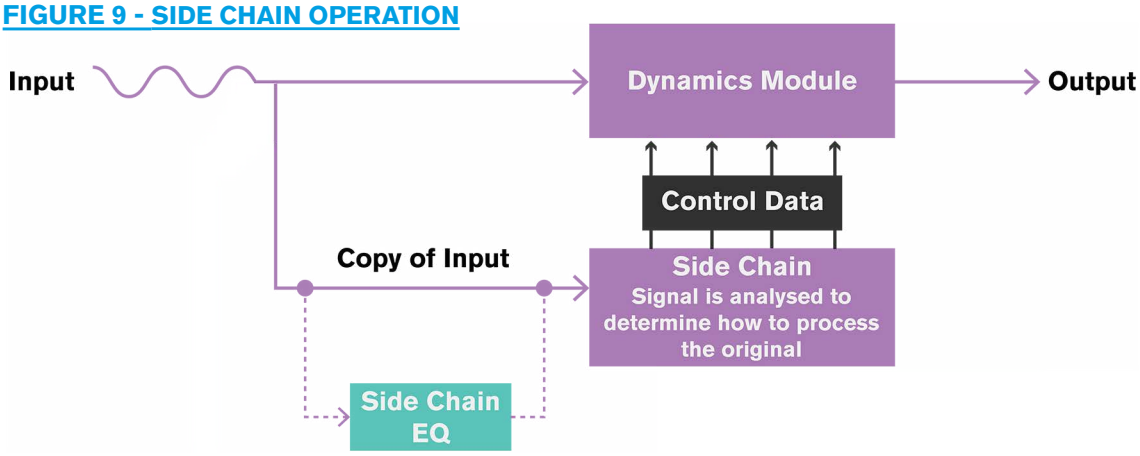
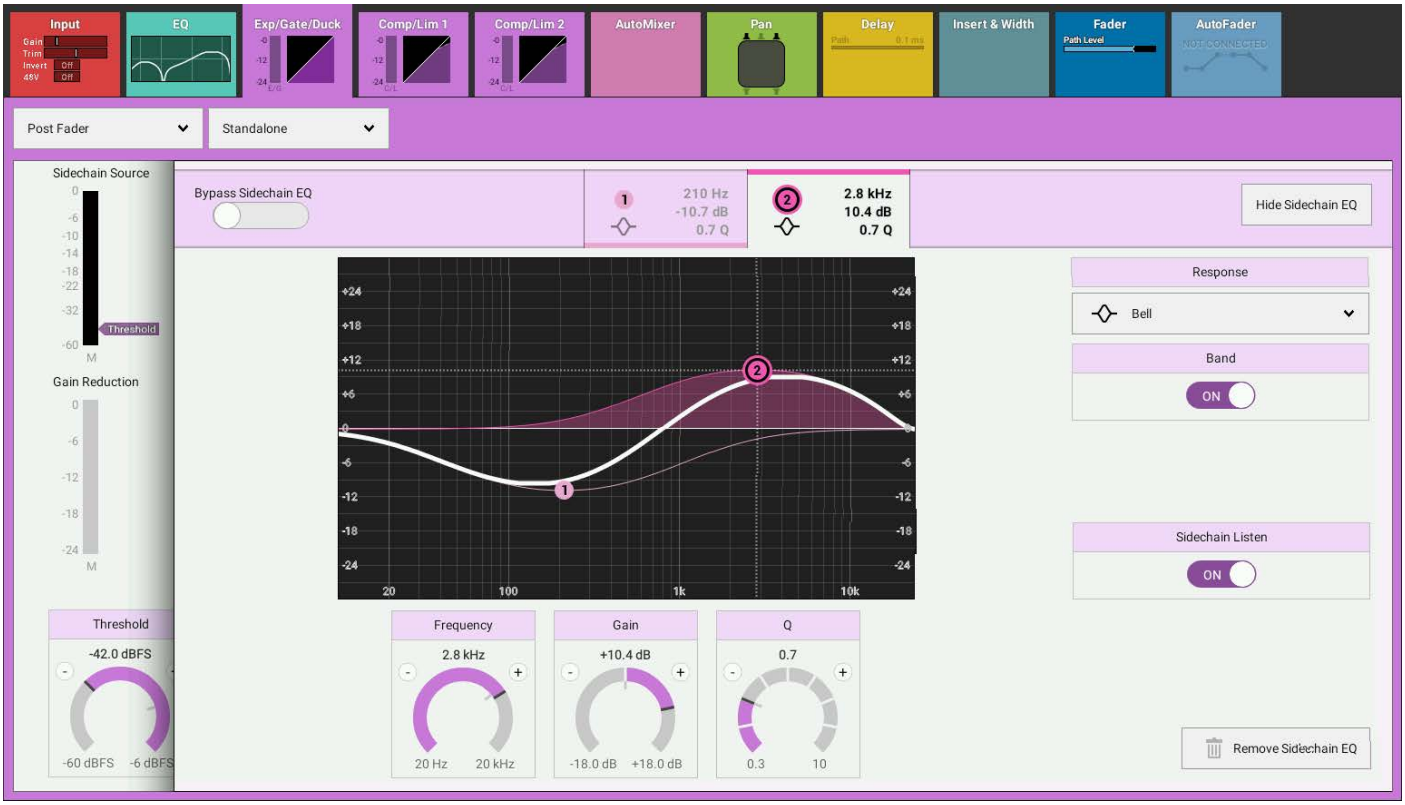
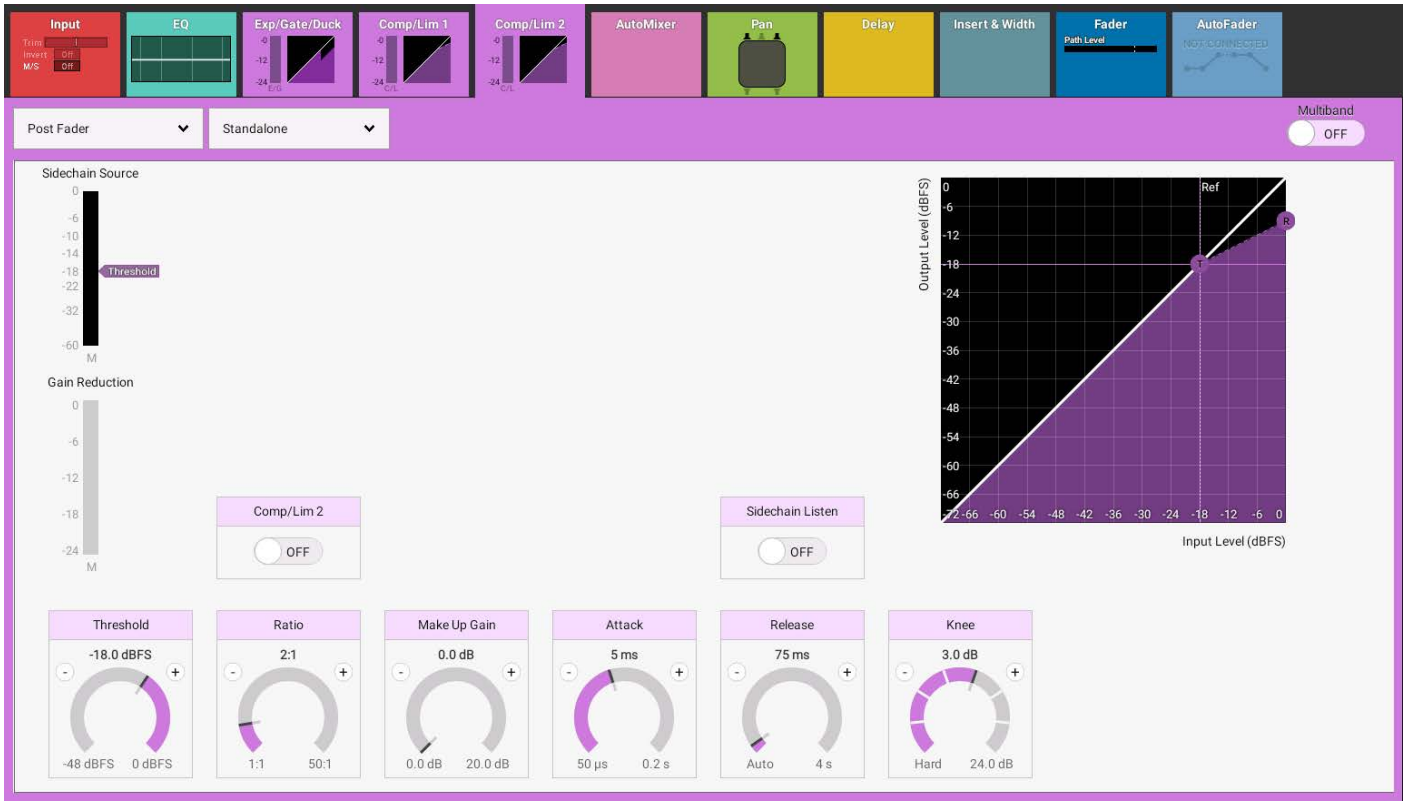


FIGURE 10 - SIDECHAIN EQ



Compressor2, as shown in Figures 11 & 12 does not have assignable sidechain EQ like exp/gate/duck and comp/lim1. Instead, when in multi-band mode, the frequency range of each band can be adjusted. Multi-band compressors offer an advantage over sidechain EQ for applications such as de-essing as they can apply gain reduction to a specific frequency range, whereas using a regular compressor, the sidechain EQ can be set so that gain reduction is only triggered by certain frequencies, but will apply the same amount of gain reduction across the whole frequency range.

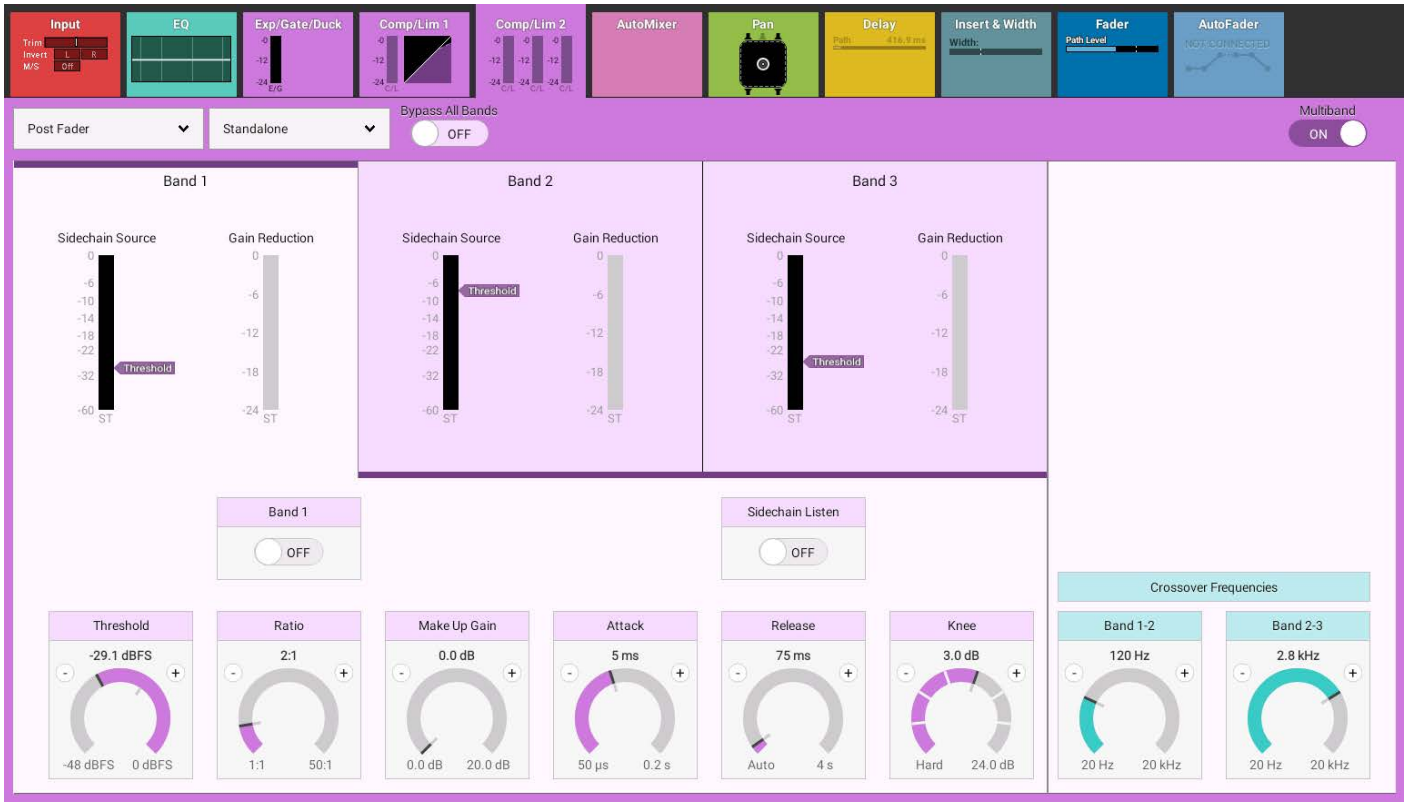
FIGURE 11 - COMPRESSOR 2 IN SINGLEBAND MODE



Multiband Compressor

Compressor 2 may be reconfigured to act as a multiband compressor, as shown in Figure 12, by sliding the 'Multiband' switch in the top right hand corner of the Comp/Lim 2 window. This allows the user to compress a signal differently over 3 different frequency ranges. Between compressor bands 1 & 2 and compressor bands 2 & 3 are placed crossover frequency controls. These are by default set to 120Hz and 2.8kHz respectively so band 1 compressor acts on the signal frequencies up to 120Hz, band 2 compressor acts on the signal frequencies between 120Hz and 2.8kHz and band 3 compressor acts on the signal frequencies above 2.8kHz.

FIGURE 12 - COMPRESSOR 2 IN MULTIBAND MODE

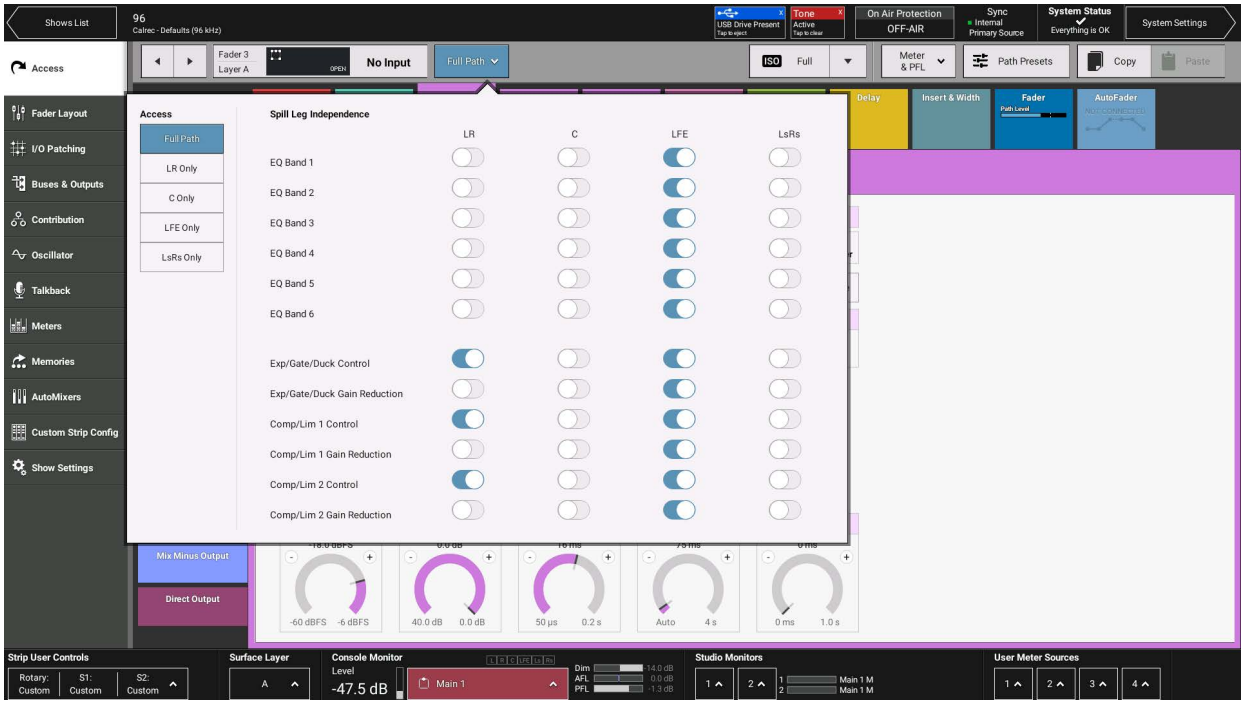


Dynamics Independence Controls for Stereo and 5.1 Paths

For Multichannel paths such as Stereo and 5.1 paths it is now possible to apply Dynamics processing independently for each L or R spill leg in the case of a Stereo path, or LR, C, LFE, LsRs spill legs in the case of a 5.1 path.

Figure 13 shows the Expander/Gate/Ducker page for a 5.1 path, in the path header is shown a drop down box which normally says 'Full Path'. Tapping on this opens an independence control table 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 to become independent.

FIGURE 13 - INDEPENDENCE CONTROLS



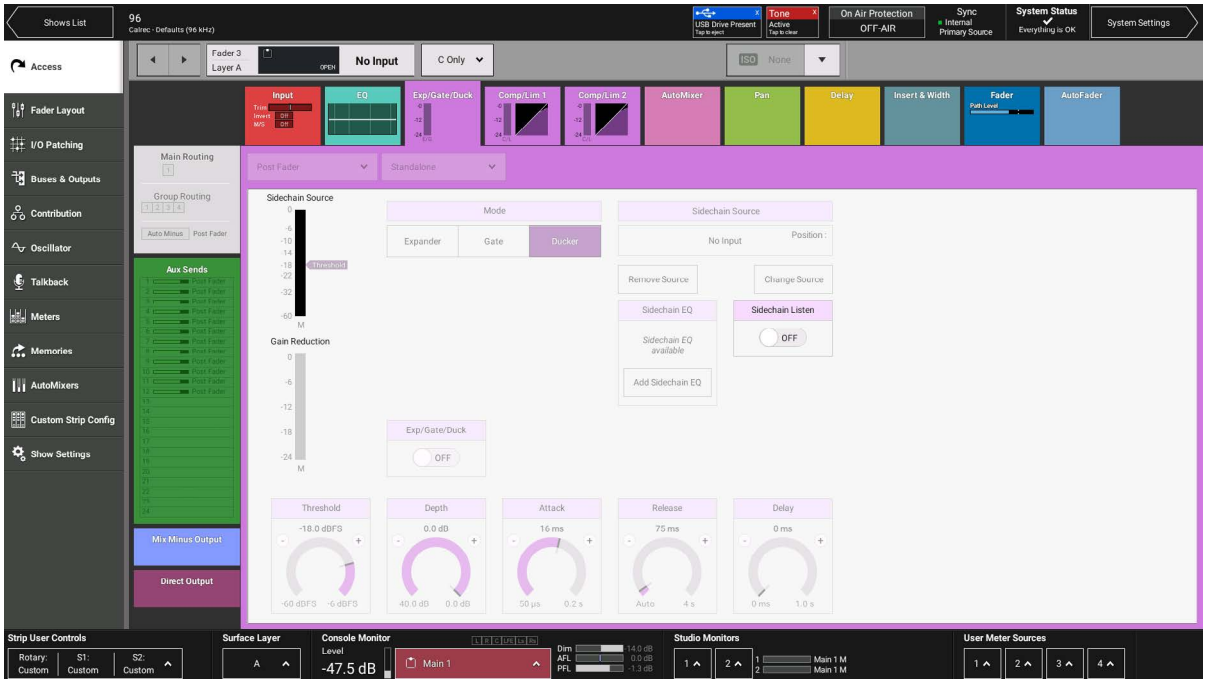
As shown in Figure 13 all the controls for the LFE leg are independent, this is by default. The user has just made the Expander/Gate/Ducker, Comp/Lim1 & Comp/Lim2 controls independent for the LR Only spill legs of this 5.1 channel. Figure 14 shows the Ducker control for LR Only spill leg.

FIGURE 14 - INDEPENDENT DUCKER CONTROLS FOR THE LR ONLY SPILL LEGS OF A 5.1 PATH

Dynamics displays of Non-independent Controls for Stereo and 5.1 Paths

If the user selects a spill leg that has not been made independent from its master or selects a Expander/Gate/Ducker or Comp-Lim 1 or Comp-Lim 2 control set that has not been made independent then the display is 'Greyed Out' meaning that no controls are available from this page.
Figure 15 shows the Ducker page for the C Only spill leg of a 5.1 path which has not been made independent.

FIGURE 15 - NON-INDEPENDENCE CONTROLS



Removing Independence from Spill Legs

Clicking on the spill Legs button to the right of the Access display shown as 'C Only' in Figure 15, reopens the independence control switch table as shown in Figure 13. 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.

Compressor / Limiter 1 Module and AutoMixers

It should be noted that if AutoMixers are in use the Comp/Lim 1 modules is disabled. This is set on a per channel basis.

AUTOMIXERS

Brio 36 has two AutoMixers which can be used to automatically mix the levels of a selection of mono channels and mono groups, keeping the overall level of the mix constant.

AutoMixers have the effect of boosting paths with higher signal levels relative to other paths in the grouping, whilst lowering those with lower signal levels. In reality, AutoMixers only ever apply attenuation, signals are never actually boosted. For example, in a 'talkshow' situation, with one presenter and three guests, if all four microphones are assigned to an AutoMixer and only the presenter is speaking, the three guests' microphones will be attenuated more than the presenter's microphone, giving the effect of a boost to the presenter's voice and keeping the level of the overall program constant.

This method of automixing—using attenuation adjustment—results in a mix in which the total ambient/background noise level remains fairly constant.

Applying AutoMixers to Paths

1. Access the mono channel or group by pushing its **ACCESS** button.
2. Tap the AutoMixer processing tab.
3. Tap to choose an AutoMixer for this path: 1 or 2.
4. Check that the AutoMixer Control is turned on (It's on by Default)

Note: AutoMixers use Comp/Lim 1 modules to function, so when an AutoMixer is applied to a path, its Comp/Lim 1 module is disabled.

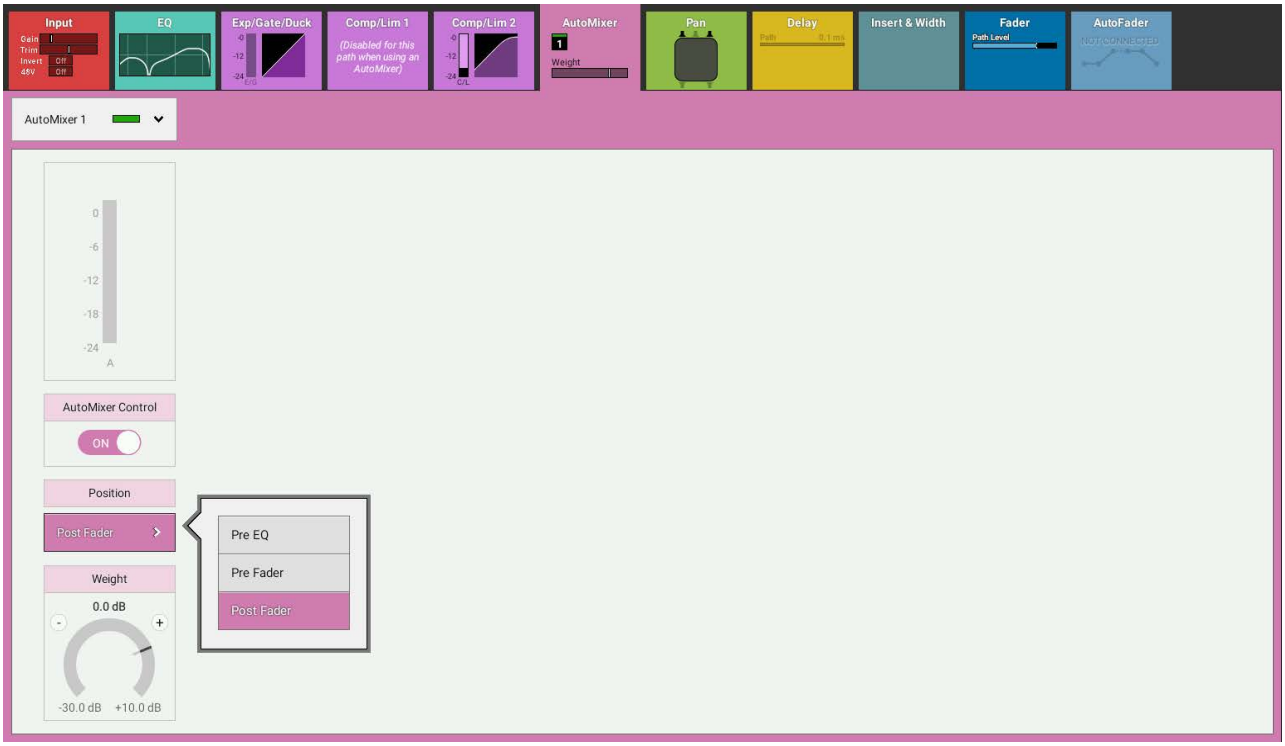
Setting Individual Path Weightings

AutoMixers calculate the ratios of path audio levels to the sum of all path levels to which the AutoMixer has been applied. Weightings 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. For example, in the 'talkshow' setting described above, if all contributors talk at the same time the user may wish to give a higher weighting to the presenter's microphone so that their voice cuts through during the debate.

AutoMixer Controls

- Weight: Used to calculate the level of attenuation applied to the path. The higher the weight the more prominent the path will be in the resulting mix.
- Position: Set the order of processing. The AutoMixer can be applied pre EQ, pre fader or post fader.
- AutoMixer Control: This switch turns the AutoMixer Off or On
- A gain reduction meter is provided so the user can quickly see how much gain reduction is currently being applied to the path.

FIGURE 1 - AUTOMIXER PATH CONTROLS

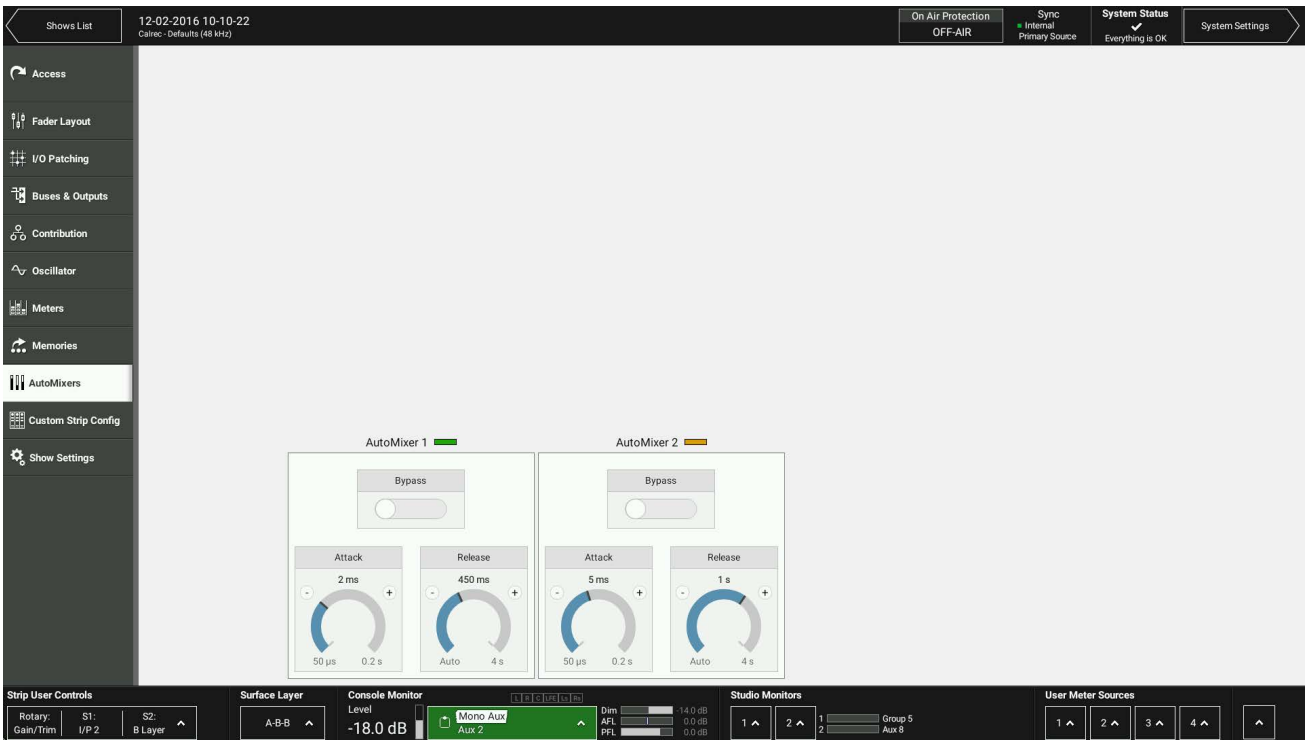


AutoMixer Global Controls

Each of Brio 36's two AutoMixers have their own 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.

Tapping **BYPASS** disables the AutoMixer for all assigned paths. If the user wants to momentarily take a path out of the AutoMixer assignment, the AutoMixer Control On/Off switch should be used on the individual path's processing tabs, as shown in Figure 1.

FIGURE 2 - AUTOMIXER GLOBAL CONTROLS



PAN CONTROLS

The pan processing tab provides individual pan controls for each channel or group. Separate pan controls are available for panning to mains and groups and to auxes and you can switch between them using the drop-down menu in the screen header.

Surround Mains and Groups

Surround panning controls are available when feeding mains and groups. There are several ways to manipulate these controls:

Pan controls are accessed from the touch display.

- With the touch display in 'active Show' view, tap the Pan processing tab to access the relevant controls.
  Note: the appropriate context sensitive controls under the touchscreen illuminate to provide physical controls
- From the surface, push the **ACCESS** control mode button to select which path the controls will act upon.
- On the touch display there is a visual representation of the surround space to the left hand side of the panning screen. Tap a new location or drag the white disk to place the audio within the space. Alternatively, there are rotary controls on the right of the panning screen available for left/right and front/back panning.
  The pan context based controls and page are shown in Figure 1.

FIGURE 1 - CONTEXT CONTROLS—ACCESS MODE—MAINS & GROUPS PANNING

Pan Controls

- Bypass M&G Pan: Allows the user to quickly disable panning to mains and groups without having to navigate to the correct pan screen. Individual in/out statuses of each pan control are preserved when bypass is used.
- Switch between viewing panning controls for mains and groups or auxes.
- Centre Only: Allows the user to quickly centre all panning for the currently accessed path.
- Front Format: Allows the user to switch between LR, LCR and LCR with divergence when panning to 5.1 destinations.
- LFE and non-LFE Level: Separate level controls are available for the LFE and non-LFE portions of the signal so that the overall level can be balanced.
- Front Divergence: An extra control over the ratio between the amount of signal routed to the centre and LR speakers in a 5.1 situation.

Pan to Auxes

Auxes can be stereo or mono. When **PAN TO: AUX** is selected in the screen header the context sensitive controls become 8 panning rotaries for setting individual panning for each of 8 Auxes. There are 3 pages of Pan controls for up to 24 Auxes and there are also individual **ON**/**OFF** switches to switch on and off the panning for each Aux send. Note: Panning is only available for Stereo Auxes as shown in Figure 2.

FIGURE 2 - PAN TO AUX CONTROLS

Stereo & 5.1 path spill leg access and independence for Pan settings

From version v1.1 Brio can access each spill leg of a Stereo or 5.1 path and allow parameter changes to be made on each spill leg. Figure 3 shows the 'Full Path' button being pressed which brings up the Spill Legs Access pop-up. The user selects which spill leg they wish to examine/alter and the screen then accesses that leg as shown in Figure 4. Note: this button appears on all access pages.

FIGURE 3 -SPILL LEG SELECTOR

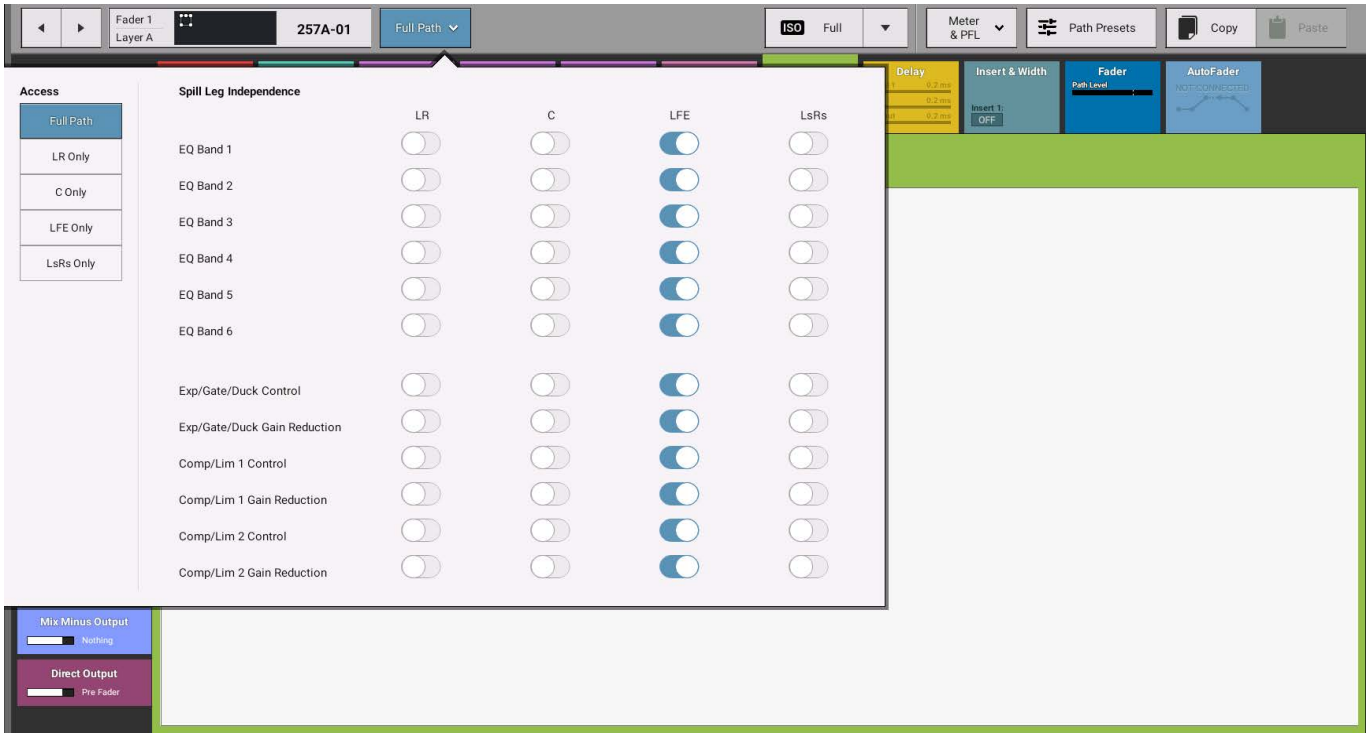


Figure 4 shows the 'LR Only' spill legs on the Pan page. As this is a Stereo spill leg all the controls that would normally appear for a Stereo path are made available. The 'LsRs' spill leg appears with the same stereo parameters controls as shown here for the LR spill legs.

FIGURE 4 -LR ONLY SPILL LEG SELECTED

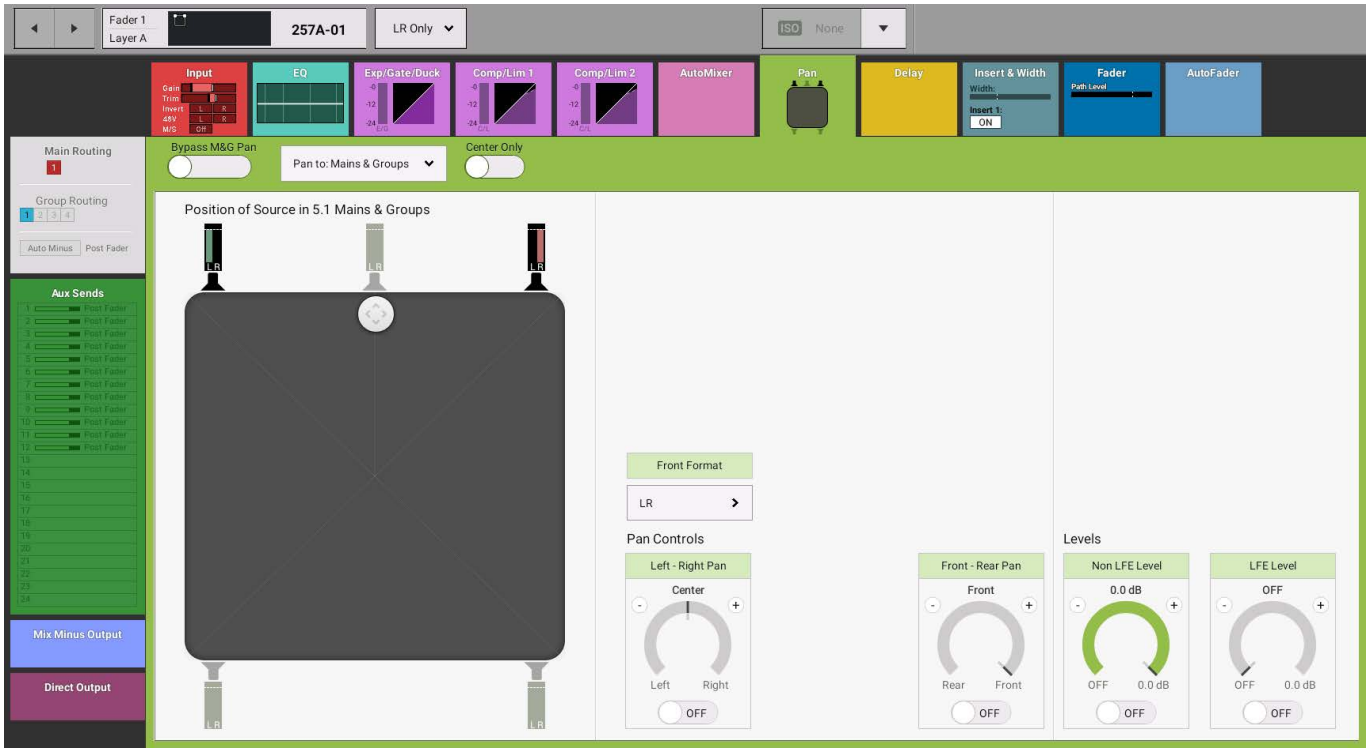


Figure 5 shows the 'LFE Only' spill leg on the Pan page. As this is a Mono spill leg all the controls that would normally appear for a Mono path are made available. Note: the 'C ONLY 'spill leg does not allow any panning as it is by definition in the centre of the soundfield.

FIGURE 5 -LFE ONLY SPILL LEG SELECTED

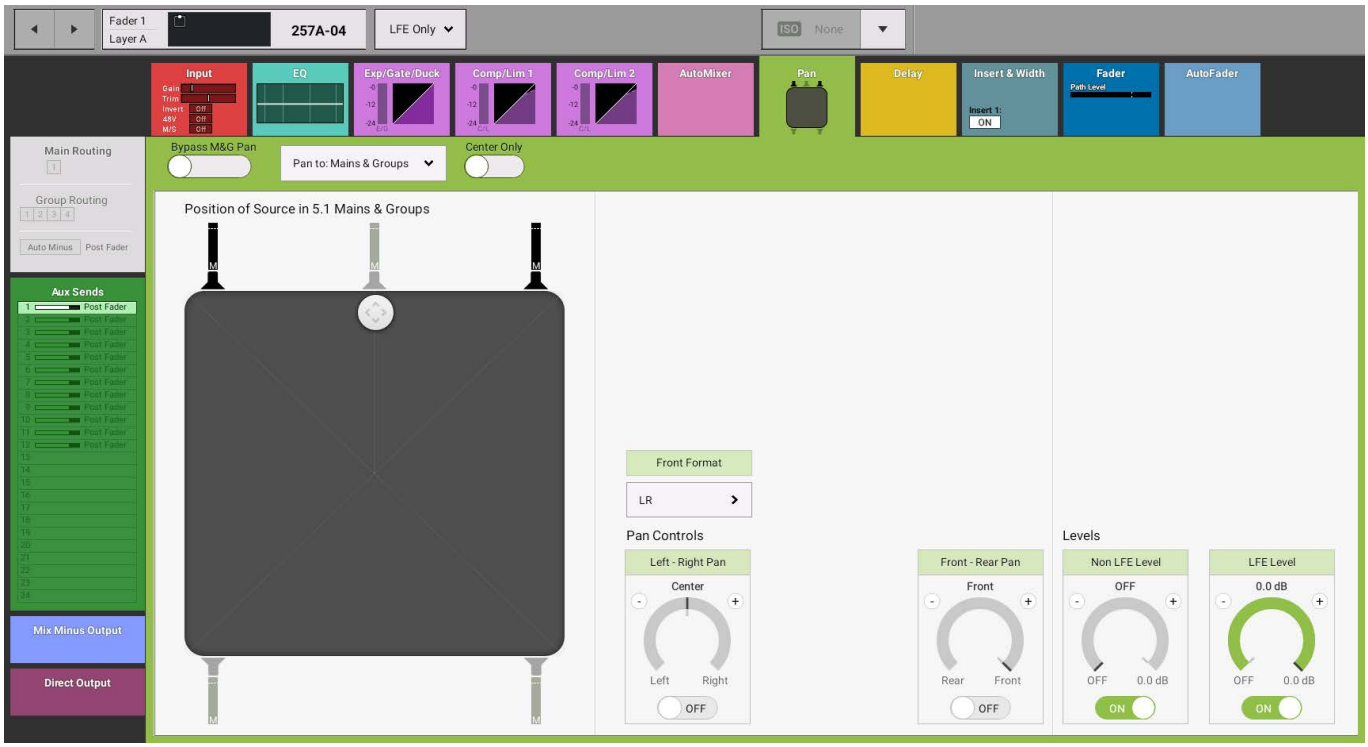
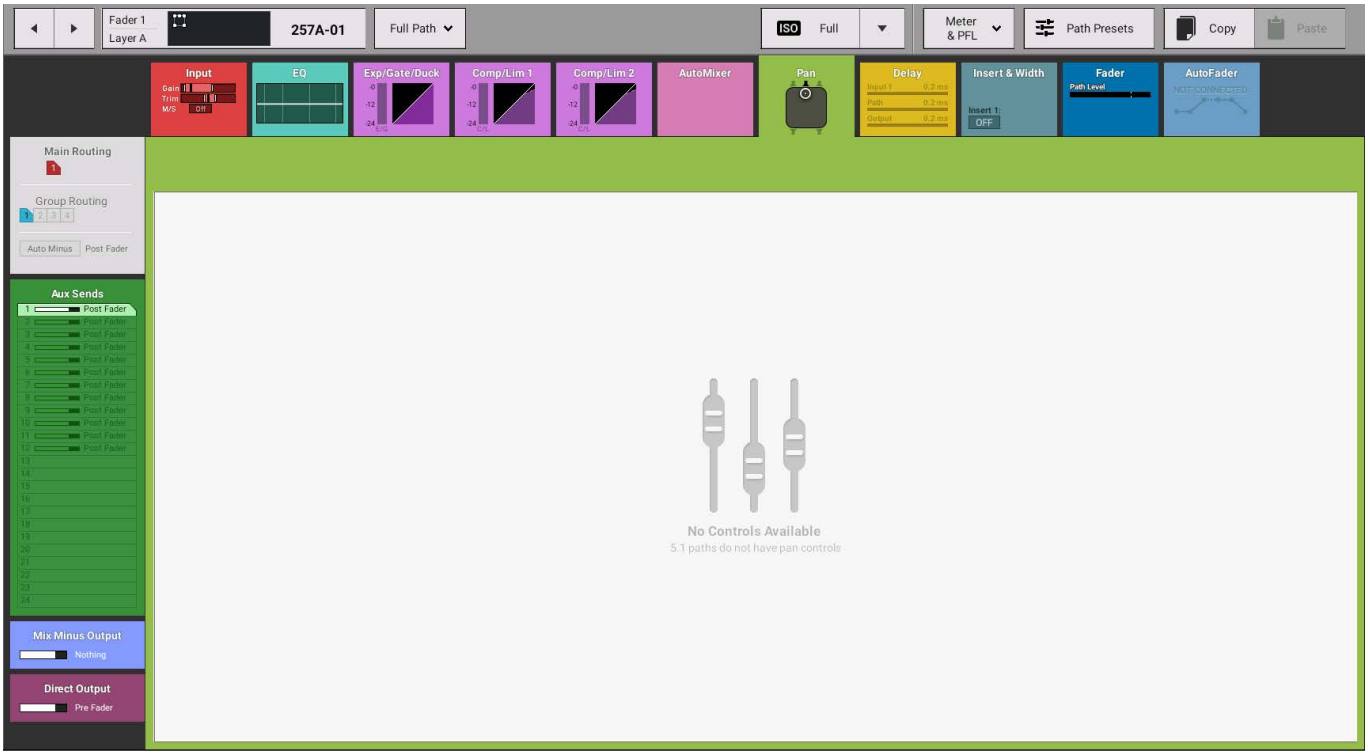


Figure 6 shows the 'Full Path' on the Pan page. As this is the 5.1 Channel it shows no Pan controls available as it is by definition a 5.1 source..

FIGURE 6 -FULL PATH SELECTED



Note: the above images show panning of spill legs to Mains and Groups. It is also possible to pan spill legs to stereo Auxes. LR, LFE and LsRs can all be panned individually, however the 'C ONLY' spill leg again does not allow any panning for the same reason as the Mains and Groups.

DELAY

Brio 36 has three types of delay available:

- Input delay: up to 5.4 s available per path from a pool of 64 mono legs, for example, when assigning input delay to a 5.1 path, six of the 256 mono legs are used.
- Path delay: up to 5.4 s available per path from a pool of 64 mono legs, as above.
- Output delay: up to 5.4 s available per path from a pool of 64 mono legs, as above.

Input, path and output delay can be used individually or in combination.

Accessing Delay Controls

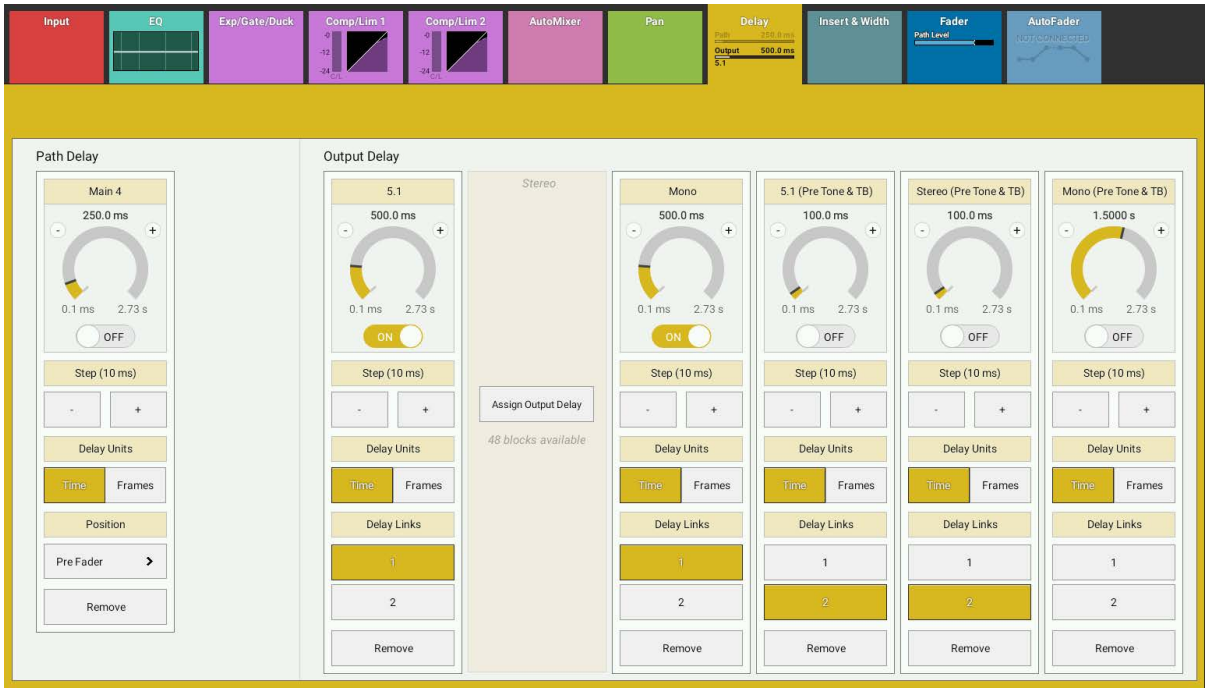
- Tapping the delay processing tab brings up the delay screen for the currently accessed path. If the path is an input channel, both input and path delay are displayed. If the path is an output, path and output delay controls are available. Note: the appropriate context sensitive controls under the touchscreen illuminate to provide physical controls
- Path delay is available for all paths, input delay is only available for input channel paths, output delay is available an can be applied to direct outputs on channels and groups providing a direct output has been allocated for those paths. In addition, aux outputs and main outputs can have output delay applied to their actual bus outputs.

Multiple input and output delay modules can be added to paths. If all available input or output delay modules are in-use and more are needed, modules must be removed from paths by tapping the **REMOVE** buttons at the bottom of the modules to add them back into the delay pool. The delay context based controls and page are shown in Figure 1.

FIGURE 1 - CONTEXT CONTROLS-INPUT & PATH DELAY SHOWING PAN POSITION OPTIONS

- Use the rotary control to set the delay length.
- Alternatively, use the step up [+] & step down [-] buttons to increase and decrease the delay time in steps of 10 ms.
- Delay Units: Switch between displaying delay in either time or frames.
- Delay Position: Path delay can be inserted into the path either pre EQ, pre fader or post fader.
- Delay units can be assigned from the pool by tapping on the on screen assign buttons. See Figure 2 on Main 4's Stereo O/P delay.

FIGURE 2 - OUTPUT & PATH DELAY CONTROLS



Global Delay Controls

Tap 'Show Settings' in the Show menu and then select 'Delay Controls'. Three global delay settings are available as shown in Figure 3.

- Delay can be viewed in either time or frames across the surface, select **TIME** or **FRAMES** and all new delay modules will be displayed according to your choice. If you wish to extend this selection to all existing delay assignments tap **APPLY TO EXISTING DELAYS**.
- If delays are displayed and controlled in frames rather than time, a frame-rate must be set. Changing the frame-rate from this screen changes is for all delays assigned on the surface which are in frames.
- When setting delays wither a rotary control or an up/down stepper can be used. If the stepper is used, the step size can be set at either 1 frame or 0.5 frames.

FIGURE 3 - SHOW SETTINGS—DELAY CONTROLS

INSERTS

Inserts provide a quick way to insert signal processing equipment into the system. Input channels, groups, auxes, mains and the console monitor output all have an insert.

Each insert has a send and a return, providing a convenient break in the signal chain. Sends and returns all appear in the I/O patching screen where they can be patched to I/O box ports for connection to external devices.

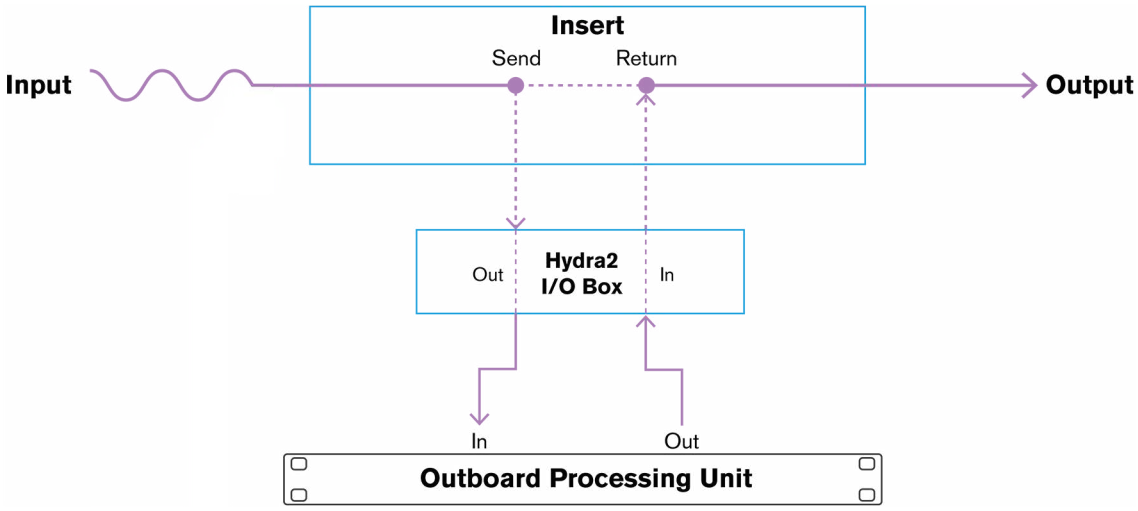
Path Inserts

Path inserts are associated with the attached path. If, for example, an input channel is attached to fader three and its paths insert is patched to an I/O box, if input channel on fader three is moved to a different fader, such as fader 10 for example, the insert patching will move along with it to appear on fader 10's insert send and return displays.

Patching Inserts

From the Brio 36 surface, insert sends should be connected to outboard inputs and Insert returns should be connected to outboard outputs. Outboard devices should have their inputs connected to I/O box output ports and their outputs connected to I/O box input ports, as shown in Figure 1.

FIGURE 1 - INSERT



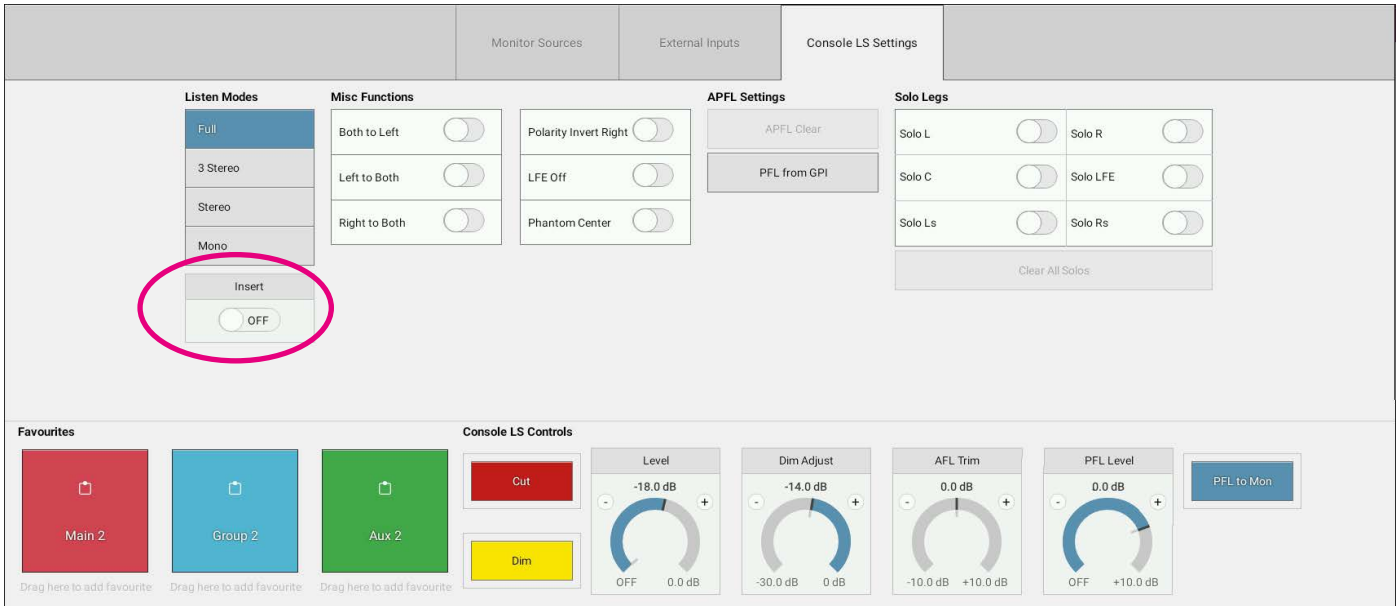
In/Out

Each insert has its own activation in/out button which, for faders, groups and mains can be found in the insert & width processing tab. The console monitor insert in/out button is accessible from the settings tab within the console monitor pop-up, as shown in Figure 2.

In/out buttons are useful for quickly comparing processed and unprocessed signals.

Note: Brio 36 has 2 Inserts available per path.

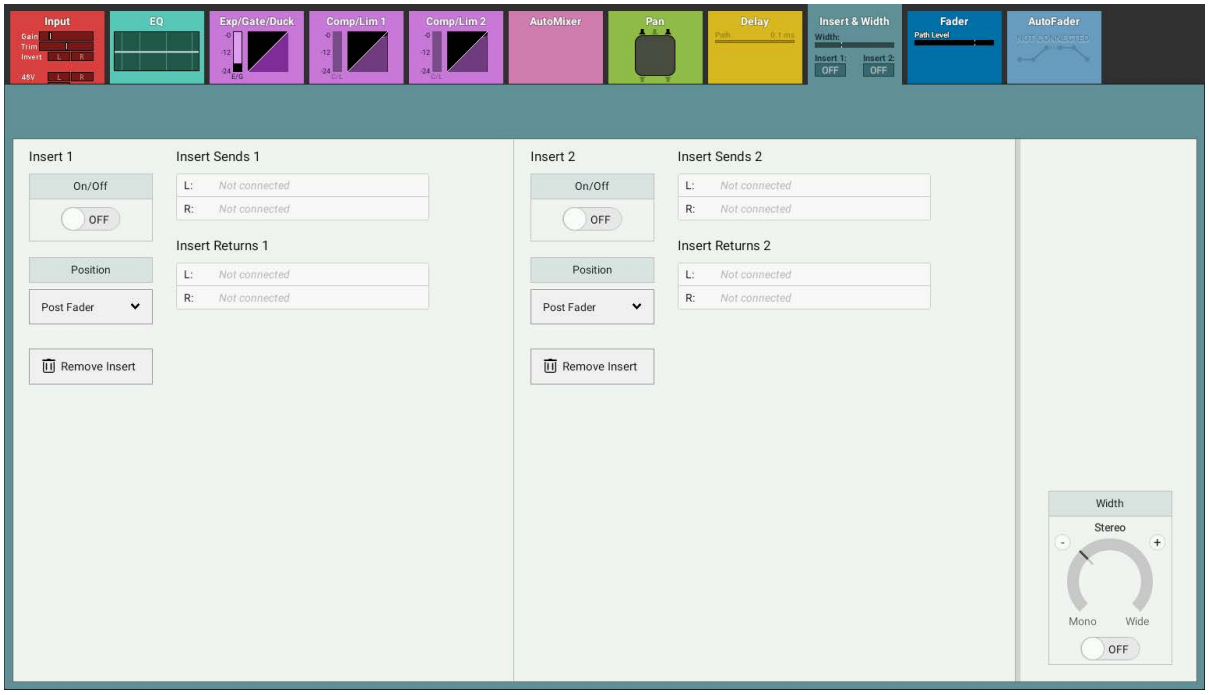
FIGURE 2 - CONSOLE MONITOR INSERT ON/OFF TOGGLE SWITCH



Insert and Width Tab Controls

- Width: A width rotary control is available for all stereo paths and is used to control the width of the stereo width ranging from mono, through stereo to wide. Wide creates the impression of an extended image past the usual left/right limits. Pressing the **WIDTH** control mode button populates the bottom row of control cells with width controls for any stereo paths.
- Insert: Inserts can be switched on or off individually.
- Position: Inserts can be placed either pre EQ, pre fader or post fader.
- Insert patching sources and destinations are clearly displayed.
- Figure 3 shows a Stereo Path with Width controls and two inserts assigned to it.

FIGURE 3 - FADER STRIP



Stereo & 5.1 path spill leg access and independence for Insert settings

From version v1.1 Brio can access each spill leg of a Stereo or 5.1 path and allow parameter changes to be made on each spill leg. Figure 8 shows the 'Full Path' button being pressed which brings up the Spill Legs Access pop-up. The user selects which spill leg they wish to examine/alter and the screen then accesses that leg as shown in Figure 9. Note: this button appears on all access pages.

FIGURE 4 -SPILL LEG SELECTOR

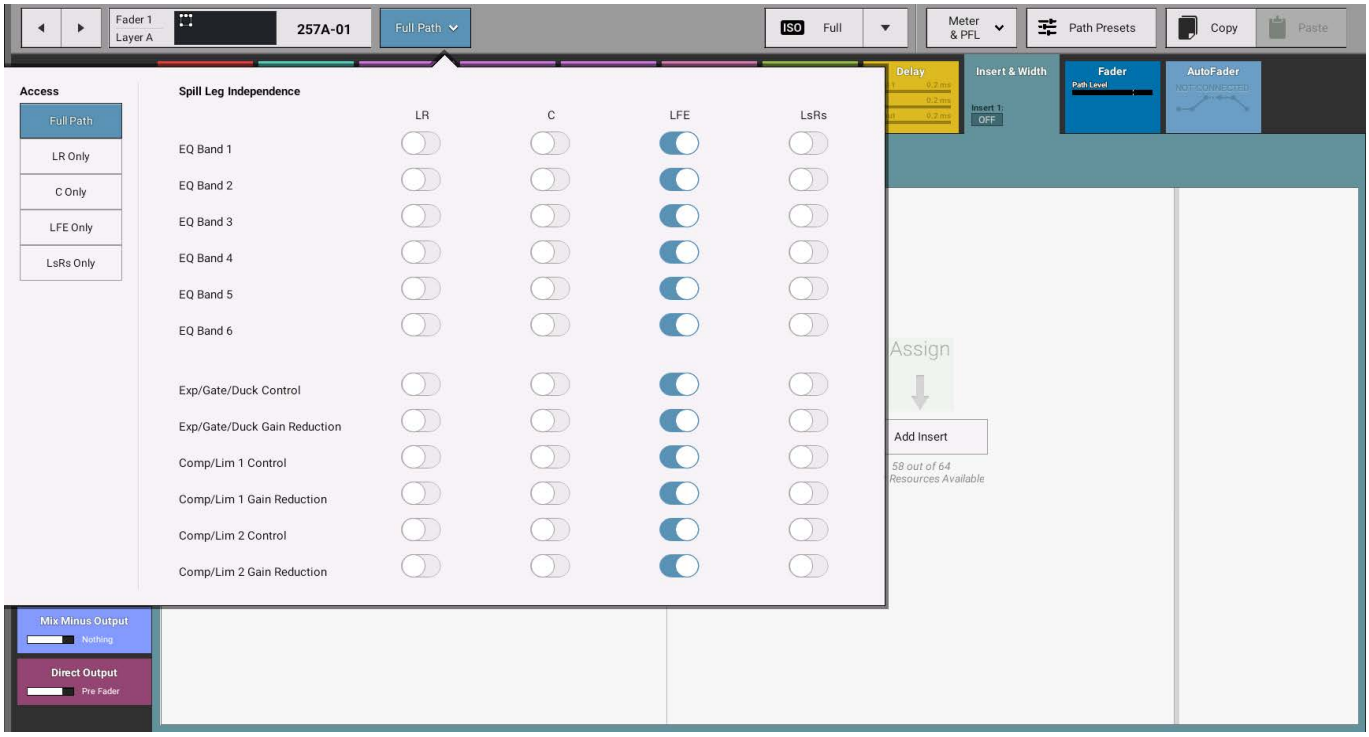
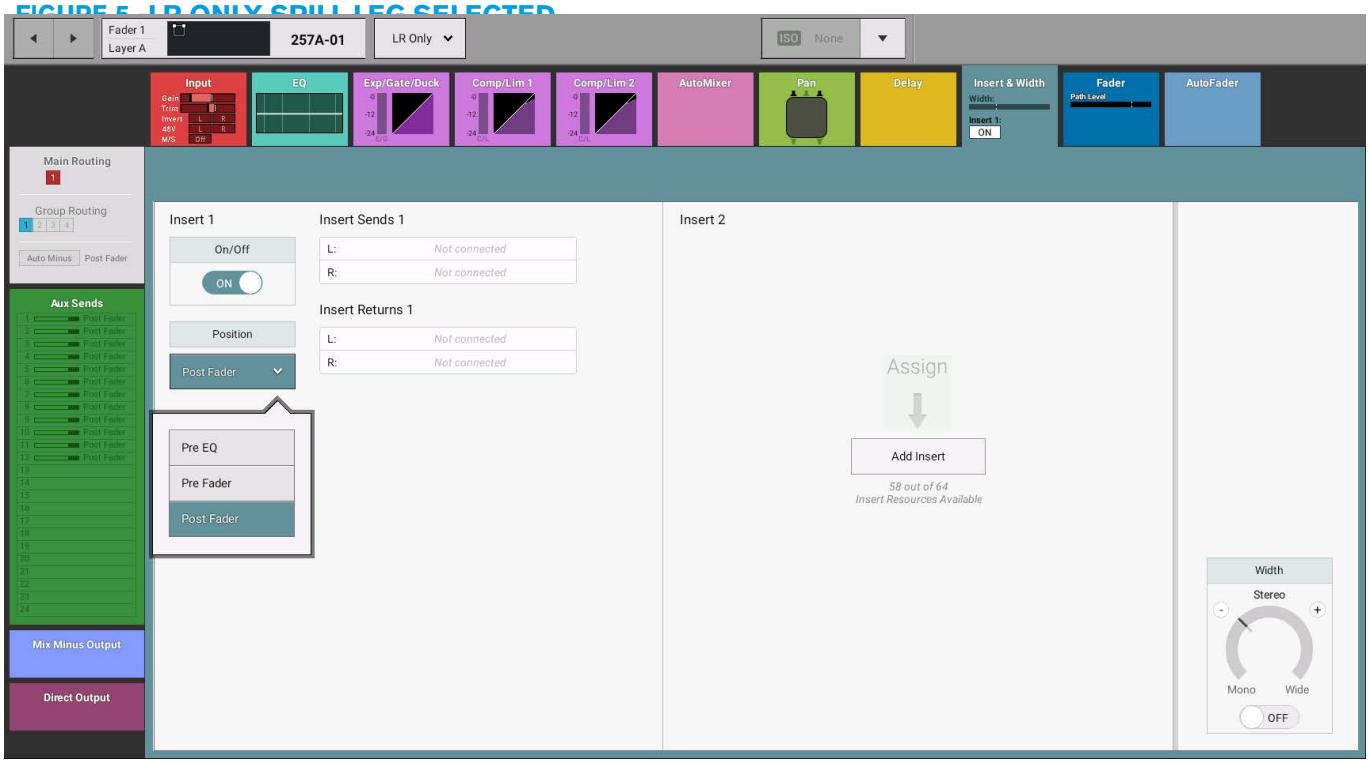


Figure 9 shows the 'LR Only' spill legs on the Inserts page. As this is a Stereo spill leg all the controls that would normally appear for a Stereo Insert including Width are made available. Note: the LsRs spill legs appears with the same parameters controls as shown here for the LR spill legs. The C and LFE spill legs appear in a similar way but without width controls.

FIGURE 5 -LR ONLY SPILL LEG SELECTED



VCA GROUPS

Brio 36's VCA group system allows you to control the level, CUT, AFL and PFL states of a group of faders from a 'master' fader.

Creating and dissolving VCA Groups

To create a VCA group:

1. Select the fader to be the group's master by pushing and holding its **ACCESS** button.
2. Push **ACCESS** for the faders that are to be slaves to this master.

To remove slaves or undo the process:

1. Push and hold the master's **ACCESS** button.
2. Push the **ACCESS** buttons for the slaves that are to be removed from the group.

By default, slave faders move along with their master faders to show the relative levels. This feature can be switched off within Brio 36's general settings, as shown in Figure 4 at the end of this section.

VCA Group Status Indication

FIGURE 1 - VCA STATUS—FADER DISPLAY OPTIONS

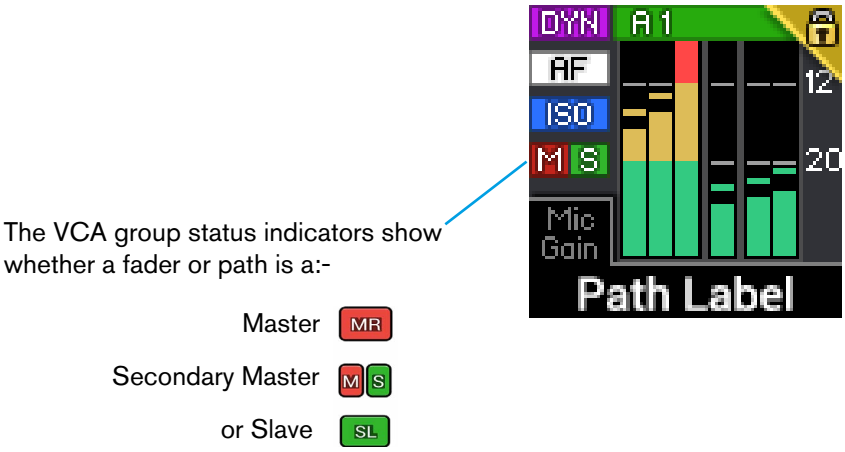
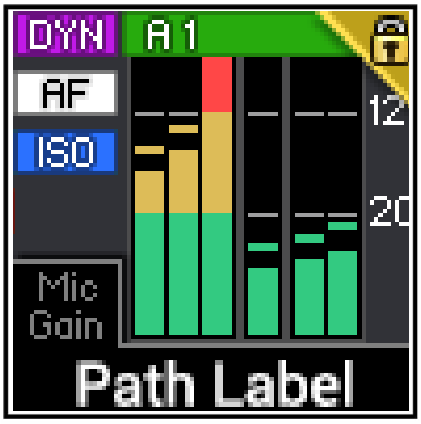
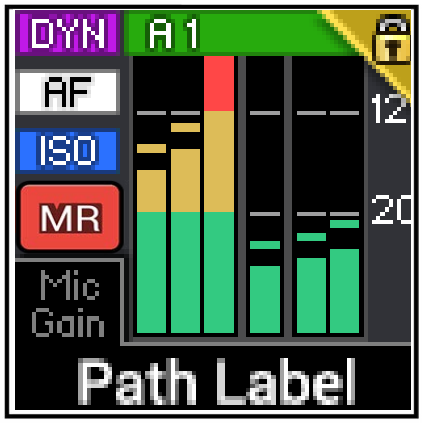


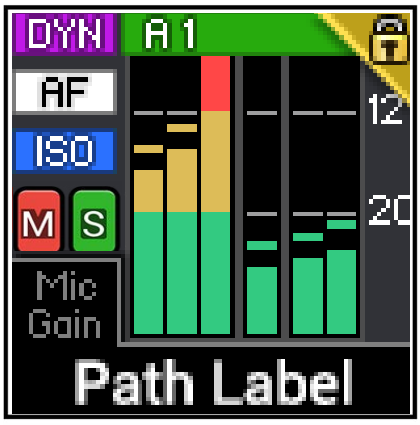
FIGURE 2 - VCA STATUS—FADER VARIANTS



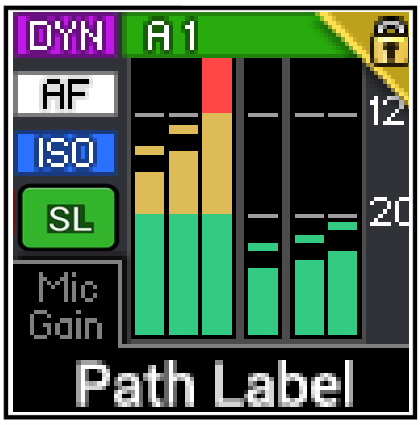
This fader is neither master nor slave. If a path is attached, the level of this fader is the level of the path.



This fader is a primary master. If a path is attached, the path is a direct slave to this master. Push ACCESS to see and alter the level of the slave path.



This fader is a secondary master. If a path is attached it is a slave to this secondary master. Push ACCESS to see/alter the level of the slave path.

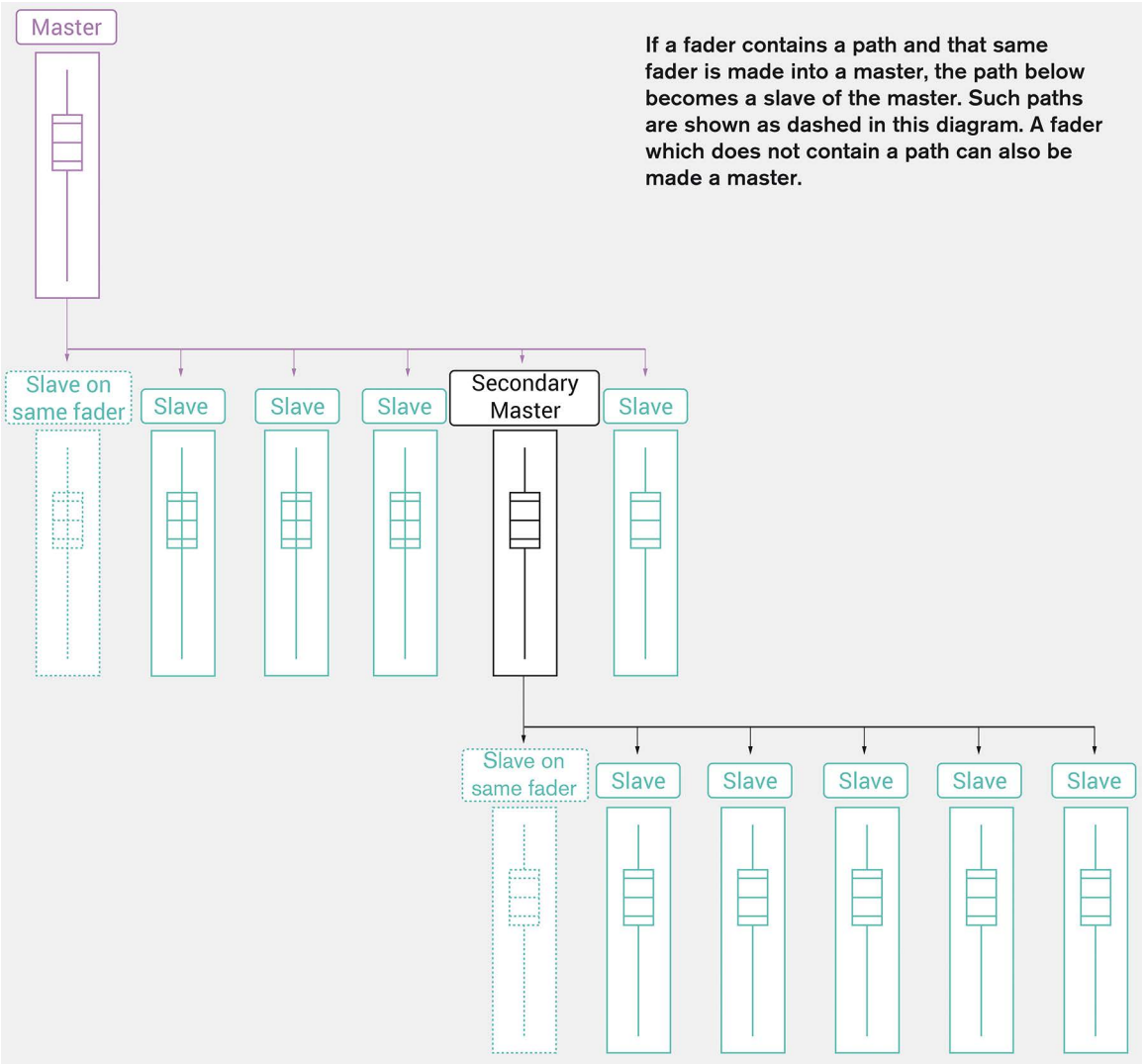


This fader is a slave. If a path is attached, the level of the fader controls the level of the path.

Secondary Master

There is a three tiered hierarchy within Brio 36's VCA group system: primary Master, secondary master and slave. Altering the level of a primary master affects the levels of its direct slaves, its secondary master and the secondary master's slaves, all by the same degree. Pushing the primary master's CUT, AFL or PFL buttons applies the same settings to direct slaves, any secondary masters and their slaves. The diagram on this page illustrates the hierarchy.

FIGURE 3 - VCA HIERARCHY



Masters and Paths

When a fader becomes a master and it has a path attached, that path becomes a slave of the master fader. The level of the slave path can be altered separately to the master fader level:

1. Push the master fader's **ACCESS** button to see the fader jump to the position of the slave path.
2. With the **ACCESS** button held, move the fader to change the level of the slave path.
3. Release the **ACCESS** button to see the fader jump back to the master position.

Other VCA information

A VCA Slave can only be set +10dB higher than the position of its VCA Master.

When a Primary VCA Master, Secondary VCA Master and Slave are all pushed to the top of their travel it is possible to make the gain of the Slave go up to +30dB.

If the level of the VCA Master fader is taken below -50dB the level of the slave cannot be altered so that the balance of the VCA group is preserved at low levels. This has been put in place for safety as making alterations at such low levels would be likely to produce inaudible results that would be significantly amplified when the master is later opened.

5.1 Surround Paths

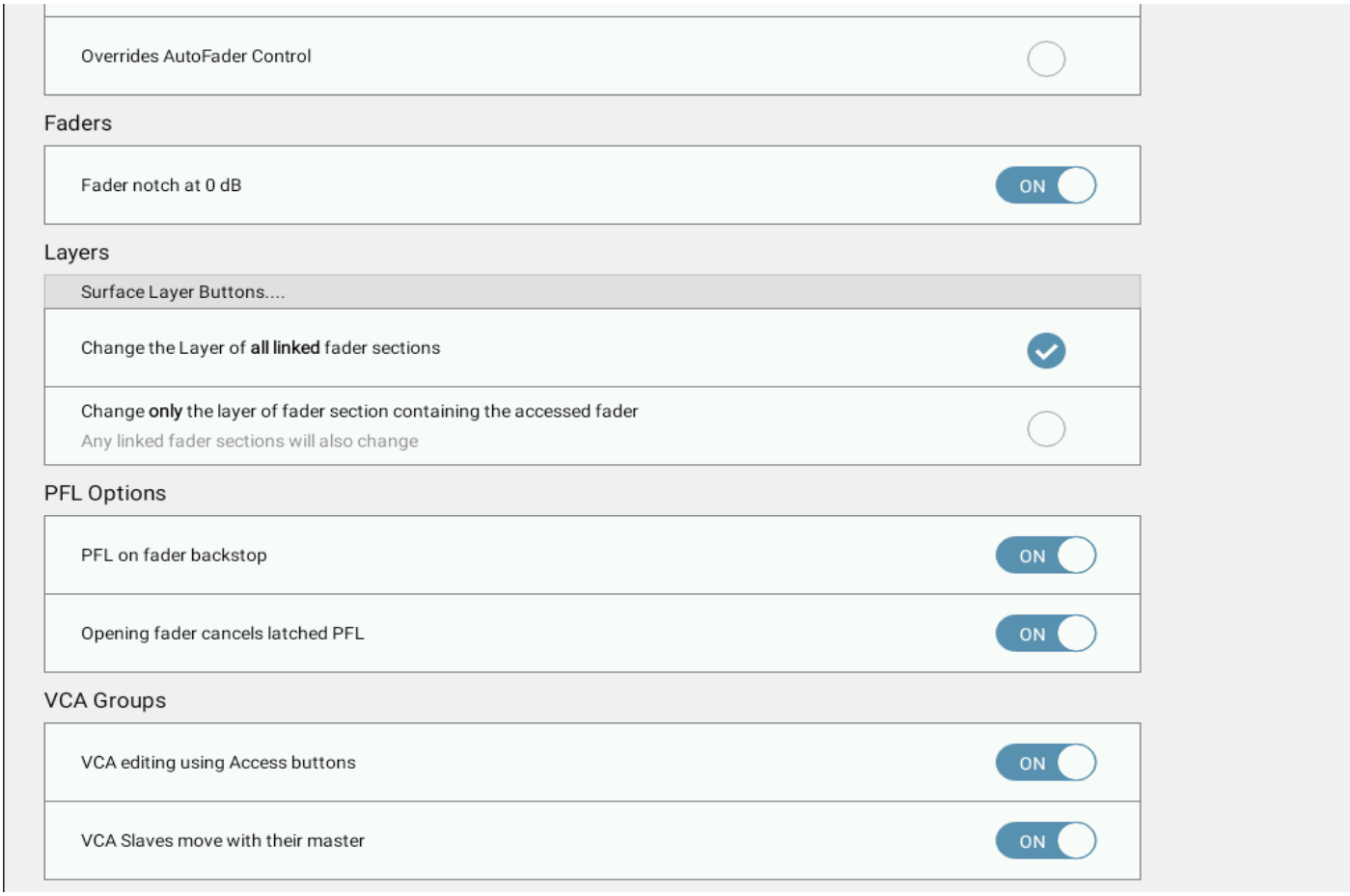
If a surround path is part of a VCA group, the primary and secondary masters' level, PFL, AFL and CUT settings will affect all legs of the surround path. A surround path leg cannot be a VCA master or slave.

VCA Group Protection

VCA groups can be protected from being changed:

1. Tap **SHOW SETTINGS** at the bottom of the Show menu.
2. Select **GENERAL** from the left hand menu.
3. Switch **VCA EDITING USING ACCESS BUTTONS** 'off'—all existing VCA groups carry on operating normally but no changes can be made and no new groups can be created.

FIGURE 4 - VCA GROUP SETTINGS



VCA Non-Moving Faders

The motorised VCA system can be disabled so that the Audio resultant is just the Sum of the fader values and the faders don't move to show the WYSIWYG resultant:

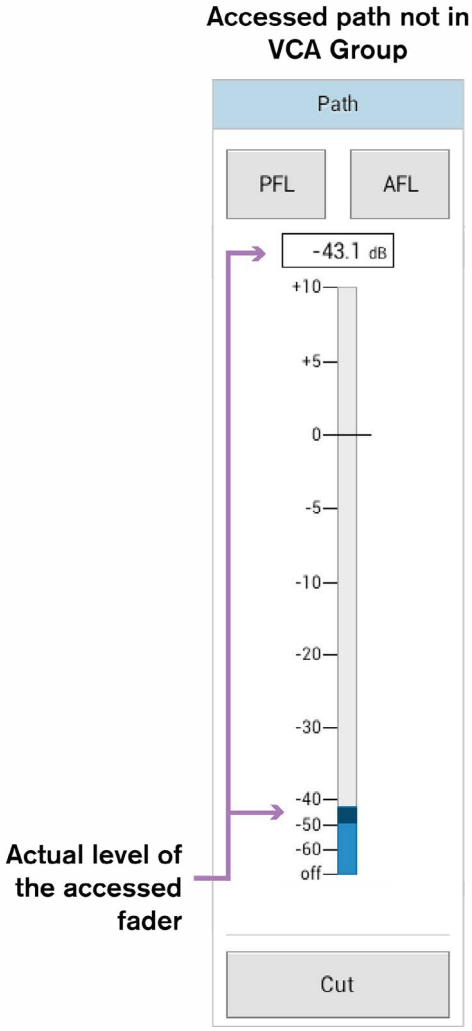
1. Tap **SHOW SETTINGS** at the bottom of the Show menu.
2. Select **GENERAL** from the left hand menu.
3. Switch **VCA SLAVES MOVE WITH THEIR MASTER** 'off'—all existing VCA groups carry on operating normally but the motors are turned off and the Audio result is now the sum of the primary master, secondary master (if any) and the Slave positions.

THE FADER SCREEN

The fader screen displays an overview of the currently accessed fader. All level information relates to the fader level, not the actual level of the attached audio path.

A virtual version of the accessed fader is provided within the fader screen including PFL, AFL and CUT buttons which can be used as an alternative to the surface buttons. The image below shows how a fader that is not in a VCA group is displayed within the fader screen.

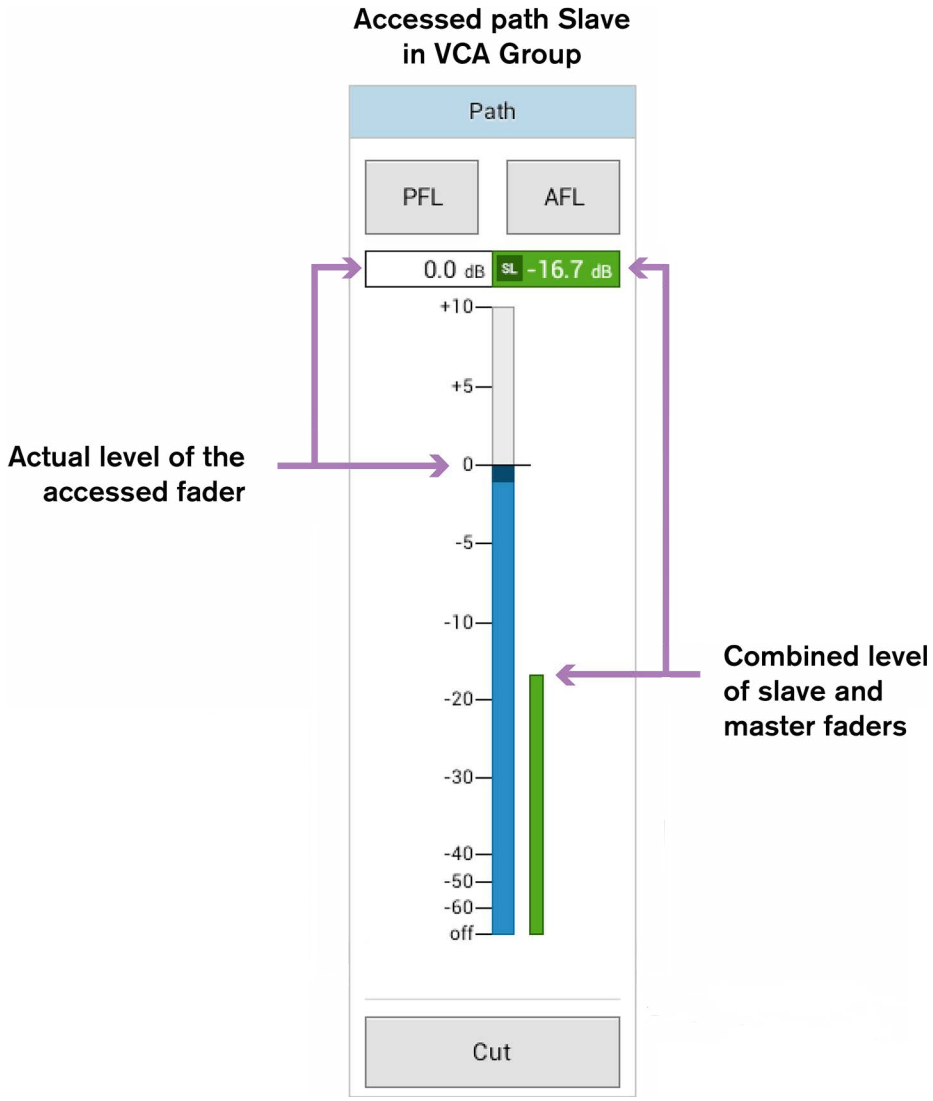
FIGURE 1 - FADER—NOT IN VCA GROUP



VCA Slave

If the accessed fader is a slave within a VCA group a green slave level is displayed to the right of the blue fader level indicator showing the combined level of the accessed fader and its master fader.

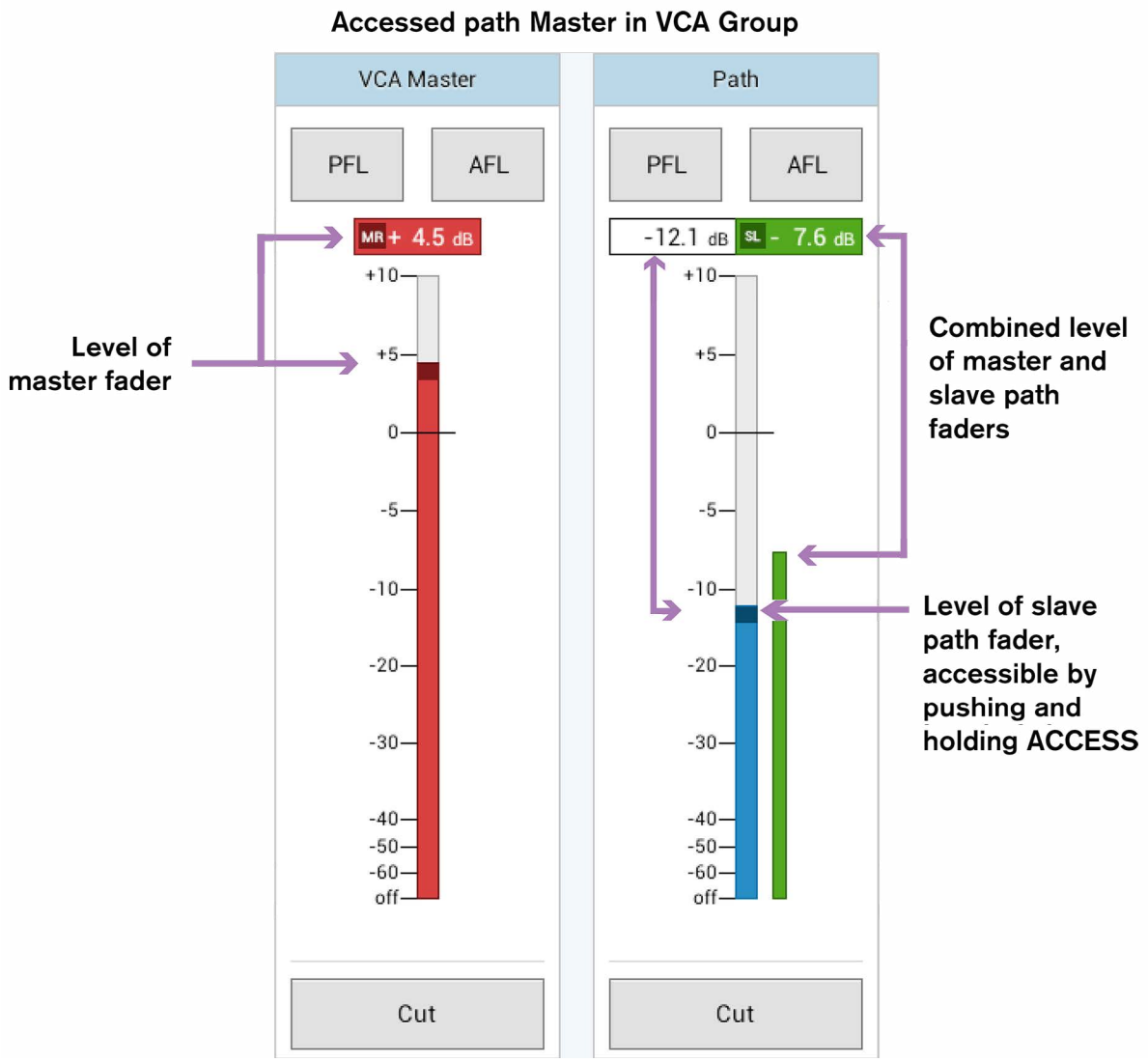
FIGURE 2 - FADER—SLAVE IN VCA GROUP



VCA Master

If the accessed fader is a primary or secondary master within a VCA group and a path is attached to the fader, two faders are displayed, one for the VCA master and one for the slave path beneath (see "VCA Groups" on page 134 for more information)

FIGURE 3 - FADER—MASTER IN VCA GROUP



VCA Slaves on Buses and Outputs Page

The Buses and Outputs page now shows VCA Slave levels as well as the bus path level, if a bus is controlled by a VCA Master. This applies to Main, Group and Aux bus outputs. See Figure 4 which shows Aux bus outputs display when set as VCA slaves to a VCA Master.

FIGURE 4 - AUX BUS OUTPUT FADERS—SLAVES IN VCA GROUP

Surround Paths

If the accessed fader has a surround path attached, two additional tabs appear within the fader screen: 'surround leg faders' and 'downmix faders'.

Surround Leg Faders

The surround leg faders screen allows you to set the relative levels for the separate surround component legs:

- Left and right (LR)
- Centre (C)
- Low frequency enhancement (LFE)
- Left surround and right surround (LsRs)

The individual surround legs can be monitored and cut individually using the CUT, AFL and PFL buttons.

Downmix Faders

The downmix faders tab allows the user to make individual alterations to the LR, C, LFE and LsRs levels which will be used for downmixing the surround feed to stereo and mono outputs. Each Show has default downmix levels which are defined within the setup area. Making changes within the fader screen offsets the downmix levels from these defaults. See "DOWNMIXING" on page 180 for more information.

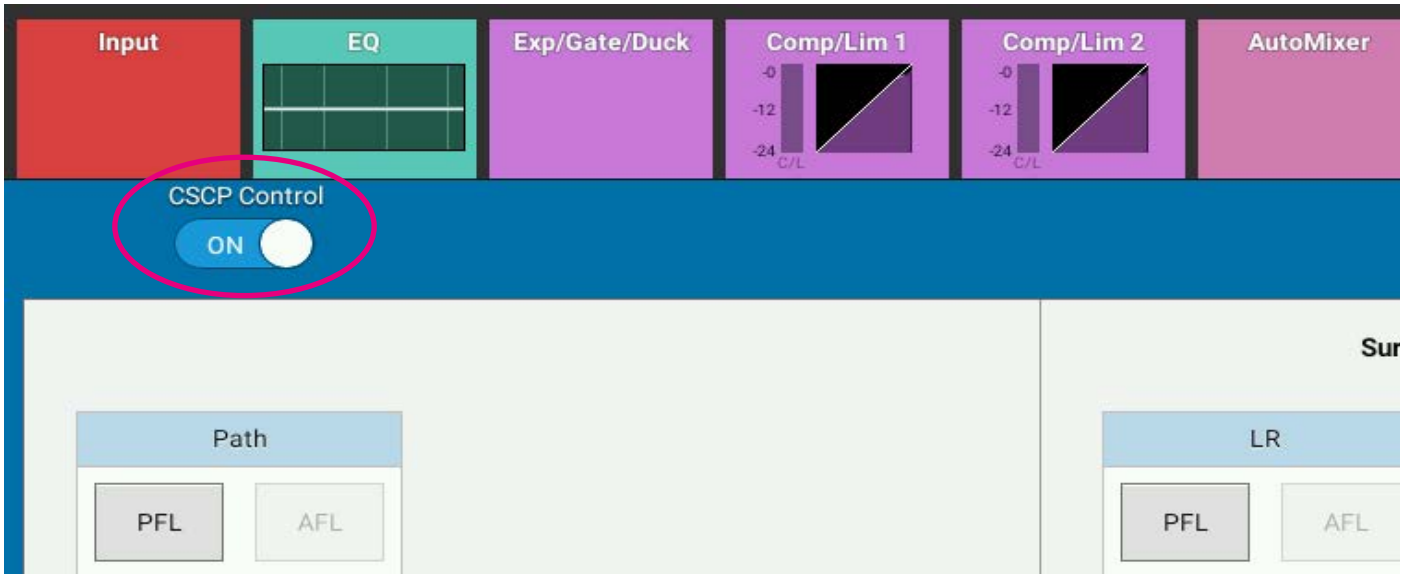
CSCP control

Calrec serial control protocol (CSCP) enables control of the following using various third party devices:

- Fader positions
- Path CUT/ON status
- PFL/AFL Status
- Routing to Auxes and Mains
- Setting Aux output levels
- Main output level
- Left to both and right to both switching

Each fader has a CSCP Control on/off switch in the fader screen header. Setting this switch to the on or off positions enables/disables CSCP for that path.

FIGURE 5 - CSCP CONTROL SWITCH IN THE FADER SCREEN



AUTOFADERS

AutoFaders allow Brio 36 faders to be opened and closed under the control of another system through the use of GPIs.

To control an assignable AutoFader, select the Access>Autofader page and press the appropriate access button for the channel whose AutoFader is to be accessed. See Figure 1.
Note: the appropriate context sensitive controls under the touchscreen illuminate to provide physical controls

FIGURE 1 - AUTOFADER SCREEN

The AutoFader TFT screen gives a visual representation of the behaviour of the AutoFaders position over time and provides information about which AutoFader is in use and which GPI the AutoFader is being triggered from.
There are 9 individual AutoFader controls provided and a global on screen switch to Bypass All AutoFaders.

AutoFader Controls

- AUTOFADER ON - Enables the AutoFader on this assign path. Note: if the AutoFader is shared across several paths, only this path is affected by this switch.
- REHEARSE - Press and Hold this button labelled ' Hold then release to rehearse AutoFader' to trigger the AutoFader and release to release the AutoFader. This button allows the user to walk through the action of the AutoFader and adjust parameters if necessary.
- FADE IN LEVEL - This is the level that the fader goes to when the GPI is triggered shown as an 'IN' line.
- FADE OUT LEVEL - This is the level that the fader goes to when the GPI is released shown as an 'OUT' line.
- FADE IN DELAY - This is the delay period before the fader starts to ramp up to the IN LEVEL.
- FADE IN DURATION - This is the fader ramp up period.

- FORCE RELEASE - When 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.

Note: if the above control is set to 'Never' the AutoFader will remain triggered indefinitely whilst the connected GPI is triggered.

- FADE OUT DELAY - This is the delay period before the fader starts to ramp down to the out level
- FADE OUT DURATION - This is the fader ramp down period.

Note: the AutoFader thumbnail shows which AutoFader is in use and its On / Off state even when the Access mode is on a different control page.

- CONNECTED AUTOFADER TRIGGER - Pressing this button allows the user to select the AutoFader trigger.

Setting Up AutoFaders for use

There are 99 AutoFaders in the Brio 36 system. GPIs are assigned to control one or more of these AutoFaders when they receive the required trigger signal. The AutoFaders can then be assigned to control one or more faders on the surface.

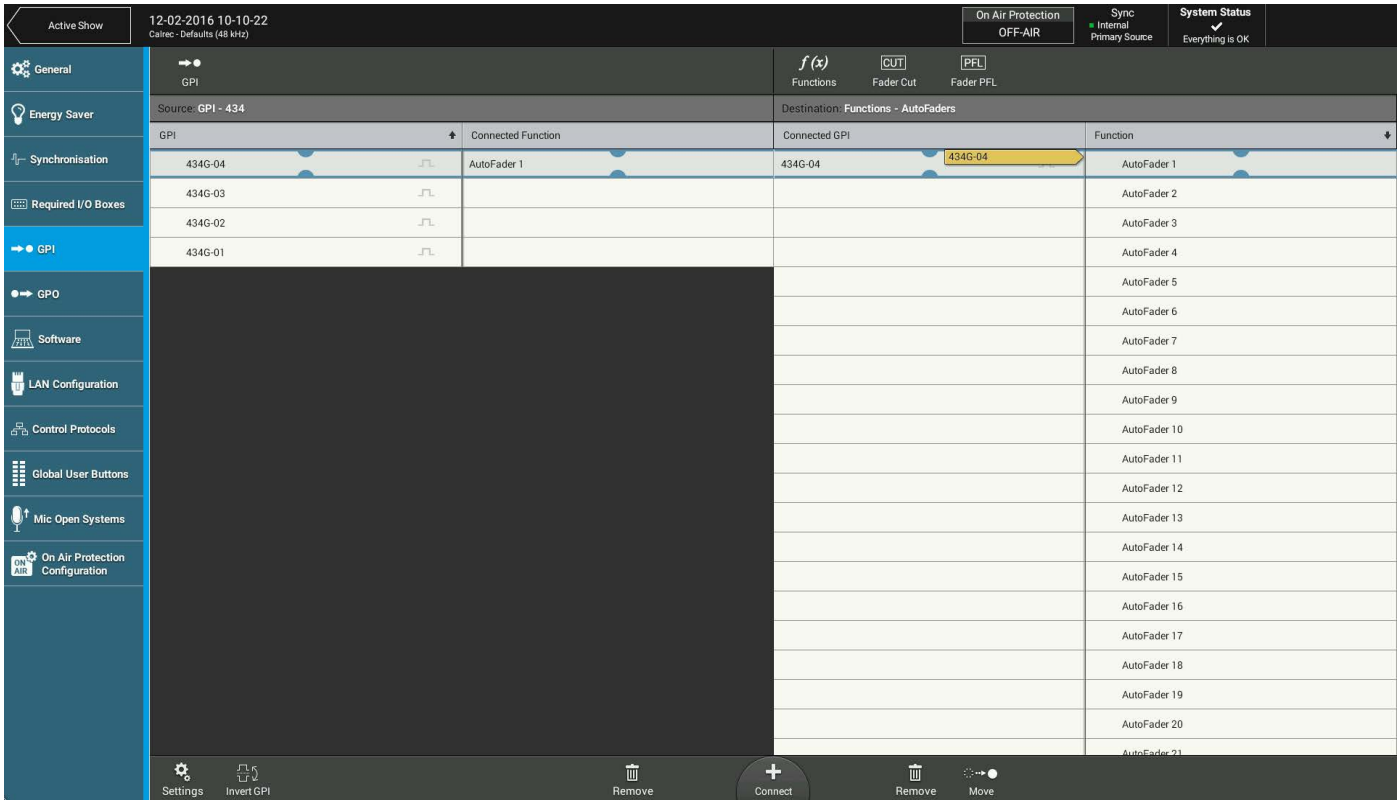
Assigning GPI's to AutoFaders

GPIs are assigned to AutoFaders in the GPI screen in System Settings>GPI as shown in Figure 2.

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

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

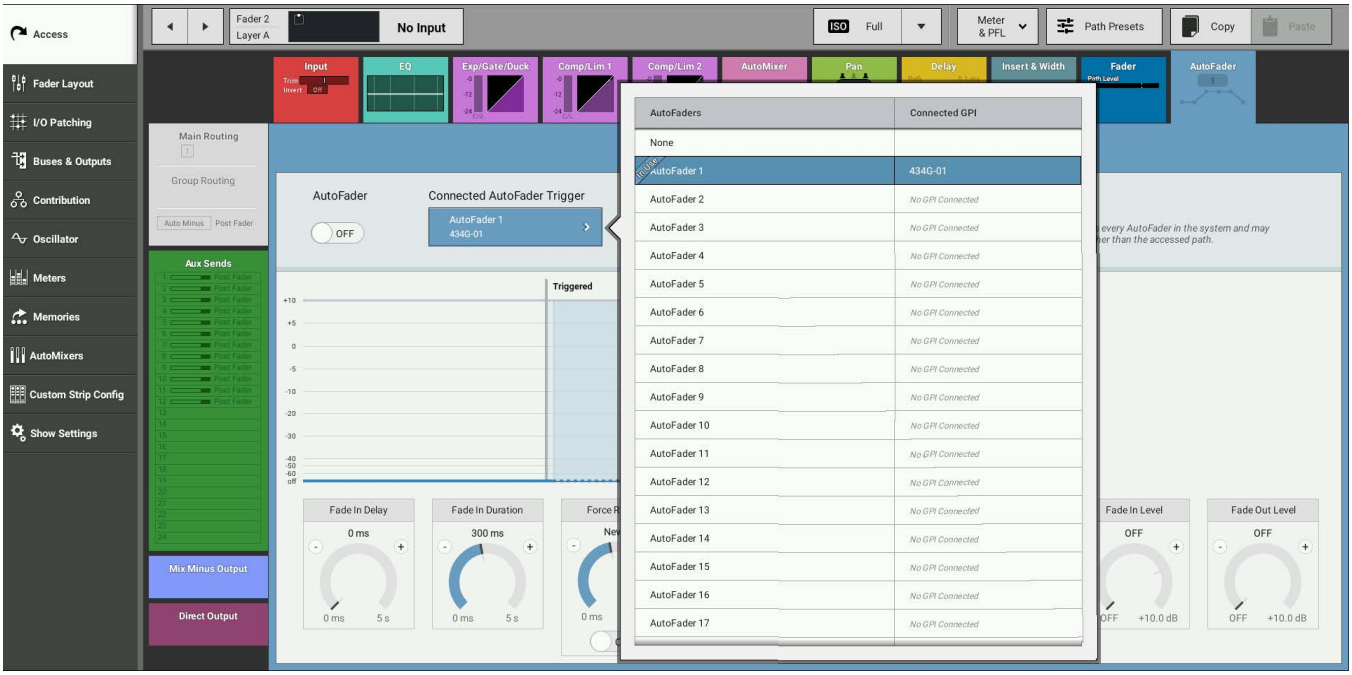
FIGURE 2 - ASSIGNING GPIs TO AUTOFADERS



Assigning AutoFaders to faders

Once the relevant GPIs have been assigned to AutoFaders, the AutoFaders can be assigned to control faders on the surface. This is done on the Access>AutoFader screen as shown in Figure 3.

FIGURE 3 - ASSIGNING AUTOFADERS TO FADERS



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 Access>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 -100dB to +10dB.

Global AutoFader Bypass

At the bottom of the AutoFader screen there is a copy of the Global Bypass button which effectively disables all AutoFaders.

AutoFader indicators

When an AutoFader is assigned to a fader, the Fader display will show the AutoFader Number and the Meter display shows when the AutoFader is active.

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 being 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.

CONTROL LINKING

Paths can be linked, meaning that if a parameter is altered for one linked path it will also be altered for all other linked paths for which the parameter is relevant. Memory isolation is also included in the control link.

Linking can be achieved by pressing two access buttons will link all the paths between them on the surface, or by pressing and holding the 'LINK' Sel/Clear button and selecting the paths to be linked by pressing the Access buttons at the same time. To alter the paths in the link, press and hold **LINK** and add or remove paths from the link using the Access buttons. Those paths in the Link will have their Access buttons lit. . To add a fader on a different surface layer to the link group, use the fader layer A or B buttons to access the desired layer, then push the path's **ACCESS** button.

To link a group of sequential paths, simultaneously push the **ACCESS** buttons at each end of the group, for example, simultaneously pushing **ACCESS** buttons for fader one and four adds faders one, two, three and four to the link.

Identifying Linked Faders

All linked paths can be identified by the link symbol in the Fader displays. See "Fader Display" on page 24.
In addition when a Link is active even if the linked faders are on the other layer the LINK button flashes. If the LINK button is switched off the faders operate independently. Turning on the LINK button again will restore the last link arrangement. Note: if another two access buttons are pressed simultaneously without holding down the LINK button a new link arrangement will replace the last one.

Link Features

- Parameter changes across linked paths are made relatively, for example, if the gain of one linked path is increased from 0 dB to 5 dB, a linked path with an original gain of 5 dB will be increased to 10 dB.
- Frequency controls are altered 'musically', for example, if one EQ frequency control is increased from 5kHz to 10 kHz, i.e. one octave, the corresponding frequency control for a linked path starting at 7 kHz will also be increased by one octave to 14 kHz.
- If a path is cloned and then added to the link group, all its clones will also be linked.

For reasons of safety and usability some features are not included in linking:

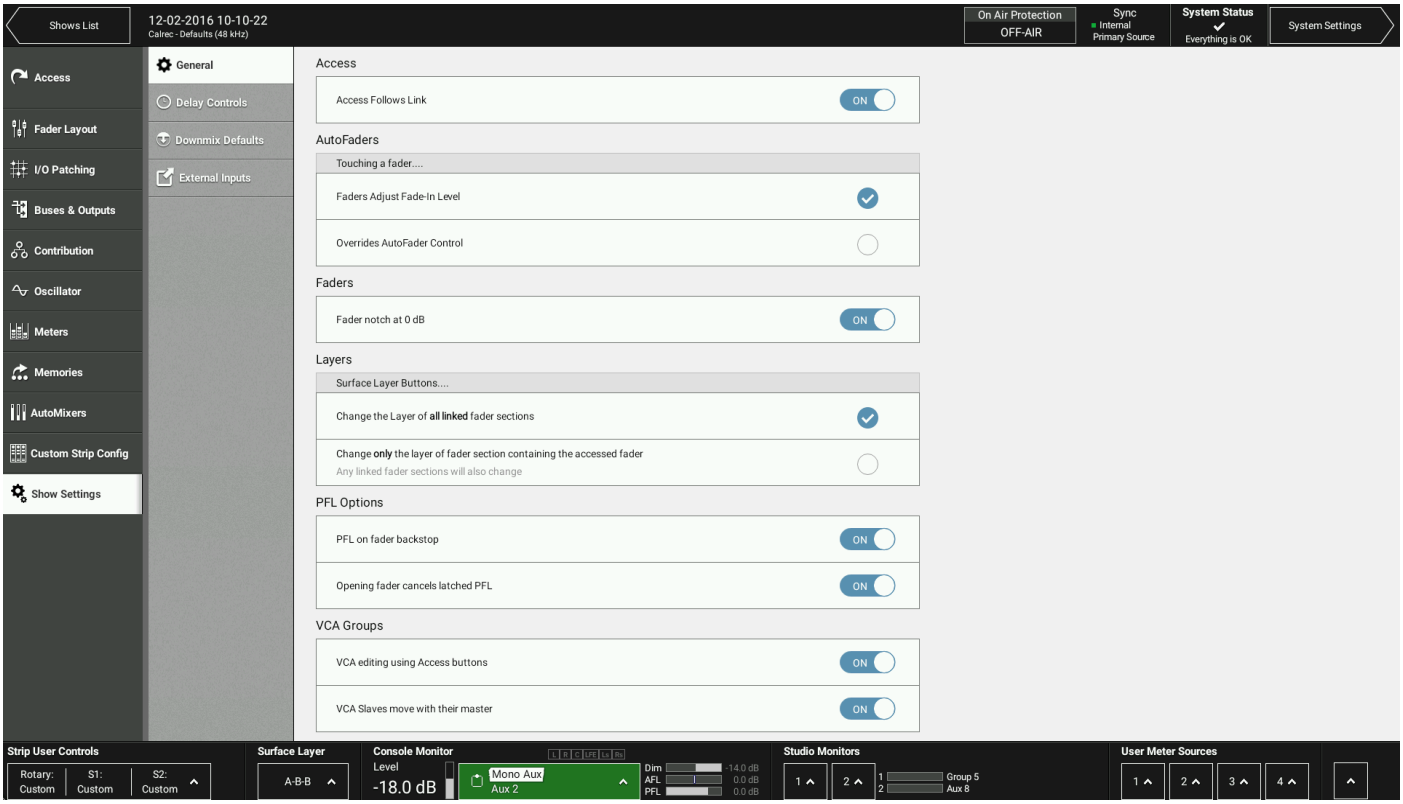
- Port patching
- PFL/AFL
- Phantom power
- VCA masters can not be linked

FIGURE 1 - LINK SEL/CLEAR BUTTON

Access Follows Link

Active Show>Show Settings>General contains an option for path access to follow the creation of a control link see Figure 2.

FIGURE 2- ACCESS FOLLOWS LINK OPTION



When this option is on, then when the user creates a link across a range of faders by simultaneously pressing two access 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.

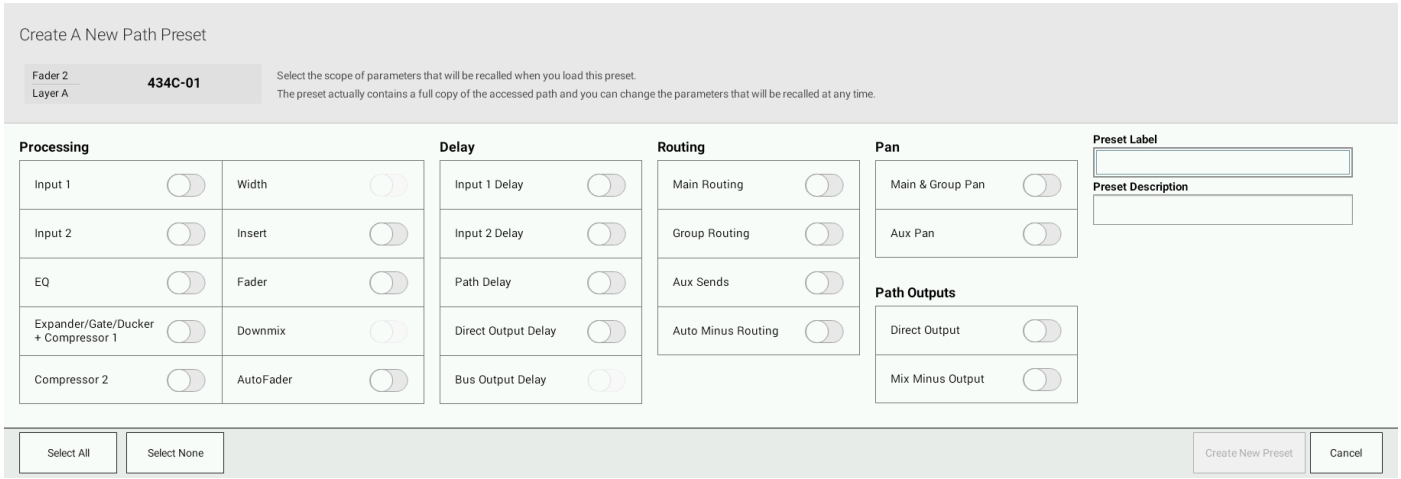
The user can now also link faders that do not contain paths. This makes it very quick to select a range of faders and assign paths from the Access screen.

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 work-flow 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.

FIGURE 1 - PRESETS SCOPE

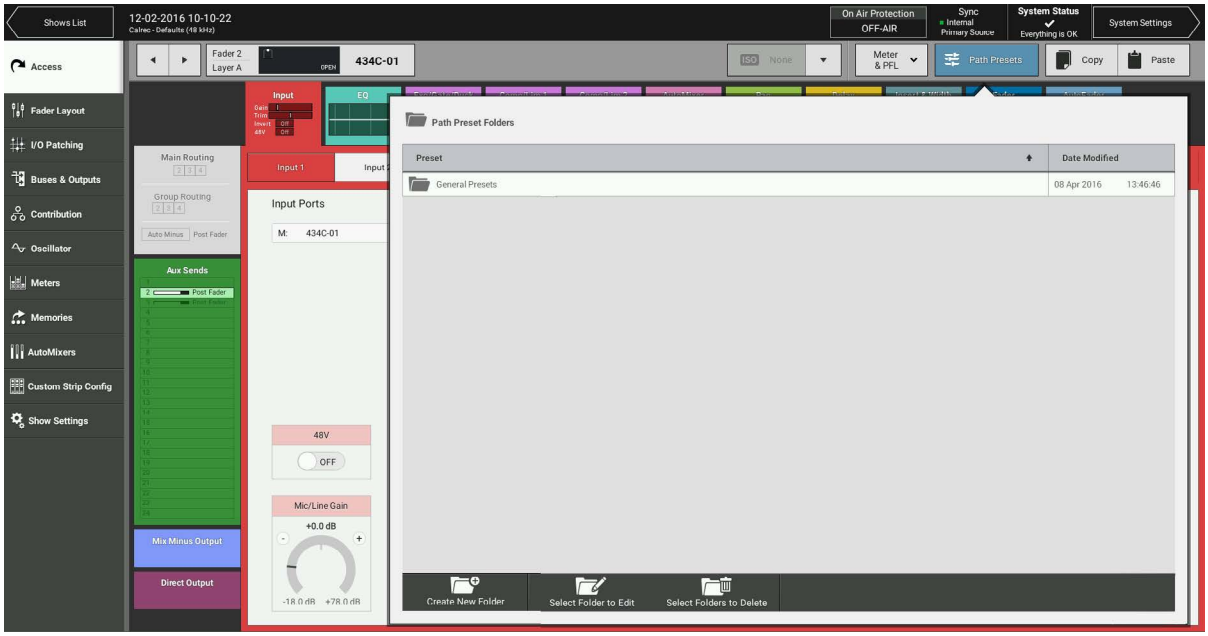


Creating a Preset

To create a preset from the currently accessed path:

1. Tap **PATH PRESETS** in the Access bar.
2. Navigate to where you wish to save the preset, making a new folder if necessary.
3. Tap **NEW**.
4. If overwriting a previously saved preset a red dialogue will be displayed to warn the user of the potential overwrite. Tap **OVERWRITE** or **CANCEL**. Otherwise, the user will be directed to enter a label and description and set the scope of the preset, then tap **CREATE NEW PRESET** or **CANCEL** to discard any changes.

FIGURE 2 - CREATING / SELECTING A PRESET FOLDER



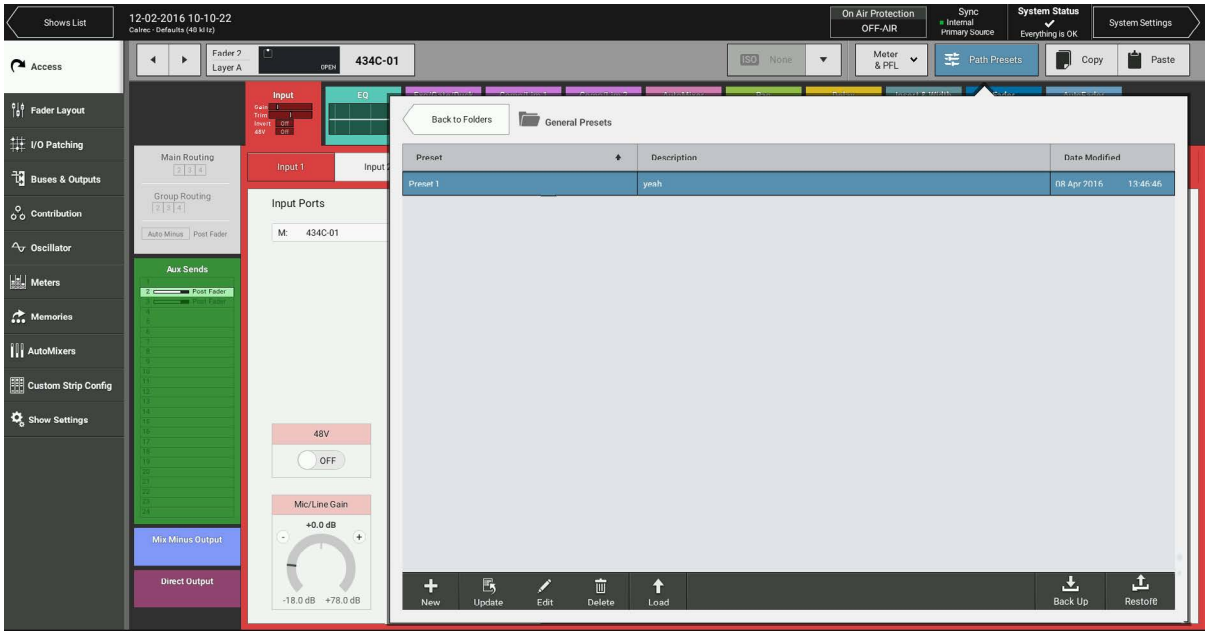
Loading a Preset

To load a preset to the currently accessed path:

1. Tap **PATH PRESETS** in the Access bar.
2. Navigate to and select the required preset.
3. Tap **LOAD** .

If a preset is loaded to a path which is part of a control link, the in-scope preset elements will be loaded for all paths in the control link. Any elements of the preset which don't apply to the path will be automatically ignored.

FIGURE 3 - LOAD PRESETS

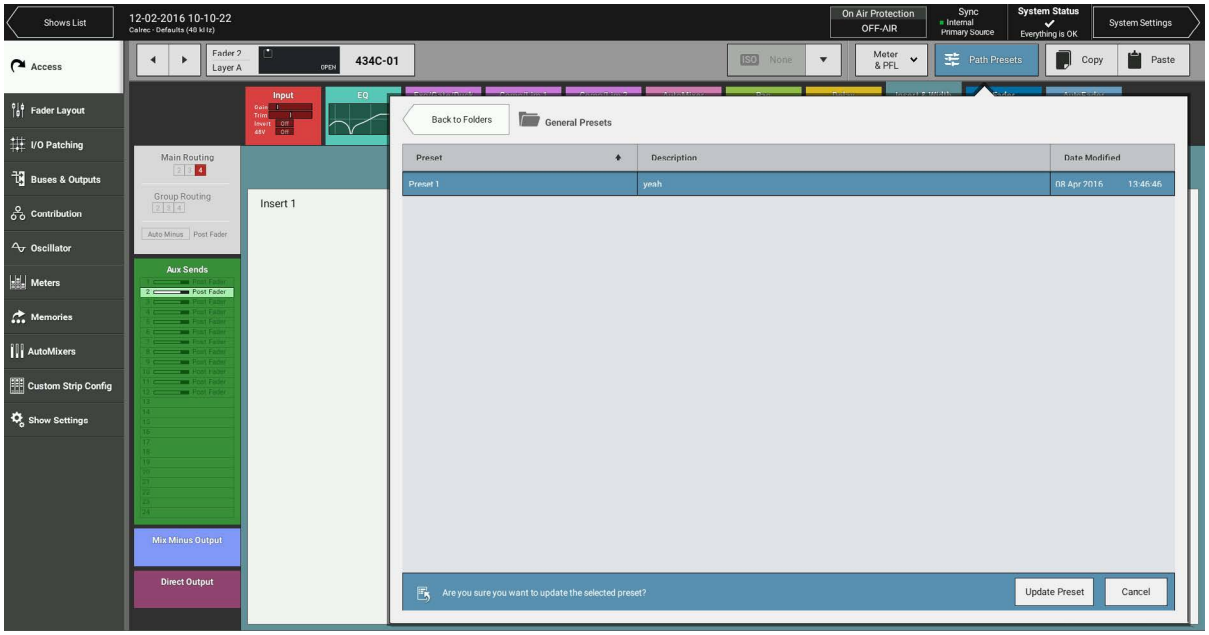


Updating a Preset

To update a preset to the currently accessed path:

1. Tap **PATH PRESETS** in the Access bar.
2. Navigate to and select the preset to update.
3. Tap **UPDATE** and confirm.

FIGURE 4 - UPDATE PRESETS



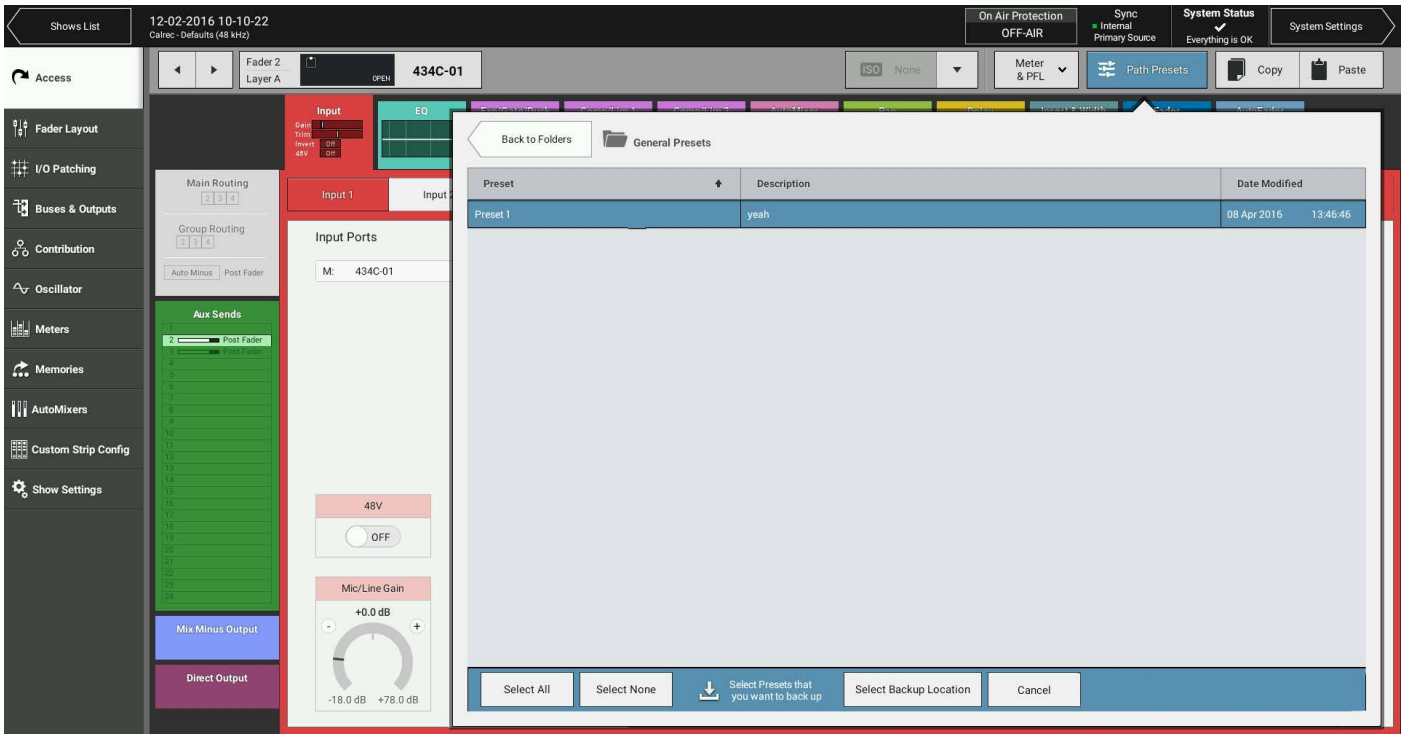
Backing Up and Restoring Presets

Presets can be backed up to a USB drive connected to one of Brio 36's USB ports.

To back up a preset:

1. Tap **PRESETS** in the Access bar.
2. Navigate to and select the preset that you wish to backup from the list.
3. Tap **BACKUP**. The user can now select multiple Presets from the same location if required.
4. Tap **SELECT BACKUP LOCATION** and ensure a USB drive is connected to one of Brio 36's USB ports.
5. Navigate to the desired backup location, creating a new folder if necessary
6. Press **BACKUP HERE** or **CANCEL**. If there is a previously saved a version of the same preset, a pop-up will appear to ask the user if they to **OVERWRITE** or **CANCEL** the backup.

FIGURE 5 - BACKUP PRESETS



To restore a Preset from an external drive:

1. Press **RESTORE** and navigate to select the Preset to restore to the internal memory.
2. Press **RESTORE** or **CANCEL**.

Editing a Preset

Once a preset has been created the user can edit its scope, label and description at any time by tapping **PRESETS** in the Access bar, selecting the from the pop-up and tapping **EDIT** .

Pooled Resources

When presets are loaded for 'pooled' resources, such as input and output delay modules, they will be assigned up to the point where the pool runs out. If not enough resources are available to complete the load, a dialogue appears to tell the user that some resources have not been applied.

COPY AND PASTE

It's quick and easy to copy properties from one path and paste them to another

1. Access the path that to copy properties from and tap **COPY** in the top right corner of the Access bar as shown in Figure 1.
2. Tap to select the properties to copy **SELECT ALL** and **SELECT NONE** can be used if required and tap **COPY** or **CANCEL** as shown in Figure 2
3. Access the path(s) to paste the properties to and tap **PASTE** in the Access bar.

FIGURE 1 - COPY AND PASTE BUTTONS

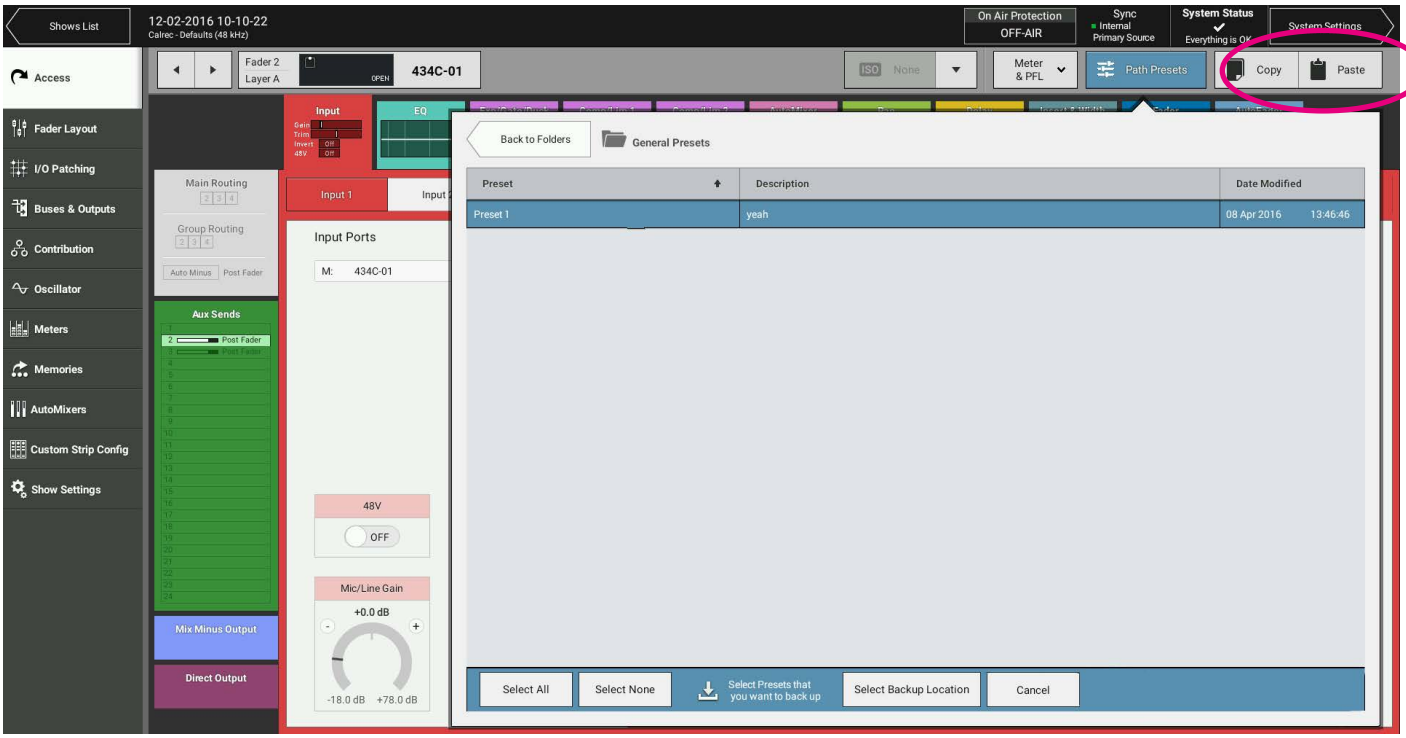
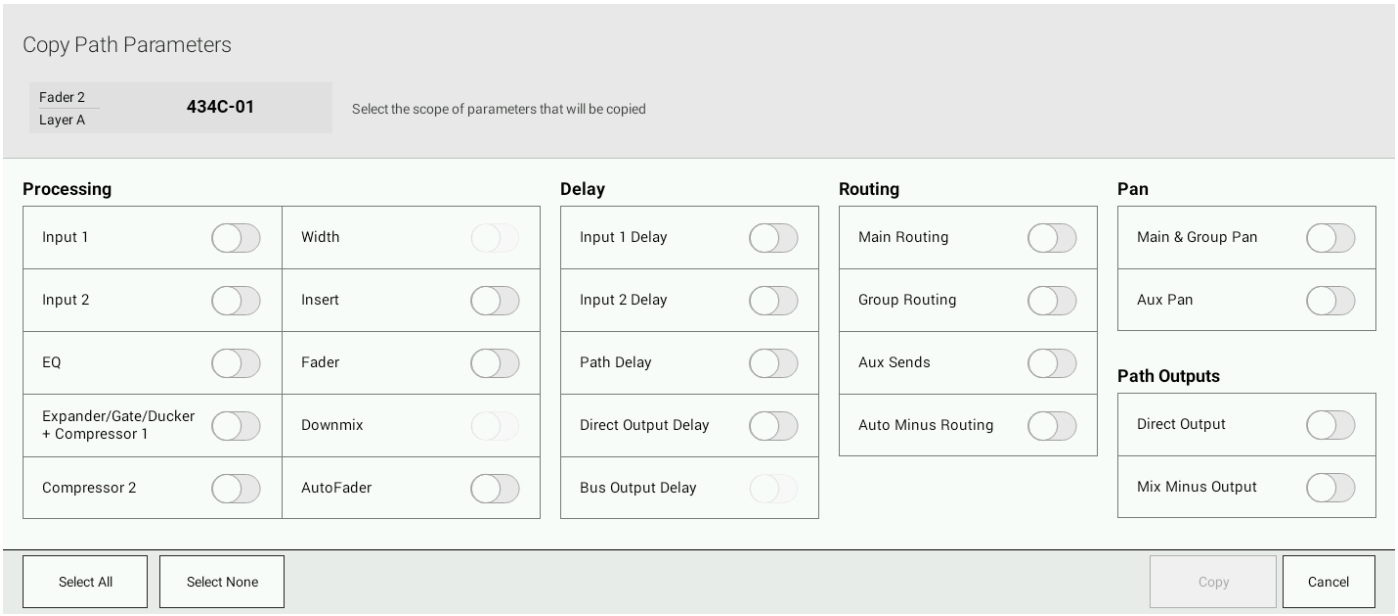


FIGURE 2 - COPY PATH PARAMETERS



BRIO 36
MONITORING

CALREC

CONNECTING MONITORS

Audio I/O is available on the back of the Brio 36 surface for processing, therefore, loudspeakers may be connected to the system from console outputs or Hydra2 I/O ports and patched from Brio's various monitor outputs.

All Brio's monitor outputs are available as sources within the I/O patching screen from where they can be patched to I/O output ports either built-in or via Hydra 2 I/O ports and then connected to loudspeakers.

Once loudspeakers have been connected and correctly patched, monitoring control is achieved from the surface monitor controls, as described in "CONTROL SURFACE SECTIONS" on page 23, or by using the monitor bar at the bottom of the touch display. The figures below show an example of how loudspeakers can be connected and arranged along with an image showing how the I/O patching screen should look for this loudspeaker setup.

FIGURE 1 - MONITORING PATCHING EXAMPLE

Desk Outputs | I/O Boxes | Hydra Patchbays — Source: Desk Outputs - Monitor Outputs

Desk Inputs | I/O Boxes | Hydra Patchbays — Destination: I/O Box - 434

Output		Connected Destination	Connected Source		Output		Number
Console Monitor	L	434B-01L	Console Monitor -L	Console Monitor - 5.1 - L	434B-01L	AES3	434B-01L
	R	434B-01R	Console Monitor -R	Console Monitor - 5.1 - R	434B-01R	AES3	434B-01R
	C	434B-02L	Console Monitor -C	Console Monitor - 5.1 - C	434B-02L	AES3	434B-02L
	LFE	434B-02R	Console Monitor -LFE	Console Monitor - 5.1 - LFE	434B-02R	AES3	434B-02R
	Ls	434B-03L	Console Monitor -Ls	Console Monitor - 5.1 - Ls	434B-03L	AES3	434B-03L
	Rs	434B-03R	Console Monitor -Rs	Console Monitor - 5.1 - Rs	434B-03R	AES3	434B-03R
Studio Monitor 1	L	434B-04L	Studio Monitor 1 -L		434B-04L	AES3	434B-04L
	R	434B-04R	Studio Monitor 1 -R		434B-04R	AES3	434B-04R
	C	434B-05L	Studio Monitor 1 -C		434B-05L	AES3	434B-05L
	LFE	434B-05R	Studio Monitor 1 -LFE		434B-05R	AES3	434B-05R
	Ls	434B-06L	Studio Monitor 1 -Ls		434B-06L	AES3	434B-06L
	Rs	434B-06R	Studio Monitor 1 -Rs		434B-06R	AES3	434B-06R
Studio Monitor 2	L	434B-07L	Studio Monitor 2 -L		434B-07L	AES3	434B-07L
	R	434B-07R	Studio Monitor 2 -R		434B-07R	AES3	434B-07R
PFL/RTB LS	L	434B-08L	PFL/RTB LS -L		434B-08L	AES3	434B-08L
	R	434B-08R	PFL/RTB LS -R		434B-08R	AES3	434B-08R
AFL LS	L	434B-09L	AFL LS -L		434B-09L	AES3	434B-09L
	R	434B-09R	AFL LS -R		434B-09R	AES3	434B-09R
	C	434B-10L	AFL LS -C		434B-10L	AES3	434B-10L

Settings | Remove | Connect | Connect & Fix | Move | Remove | Isolate | Settings

Note: patching monitors to output ports as fixed connections (using Connect & Fix), means they will be the same regardless of the user memory loaded.

FIGURE 2 - BRIO 36 REAR VIEW - SHOWING BUILT-IN ANALOGUE OUTPUT PORTS

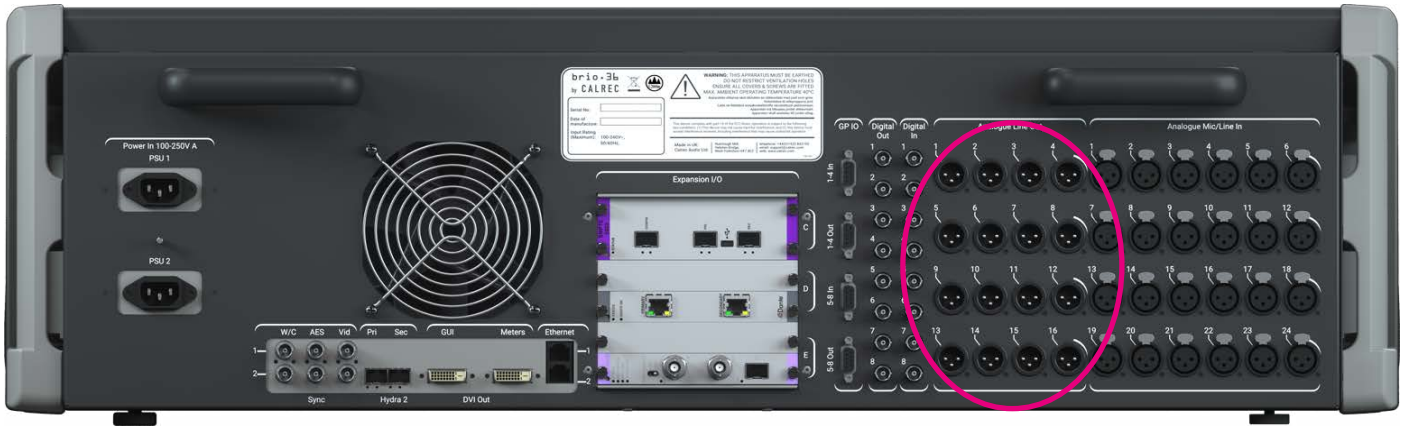
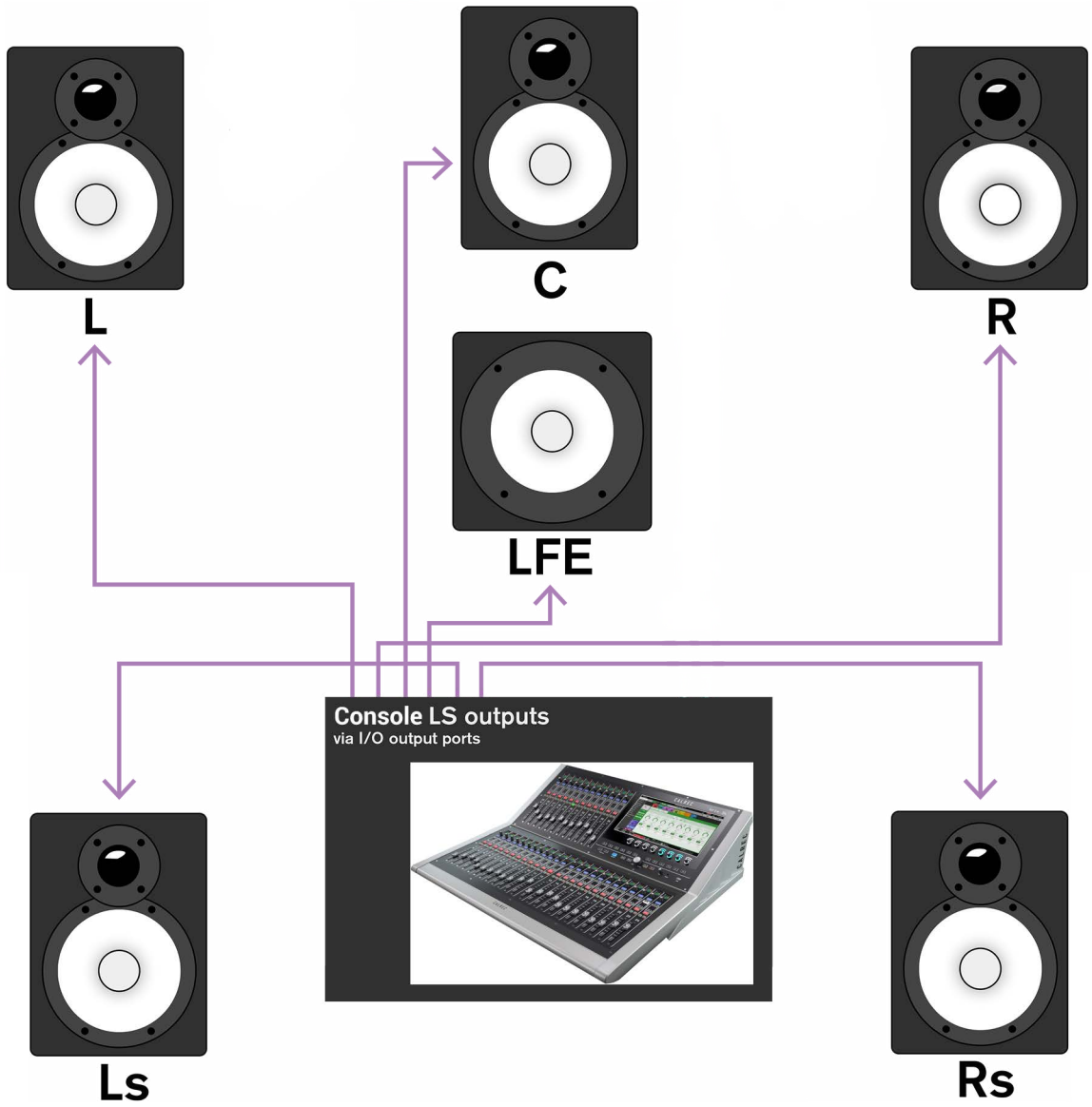


FIGURE 3 - EXAMPLE LOUDSPEAKERS SETUP

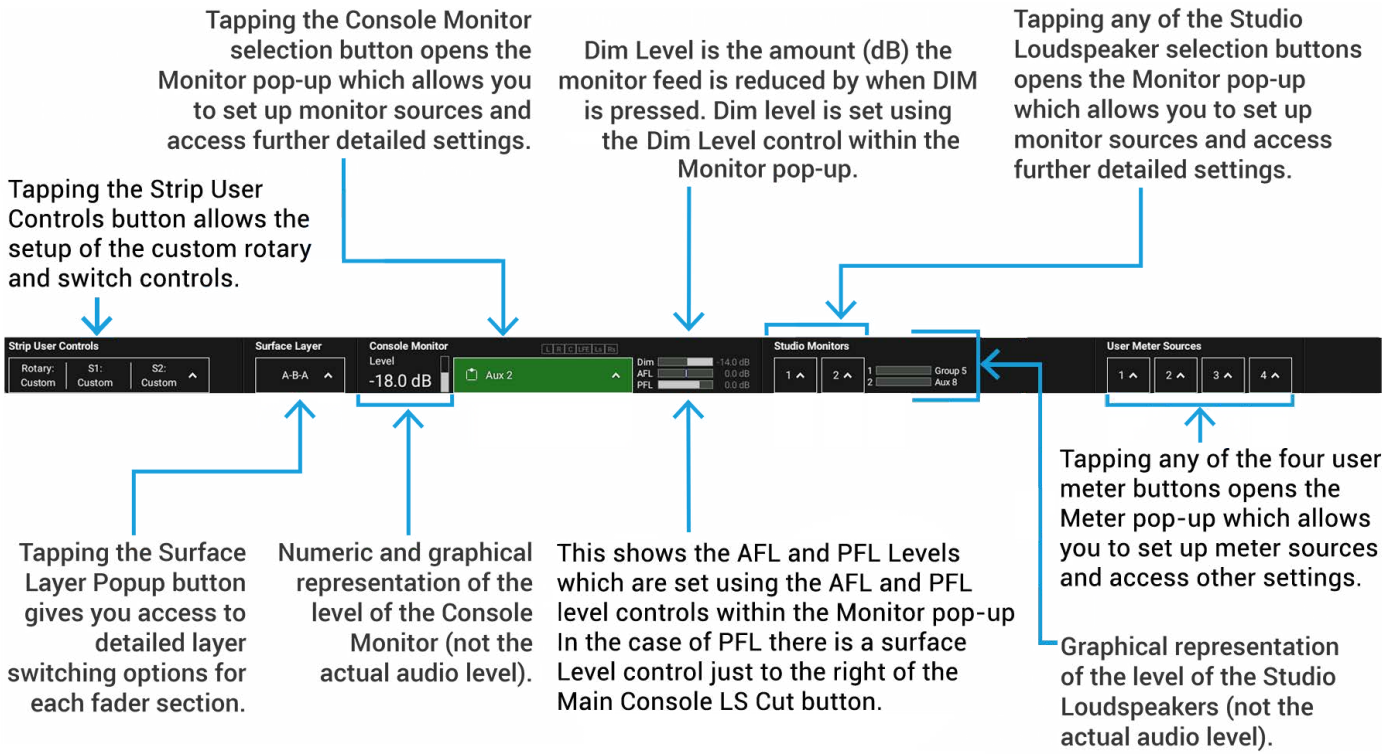


MONITOR CONTROLS

The monitor bar provides access to monitor controls, monitor source settings and visual feedback from the surface monitor controls.

Tap either the console monitor or one of the studio monitor selection buttons to view the monitor pop-up, which is described in detail here: "THE MONITORING POP-UP" on page 151. Figure 1 explains each control that is available from the monitor bar.

FIGURE 1 - THE MONITOR BAR EXPLAINED



Note: the Console and Studio 1 monitors are surround. If using only a stereo pair of speakers for these monitor, ensure that phantom centre is selected in the options - if this is not done, when mono is pressed on the surface to hear a mono downmix, the user will hear nothing as the mono downmix is routed to centre speaker unless phantom centre is selected.

THE MONITORING POP-UP

The monitor pop-up allows the user to quickly select a monitor source as well as providing detailed controls for the selected output. It is accessed by tapping any of the monitor source select buttons from the Monitor bar.

The monitor sources tab in the monitor pop-up is used for selecting a monitor source. On accessing the monitor pop-up for the console monitors, tap any path selector to see the console monitor source select button change to display the correct source label and colour, indicating that the selected source is now feeding the console monitors.

Favourite Monitor Sources

Three 'favourites' boxes are provided towards the bottom left of the monitor pop-up. Any monitor source can be placed into a favourites box making it more readily available during operation—drag and drop the three most commonly used monitor sources into these favourite boxes to speed up monitor source switching.

The user can also assign monitor sources to global user buttons to provide a shortcut for changing between commonly used sources.

Monitoring External Inputs

The external inputs tab allows the user to select any external input as a monitor source.

Settings

- Listen Modes: Allow the user to monitor the source at either its current path width (full), using the left, right and centre speakers (3 stereo), in stereo or mono.
- Insert: Switch the monitor insert on and off.
- Misc Functions: Various functions ranging from leg routing options, LFE on/off, phantom centre (meaning to route the C monitor feed to both left and right speakers) and polarity invert right (which allows the user to monitor the stereo content of the monitor source by cancelling out the mono content).
- APFL Settings: Gives control over where the PFL bus is routed along with an 'APFL clear' button to clear all
- AFL/PFL/Output Listen routing across the surface.
- Solo Legs: Each leg of the monitor source has its own solo check-box, checking any of these disables all other legs, so each can be auditioned individually.

The controls along the bottom of the pop-up are visible whichever tab is selected:

- Favourites: Allows the user to make up to three monitor sources available for quick selection at any time. Simply drag and drop sources from the first two monitor pop-up tabs.
- Console LS Controls: Control the level of the console monitors and cut or dim the feed.
- Dim Adjust: Set how much the monitor level will be reduced when DIM is selected.
- AFL Trim: Adjust the level of the AFL feed between -10dB and +10dB.
- PFL Level: Sets the level of the dedicated PFL output.
- PFL to Mon button: when active this reroutes the PFL signal to the Console Monitor rather than the PFL speaker.

The console LS settings tab contains settings for the currently accessed monitor feed.
The individual controls are displayed in the following figures.

FIGURE 1 - MONITOR SOURCES

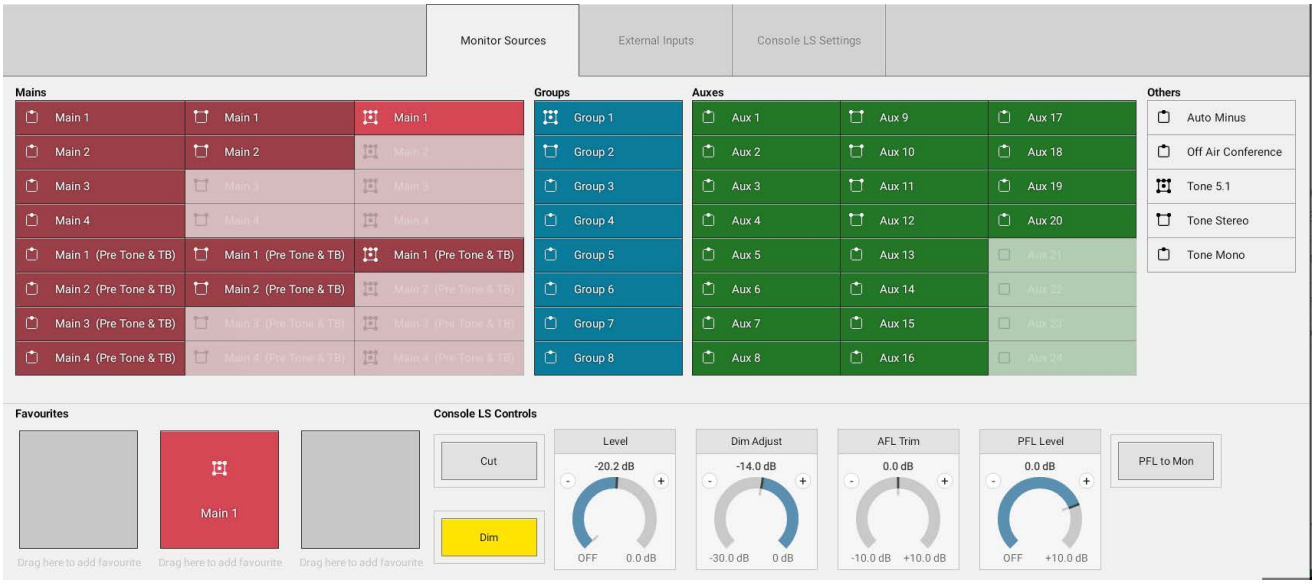
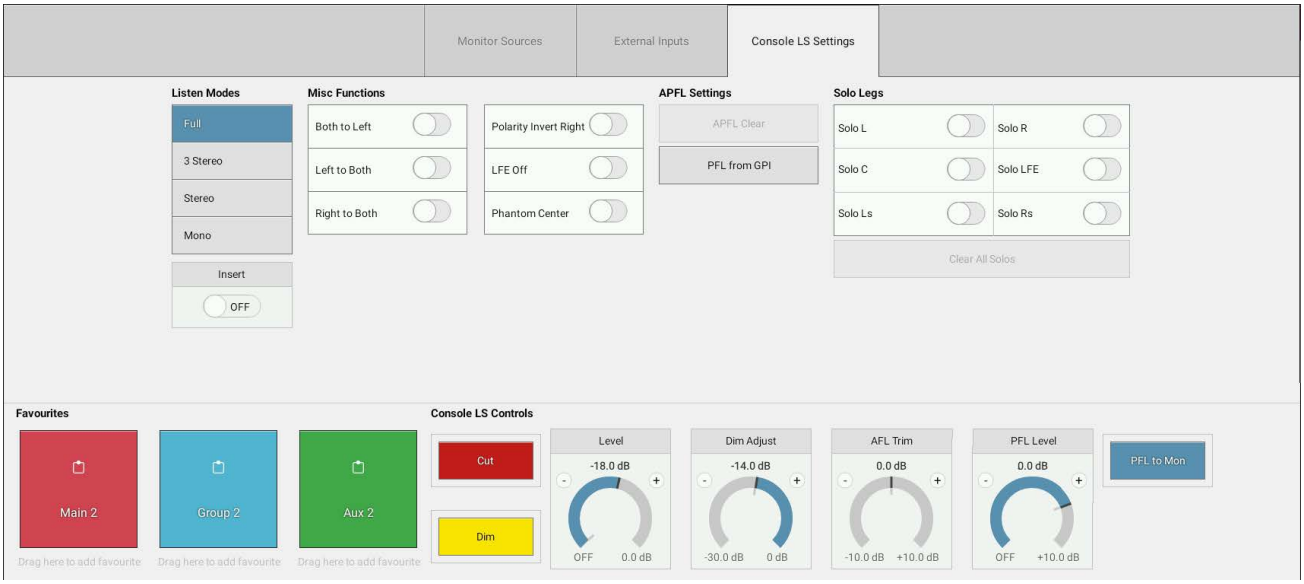


FIGURE 2 - EXTERNAL INPUTS

FIGURE 3 - CONSOLE LS SETTINGS



PFL, AFL AND OUTPUT LISTEN

Brio 36 has comprehensive built-in, after fader listen (AFL), pre fader listen (PFL), and 'output listen' (OPL) systems, allowing you to listen to multiple combined audio feeds at various points in the signal chain.

Multiple paths can be PFL'd, AFL'd or have 'output listen' activated at any time to create summed mixes of pre/post fader path feeds.

AFL

Selecting AFL for any path replaces the current feed to the console monitors with the path's post fader feed. AFL provides a 'non-destructive solo,' allowing you to quickly check individual paths whilst maintaining all mixes as they are. Only the monitor output is affected by AFL, no paths are cut and the mix to all other buses is preserved.

PFL

By default, selecting **PFL** anywhere across the surface feeds the pre fader feed of the path to Brio's dedicated PFL speaker output. If **PFL TO MON** is activated within the monitor pop-up, the PFL feed will replace the monitor source, as described for AFL above.

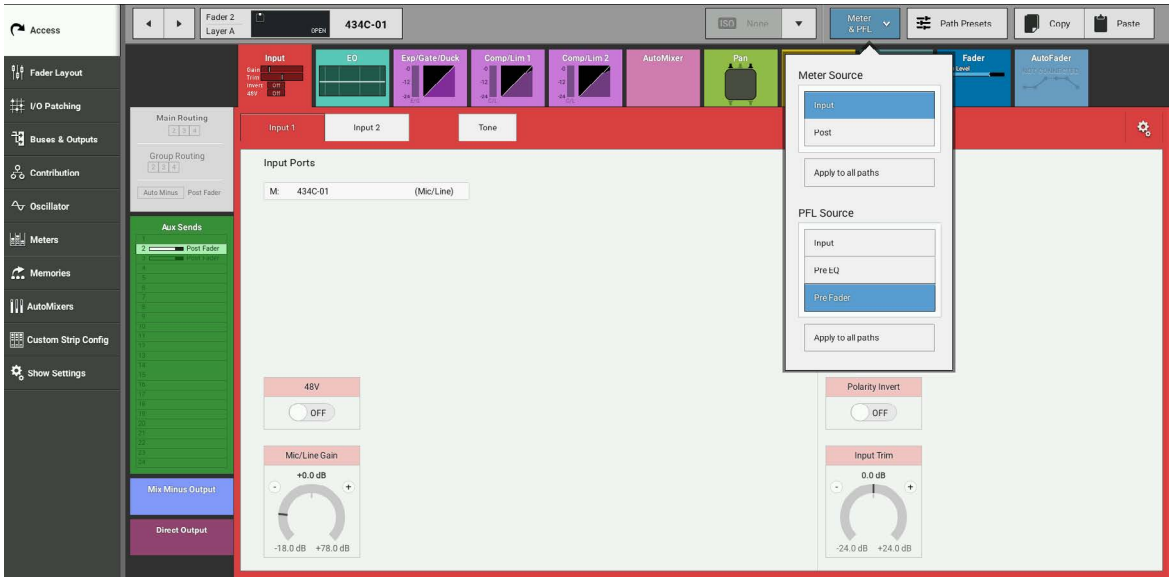
Output Listen (OPL)

Mains, auxes and direct outputs all have an **OUTPUT LISTEN** 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.

PFL Position in Audio Chain

The PFL point may now be placed at the Input, Pre EQ, Post EQ or Pre Fader in the Audio Path. This is accessed from the Meter & PFL button in the Screen Header. Selections can be made per path, or applied to all Paths. See Figure 1.

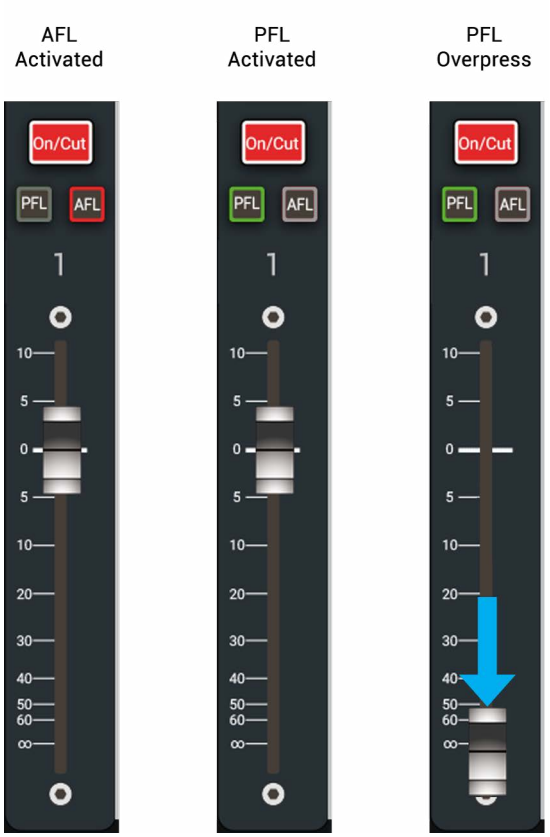
FIGURE 1 - PFL POSITION SELECTOR



Access from Faders

Figure 2 shows the location of **AFL** and **PFL** buttons on the surface. Both are either latching when pushed, or momentary when held. PFL can also be activated momentarily by pulling the fader down below its lowest point, and deactivated once released. Also by default if a fader is closed and its PFL is activated, it will be deactivated once the fader is opened. These features can be switched off within the general Show settings: Tap 'Show settings' in the Show menu and select 'General'.

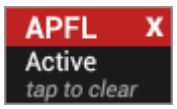
FIGURE 2 - FADER STRIP AFL AND PFL CONTROLS



Access from the Touch Display

AFL, PFL and 'output listen' can all be accessed from the routing and fader control screens as well as from the 'Buses & Outputs' screen

Global Cancel



AFL, PFL and output listen can be globally cleared across the surface by tapping the 'APFL Active' icon in the notifications area.

Sending PFL to the Console Monitor

Within the monitor pop-up, tapping **PFL TO MON** routes all PFL feeds to the console monitor, rather than the PFL loudspeaker output. When AFL, PFL (if **PFL TO MON** is selected) or output listen are activated anywhere across the surface, the console monitor button in the monitor bar changes to display the feed that the user is currently monitoring.

BRIO 36
METERING

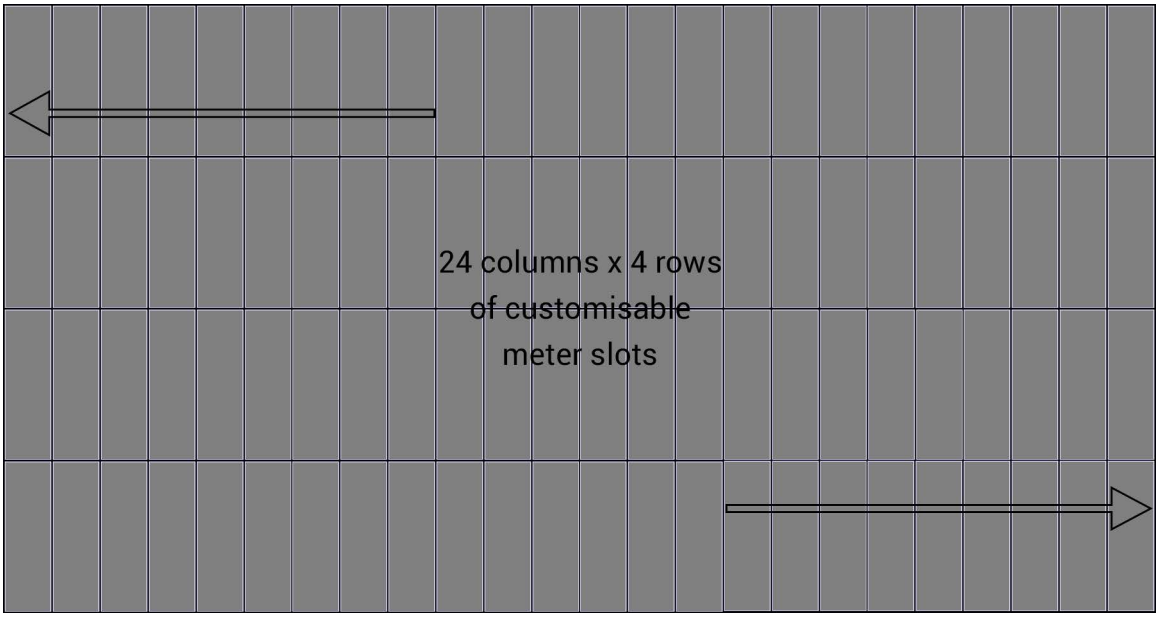
CALREC

METER DISPLAY LAYOUT WITH CUSTOMISATION

Brio 36 uses an external DVI meter display connected via a DVI-D cable to the Meters DVI Out connector on the back of Brio. The 1920x1080 display consists of 4 rows of 24 meter slots which are fully customisable.

This allows for Input Channels, Mains, Groups, Auxes, Console LS, PFL, AFL, APFL, Off Air Conference, Autominus and External Input metering to be mapped out. Figure 1 shows the empty layout on the external display.

FIGURE 1 - METER LAYOUT



Customising Meter Layouts

Figure 2 shows the meter layout screen for the upper 2 rows and part of the lower 2 rows. The lower section shows the usage of the 4 rows of 24 meter slots shown here empty. The upper section is used to create the meter from source and options required which varies depending on the type. The minimum slot usage is 1 slot for Auxes, Off-air & Mix minus sources or 2 slots for Mains, Groups, Console LS, AFL, PFL, APFL, User Meters and External Inputs. Depending on the options selected for that source this can expand the custom meter up to 10 slots. The primary option available for all meters is to provide full height meters which doubles the slot usage vertically. The rest of the options vary in the number of meter slots used depending on meter source type. To set up the meter display, select the required souce, then a preview appears in the upper left area, choose the required options using the toggle switches, then drag the preview onto the meter grid below in the desired location. Then highlight the selection on the meter grid and use 'Add Next' to speed up allocating consecutive meters as shown in Figure 3 on the next page.

FIGURE 2 - METER LAYOUT SCREEN EMPTY

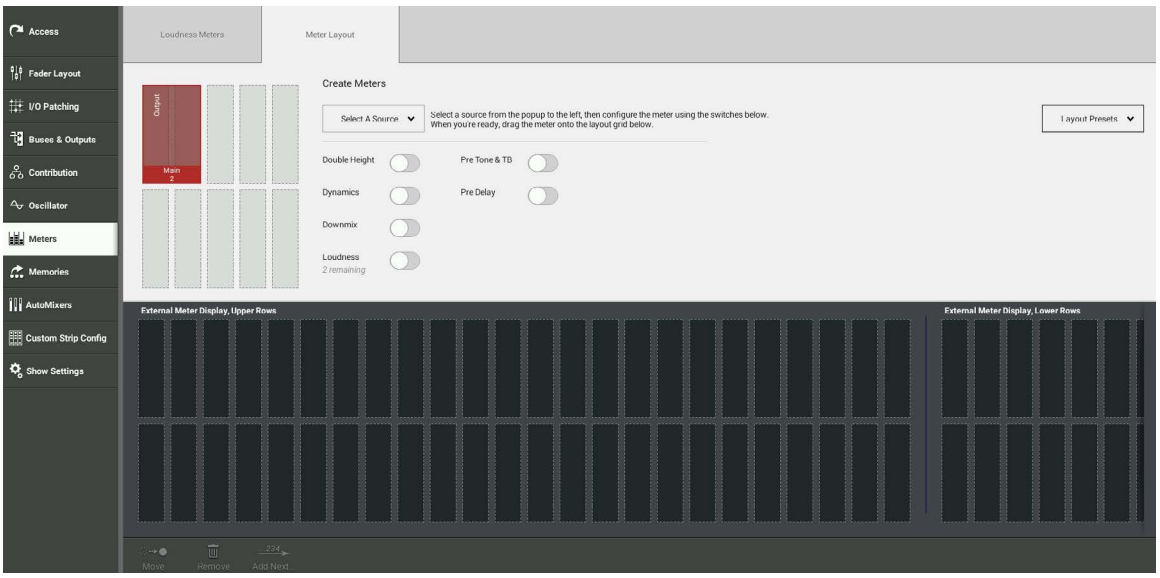
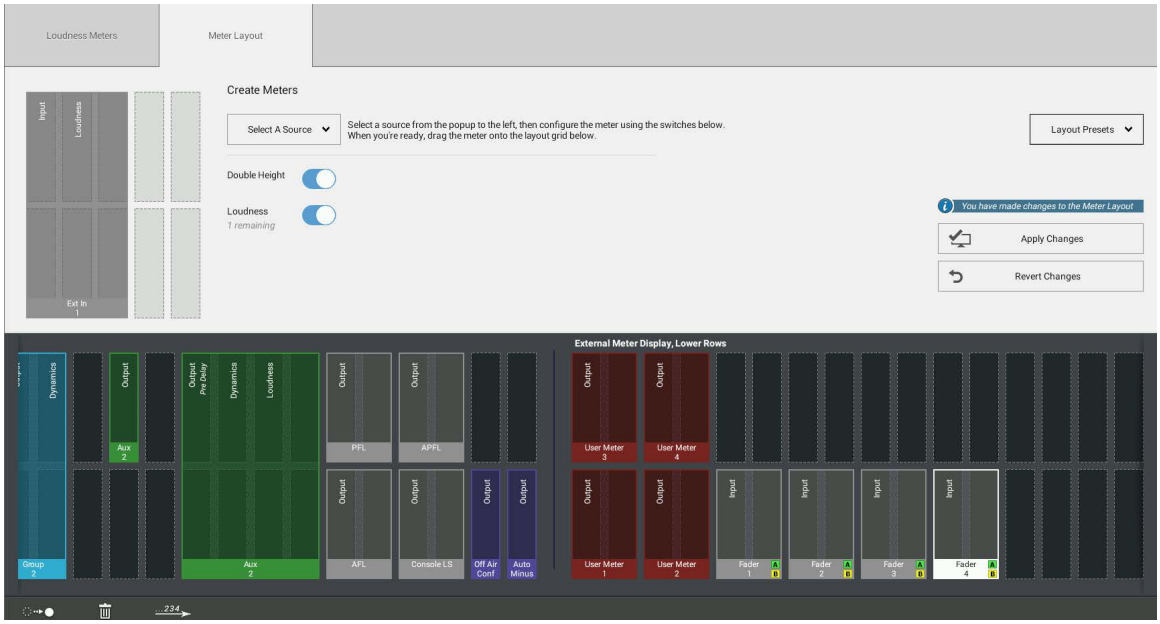


Figure 3 shows a partially customised meter layout using a mixture of Group, Aux, Monitor, Off Air, User Meter and Fader paths meter slot usage. The options apart from Full Height can add Dynamics, Downmix, Loudness, Pre Tone & TB and PreDelay metering to the basic meter source and type, these other options vary depending on source type. Note: for some meters a number of Layouts are made available, for instance Main 2 can show the same information in an 8, 6 or 10 slot configuration for layout 1,2 or 3 depending on user preference. Once a meter layout has been completed the user can simply 'Apply Changes' which puts the Meter layout onto the TFT screens or can tap the Layout Presets button to Create New Presets from the layout, Load Old Presets from memory or Backup and Restore Meter Presets.

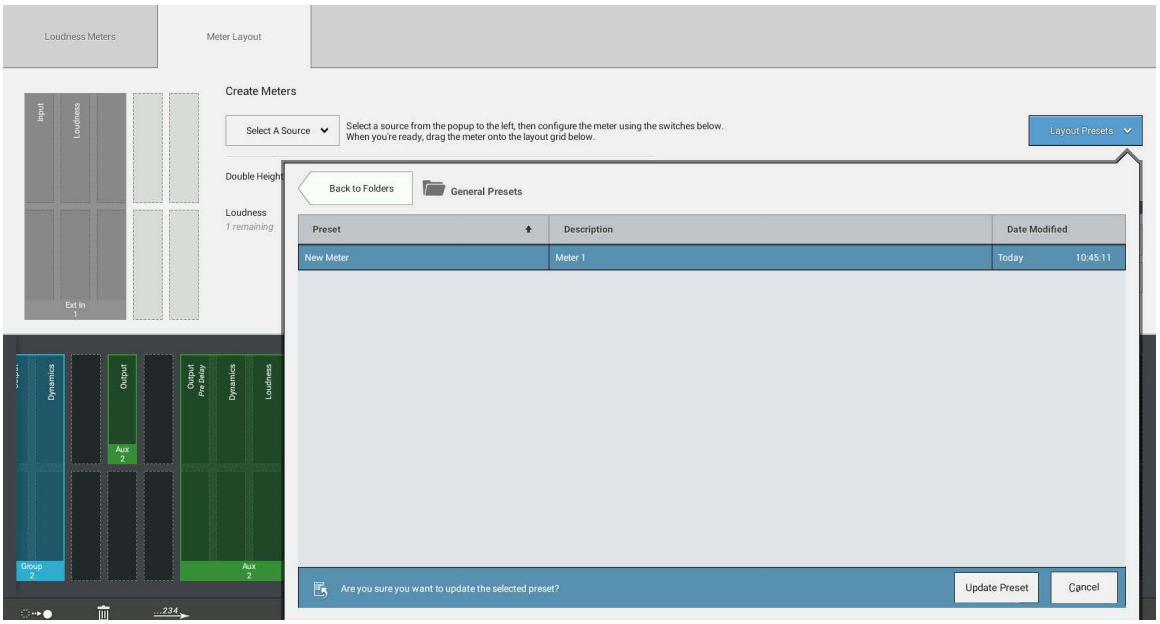
FIGURE 3 - METER LAYOUT SCREEN PARTIALLY CUSTOMISED.



Meter Layout Presets

Figure 4 shows the Layout Presets pop-up for the custom meters. From here the user can go back to select, create, rename or delete another Meter folder or, can in this meter folder:- make a New preset from the Meter layout, Update a selected preset with the current meter layout, Edit the name of a preset, Delete presets or Load a preset into the Meter Layout screen. Note: this does not apply the meter layout to the surface until the 'Apply Changes' button is tapped. Two further functions are available:- Backup and Restore, these allow the Meter Layout presets to be backed up to / restored from a backup location. A USB flash drive can be selected from the screen once the Backup or Restore buttons have been tapped. This allows the user to transfer customised meter layouts to/from a storage medium for subsequent use with this or other Brio 36 consoles as the meter presets are independent from Shows and Memories storage.

FIGURE 4 - METER LAYOUT PRESETS



METER TYPES

Brio 36 meter types and ballistics can be set globally within System Settings. Available meter options are shown in the following table:

Meter Type	Color Break
PPM	8 dB/20 dB
PPM	9 dB/15 dB
PPM	10 dB/18 dB
PPM	12 dB/18 dB
VU	8 dB/20 dB
VU	12 dB/20 dB
VU	0 dB/20 dB

Input channel, group and main meters all include integrated dynamics meters for Exp/ Gate/ Ducker, Comp/Lim 1 and Comp/Lim 2 Dynamics modules. Each compressor/limiter meter displays a small 'C1 or C2' (compressor/limiter) and 'E' (expander/gate) below, which illuminate as the modules are enabled.

All Brio meters include a peak-spot-on meter bar which remains for a short time to make peak monitoring more accurate. If a signal reaches the clipping point, the meter background turns red and holds for the peak spot duration, then fades out over one second, letting you trace overloads very easily.

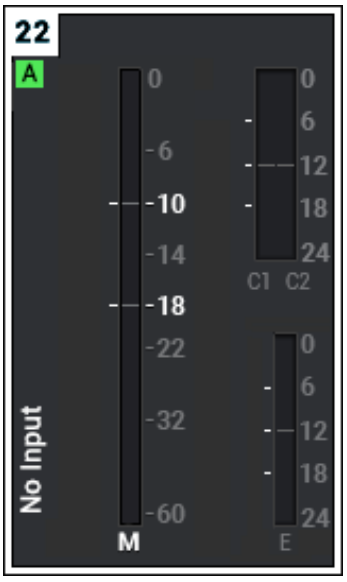
PPM or VU?

VU (Volume Unit) meters use the amplitude and duration of signals to provide an indication of the perceived loudness of a program. PPM (Peak Program) meters have short attack and long fall-back times in order to give an indication of the peak amplitude of an input signal.

Fader Meters

Each fader on the Brio 36 surface has a small input meter bar in the fader display. The bottom of each fader display is shaded to match its attached path type, to ease identification. Fader meters on the external screen provide a wide variety of essential information including: fader number/ layer/label/scale etc.. an example of which is shown in Figure 1.

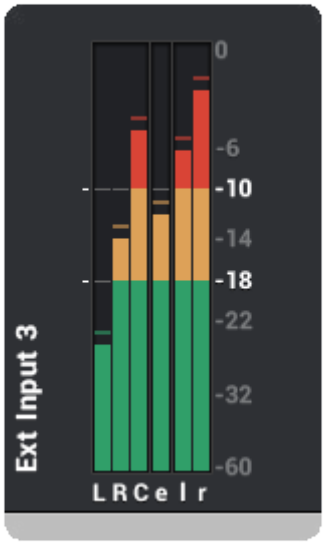
FIGURE 1 - FADER METER



External Input Meters

Any of the 48 external input meters are available on the customisable meter layout. An example of a 5.1 external input meter is shown in Figure 2.

FIGURE 2 - EXTERNAL INPUT METER



Bus and Output Meters

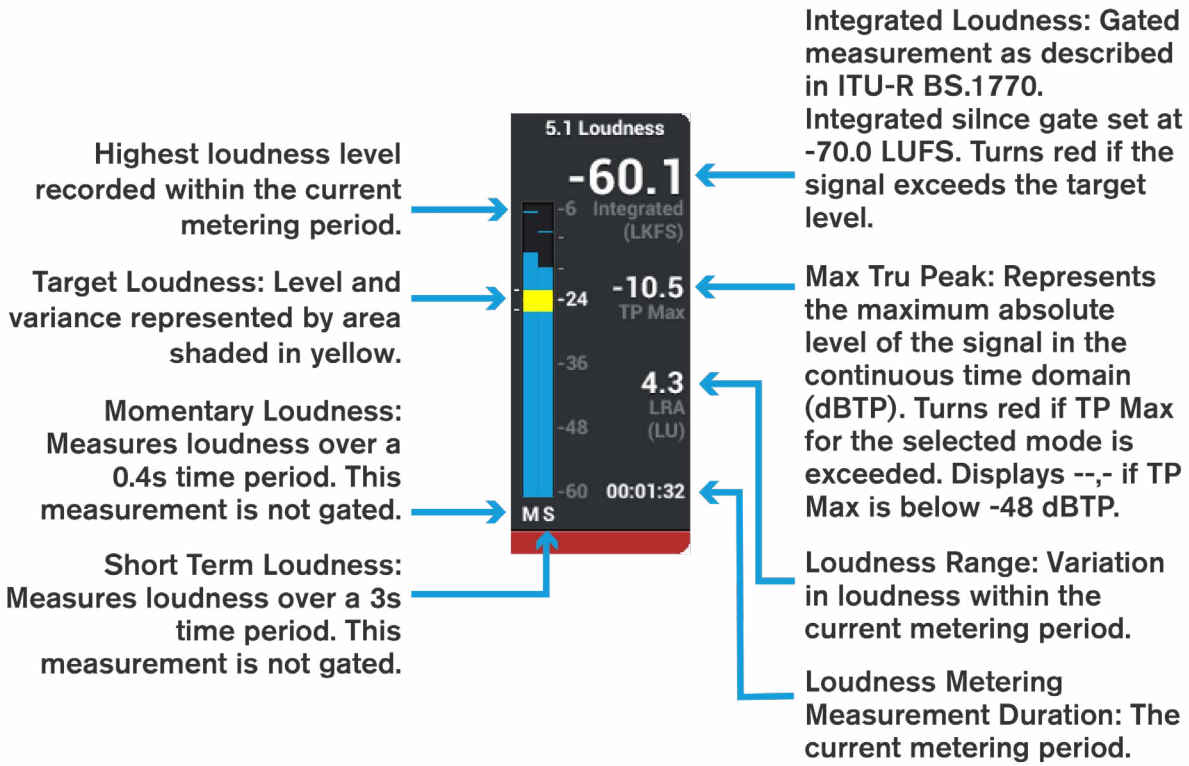
As described earlier the Bus and Outputs/ Monitoring can display a variety of information depending on how it is created in the customisable meter layout page. Examples of each bus/output meter type are shown in Figure 3.

FIGURE 3 - BUS AND OUTPUT METERS

Loudness Meters

Loudness meters provide a way to monitor and regulate average loudness levels over the duration of a program. Loudness meters are displayed as part of the meter they are assigned to on the External Meter Panel. There are two loudness meters available on Brio 36.

FIGURE 4 - LOUDNESS METERS



Loudness Metering Modes

There are six loudness metering modes available on the console, the details of which are displayed in the table in Figure 5 on next page.

The loudness meter mode is set globally for the console: Tap **METERS** in the Show menu and tap the **MODE** button to view a drop-down list of loudness modes to choose from. An appropriate loudness metering scale can also be set from this screen, which alters the scale of all loudness meter bar graphs.

Loudness meter modes relate to standards set by organisations 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.

Two extra modes called DPP Live and DPP Non-Live have been added to provide additional guidelines in Live and Non-Live production environments. This was set up by various broadcasters in a group known as the DPP (Digital Production Partnership).

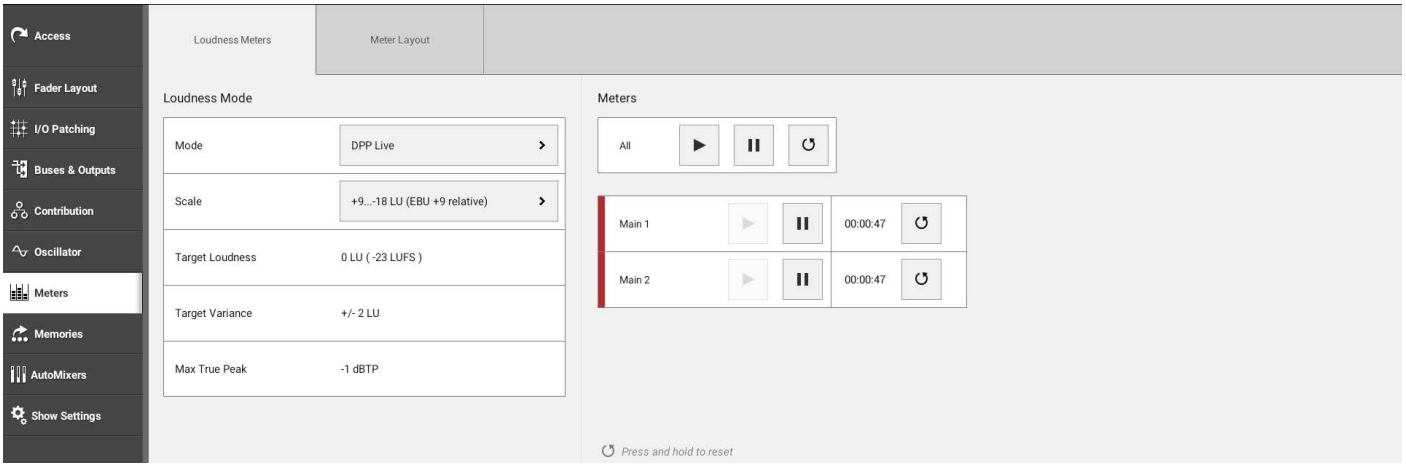
Loudness Meter Controls

Controls for Loudness metering can be accessed from the Active Show>Meters>Loudness Meters page
The Loudness Metering Mode and Scale is set globally and can be configured for the 2 Loudness Meters.
There are individual play, pause and refresh controls for each meter and global controls to play, pause and refresh all the Loudness meters at once. See Figure 6 on the next page.

FIGURE 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)	+/-2 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)	+/- 1LU	-1 dBTP	N/A

FIGURE 6 - LOUDNESS METER CONTROLS



User Meters

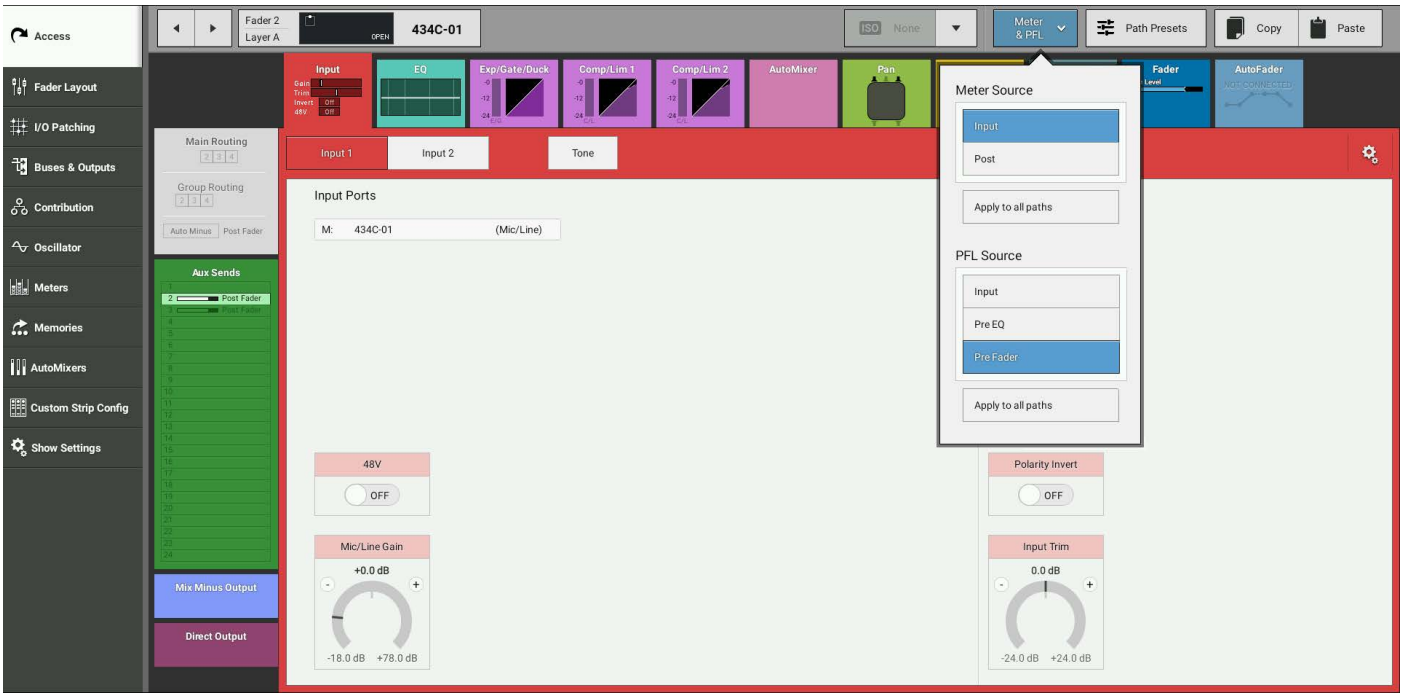
User meters 1-4 provide metering for paths which the user wishes to display and is free to change on the fly.
The 4 user meters are placed on the meter bridge as part of the configurable meter layout. Any bus output can be chosen as a user meter source. User meter sources can be selected quickly using the meter selector buttons to the bottom right of the touch display when in 'active Show' view for each of the 4 user meters. Figure 7 shows the user meter 1 selection pop-up, which follows a similar structure to the monitor pop-up, with a source select tab, an external inputs tab and a settings tab. The sources tab is shown here.

FIGURE 7 - USER METER SELECTION POP-UP

Meter Position in Audio Chain

The Metering point may be placed at the Input or Post which is the last point in the Audio Path. Note: this applies to the "Fader Meter" on the external display and on the console surface strips themselves. The Bus meters on the external display show the actual output, including output tone. This is accessed from the Meter & PFL button in the screen Header. These Selections can be made per path, or applied easily to all Paths See Figure 8.

FIGURE 8 - METER POSITION SELECTOR



BRIO 36
COMMUNICATIONS

CALREC

TALKBACK

Talkback is the process of routing a microphone to an output for the purpose of communication. Usually, talkback routes a microphone signal to headphones or a loudspeaker so that people in a control room can talk to those on the studio floor, and vice versa.

The talkback feed can be routed to any bus or output using the touch display talkback buttons.

When talkback is routed to an output, the output's normal feed is entirely replaced by the talkback microphone feed.

Touch Display Talkback Buttons

There are talkback buttons for individual bus outputs in the Buses & Outputs screen and for outputs in the mix minus and direct output routing screens. Tapping any of the touch display talkback buttons routes the talkback feed to the corresponding output and stays on when released, pressing and holding any of the touch display talkback buttons routes the talkback feed to the corresponding output but when released the talkback is turned off.

Surface Talkback Buttons

Each fader on the Brio 36 surface can have a function assigned to the S1 or S2 user buttons which routes talkback to the corresponding mix minus output.

Patching to Talkback

There is one talkback input to the system which is available as a patching destination within the I/O Patching screen. Brio 36 has a built-in talkback microphone situated close to the Brio 36 logo on the surface, which can be connected directly to an I/O port in the Brio. To use the built-in talkback microphone, first connect its output to an analogue input. By default TB Mic port M-01 should be patched to Brio's DSP TB input, but this can be over-patched with any other input if a different mic/source is required. Also M-01 can be patched to other destinations as well, e.g. if you want to feed the console's mic into a TB system.

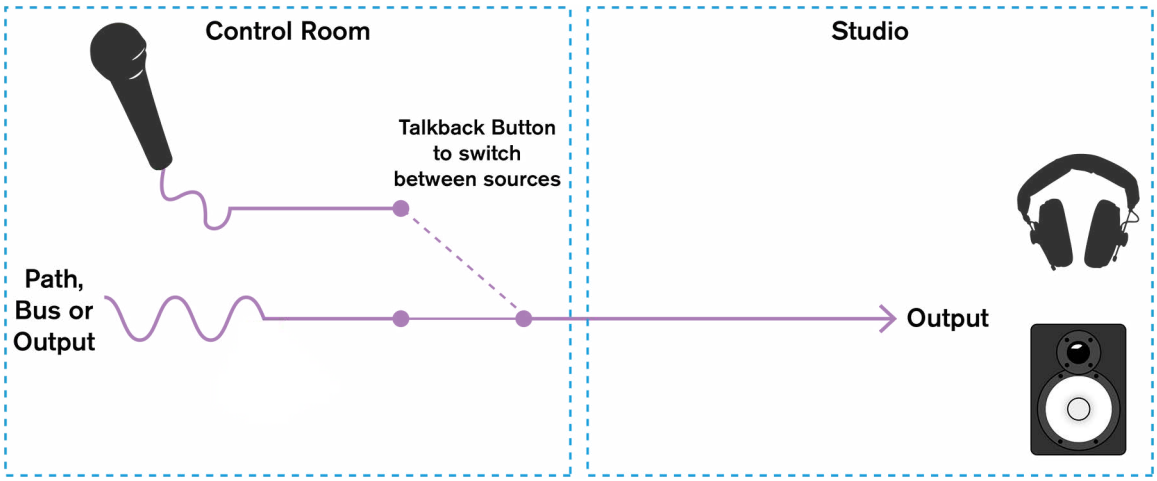
Any Hydra2 input port can be patched to the talkback input:

1. Tap **I/O PATCHING** in the Show menu.
2. Select **I/O BOXES** in the sources screen and select the I/O box to which the talkback microphone is connected
   Select **DESK INPUTS** within the destinations screen and select talkback Inputs.
3. Tap to select the input port to which the talkback microphone is connected.
   Note: When using the Built in Microphone use M-01 port of the built in I/O box currently shown as Box 434.
4. Tap to select the talkback input.
5. Tap **CONNECT**.

The built-in mic has fixed gain and phantom power. If using a different input for TB, the gain and phantom power can be setup by the network administrator via H2O (see 'Source Settings' in the H2O user guide for more information).

Alternatively this can be set up from the console UI by patching the mic to a channel at the same time as the TB input apply the settings on the channel, then the channel can be removed and the settings are retained.

FIGURE 1 - TALKBACK BUTTON SENDS THE TALKBACK MICROPHONE FEED TO THE OUTPUT



On-Air / Rehearse Settings

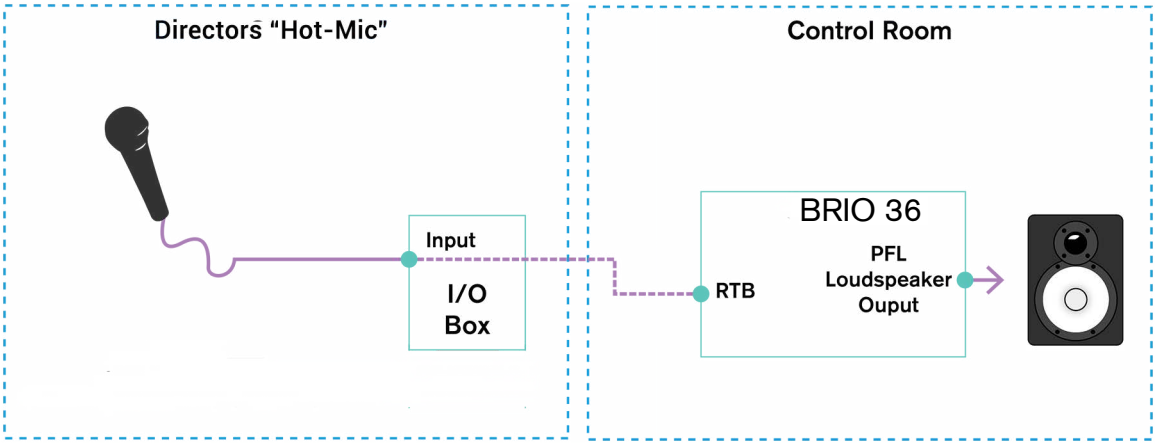
The talkback system can be inhibited when the console is in on-air mode. By default, when in on-air mode, talkback cannot be routed to a main. See "ON AIR PROTECTION" on page 194 for more information on setting up the on- air/ rehearse settings.

Reverse Talkback

Reverse talkback is a process which allows the use of 'hot-mics' (often by the director or producer) in the audio control room which routes their microphone signal to Brio's PFL loudspeaker output. Brio has two reverse talkback inputs.

Microphones should be patched to Reverse TalkBack inputs using the method described for patching to talkback inputs. These RTB inputs feed directly to the PFL LS as "hot-mics", i.e. they are always live. If there is a requirement for RTB not to be always active, it needs to be switched externally,

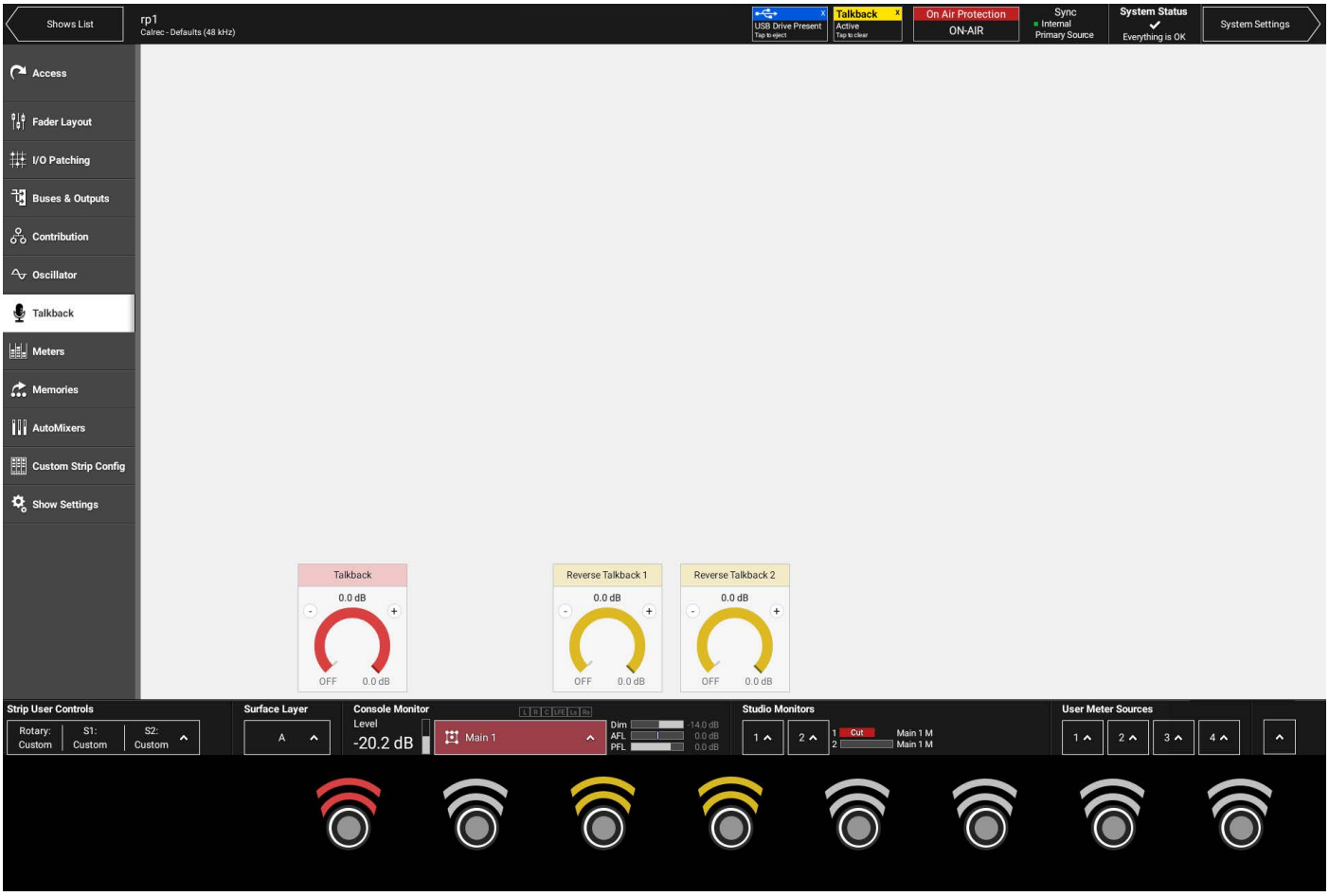
FIGURE 2 - REVERSE TALKBACK SWITCH SENDS THE MICROPHONE FEED TO THE PFL LS OUTPUT



Talkback & Reverse Talkback Levels

In the Active show page, Tap "Talkback" from the left hand menu this opens the Talkback and reverse talkback level controls page as shown in Figure 3 together with their contextual controls.

FIGURE 3 - TALKBACK AND REVERSE TALKBACK LEVEL CONTROLS



MIX MINUS

Brio 36's mix minus system allows a comprehensive foldback mix to be sent to multiple listeners. Using the auto minus bus along with mix minus outputs allows you to provide to listeners a complete mix with their own input automatically removed.

Foldback is a term used to refer to audio mixes used to feed communications systems, usually from control rooms into studios, to allow presenters and performers to hear all audio content which is relevant to them.

Why remove a source's own input from its foldback mix?

Scenario one: Field reporters or presenters communicating via long distance systems, e.g. satellite links.

Field reporters need to hear a live mix of the program to which they are contributing in order to hear cues and communicate with other presenters. The inherent delay in the system means that it may be a number of seconds before the live audio stream reaches the reporter.

It can be very difficult to speak whilst hearing your own voice even with only a slight delay. Using an auto minus feed for the reporter solves this problem as their own contribution to the audio mix is removed before it is fed to their headphones or monitoring system.

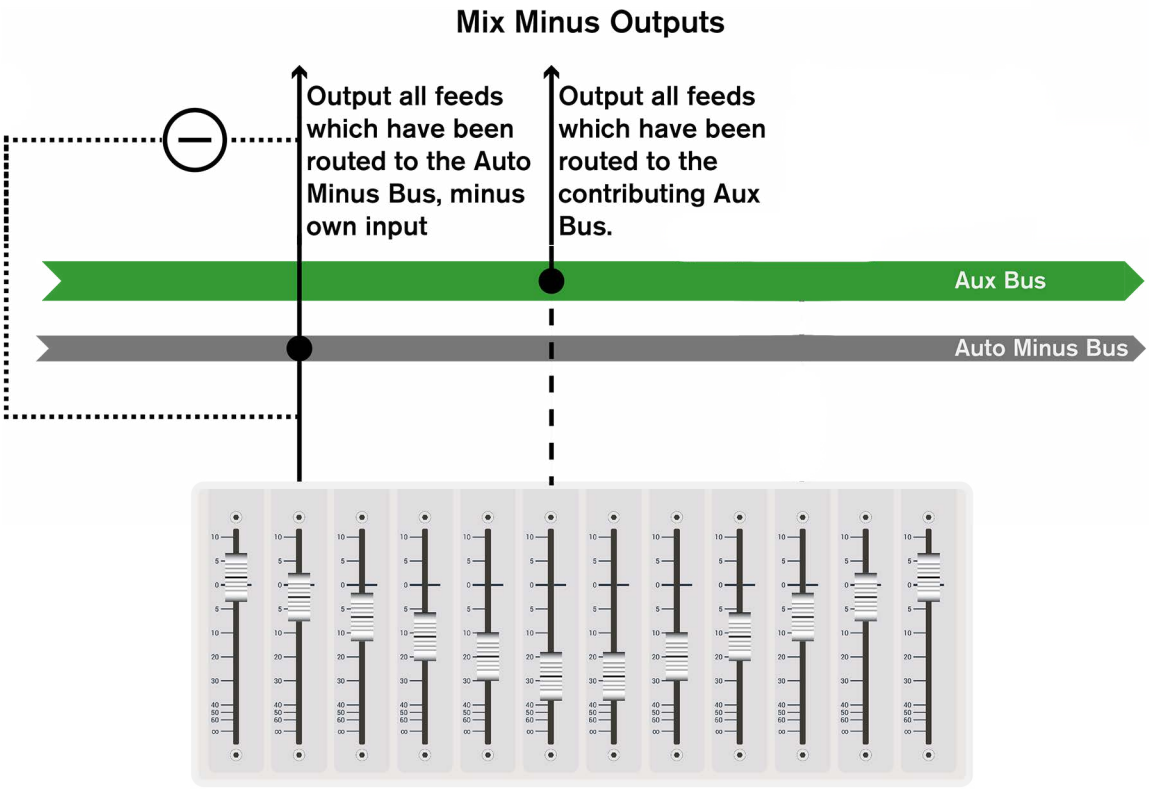
Scenario Two: Eliminating feedback when using loudspeakers for communication.

If a presenter is monitoring their foldback feed using a loudspeaker, the sound from the loudspeaker signal may be picked up by the presenter's microphone, thus creating a feedback loop. By using the auto minus bus to remove the presenter's own contribution to the foldback bus, this feedback loop is broken.

Mix Minus Output

Each channel and group has a dedicated mix minus output available for patching to external communications devices to create foldback feeds. Each mix minus output can be fed by either the auto minus bus or an aux bus.

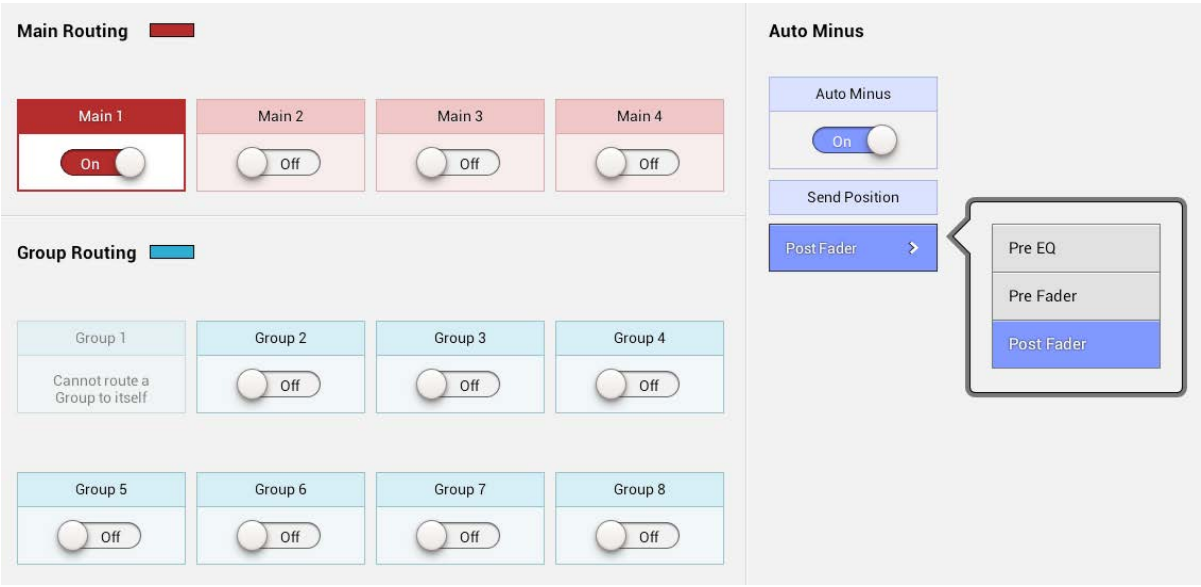
FIGURE 1 - MIX MINUS OUTPUT CONTRIBUTION SYSTEM



Mix Minus using the Auto Minus bus

The auto minus bus is a summing bus, which automatically subtracts the associated channel/group feed from the bus prior to feeding the channel/group's mix minus output. Paths can be routed to the auto minus bus, either using the contribution pop-up within the mix minus screen, or from the Mains and Groups routing screen.

FIGURE 2 - AUTO MINUS ROUTING



Mix Minus using Auxes

When using an aux to feed a mix minus output make sure that the associated channel/group is not routed to the contributing aux as it will not automatically be subtracted. The source channel/group is only automatically subtracted when using the auto minus bus.

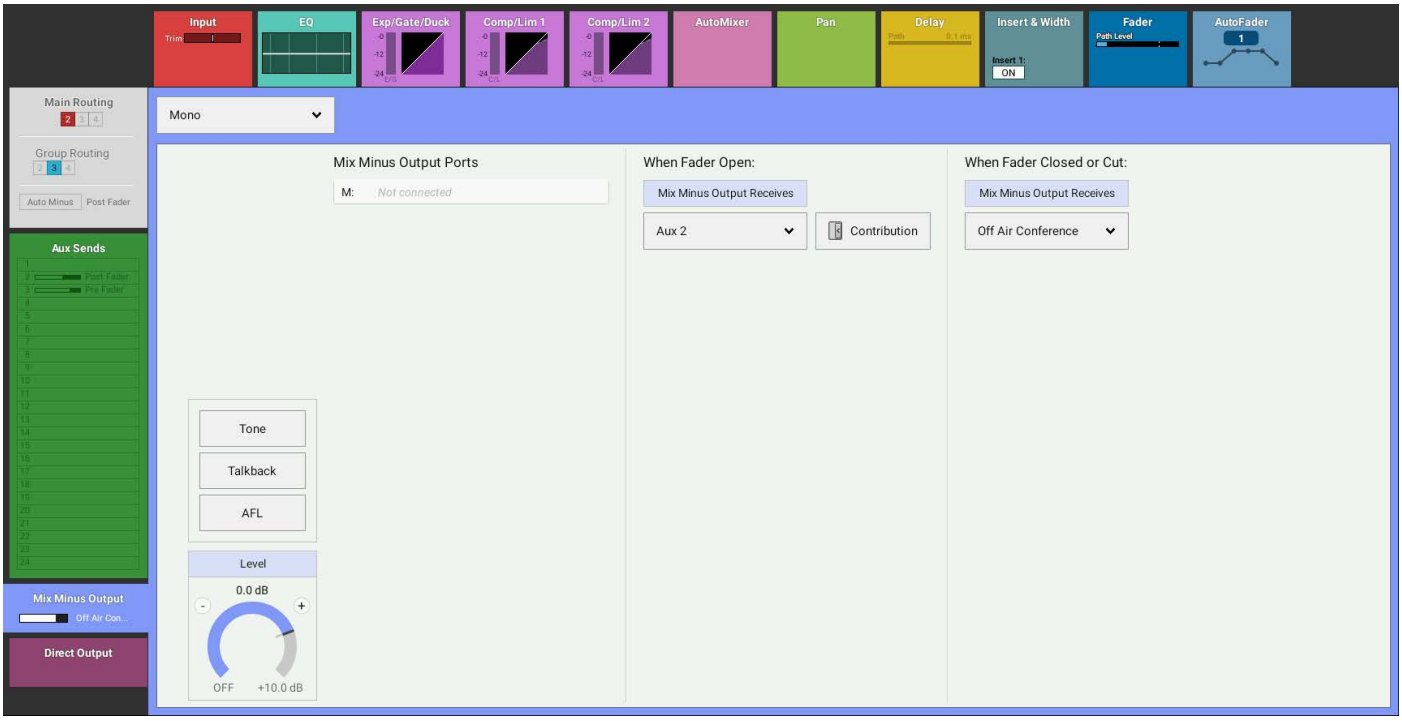
Setting up a Mix Minus output

1. Access a channel or group by pressing its **ACCESS** button (either above the fader or in the 'Buses & Outputs' screen).
2. Make sure the touch display is in 'active Show' view by exiting either the shows list or System Settings area and select **ACCESS** from the Show menu.
3. Select the mix minus output routing tab.
4. Create a mix minus output by tapping either **MONO** or **STEREO**.

Mix Minus Controls

- Level: Control the level of the mix minus output.
- Tone: Send tone to the mix minus output.
- Talkback: Route the talkback microphone feed to the mix minus output.
- AFL: Route the AFL of the mix minus output to the console monitors.
- When Fader Open: Tap to select a source to feed the mix minus output when the accessed path's fader is open.
- When Fader Closed or Cut: Tap to select a source to feed the mix minus output when the accessed path's fader is closed.

FIGURE 3 - MIX MINUS OUTPUT SCREEN



Once the mix minus output has been created there is an option to set different feeds depending on whether the channel/ group fader is open or closed.

Tap to select **WHEN FADER OPEN** and the mix minus output feed pop-up appears. Within the pop-up, select one of the following feed options:

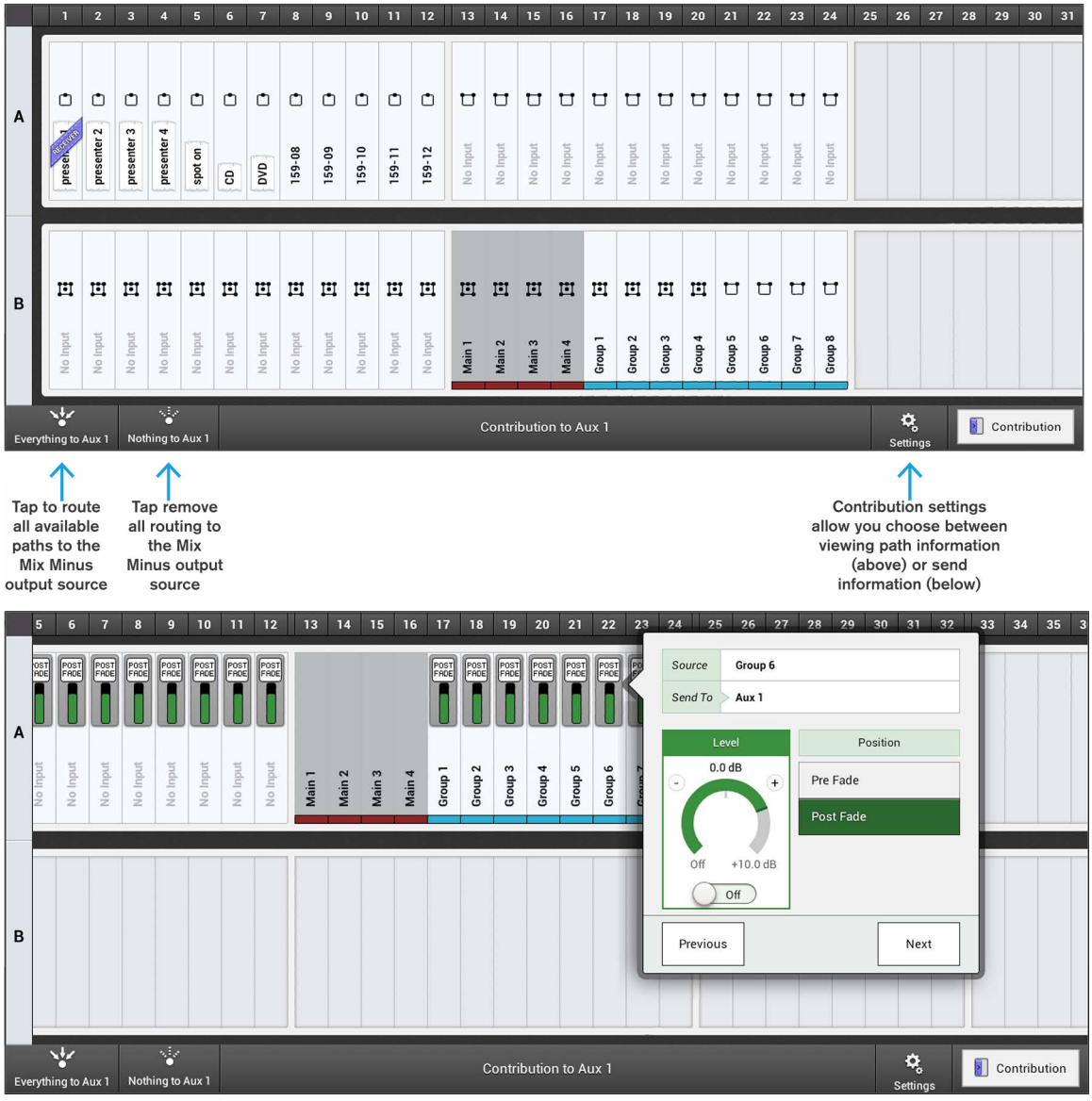
- Nothing
- Auto minus
- Any of the 24 auxes

Next, tap the contribution button to the right. This brings up the contribution pop-up which replicates the fader setup screen, allowing you to route any path to the contributing bus. For example, if aux 3 is selected to feed the mix minus output, selecting any path from the contribution screen immediately routes that path to aux 3.

The path for which the mix minus was created can easily be identified within the contribution screen as it displays the 'receiver' tab.

It is important to be sure of any changes made within the contribution pop-up as this can directly change routing for all paths.

FIGURE 4 - MIX MINUS CONTRIBUTION POP-UP



Off Air Conference Bus

The same process can be followed for **WHEN FADER CLOSED OR CUT** for which the following options are available:

- Same as 'when fader open'
- Nothing
- Auto Minus
- Off Air Conference
- Any of the 24 Auxes

The 'off air conference bus' provides a way for all contributors to talk to each other when their faders are closed. Selecting **OFF AIR CONFERENCE** routes the pre fader feed of the accessed path to the off air conference bus when its fader is closed, which is then used to feed the associated mix minus output.

Surface Controls

The User Rotary controls can be set to control the Mix Minus Level for each path. If a mix minus output has been assigned to the accessed path, mix minus output controls can be made available by assigning the rotary controls to the Mix Minus Level function.

BRIO 36
ROUTING

CALREC

BUSES AND OUTPUTS

Brio 36 has up to 4 mains, 8 groups and 24 auxes. Direct outputs and mix minus outputs can be assigned per path from a shared pool of 64 mono resources.

All outputs and buses are available for the currently accessed path via the routing tabs to the left of the control screen with the touch display in 'active Show' view.

Direct Outputs and Mix Minus

Direct outputs and mix minus outputs are created on a per-path basis from the shared pool of 64 resources. Creating a 5.1 direct output uses six of these shared resources, and for stereo direct output or mix minus output, two resources are used. For information on using mix minus outputs see "MIX MINUS" on page 167 and for direct outputs see "DIRECT OUTPUTS" on page 92.

Unconfigured Buses

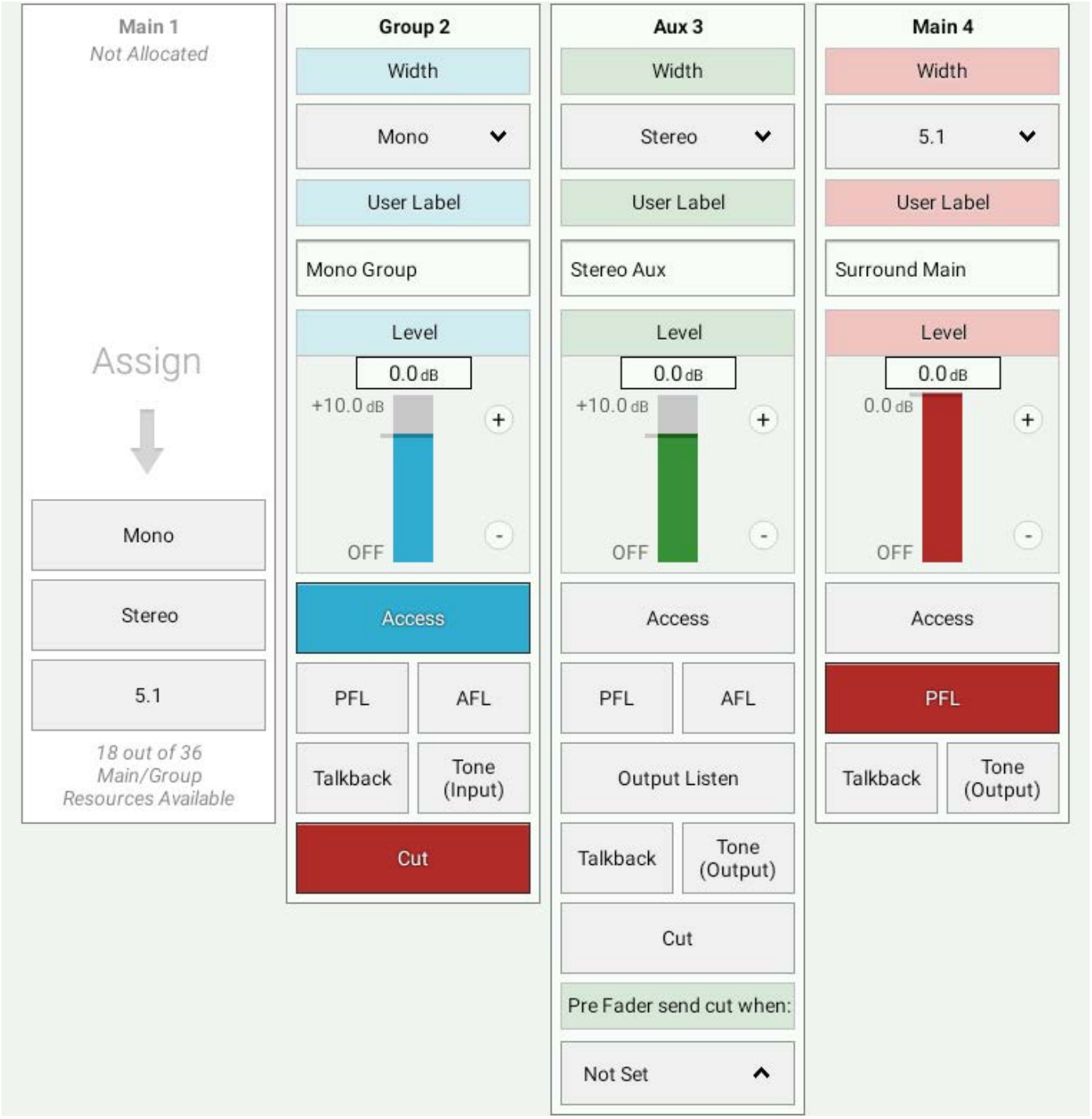
Figure 1 shows Buses and Outputs being Configured, Note: Main 1 has not yet been allocated and shows the number of resources available to create Mains and Groups, the user simply taps on the required width to create the bus. Mains and Groups share a pool of 36 mono resources, whilst Auxes have a separate pool of 24 mono resources.

Configuring Buses

Tap **BUSES & OUTPUTS** in the Show menu to access bus configuration controls. Figure 1 also shows an example of each allocated bus/output type. Each bus has a combination of the controls which are described here:

- Width: The width drop-down menu allows the user to change the width of each bus at any time to mono, stereo,5.1 or remove the bus entirely from the DSP if it is not required.
- User Label: The user can enter a user label for each bus.
- Level: Control the individual output level of each bus.
- Access: acts in the same way as the physical access buttons above each fader on the surface. When a path is accessed and the surface/touch display are in access mode, all control cells and parameters apply to that path.
- AFL: Replace the current feed to the console monitors with the bus feed. AFL provides a non-destructive solo, allowing the user to quickly check individual paths whilst maintaining all mixes-only the monitor output is affected, no paths are cut and the mix to all other buses is preserved. Note: No AFL on Main Outputs
- PFL: Route the pre-fade feed to the dedicated PFL speaker output. If PFL to MON is selected, the PFL feed will replace the console monitor feed.
- Output Listen: Like AFL, Output Listen provides a non-destructive solo, but in this case the feed is taken post-output delay, directly before the feed leaves the console.
- Talkback: Route the feed from the talkback microphone directly to the bus or associated output
- Tone: For groups, tapping **TONE** routes the tone source to the input of the group, similarly to routing tone to a channel. For mains and auxes, tapping **TONE** routes the tone directly to the bus output, prior to the point where it is patched out of the system.
- Downmix Type: Note: Brio 36 currently only uses LoRo downmixing for 5.1 mains.
- Cut: Cut the bus output.
- Pre-Fader send cut if...: Cut the feed to the aux if the conditions selected in the drop-down menu are met.

FIGURE 1 - CONFIGURING BUSES AND OUTPUTS



ROUTING A SIGNAL

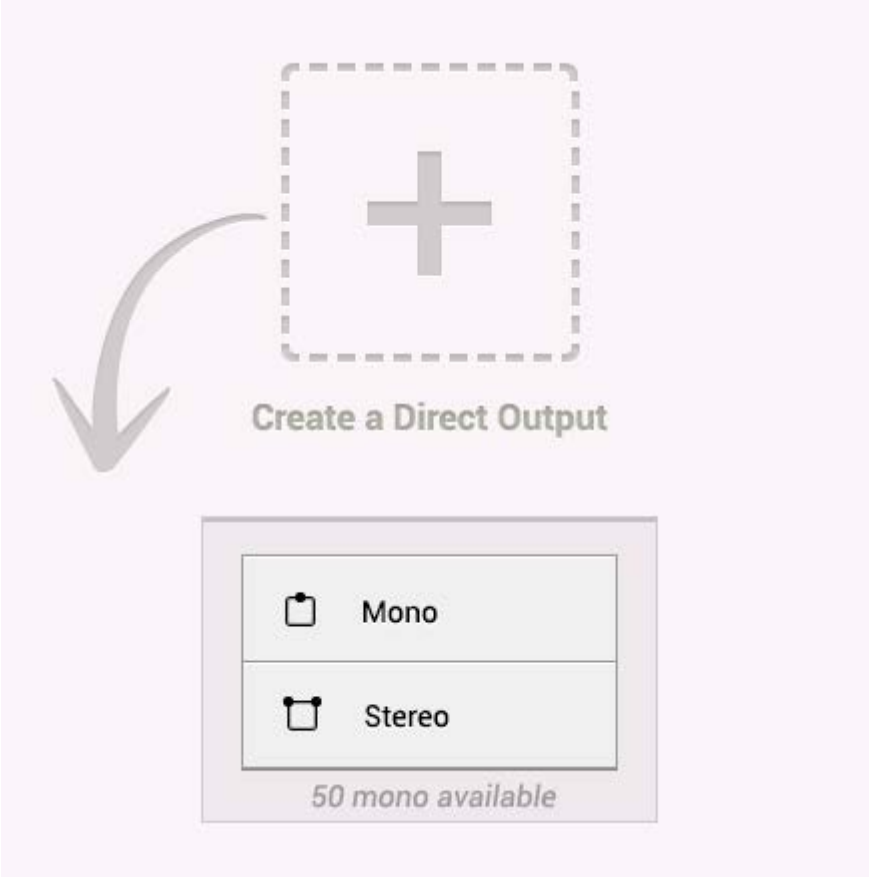
Routing a signal in Brio 36 is quick and simple:

1. Access the path you wish to route, either using the **ACCESS** buttons situated above faders, or from the touch display within the 'Buses & Outputs' screen.
2. Next, tap to select the routing tab for the bus or output to route the path to and the relevant controls are displayed within the control screen.
3. If routing to a bus, tap to slide the on/off switch for the individual bus.

FIGURE 1 - BUS ROUTING SWITCHES

4. If routing to an output (direct or mix minus), tap either **MONO** or **STEREO** to create the desired output for the accessed path.

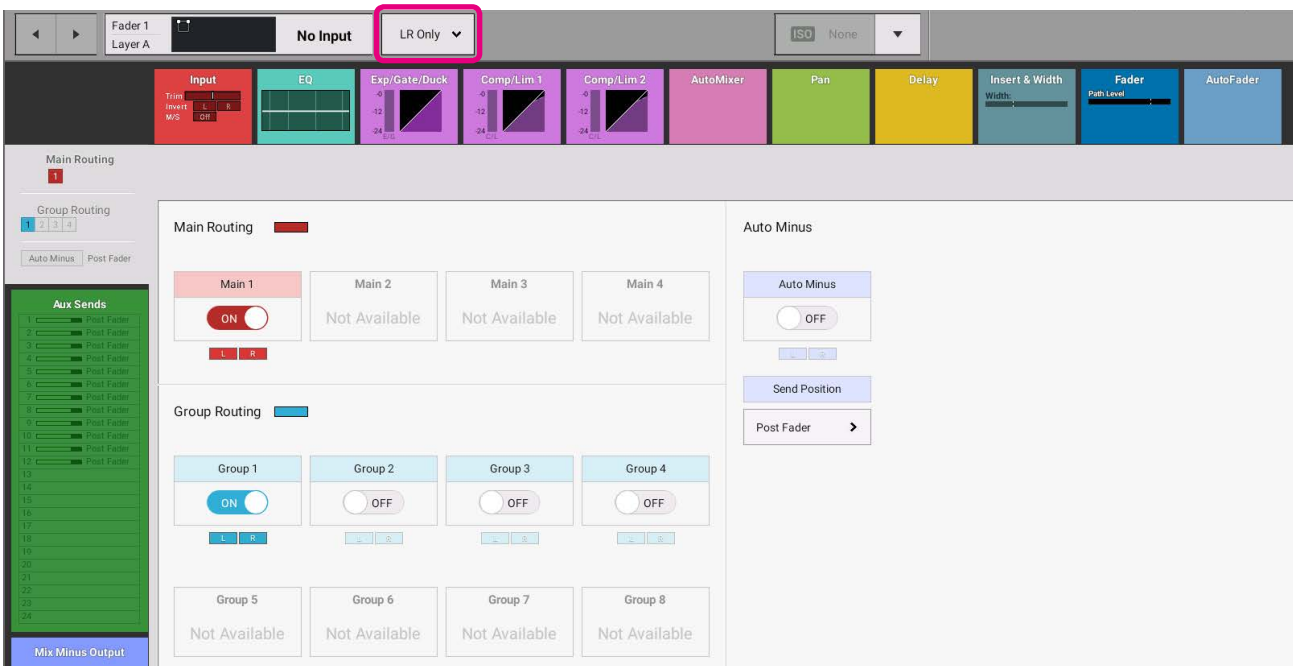
FIGURE 2 - ASSIGNING AN OUTPUT



Partial Routing

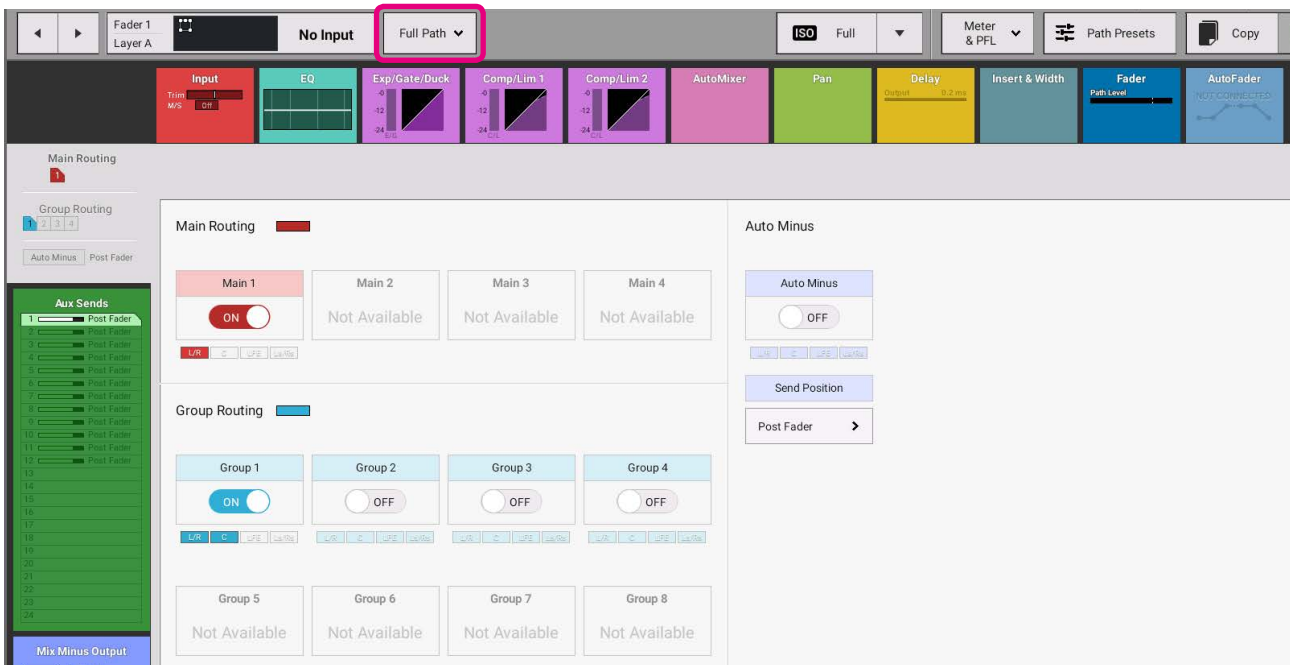
From version v1.1 the user has the ability to route individual spill legs to Mains, Groups and Aux Buses. This is achieved by selecting the channel to route from (Fader 1), selecting the appropriate spill leg (LR Only), using the 'Full Path' button to the right of the access block as highlighted in Figure 3 and routing to the appropriate Bus.

FIGURE 3 - BUS ROUTING SWITCHES FOR LR ONLY SPILL LEGS



Note: that in Figure 3 the Main 1 and Group 1 routing displays are just showing the L and R indicators underneath the routing switches. Selecting the 'Full Path' button again and this time selecting 'Full Path' returns the routing display back to showing the routing for all the spill legs as shown in Figure 4 below.

FIGURE 4 - BUS ROUTING SWITCHES FOR FULL PATH

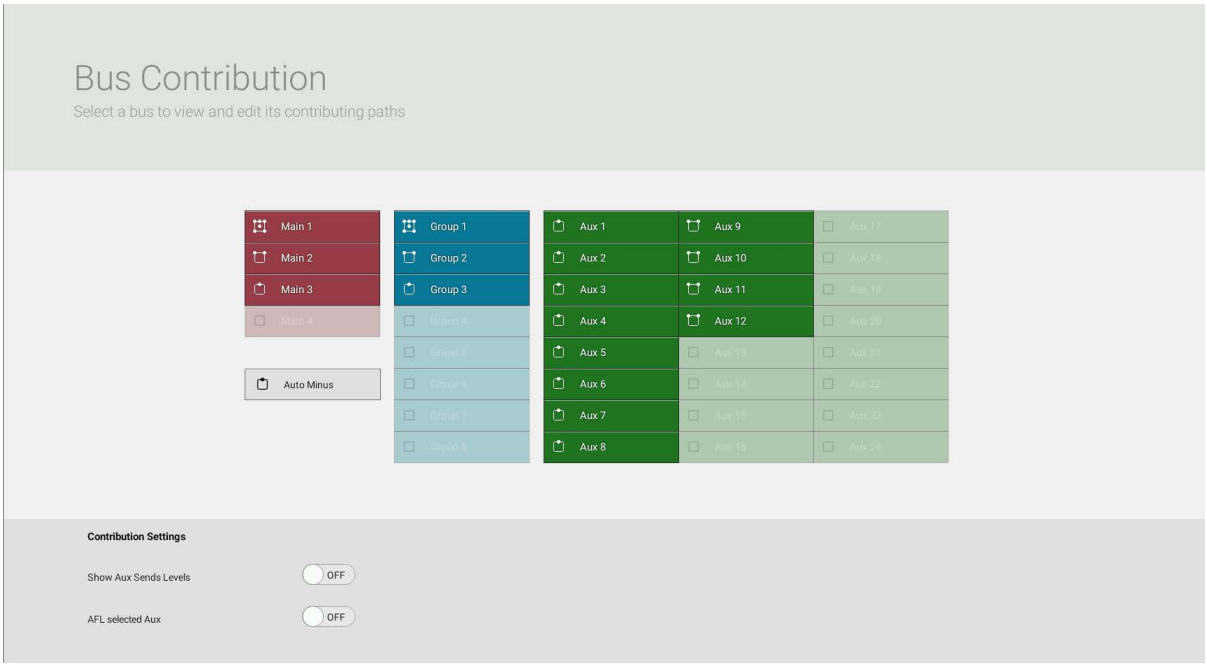


When a partial route to a bus is made, i.e. only some of the spill legs are routed, the routing indicator from the 'Full Path' view shows the Route with the top right hand corner cut off and in addition the routing blocks underneath the 'Full Path' routing switches show which spill legs have been routed. So in Figure 4 Fader1's 5.1 channel has routed just the front LR spill legs to Main 1 and has routed the LR & C spill legs to Group 1.

CONTRIBUTION

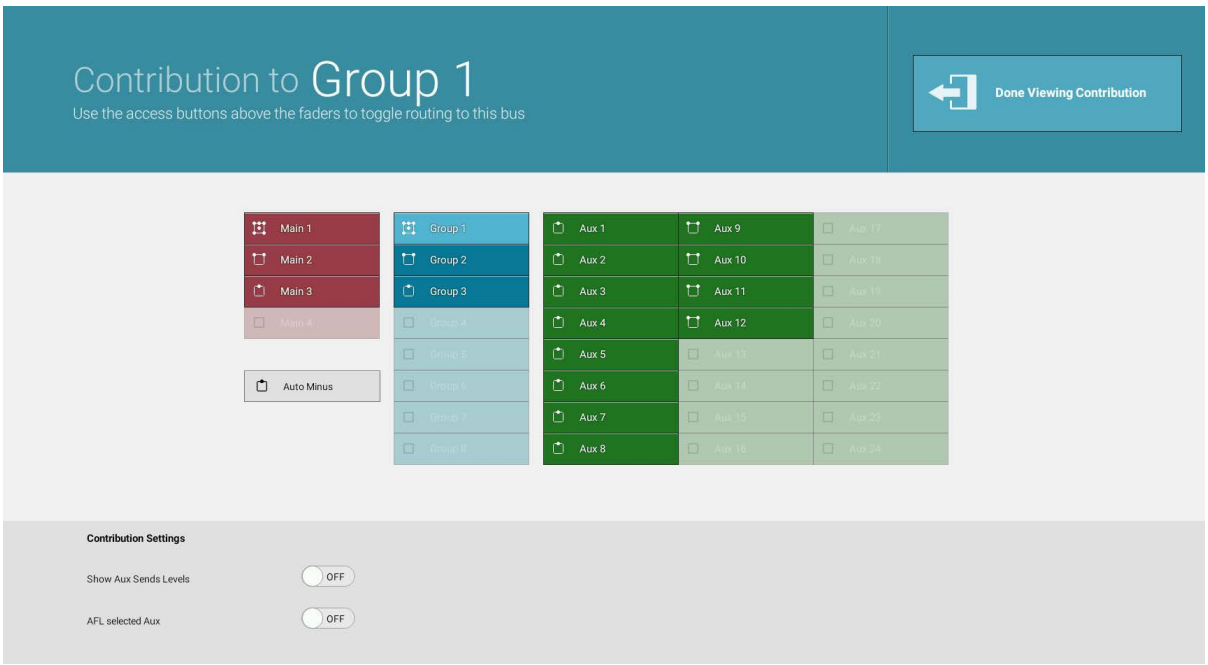
The Contribution screen allows the user to see which paths are routed to a selected bus quickly and easily. To enter the Contribution screen, tap CONTRIBUTION in the Show menu and the following screen will be displayed:

FIGURE 1 - CONTRIBUTION SCREEN



Tap to select any of the bus selectors (mains, groups, auxes or auto minus) in the contribution screen and the fader **ACCESS** buttons for any paths that are currently routed to the selected bus will light as shown in Figure 3. In the following image Group 6 has been accessed in contribution mode. The Global and Strip User buttons can be configured to act as a shortcut to access contribution mode.

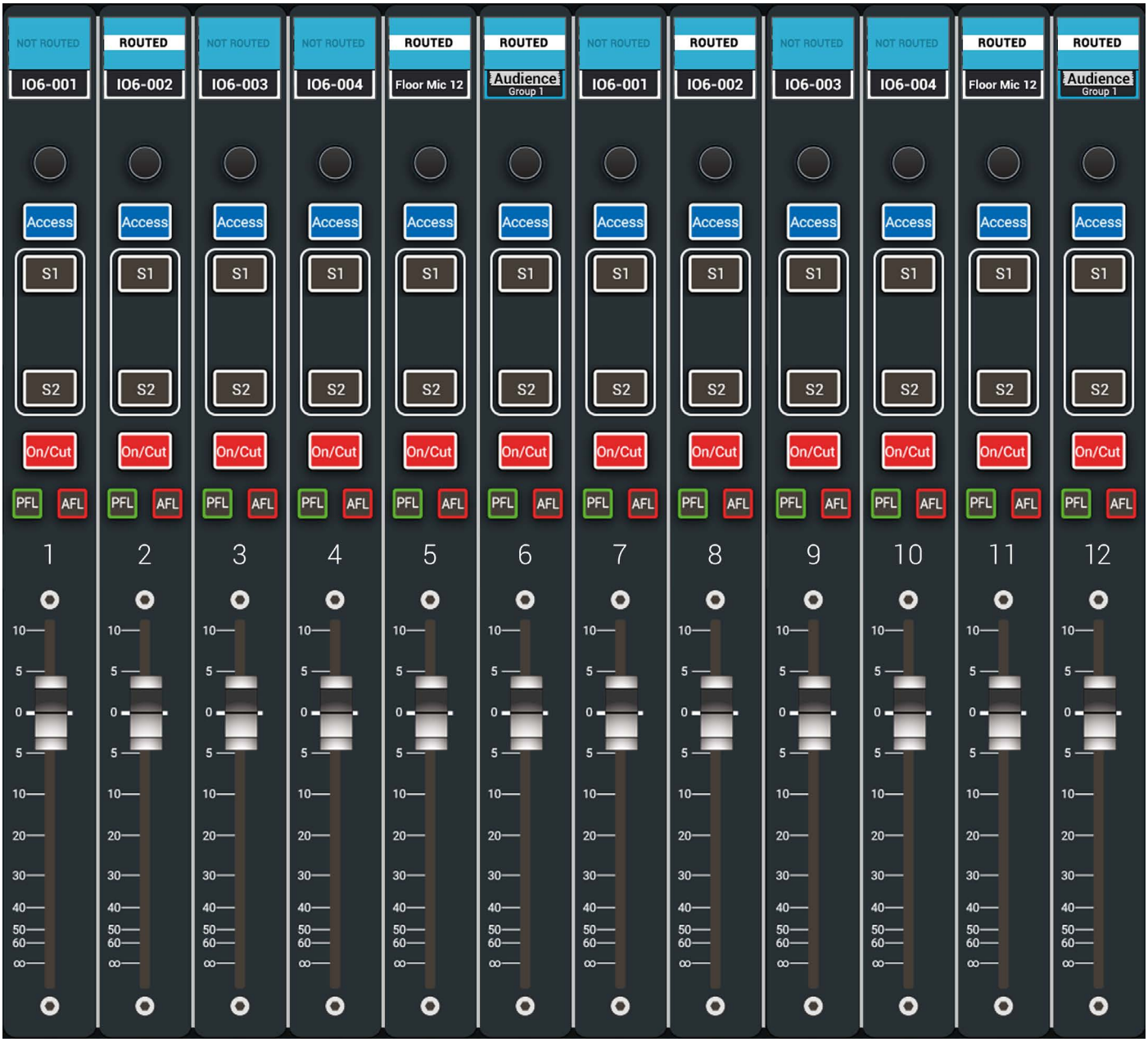
FIGURE 2 - CONTRIBUTION MODE—GROUP 6



At this point you can toggle on/off the routing of any path to the selected bus by pressing its fader **ACCESS** button.

Paths on layers other than the currently visible layer can also be routed by using the layer buttons to access their fader controls. The following image shows how the fader displays will change to indicate routing to a Group. Once you have finished viewing contribution for the chosen bus, tap **DONE VIEWING CONTRIBUTION** on the touchscreen.

FIGURE 3 - CONTRIBUTION—FADER DISPLAYS



DOWNMIXING

When a surround audio feed is routed to a mono or stereo destination, its component legs are combined using predefined level settings to ensure the resultant mono or stereo feed is accurate and appropriate. This process is referred to as downmixing.

Downmixing happens automatically whenever a surround feed is routed to a non-surround destination. All internal downmixing uses LoRo values.

LoRo

When configuring a 5.1 main, LoRo is simply the surround channels summed together as follows:

- L + Ls+ C = Lo
- R + Rs + C = Ro

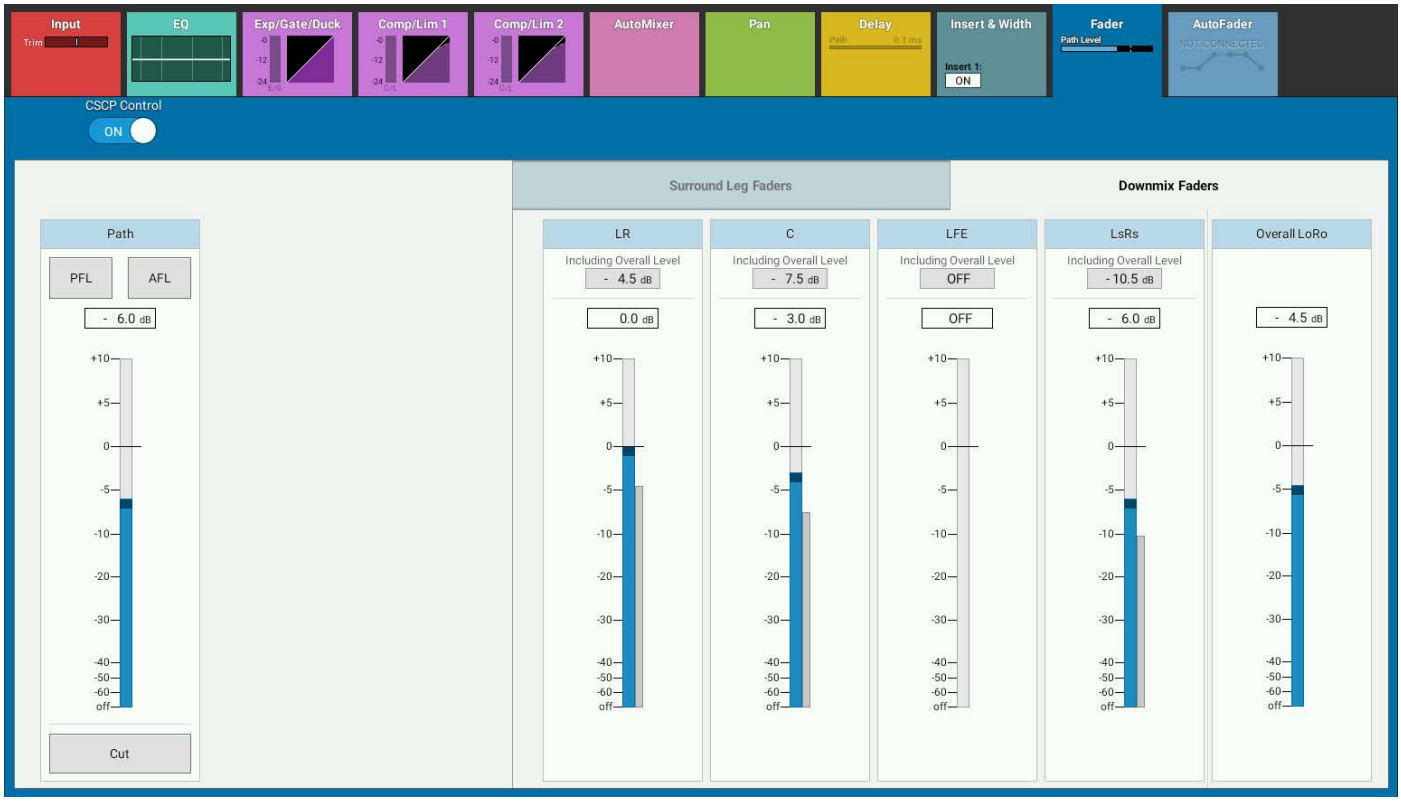
LoRo takes away all front to rear sound separation and leaves a stereo mix which is also compatible with mono systems.

All internal routing of the 5.1 main to stereo destinations remains as LoRo.

Downmix Settings

Individual LoRo downmix settings are available for each surround path from the fader control screen. Five level controls are available: Left and right front (LR), centre (C), low frequency effects (LFE), left and right rear (LsRs) and an overall level control (overall LoRo). Altering the overall LoRo level increases and decreases the overall level of the path.

FIGURE 1 - DOWNMIX FADERS



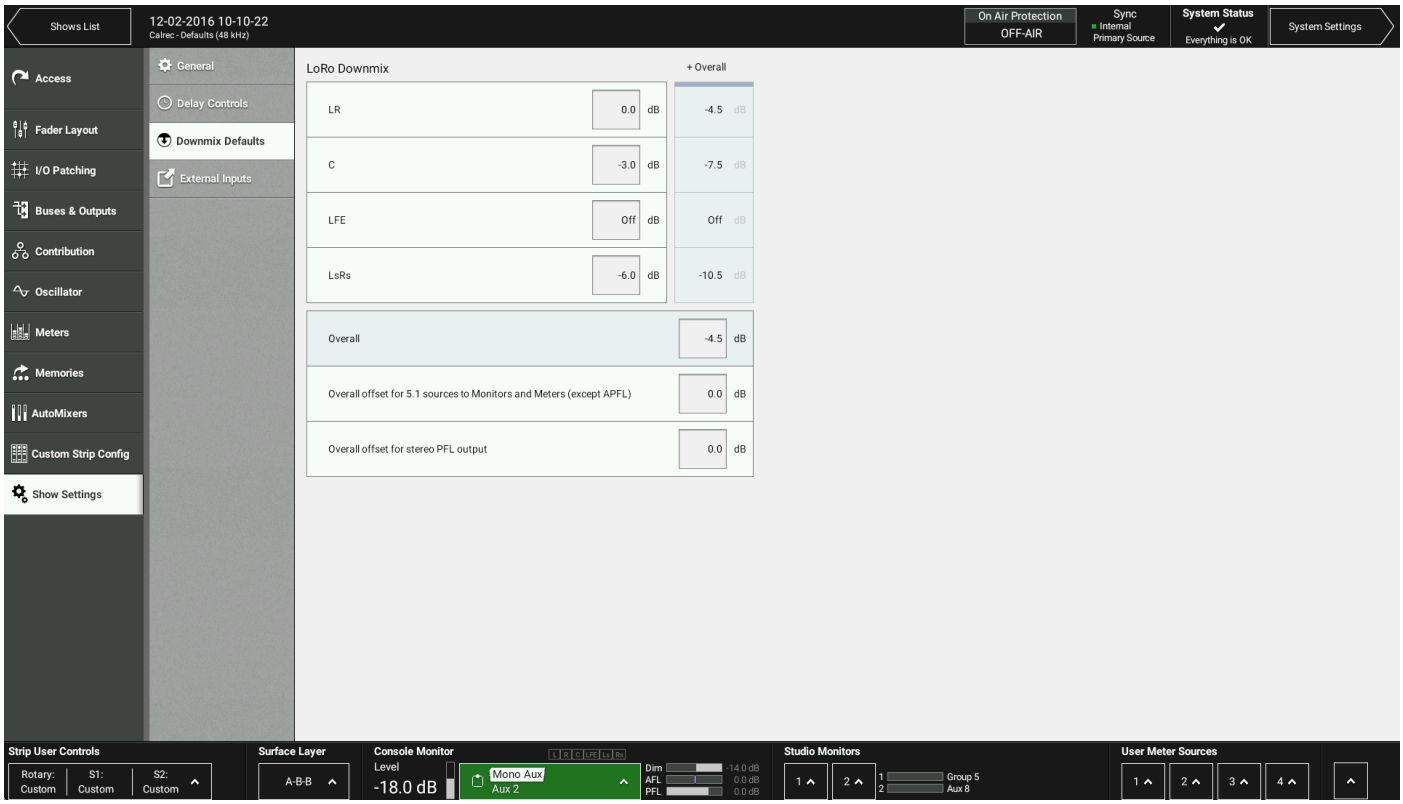
Downmix Defaults

Every Show has default downmix settings which can be located by tapping **SHOW SETTINGS** at the bottom of the Show menu on the touch display and then selecting 'downmix defaults' from the menu.
These defaults can be edited by tapping the individual text fields and entering new values. All new and existing paths will be updated to the new level settings but any offsets which were previously specified for existing paths will be retained.

Offsets

A level offset can be specified for all paths that are routed to monitors and meters (except APFL) which allows the user to increase the level of 5.1 sources for monitoring purposes without having an effect on the mix. A separate offset can be specified for APFL levels.

FIGURE 2 - DOWNMIX DEFAULTS



BRIO 36
EXTERNAL INTERFACING

CALREC

GENERAL PURPOSE INPUTS AND OUTPUTS

Opto-isolated general purpose inputs (GPIs) can be configured to allow Brio 36 to respond to external control signals. Brio can also output control signals via general purpose output relays (GPOs) to control external equipment.

GPI Functions

To access the GPI setup screen, tap **SYSTEM SETTINGS** in the top right hand corner of the touch display and select **GPI** from the left hand menu.

GPI functions listed within the 'Functions' pop-up, are all specific to console functions. The 'Fader Cut' and 'Fader PFL' functions are I/O port specific, for example, if the 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 a different fader.

GPI functions are listed below:

AutoFaders	Trigger any number of the 99 independent AutoFaders via a GPI input signal
General	External 'On Air' Signal—Use an external signal to switch the console into 'On Air' mode External 'Rehearse' Signal—Use an external signal to switch the console into 'Rehearse' mode Surface Sleep --Energy Saving Mode
Group CUT	Apply CUT to any of the 8 Group Buses
Group PFL	Apply PFL to any of the 8 Group Buses
Monitoring	Apply CUT or DIM to the Console Monitor or any of the 2 Studio Monitors
Strip User Button LEDs	Illuminate any of the 72 Strip User Button LEDs via any of the 72 Triggers
Global User Button LEDs	Illuminate any of the 12 Global User Button LEDs
Aux Talkback	Route talkback to any of Brio's 24 Auxes
Group Talkback	Route talkback to any of Brio's 8 Groups
Main Talkback	Route talkback to any of Brio's 4 Mains
Main Tone	Route tone to any of Brio's 4 Mains
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

Assigning GPIs

To assign a GPI to a function:

1. Tap **GPI** in the screen header and select the box in which the GPI port is installed.
2. Tap **FUNCTIONS** in the screen header and select the function type for the GPI to control.
   Alternatively, tap **FADER CUT** or **FADER PFL** and select the relevant I/O box for the port to be controlled.
3. Select a GPI on the left, select a destination on the right and tap **CONNECT**.
4. Decide if the GPI needs to be inverted (active low rather than active high).

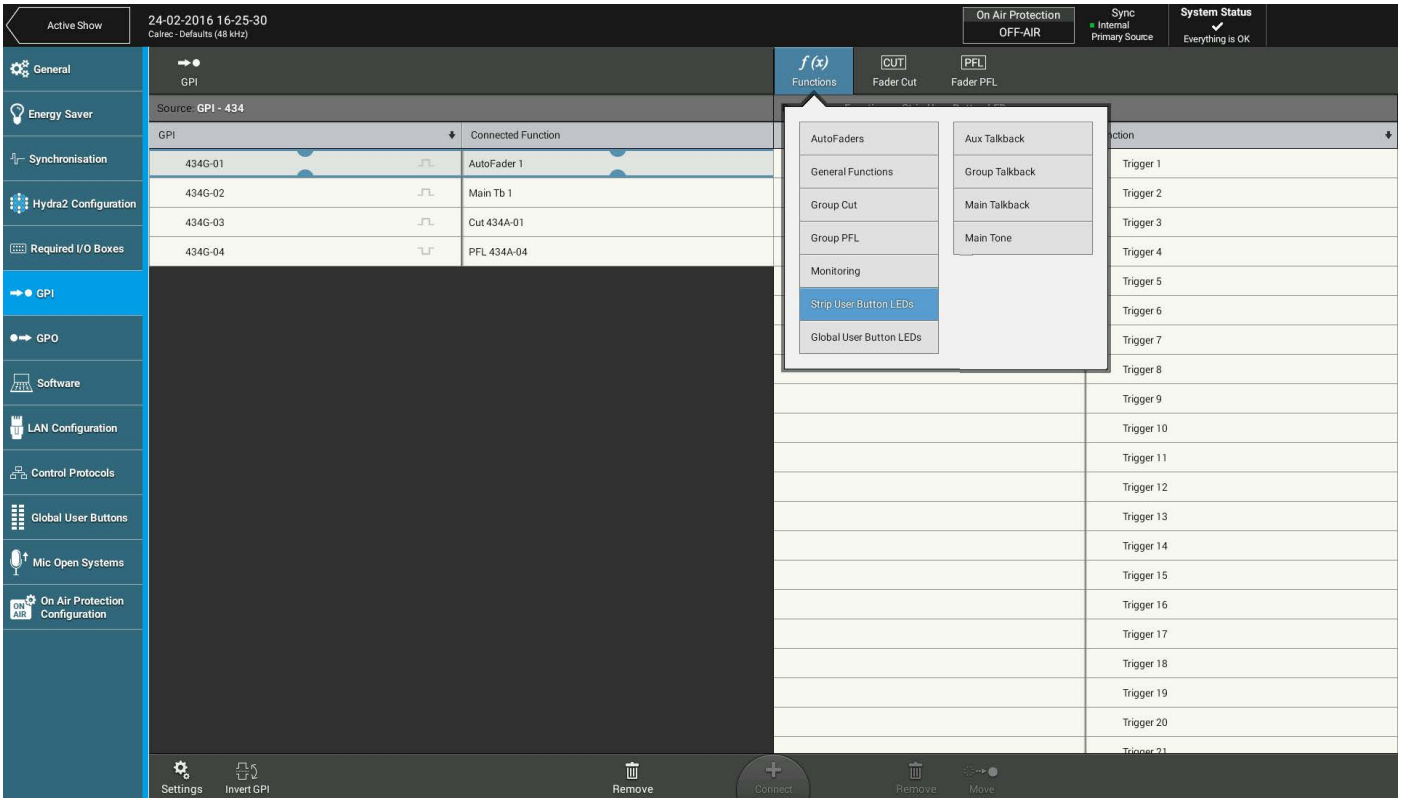
Moving a GPI destination

1. Tap a destination and tap **MOVE** in the screen footer.
2. Select a new destination and tap **MOVE** again, or tap **CANCEL** to discard any changes.

Removing a Destination

1. Tap one or more destinations and tap **REMOVE** in the screen footer.
2. Tap **REMOVE** again to confirm or tap **CANCEL** to discard any changes.

FIGURE 1 - GPI USAGE



GPO Functions

To access the GPO setup screen, tap SYSTEM SETTINGS in the top right hand corner of the touch display and select GPO from the left hand menu.

GPO functions listed within the 'Functions' pop-up, are all specific to console functions. 'Fader On' and 'Fader Open' functions are I/O port specific, i.e. 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.

GPO functions are listed below:

General	AFL Active—If an AFL is activated a GPO can be activated
	Error Warning—If an error warning occurs a GPO can be activated
	Fire Alarm Mute —If a Fire Alarm Mute is activated a GPO can be activated
	Mic Open1 thru 5—If a Mic Open circuit is activated a GPO can be activated
	On Air—if the console is put into On Air mode a GPO can be activated
	PFL Active—If a PFL is activated a GPO can be activated
	Red Light — If a Red Light is activated a GPO can be activated
	Rehearse—If the console is put into Rehearse mode a GPO can be activated
Strip User Buttons	Assign any Strip User Button to Activate a GPO via any of the 72 Triggers
Global User Buttons	Assign any Global User Button to Activate a GPO
Fader On	Fader open and on (not cut) activates GPO for any port on the network
Fader Open	Fader open activates GPO for any port on the network

Assigning GPOs

1. Tap **GPO** in the screen header and select the box in which the GPO port is installed.
2. Tap **FUNCTIONS** in the screen header and choose a function type from the list. Alternatively, tap **FADER OPEN** or **FADER ON** and select the relevant I/O box for the port to be controlled.
3. Tap to select a function or port on the left, tap to select a GPO port on the right and tap **CONNECT**.

Moving a GPO Function

1. Tap a destination and tap **MOVE** in the screen footer.
2. Select a new destination and tap **MOVE** again, or tap **CANCEL** to discard any changes.

Removing a Destination

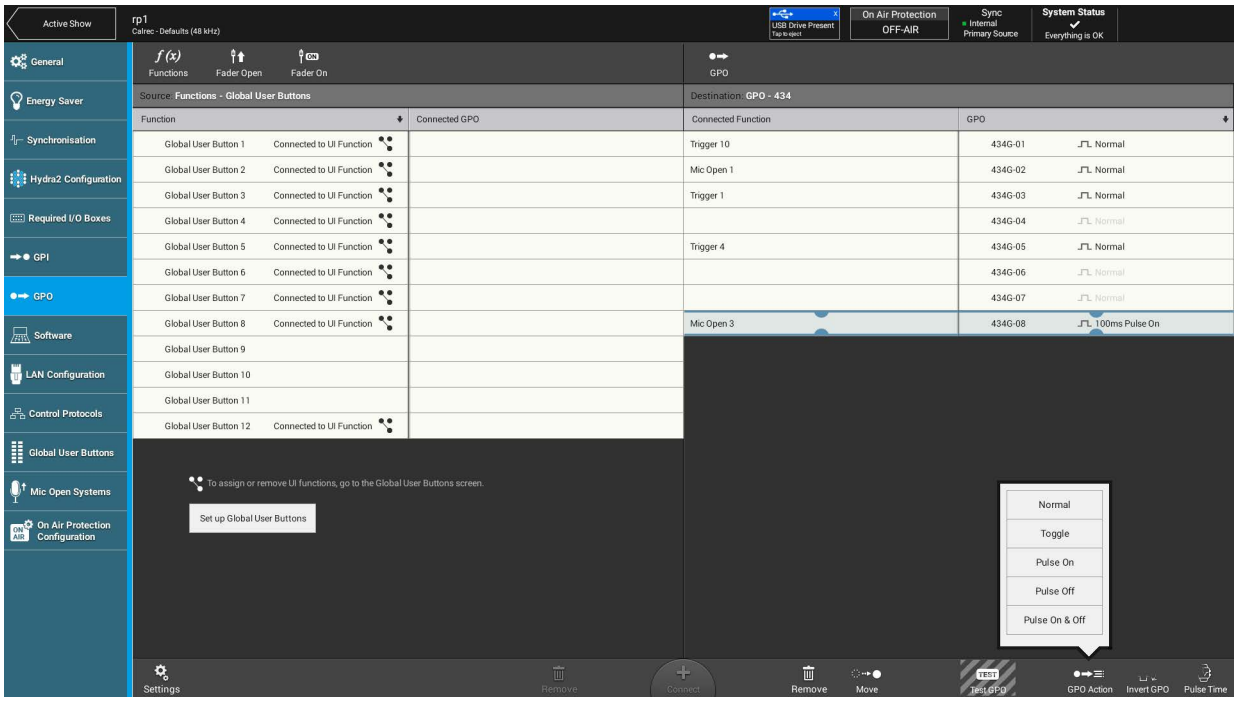
1. Tap one or more destinations and tap **REMOVE** in the screen footer.
2. Tap **REMOVE** again to confirm or tap **CANCEL** to discard any changes.

GPO Actions & Invert

Figure 2. Shows the available options under "GPO Action"...
"Normal" - GPO held closed whilst console function is active.
"Toggle" - useful if controlled by a user button where a press to activate and a subsequent press to deactivate is required.
"Pulse On" - when function activates, Pulse Off" - pulse when function deactivates, or
"Pulse On & Off" - where a pulse is sent on both activation and deactivation of a function.
The user can also invert the GPO if required In most cases.

Assigning GPOs to be controlled from the Global and Strip User Buttons can change their mode from latching to momentary so the relay is only activated as long as the button is pressed.

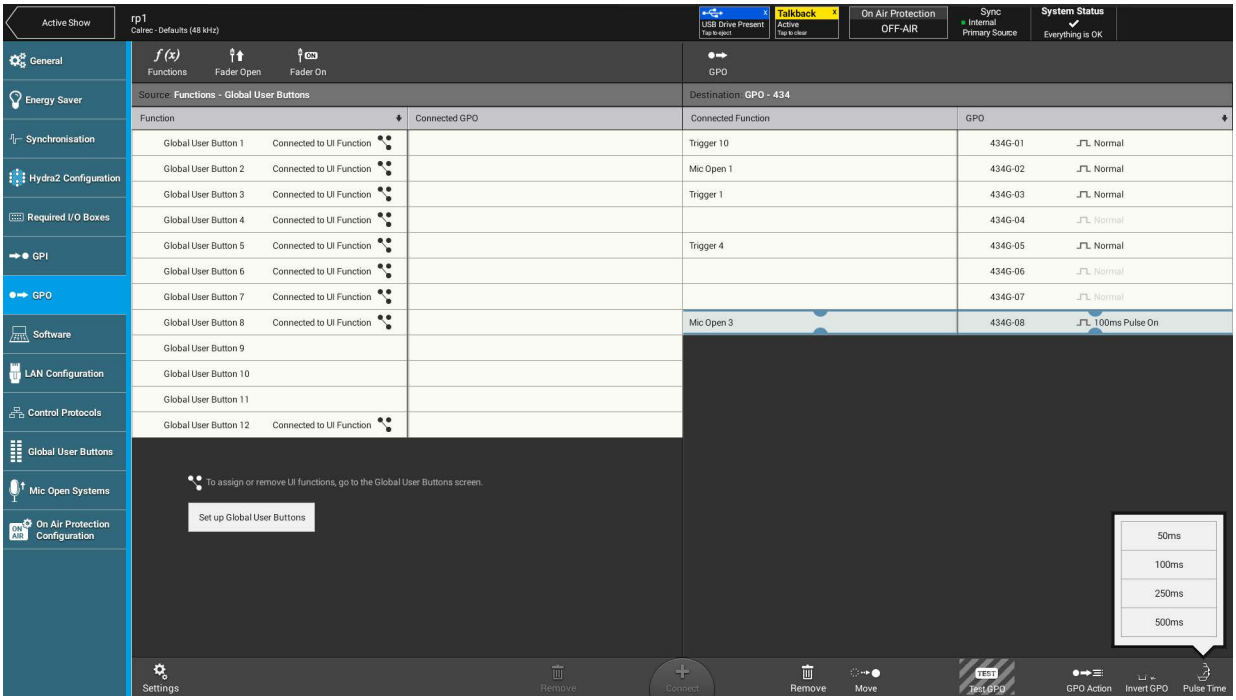
FIGURE 2 - GPO SHOWING GPO ACTION MODES



Pulse Time

When the GPO Action is set to a Pulse mode, tapping the Pulse Time button opens a pop-up with four different pulse times 50ms, 100ms, 250ms & 500ms, this sets the duration of the pulse as shown in Figure 3.

FIGURE 3 - GPO SHOWING GPO PULSE TIMES



Testing GPO Functioning

A **TEST GPO** button is available in the screen footer to quickly manually trigger GPO signals for testing purposes. To use this the user must be logged in as an administrator.

MIC OPEN SYSTEMS AND ON AIR PROTECTION CONFIGURATION

Mic Open systems are used to control external devices, relative to the 'On Air' status of a signal source. Mic open systems can CUT or DIM a loud speaker feed to avoid feedback, or control relays for switching purposes, such as turning on ON AIR lights. This On Air Protection is an important part of the Broadcast System.

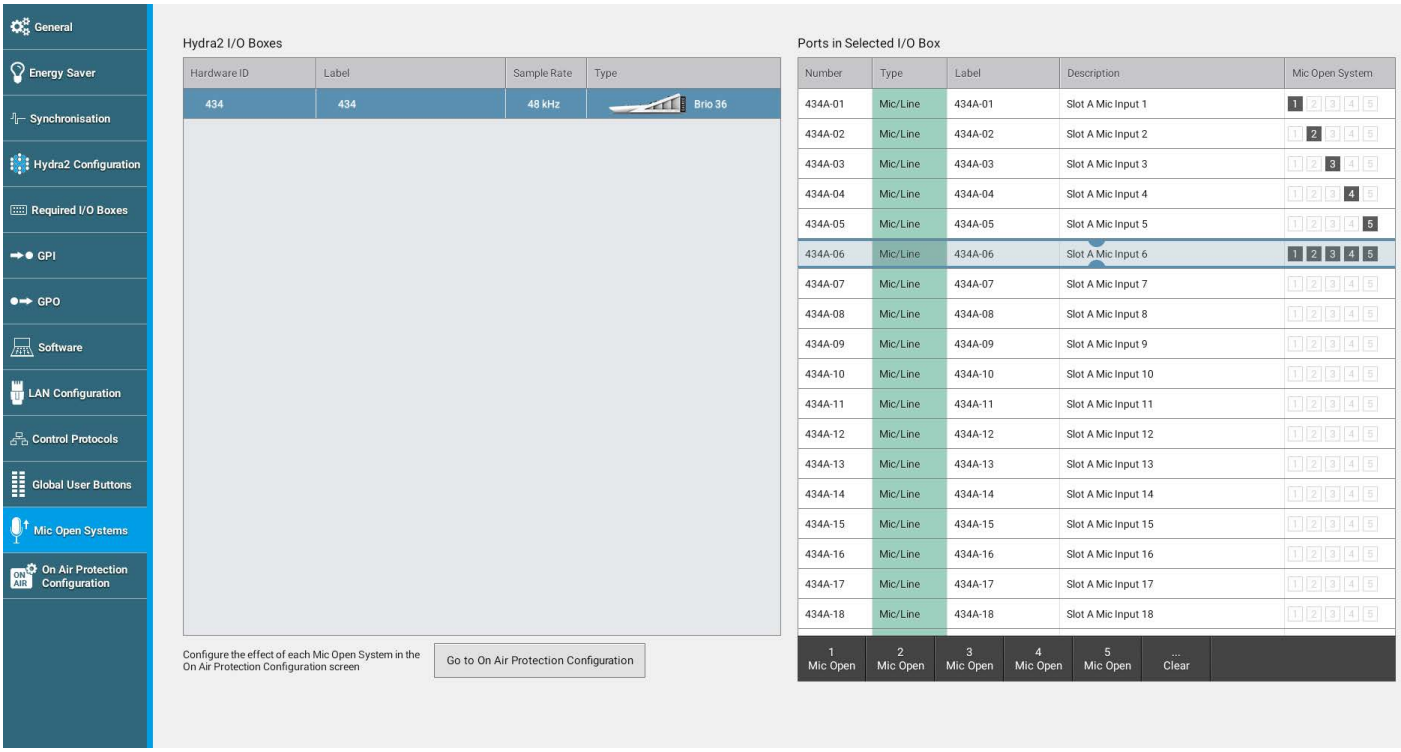
There are 5 Mic Open systems available on the console, each is normally associated with a physical area for control, such as a studio or an area of a studio floor. Mic Open systems work for all input ports, as microphones can be connected to ports other than mic/line inputs.

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.
If a signal is routed to a console input via a hydra patchbay and/or an input alias the on air decoding will be the same as described above.
When a Mic Open system detects that a microphone is on air, it switches on and the associated GPO/CUT/DIM is executed.
Mic Open systems are console-wide.

FIGURE 1- ASSIGNING A MIC OPEN SYSTEM



Assigning Inputs to Mic Open Systems

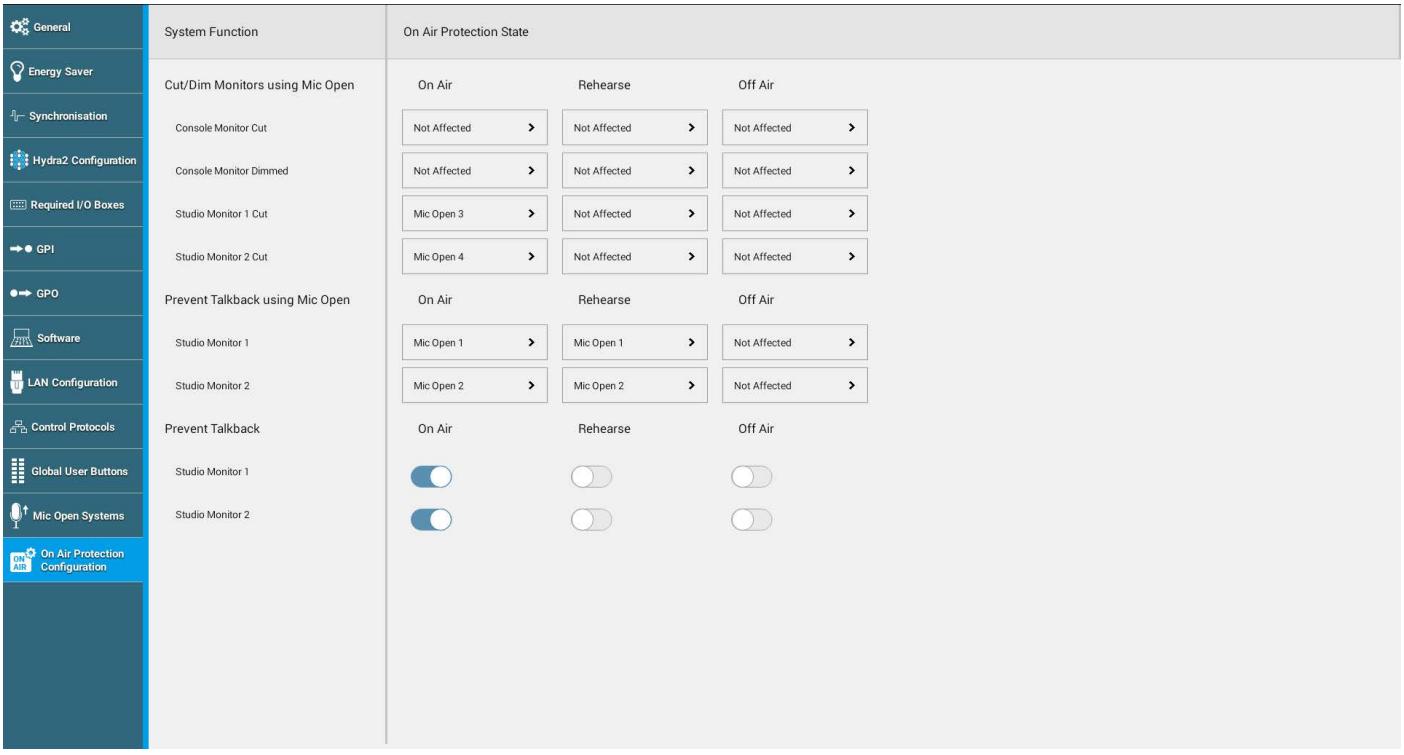
To allocate an input port to any of the 5 Mic Open systems, select Mic Open Systems within the System Settings page, then select the Hydra 2 I/O boxes containing the Mic Input ports. The port list appears in the right hand screen with a Mic Open System column.
There are 6 buttons at the bottom of the input allocation screen for assigning inputs to any of the 5 Mic Open systems. Select an input port from the list and press one or more of the 5 Mic Open system buttons - notice that the corresponding cells in the end column now reflects your choice. Assigning Mic Open Systems to GPOs
Mic Open systems can be set to control relays by assigning them to GPOs. Select System Settings>GPO and enter the GPO screen. Tap the FUNCTIONS button at the top left of the screen, select FUNCTIONS and then GENERAL.

Select one of the five Mic Open systems on the left hand side of the screen and then select one of the available GPOs from the list on the right hand side of the screen. See "Assigning GPOs" on page 186 for more information.

Assigning to CUT/DIM Loud Speakers for On Air Protection

Mic Open systems can be assigned to CUT or DIM the various loudspeakers connected to the console or inhibit talkback routing to any of the Studio Monitor s.
These settings can be different for the different console modes: On Air , Rehearse and Off Air . See Figure 2.
Select On Air Protection Configuration from the System Settings page. The table in the main screen lists the various CUT/DIM and talkback inhibit options down the left hand side along with columns for the three console modes. The selection buttons in the three columns can be used to select one of the 5 Mic Open systems to control each Loudspeaker CUT/DIM and Prevent Talkback.

FIGURE 2- ON AIR PROTECTION



Mic Open systems and multi-leg paths

Individual legs of stereo and 5.1 paths can be associated with different Mic Open systems. In this case, when the path is considered on air, all associated Mic Open systems will be activated.

A 5.1 path will be considered on air with only one of its legs routed, as long as all other conditions are met. An on air 5.1 path will remain on air even if all its spill legs are closed/CUT as long as the surround master is open and not CUT.

CONTROL PROTOCOLS

In addition to GPI activated controls, the Hydra2 product range supports several protocols to allow 3rd party equipment to remotely control various features. CSCP (Calrec Serial Control Protocol) can be used to remotely automate various Brio 36 features.

CSCP

Calrec Serial Control Protocol (CSCP) allows remote control, using third party equipment, of the following:

- Fader positions (including VCA master faders)
- Path cut/on status
- PFL status
- Routing to auxes and mains
- Aux output levels
- Main output Level
- 'Left to both' and 'right to both' switching

CSCP can be enabled and disabled per fader:

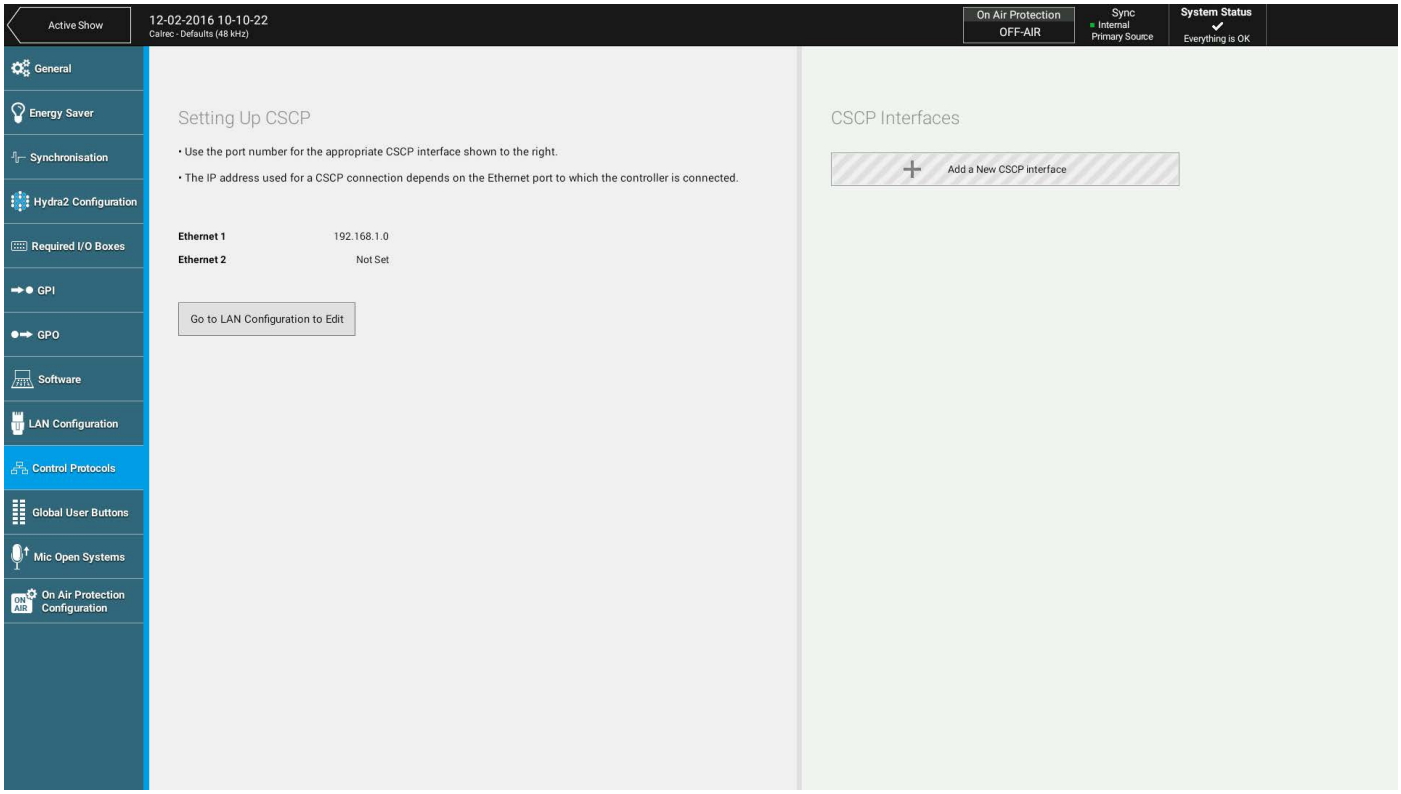
1. Press a fader's **ACCESS** button.
2. Tap the fader processing tab.
3. Tap **CSCP ENABLE** in the screen header to switch on or off.

When a fader is under CSCP control, this can be overridden by touching and dragging the fader to the desired level.

Setting Up CSCP

Tap **SYSTEM SETTINGS** in the top right of the screen and select **CONTROL PROTOCOLS** from the left hand menu. In this screen the user can configure each CSCP controller device to connect to your network. On the left of the screen the LAN port IP address information is displayed (see "LAN CONFIGURATION" on page 192 for more information) so that it is available for configuring the CSCP controller. On the right of the screen the user can add the CSCP interface, **EDIT** the settings, switch on the connection or **DELETE** the controller from the system. By default, the Assist CSCP interface will already be defined. Use CSCP version 21 unless otherwise advised by a Calrec engineer.

FIGURE 1 - CONTROL PROTOCOLS SETUP



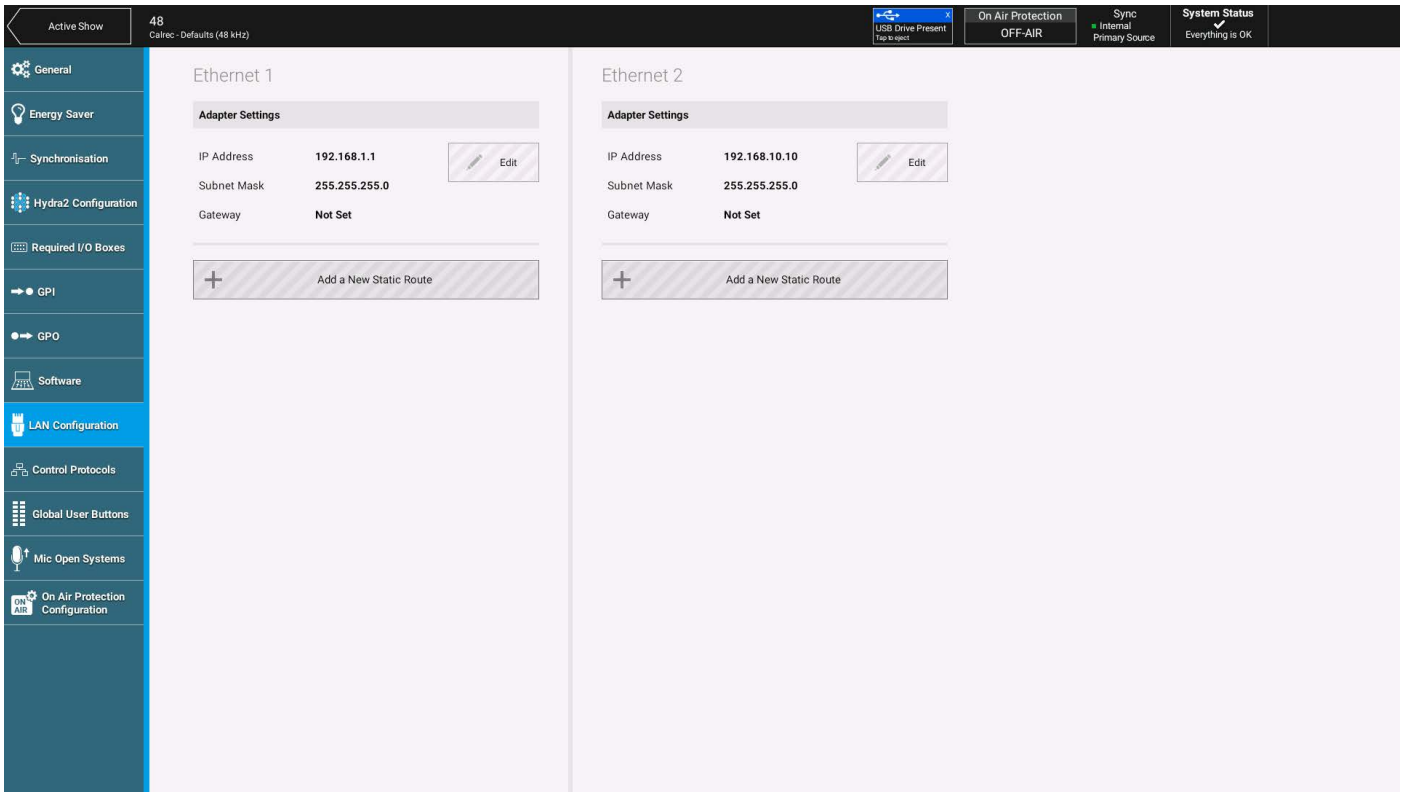
For more information on CSCP, including a list of supported 3rd party devices,
See "Remote Control–Calrec Serial Control Protocol" in the Brio 36 installation manual.

LAN CONFIGURATION

Brio 36 has two ports labelled Ethernet 1 and 2, these ports can be used to connect the Brio 36 system to other corporate networks.

To configure these ports tap **SYSTEM SETTINGS** in the top right of the screen and select **LAN CONFIGURATION** from the left hand menu. In the LAN configuration screen the user can define the adaptor settings for each port and create multiple static routes for each port as required. Note: the user must be logged on as Administrator to change these settings.

FIGURE 1 - LAN CONFIGURATION SCREEN



BRIO 36
CONSOLE FACILITIES

CALREC

ON AIR PROTECTION

Brio 36's 'on air protection system' provides three modes of operation:

- On
- Rehearse
- Off

When 'on air protection' is switched on or into rehearse , certain talkback and tone options are disabled to help to avoid unwanted broadcast of tone and talkback feeds. The tone and talkback settings associated with the three operation modes are shown in the Figure 1.

Changing Modes

With the touch display interface in 'active Show' view , the 'on air' mode selection button is in notifications area along the top of the screen. Tap the 'on air' button to and select one of the three mode options from the pop-up.

On Air Mode via GPI

Two GPIO options are available relating to the 'on air protection' system: 'On air protection - on' and 'On-air protection - 'rehearse'. Applying a signal to either of these GPIs puts the console into the on or rehearse mode. Note: these functions can be controlled by assigning them to the Global User buttons

If mode selections are made both by GPI and from the touch display interface, the highest setting will be used:
On being the highest and Off the lowest.

FIGURE 1 - TABLE OF FUNCTIONS AFFECTED BY ON AIR PROTECTION

General Functions	On	Rehearse	Off
Red Light GPO	Active		
Fire Alarm Mute	Active		
On Air GPO	Active		
Rehearse GPO		Active	

Talkback	On	Rehearse	Off
Mains (1-4)	Deactivated		

Tone	On	Rehearse	Off
Mains (1-4)	Deactivated		
Groups (1-8)	Deactivated		

Talkback Dims Console Monitors	On	Rehearse	Off
Mains (1-4)	Active	Active	Active
Groups (1-8)	Active	Active	Active
Auxes (1-24)	Active	Active	Active
External Talkback	Active	Active	Active
Talkback Groups	Active	Active	Active
Channel Direct Outputs	Active	Active	Active
Channel Mix Minus Outputs	Active	Active	Active
Group Direct Outputs	Active	Active	Active
Group Mix Minus Outputs	Active	Active	Active
Studio Monitors (1-2)	Active	Active	Active

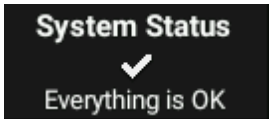
SYSTEM STATUS MONITORING

Brio 36 constantly monitors the functioning of all system components and connections and reports warnings, faults and information to the user. There are three types of system status message:

Error messages report a serious error message that could cause, or has caused the system to fail. Errors normally require user intervention to correct the problem before operation can continue.

Warning messages indicate where the system has located a fault or a failure, but will still operate without intervention. Warnings indicate that the system should be checked as it may be running on secondary components.

Information messages inform users when certain actions take place. They do not report errors and no action needs to be taken in response to them.

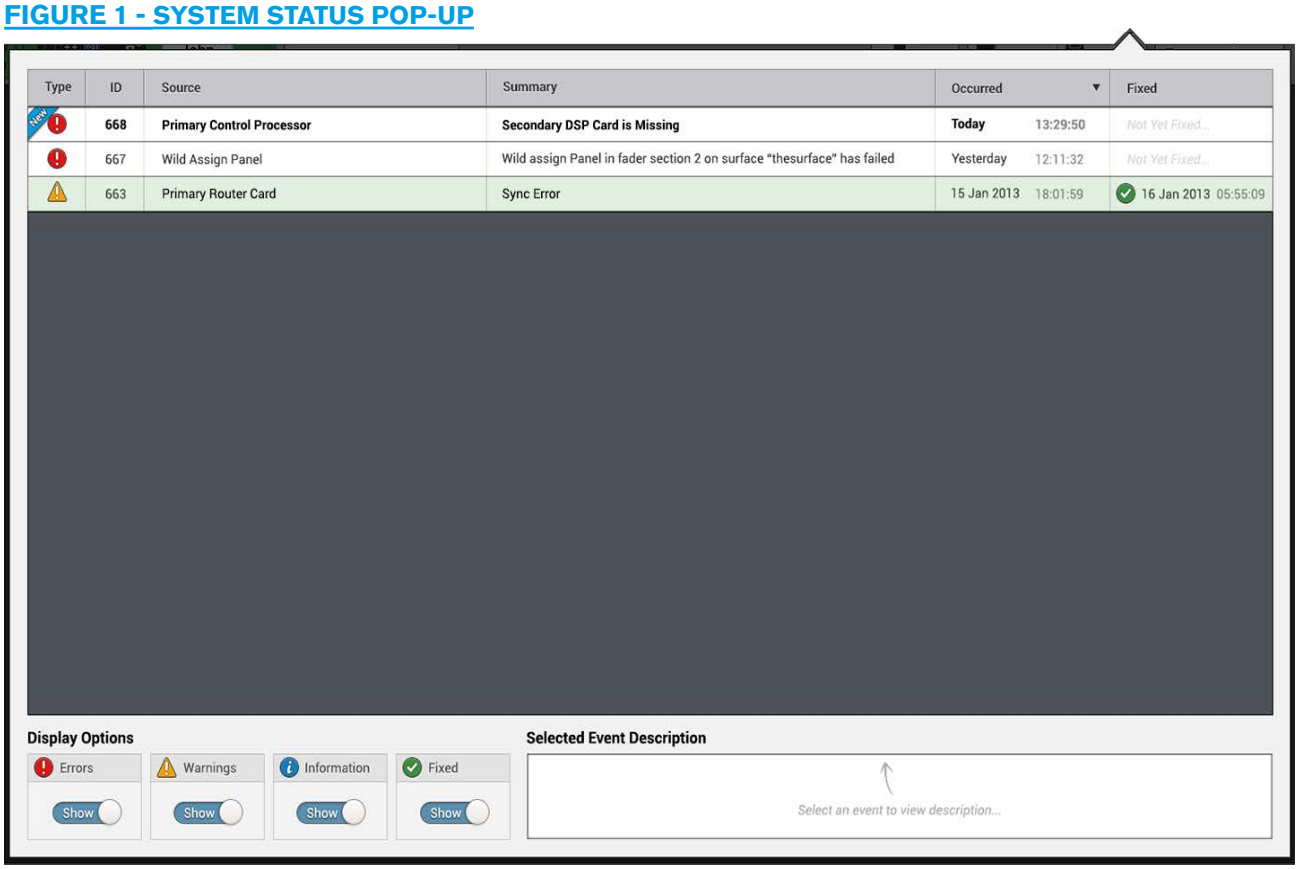


The system status notification button is situated within the notifications area to the top right of the touch display when in 'active Show' view. Under normal operating circumstances the system status button will look like this.

Notifications

Tap the system status button to display the pop-up which lists all messages in a sortable table. Tap the table headers to sort the messages. There are four view selection buttons along the bottom of the pop-up which allow the user to filter out messages by type, for example, if the user does not want to see any messages which have already been fixed, tap to switch off the **FIXED** view button. Selecting any of the messages populates the 'message description' field with a description of the message.

FIGURE 1 - SYSTEM STATUS POP-UP

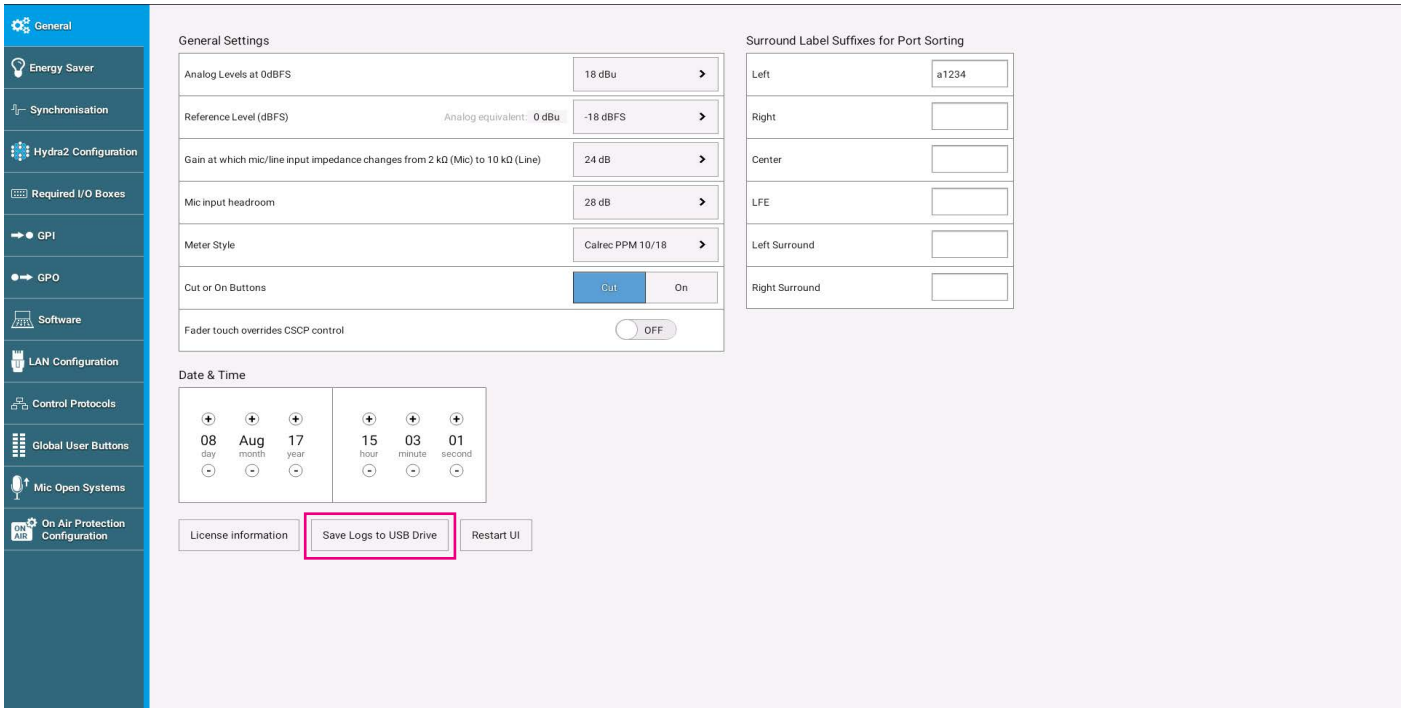


COLLECTING SYSTEM LOGS

Various log files are maintained by different parts of the system. These log files can be collected and transferred to USB memory for forwarding to Calrec Support in the event that detailed troubleshooting is required:

- Insert a USB memory device into one of the USB ports on the control surface
- Navigate to the System Settings>General screen and click the “Save Logs to USB Drive” button
- All log files from around the system will be collated into a zip file written to the chosen location on the USB memory device
- Note: the system may be unresponsive for a moment while logs are gathered
- The log files will be compressed as a gzip tar archive and given a default filename that starts with the system’s ID, followed by date and time, e.g. ID_date_time_logs.tar.gz

FIGURE 1 - COLLECTING LOGS



BRIO 36
TERMINOLOGY

CALREC

A

Access

An operating mode of the surface. When a fader or path is accessed (by pressing its ACCESS button) all controls shown on the touchscreen correspond to the accessed path.

Accessed Path

When a path is accessed (by pressing its ACCESS button) certain functionality routing processing etc.. becomes available to it, from both the touchscreen and the strip rotary control cell

Active Show View

With the Touch Display in Active Show view all operational screens, controls and settings are available from I/O patching to processing and routing.

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 dependant on the word-length (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.

Auto 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 Auto Minus bus, minus their own contribution. The Auto Minus bus can be used to feed individual channel/group's Mix Minus outputs.

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 Bird Beater.

B

Bus

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, Main, Mix Minus, AFL, PFL.

C

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

Control Cell

A collection of controls consisting of a display, a rotary control and a button in the top of the rotary control.

Control Processor

The control processor module acts as the main controller of the Brio 36 system, passing messages between all modules in the surface. It also handles DSP processing and Routing

CSCP (Calrec Serial Control Protocol)

CSCP allows for remote control over mixing console operational functions by 3rd party systems such as video switchers and production automation systems.

D

DAC (Digital to Analogue Conversion)

The reverse of ADC. The digital representation of a signal is converted back into a continuous analogue signal.

Direct Output

Output from a channel or group path with level control and pre EQ / pre fader / post fader selection.

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.

E

Ember

The Ember protocol is a sophisticated data exchange mechanism that has potential for remote control of many functions across varied equipment types.

F

Fader

Faders are located on surface fader panels. Channels, Mains, Groups and Auxes can all be attached to faders allowing for control over level and access. Faders are also used to control VCA groups.

Foldback

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

G

Gigabit Ethernet

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

Global User Buttons

There are 12 Global User buttons below the touchscreen which can be assigned to a variety of functions.

GPIO

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 for Hydra2 I/O boxes and fitted to Brio 36 as standard.

Group

A bus to which many audio signals can be routed, summed and controlled simultaneously with a single fader. Groups have full EQ and dynamics processing. For example, all audience microphones may be sent to the same group bus for easy access. Groups must be routed to output buses in order to be patched out of the system.

H

Hydra2

An audio networking system which links I/O boxes to one or many consoles over Gigabit Ethernet. Brio 36 can be connected to a Hydra 2 system.

Hydra2 Router Module

All Hydra2 I/O boxes connect to the network via a core router. The router module contains SFP sockets that can accept either copper or a range of fibre connections by using the appropriate adaptor.

I

IFB Interruptable Fold Back

IFB is a foldback mix which can be interrupted by tone or talkback. In Brio 36 this function is handled by the aux buses.

L

Layers

Layers allow the surface faders to change the paths they are controlling. In each layer a different path can be attached to and controlled by a given fader. There are 2 layers on the Brio 36.

M

MADI

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

Main

An output bus. A final point at which signals are mixed and affected before they leave the console.
Two versions of each Main are available for patching out of the system - Main and Main (Pre Tone and Talkback).
Main (Pre Tone and Talkback) can be used to avoid the possibility of broadcasting tone and talkback feeds.

Memory Isolation

Memory Isolation is a system whereby paths or individual path parameters can be protected from being updated when a user memory is loaded.

Meter Display

Large TFT display used to display metering information.

Mic Input Headroom

Input headroom is the level in dB's above 0dB available in the system before distortion ('clipping') occurs. The headroom can be set within Brio 36's Console Settings. A high headroom offers greater safety at the expense of slightly more noise.

Mix Minus

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

O

On Air Mode

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

P

Patch

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

Path

A generic term that refers to a DSP process in the system. A signal present at an input port must be routed to a path in order for it to be processed and then sent back out of the system. Paths include channels, groups, auxes, 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 its level altered by a fader. Multiple PFL signals can be sent to the PFL bus.

Port

A port refers to any physical audio input or output either built-in to Brio 36 or in a Hydra 2 I/O box. 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 (or more with Dolby E decoding) and MADI can provide up to 64 signals.

Preset

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 work-flow when several paths with similar settings are required.

PSU Module

PSU module is a term used to describe a Power Supply unit which is built in to the Brio 36 in order to provide power inlets.

R

Redundancy

All main components of the system are redundant, meaning that there is always a secondary hot spare ready to step in and take over control if the primary component fails.

Rotary Controller

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 controller.

Route

A route is a connection made from one path to another within the system. For example a Group may be routed to a Main, or a Channel may be routed to an Aux via an Aux send.

Router Core

External Processing rack without a DSP mix engine, and therefore no control surface connected. Used to expand network capacity when Brio 36 is connected to a Hydra 2 network..

S

SDI (Serial Digital Interface)

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

SFP (Small Form-Factor Pluggable)

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. All main network connections in a Brio 36 system make use of SFP sockets.

Show

A recallable collection settings as well as a way of organising User Memories which pertain to a specific program type.

Shows List

Shows can be loaded, saved and edited with the Touch Display in the Shows List view, which can be entered by tapping the SHOWS LIST button in the top left of the Touch Display when in Active Show view.

Spill Faders

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

SRC (Sample Rate Conversion)

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

Strip User Buttons

Each fader Strip has a vertical arrangement of controls on the surface. In this arrangement are placed 2 user buttons S1 and S2 which can be assigned to a variety of functions.

Surface

The surface is the physical control surface for a Brio 36 system containing the collection of faders, rotary controllers, buttons, displays and touchscreen, allowing hands-on control of the audio signals. Also referred to as Console or Desk.

System

The term 'system' encompasses the processing core, surface and connected I/O boxes. From the moment a signal enters an input it is in the system and remains there until it is passed out of an output.

System Logs

Various log files are maintained by different parts of the system. These log files can be collected and transferred to USB memory for forwarding to Calrec Support in the event that detailed troubleshooting is required.

System Status Monitoring

Calrec's system for providing information and logs of any developing or occurring faults in the system.

T

Touch Display

Large TFT touchscreen used to operate the Brio 36 surface, including patching, routing, processing and accessing detailed system settings.

U

User Memory

Recallable collection of settings which relate to a specific program type. Collections of user memories are collected within Shows.

V

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.

BRIO 36
FEATURES BY SOFTWARE VERSION

CALREC

FEATURES

The following summarises key new features by the software version in which they were introduced. If you require features that are not available in the software version that you are running, please contact Calrec Customer Support or your local Calrec distributor to discuss upgrade options.

V1.0

Surface

- 36 x dual layer faders - 100mm, motorised, with PFL overpress
- 1 x assignable user rotary control per strip
- 2 x assignable user buttons per strip
- 12 x assignable global user buttons
- Compact 892mm x 892mm control surface

DSP

- Freely configurable on the fly, operates at 44.1, 48, 88.2 and 96kHz (from version V1.1)
- 64 legs assignable as mono, stereo, or 5.1 Input Channels
- 36 legs assignable as mono, stereo, or 5.1 Mains and Groups (maximum of 4 Mains and 8 Groups)
- 24 legs assignable as mono or stereo Auxes
- 64 legs assignable as Insert sends and returns
- 64 legs assignable as Direct, or Mix-Minus Outputs
- Automatic Mix-Minus
- Off-Air Conference for Mix-Minus

EQ

- 6 band EQ available on every Input Channel, Group, Aux and Main path:
- 4 band full Parametric EQ
- 2 band LF/HF filters, 12 or 24dB/octave

Dynamics

- Every Input Channel and Group path:
- Expander/Gate, with key input and sidechain EQ
- Compressor/Limiter with key input and sidechain EQ
- Multi-band Compressor/Limiter (from version V1.1)
- Every Aux:
- Expander/Gate
- Compressor
- Every Main:
- Single Band Compressor
- 2 x Automixers available to all mono Input Channels and Groups (uses Comp/Lim 1resource).

Delay

- Input delay: up to 5.4 s available per path from a pool of 64 mono legs,
  for example, when assigning input delay to a 5.1 path, six of the 64 mono legs are used.
- Path delay: up to 5.4 s available per path from a pool of 64 mono legs, as above.
  (Note: Path Delay not available till v1.1)
- Output delay: up to 5.4 s available per path from a pool of 64 mono legs, as above.

Monitoring/Metering

- 3 x Monitor outputs 1 Console , 2 Studio
- Surround capable metering within each strip
- Configurable meter screen output (DVI)
- 2 x Loudness meters

Multiple Sample Rates

- Functions at 44.1, 48, 88.2 and 96kHz (from version V1.1)
- All DSP facilities are available at all sample rates

Remote/Automated Control

- 8 x GPI and 8 x GPO built in
- AutoFaders for Audio Follows Video style control
- CSCP mixer control protocol interfaces with a variety of video switchers and production automation systems
- SW-P-08 'Pro-Bel' router control protocol
- EMBER

I/O

- 24 x Mic/Line inputs
- 16 x Analogue outputs
- 8 x AES3 digital inputs
- 8 x AES3 digital outputs
- 3 x Expansion slots to increase standard built in I/O, or to provide interface to other formats, including SDI, MADI, Dante etc..
- Optional Hydra 2 Module allows for further I/O to be connected, and to network audio with other consoles.

V1.1

DSP/Multiple Sample Rates

- Freely configurable on the fly, operates at 44.1, 48, 88.2 and 96kHz

Path Processing

- Stereo and 5.1 path spill leg access and independence for Routing, Input, EQ, Dynamics , Inserts and Pan settings via the 'Full Path' button
- Second compressor:-Multi-band Compressor/Limiter with single or three band operation
- Ducker mode added to the Expander/Gate module for Channels and Groups
- Selectable sidechain source ("key input") for dynamics processors. The Expander/Gate/Ducker & Comp/Lim1 processors of all Input Channel and Group paths can be keyed by mono audio from other paths on the surface
- Path delay: up to 5.4 s available per path from a pool of 64 mono legs, as above.

Networking

- Support for Hydra2 connection to Apollo/Artemis/Summa/Router cores that are running V8.0.1 software and above for multi-console networking.
- Changeable System ID:-Brio consoles ship with a factory set ID of 192.1. If connecting them to a multi-console Hydra2 network, their system ID should first be changed, to be a unique ID amongst all the consoles on the network. Networked consoles should not use IDs starting with 192*. Note: the second part of the system ID is used to determine the internal I/O's HID. The second part therefore needs to be unique amongst Brio36s, regardless of whether they have a unique first part in order to differentiate their I/O. Any existing internal I/O patching will need to be re-made after changing I/O ID.
- H2Hubs connected to a standalone Brio should be given an ID greater than 1* (using the DIP switches on the rear of the hub).
- I/O connected via H2Hubs will not update software – when upgrading software, each I/O box requires connecting directly to the Brio console one at a time, in order to upgrade them.
- H2Hubs also need a direct connection to a Brio in order to update their software, and require both primary and secondary to be connected in order to reprogram both primary and secondary modules within the H2Hub.

*Console IDs of 192.X can be used, however there will be conflict if any H2Hubs are connected that have an ID that matches X. It is therefore recommended not to give Hubs an ID of 1 as this will conflict with a factory default Brio on 192.1. It is also recommended not to use 192 if connecting to a larger, multi-console network, to avoid such potential for ID conflicts.

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