

ORIGIN

User Guide



Solid State Logic

O X F O R D • E N G L A N D

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PLEASE READ ALL INSTRUCTIONS, PAY SPECIAL HEED TO SAFETY WARNINGS.

E&OE

February 2020

Revision History

Revision V1.0, January 2020 - Initial Release

Revision V1.1 - February 2020 - First Minor Revision Release

About ORIGIN

ORIGIN takes a fresh look at what a large format console needs to do to work in harmony with a modern DAW-driven production studio. The functional design looks back at the 'ORIGIN' of in-line consoles for signal flow inspiration, but its circuits are at the cutting edge of SSL's latest analogue developments. These new analogue designs deliver huge dynamic range and bandwidth yet still have the characterful, pleasing qualities of space and depth that analogue audio breathes on digital audio.

ORIGIN's simple signal flow and layout make it easy to understand and use, while powerful features such as channel direct outputs, a fully balanced electronic architecture and precision bargraph meters make it a perfect partner for the highest quality convertors and DAWs in the most professional production applications.

A unique and innovative modular centre section allows ORIGIN to adapt to different applications and priorities, whether being used as a purely tracking console with additional boutique analogue additions to the 19" rack centre section, or a very digital/analogue hybrid approach with screens and controllers easily reached from the centre of the console.

ORIGIN offers engineers and producers the tools required for everything from large-scale tracking to hybrid mix down session. Taking sustainability, ergonomics, modern gain-staging and communication requirements into consideration, ORIGIN offers a reassuringly familiar Master Control feature-set with some ahead-of-the-curve functionality.



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Introduction

Welcome to ORIGIN...

ORIGIN is a console that has traditional analogue 'in-line' studio workflow at its heart and is the latest in a long heritage of large format SSL studio mixing consoles. With the evolution of more sophisticated digital audio workstations and new hybrid approaches to session workflow, ORIGIN takes a fresh look at what an analogue console provides to complement these sophisticated tools to make the production process fast, fun and creative.

While ORIGIN has a familiar surface, its design makes it adaptable for many different production scenarios. The 19" rack based 'modular' centre section allows the console to adapt to different control priorities and adds space for custom outboard processing. For example, the addition of a 500 series rack provides a way to accommodate flexible analogue processing from a number of manufacturers, the ability to move the centre section allows for workstation controllers to be centrally located, even the 3U centre meter panel can be moved to allow a workstation monitor to move closer to the engineer without obscuring the main meters.

SSL has invested thousands of hours of research into the sonic signatures of both analogue and digital processing in recent years. This has resulted in new analogue designs that have found their first showing in the acclaimed Fusion and SiX products and which, along with a huge catalogue of proven and well-loved traditional SSL processing, have been brought together in the design of ORIGIN.

A purely analogue design, ORIGIN represents a new benchmark in SSL's SuperAnalogue™ performance with a unique sonic signature while being unmistakably an SSL console;

- A new PureDrive™ mic pre inherits the clarity and purity of previous SSL Mic Pre designs that can also switch to a warm, harmonically rich and driven tone that varies with mic pre gain when the "Drive" function is activated.
- A new mix bus and mix amp architecture delivers an amazingly low noise floor and huge headroom, along with SSL's latest summing bus technology that retains the classic SSL sound while bringing the breadth and space to mixes that engineers and producers love from analogue.
- Acclaimed SSL E-Series four band parametric channel EQ.
- Classic SSL Bus Compressor with sidechain access and HP filter.
- Balanced Insert Point per Large Fader and Small Fader Channel paths.
- Dedicated Channel Direct Output make it easy to print mixes to the workstation for easy mix revisions.
- Modern circuit designs and unique power management tools deliver ultimate reliability and low running costs.

The in-line structure provides the twin paths needed for recording to and summing from a workstation with simple path routing indication and fast push switch access to alter signal flow. The balanced insert point per fader path is perfect to insert an SSL Sigma, adding level automation controlled directly from the DAW.

The console's clear and simple signal flow make this an easy console to use. Simple path LED indicators show where processing is in the signal chain, while a concise and clearly labelled master section is designed with all the tools needed to allow simple, fast and creative session flow, plus the adaptable centre section provides great flexibility for a focus on workstation control or more pure analogue summing/recording applications.

ORIGIN brings a new SSL studio console within the reach of every large format production room budget and creates a great tool for managing complex studio workflow and maximising the efficiency of modern workstation driven production processes.

Unpacking and Installation

This manual assumes that the ORIGIN console has been unpacked, assembled, wired to peripherals such as loudspeakers and connected to a power source. Installation information can be found in the SSL ORIGIN Installation manual, which can be found in the ORIGIN Documents section of the SSL Website (<https://www.solidstatellogic.com/>)

Safety Notices

IMPORTANT: Please read the safety notice information included in the Safety Guide supplied inside the box before using ORIGIN.

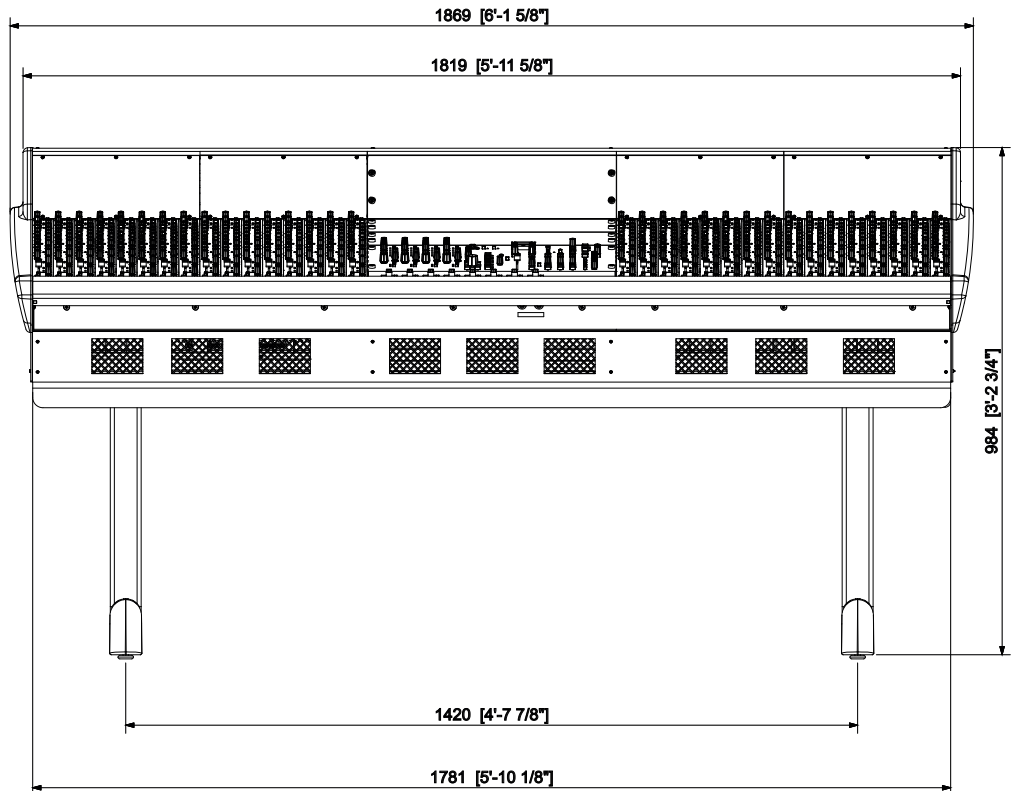
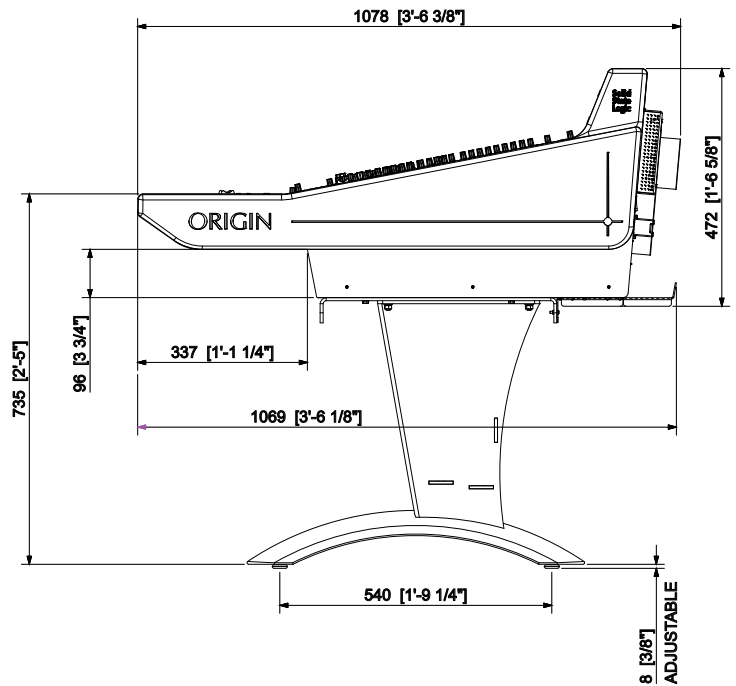
Dimensions

Approx. Dimensions in mm [and feet/inches] are shown in these diagrams.

Other specs are:

Approximate Weight:
330lb / 150kg including optional legs

Approximate Power Consumption:
Typically <900 Watts, 1200 Watts maximum when on
Typically <40 Watts when in standby/sleep.



ORIGIN Channel Strip

Channel Strip Overview

An overview of the ORIGIN Channel Strip features. Section descriptions are in the following pages.



Line Level Monitor Input with Gain Trim, typically feeds the Large Fader and is used with discrete DAW feeds for analogue summing or record signal monitoring. The Path Flip switch allows the Monitor Input to feed the Small Fader.

Two Stereo Cue feeds (A and B), with Level Control and Pan. Typically sent pre Large Fader to provide foldback mixes that follow the control room Large Fader monitor mix, the SF switch sources the feed from Small Fader and Post Fader feed option allow use as additional Stereo FX sends.

18 dB/oct High Pass Filter (HPF) sweeps from 10 Hz to 400 Hz with IN switch and LF/SF Path indicator/flip switch.

Compact and sophisticated BUS/Channel Routing ROUTE switch activates routing. Blue LED indicates if channel routed to bus. FOLLOW PATH PAN allows stereo odd/even bus panning. LF/SF Path indicator/flip switch.

Small Fader (SF) controls. 60mm high quality audio fader. SF Pan with centre detent. SF from LF sources feed from Large Fader. 0 dB switch bypasses fader to set unity gain. INS IN switch SF Insert into Small Fader path. INS PRE switches SF Insert pre fader. SF TO MIX routes the Small Fader path to the MIX BUS. SOLO and CUT for Small Fader path.

Channel Input typically feeds Small Fader Path for recording, with versatile switchable Mic/Line pre-amp featuring up to 70 dB of Gain, 48 V and Polarity Invert. Drive provides a way to change the ultra clean linear pre-amp to one with gentle warmth from harmonic distortion and transient compression artefacts. Large Fader (LF)/ Small Fader (SF) Path indicator and flip switch allows use of Drive circuit for Mixdown through Large Faders.

Channel Direct Output provides the cleanest record path to the recorder and frees track buses for more creative use. It also provides a simple way to record post fader paths to a DAW to 'print' Mix Stems. The Pre Fader selection and LF/SF Path indicator/flip switch allow for versatile path source selection.

Four Mono Aux buses with Level control provides a simple way to feed mixes to external effects or create mono parallel mixes for additional bus needs. SF switch to source Aux from Small Fader path and Pre Fader feed option for creating mono foldback sends.

SSL E-Series '242' EQ circuit Four Band Parametric EQ with variable Cut/Boost per band. HF and LF bands have Bell switches to change from shelving curves to bell curves for additional EQ sculpting. HMF and LMF bands have separate Q controls to adjust bell curve bandwidth in addition to gain and frequency. IN switch for true circuit bypass. LF/SF Path indicator/flip to switch path for the EQ.

OVERLOAD LED illuminates when Large or Small fader paths within 3 dB of either path's clipping point monitored pre Large and Small Fader, post processing.

Large Fader (LF) controls. 100 mm high quality audio fader (not shown). LF Pan with centre detent. 0 dB switch (not shown) bypasses fader to set unity gain. INS IN switch LF Insert into Large Fader path. INS PRE switches LF Insert pre fader. LF TO MIX routes the Large Fader path to the MIX BUS. SOLO and CUT for Large Fader path (not shown).

Detailed Channel Description

SuperAnalogue PureDrive™ CHAN (Channel) Pre-Amp input

ORIGIN's pre-amp is a new wide gain range, ultra low noise SuperAnalogue design that provides both Line and Mic level amplification by using a **LINE** gain range and input source switch to cover a wide range of source signals and levels.

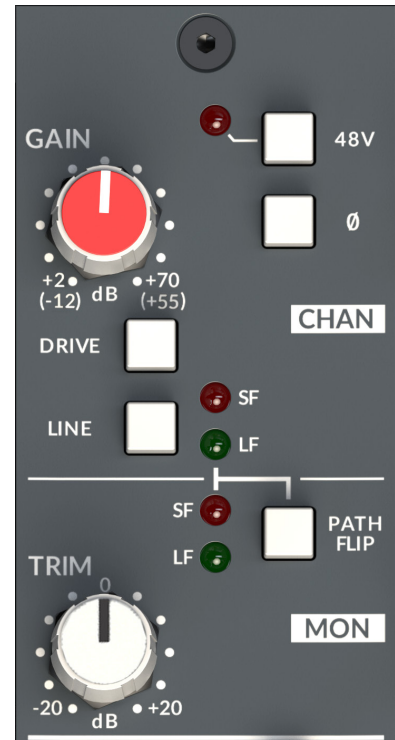
The channel microphone input is via an XLR input on the rear of the console behind the associated Channel strip. The line level channel input is via a DB-25 connector also mounted on the rear of the console. Typically these inputs will be wired to a Patchbay (see Appendix F). The XLR is the default source input, the source can be switched to the DB-25 jack Line input by pressing the **LINE** switch on the channel. The nominal Line Input impedance is 10 k Ω

The **GAIN** control adjusts either the microphone pre-amp gain (+2 dB to +70 dB), or the Line amp gain (-12 dB to +55 dB), depending on the selected input source. The Mic input's nominal impedance is 1.5 k Ω and includes a \emptyset polarity switch and switched **48V** phantom power.

DRIVE switch

The **DRIVE** switch significantly changes the character of the pre-amp and how it reacts to signal level. The default ORIGIN mic pre is a very clean, linear design which has no distortion up to the clipping point of the channel strip (approx +27 dBu). With the **DRIVE** switch pressed the pre-amp becomes reactive to signal level and gain settings. As signal levels and gain settings increase there is an initial introduction of 2nd harmonic distortion artefacts, then at higher signal levels/gain settings this adds increasingly more 3rd harmonic distortion components up to the clipping point. These effects also introduce some compression to transient signals.

The **DRIVE** feature is evolved from SSL's acclaimed VHD™ (Variable Harmonic Drive) circuits. These are found in a range of SSL products from our 1U mic pre's to our largest production consoles.



MON (Monitor) Input

The line level Monitor input is via a DB-25 connector (Mon Line In) also mounted on the rear of the console. Typically these inputs will be wired to a patchbay (see Appendix F). Nominally this input is at unity gain, with a +20 dB to -20 dB gain **TRIM** adjustment to compensate for lower or higher Line level signals.

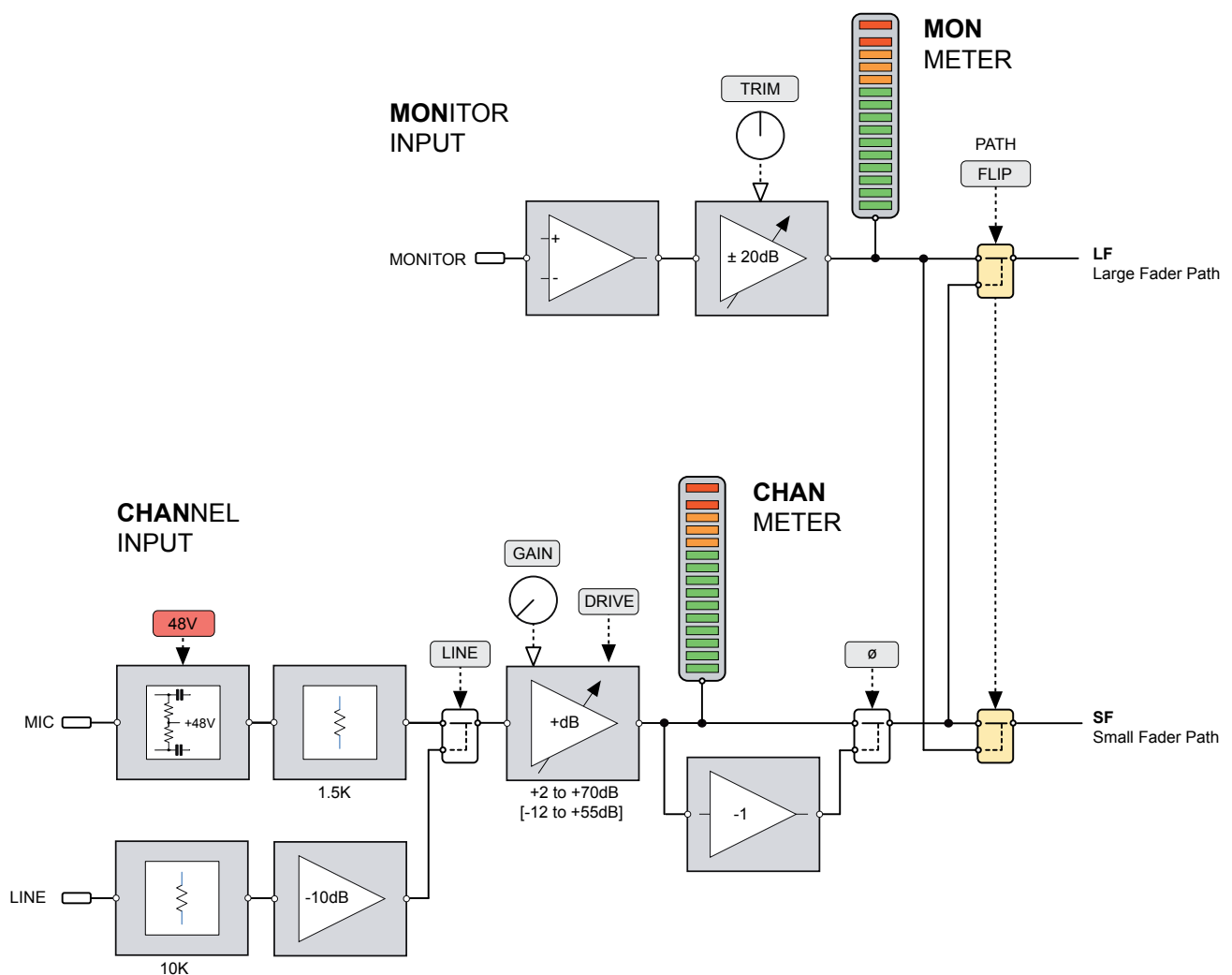
PATH FLIP

By default, the **CHAN** input feeds the Small Fader (**SF**) path and the **MON** input feeds the Large Fader (**LF**) path. This is indicated by the red and green LEDs that bridge the line between these two sets of input controls. This default routing can be swapped by using the **PATH FLIP** switch. When this switch is pressed, the red and green LEDs also flip status to show the path routing of the input sections. This philosophy is repeated through the channel strip sections i.e.

RED LED : Small Fader Path

GREEN LED : Large Fader Path

Channel Input Block Diagram



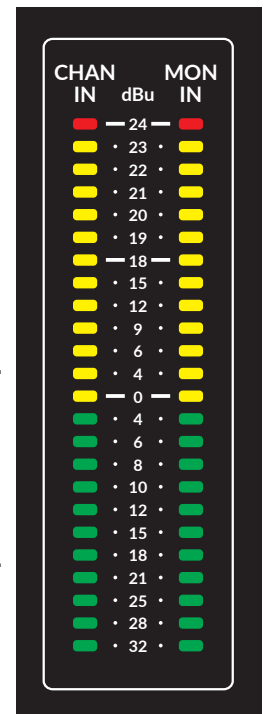
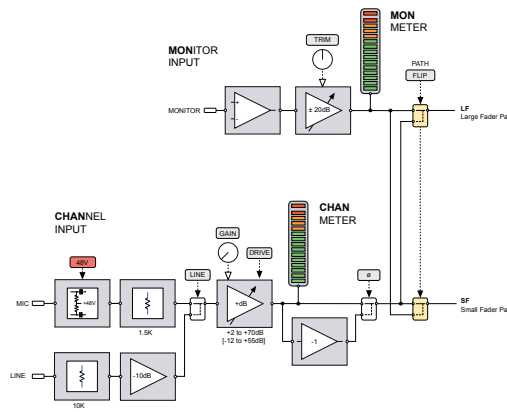
Input Metering

Above the channel are two high resolution 24 segment LED bargraph meters. These independently meter the Channel and Monitor inputs for the channel below each respective meter and are calibrated in dBu after the input gain stages.

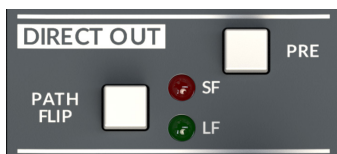
The fast response peak meter has defined lines for +24 dBu and +18 dBu as well as 0 dBu. The meter has a fast 'peak' response and a slower release time to meter peaks while still showing useful signal levels.

Origin's meters are accurately calibrated to a peak reading of +24dBu, The metering of continuous signal levels above +24dBu may show some slight differences in decay rate from meter to meter arising from tolerance variances in the meter's sample and hold circuits above their calibrated peak level. This is normal behaviour for these meters.

Input Meters post input gain stages



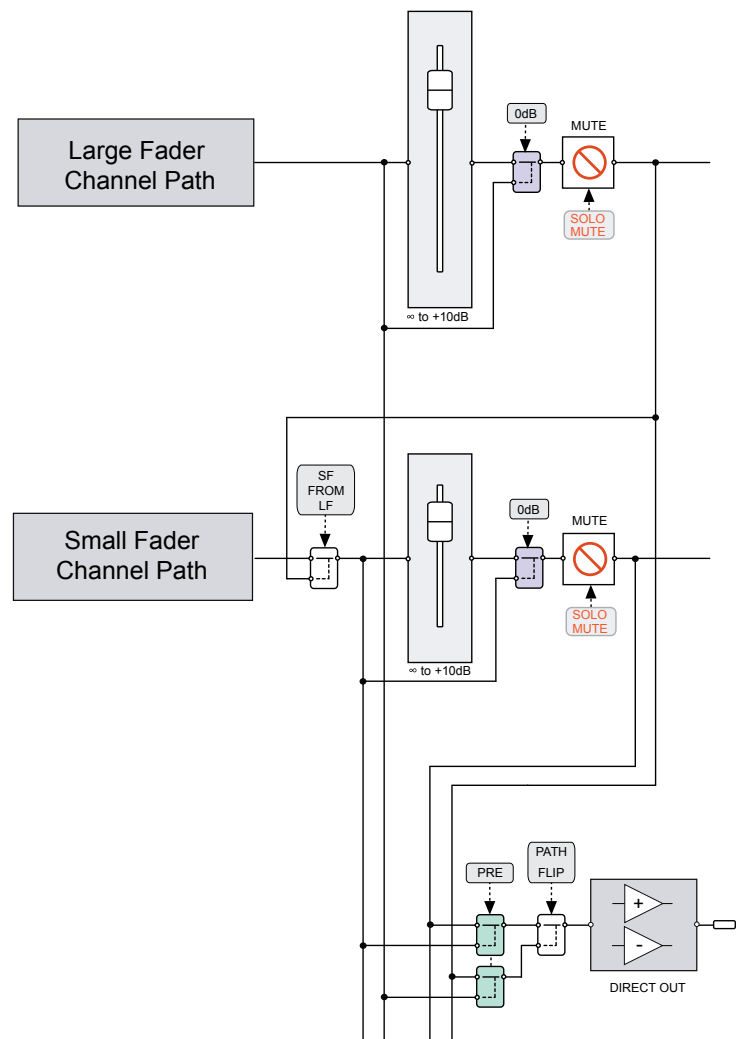
Channel DIRECT OUT



Each channel on ORIGIN has a fully balanced **DIRECT OUTPUT**. This 'per channel' output provides a way to send the selected path signal directly out of the channel strip. This is normally post fader, but selectably pre-fader using the **PRE** switch.

By default, the **DIRECT OUTPUT** is fed from the Small Fader (**SF**) path as indicated by the red and green **SF** and **LF** LEDs. This default routing can be swapped by using the **PATH FLIP** switch.

The Channel Direct Out provides the cleanest record path to the recorder and frees track buses for more creative use. It also provides a simple way to print post fader paths to a DAW to 'print' Mix Stems simplifying mix revisions.



Stereo Cue Sends

Each channel can access two Stereo Cue sends (A and B) with independent Level and Pan controls.



By default, both sends are fed from the Large Fader path, pre-fader, post-insert, but can be switched to Post Fader (post Insert) by engaging the corresponding **POST** switch. Each send can also be switched to source their feed from the Small Fader path using the **SF** switch.

The channel signal is unity gain to the Cue Bus when the **Send Level** control is fully clockwise and the **PAN** control is hard left or right. The centre Pan level is -4.5 dB from 0 dB to each bus: a traditional SSL compromise between typical mono -3 and -6 dB centre points for constant perceived level or power.

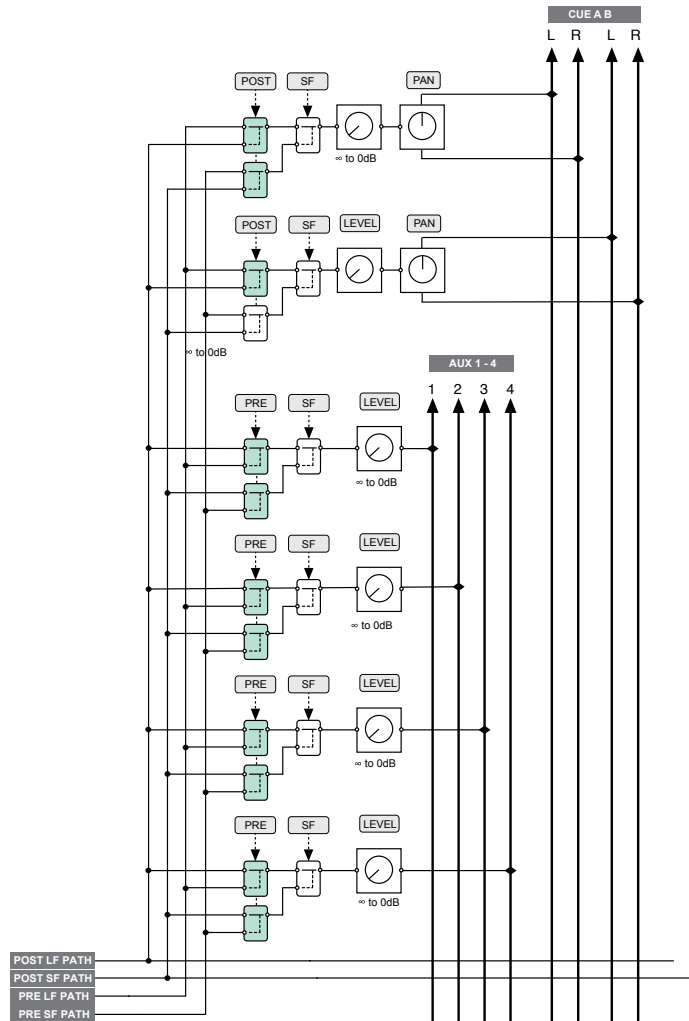
Mono Auxilliary (Aux) Sends

Each channel can access four mono Aux sends (1 to 4) with independent level controls.



By default, the Aux sends are fed from the Large Fader path, post-fader, post-insert, but can be switched to Pre Fader (post Insert) by engaging the corresponding **PRE** switch. Each send can also be switched to source their feed from the Small Fader path using the **SF** switch.

The channel signal is unity gain to the Cue Bus when the **Send Level** control is fully clockwise.



Parametric EQ and High Pass Filter (HPF)

At the top of the ORIGIN EQ section is the High Pass Filter (**HPF**) section. This has a 18 dB/Octave slope and has a variable corner frequency from 10 Hz to 400 Hz. As can be seen in the block diagram on the next page, the **HPF** actually follows the EQ section in the default signal flow, however the HPF has an independent **IN** switch and also a **PATH FLIP** switch allowing it to be separately positioned in the Small Fader (**SF**) or Large Fader (**LF**) paths.

The Parametric Equaliser in ORIGIN is based on the original SL4000E Series "242" equaliser design i.e. SSL's classic 'Black Knob' EQ.

The individual bands function as follows:

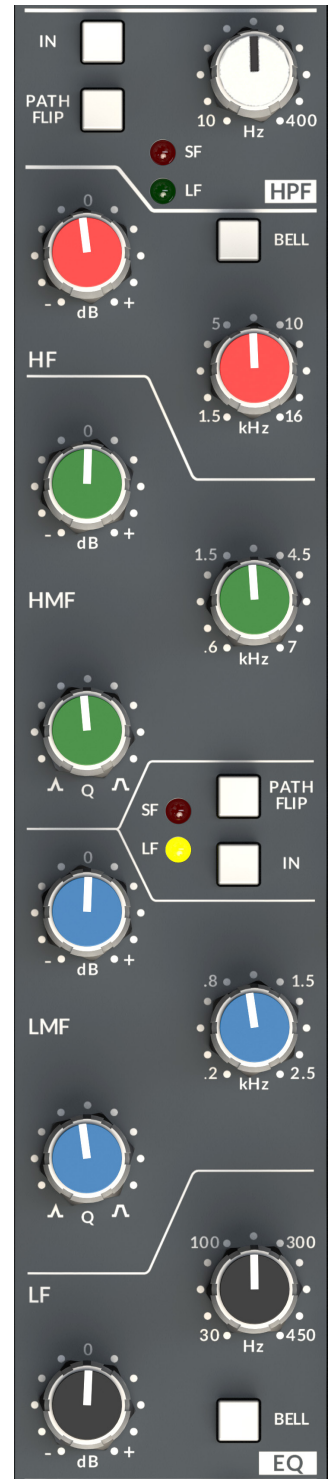
HF high frequency 12 dB/Octave shelving equaliser switchable to fixed Q parametric (**BELL**).

HMF high frequency parametric mid band equaliser with continuously variable Q control.

LMF low frequency parametric mid band equaliser with continuously variable Q control.

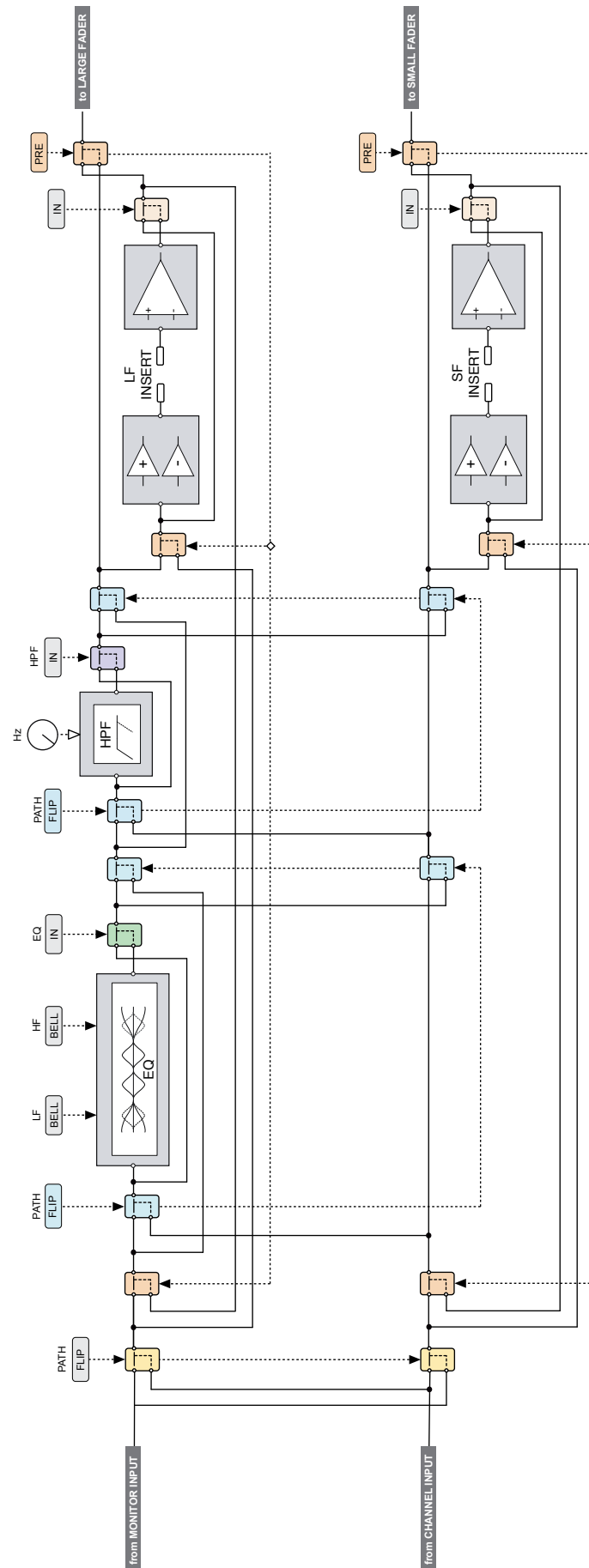
LF low frequency 12 dB/Octave shelving equaliser switchable to fixed Q parametric (**BELL**).

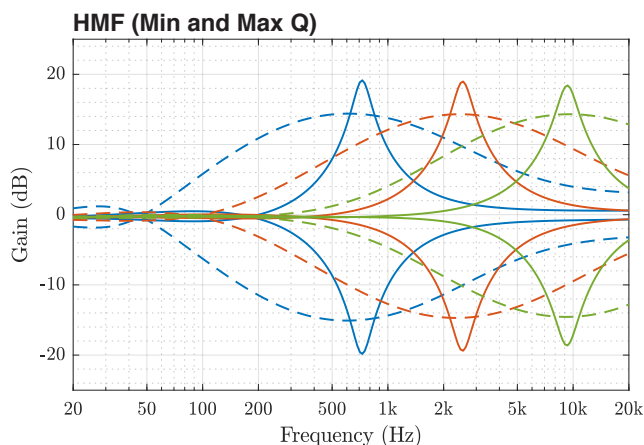
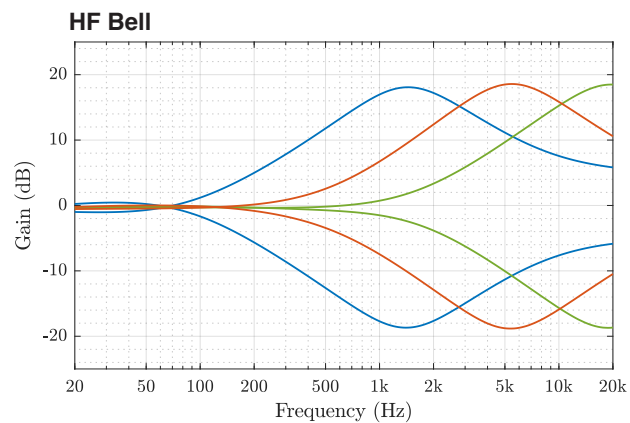
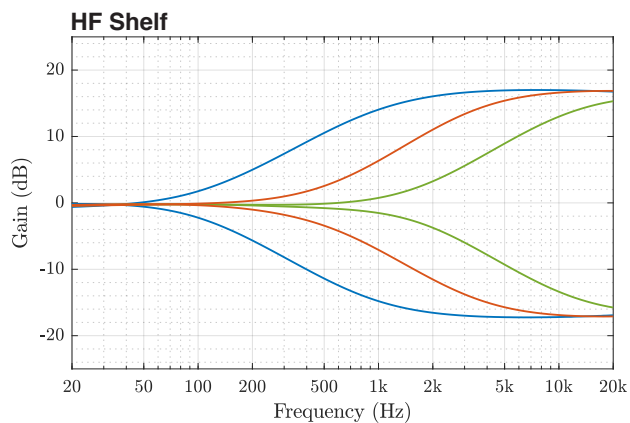
The EQ **IN** switch (located next to the insert switches) routes the channel signal through the EQ section. The **PATH FLIP** switch allows the EQ to be separately positioned in the Small Fader (**SF**) or Large Fader (**LF**) paths.



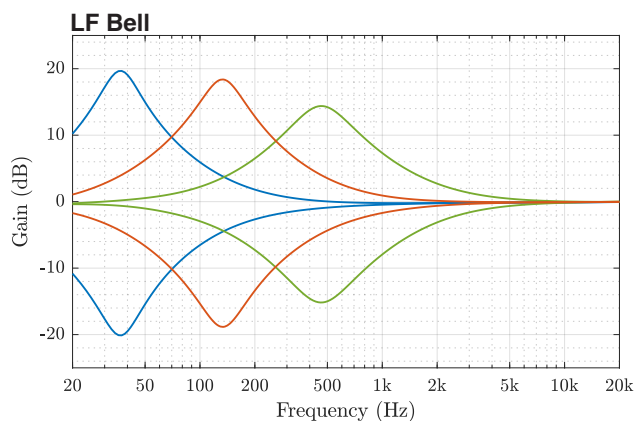
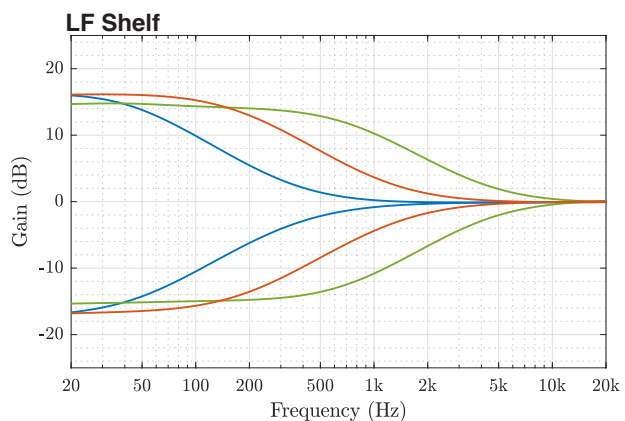
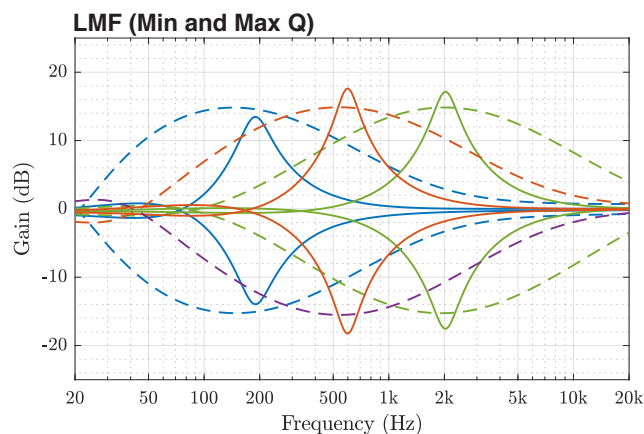
ORIGIN

Path Block Diagram



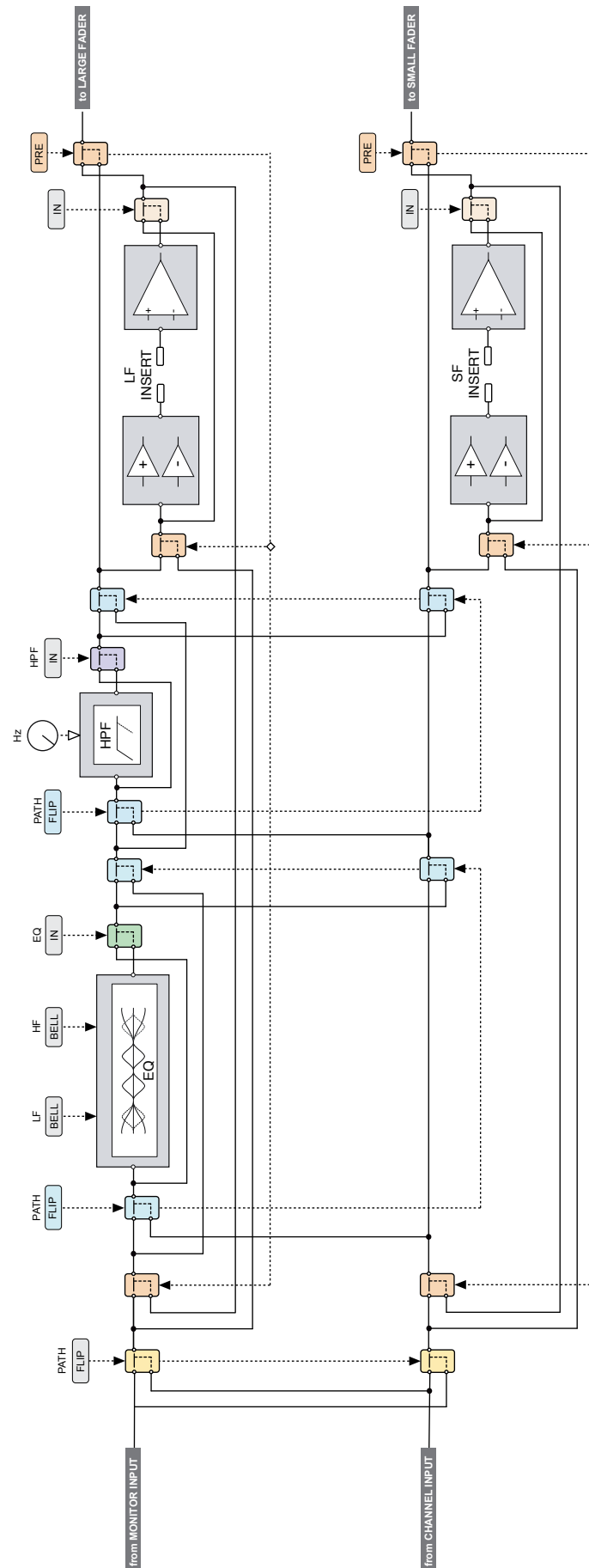


ORIGIN EQ Curves



ORIGIN

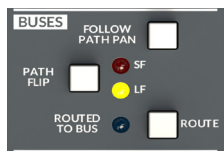
Path Block Diagram



BUSES (LF or SF Path routing to Track Buses)

ORIGIN is equipped with 16 buses, these buses are 'normally' connected in odd/even pairs to the 8 Stereo Group Buses. This connection may be directly connected via DB25 connectors on the rear panel, or more typically, connected via half-normalled connections on a patchbay for the console.

Typically on older analogue consoles, the track routing switches were located at the top of the channel strip. In ORIGIN we have used some clever routing switching to minimise the amount of channel depth used for the routing feature while at the same time adding a powerful and elegant way to route paths to buses.



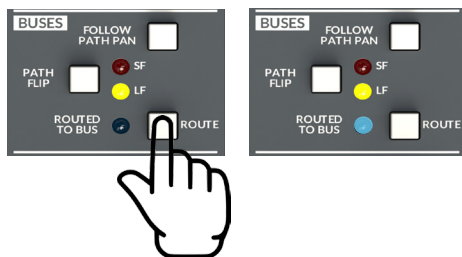
The key to routing to track buses with ORIGIN is using the **ROUTE** switch in the **BUSES** section of the channel strip (or a Stereo Return).



This works with the switches in the **BUS TRIM MASTERS AND ROUTING** section in the centre section of the console.

In simple terms, there are two ways to route signals to track buses in ORIGIN:

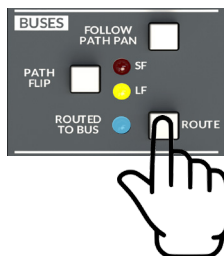
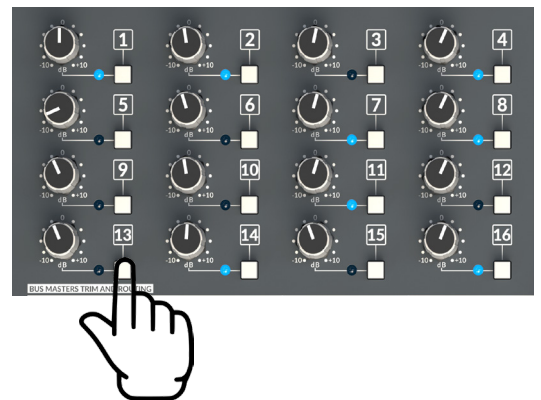
Routing from a Path to a Bus (or Buses)



The first, more traditional way, is to press the **ROUTE** switch in the **BUSES** section on the channel strip you wish to route from.

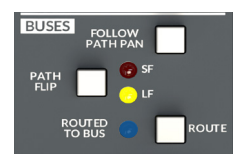
The **ROUTE LED** in the channel will flash to show that it has been selected.

The switches in the **BUS TRIM MASTERS AND ROUTING** centre section panel are now used to select which buses this channel strip will route to (e.g. 1 & 2). When these switches are pressed the corresponding blue LED will brightly illuminate to indicate that the selected path is currently routed to those buses.



Press the flashing channel strip **ROUTE** switch again to deselect it from routing mode.

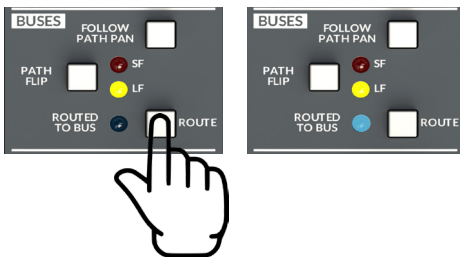
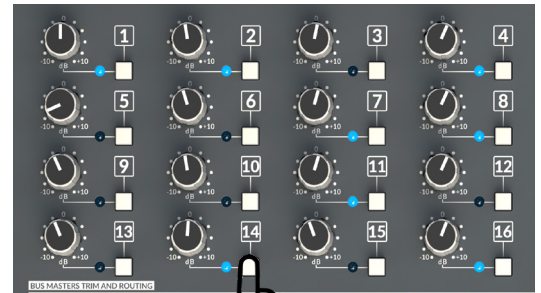
Exiting routing mode, the LEDs in the **BUS TRIM MASTERS AND ROUTING** section stay dimly illuminated to show there is at least one path routed to the Bus. The same applies to the channel strip **ROUTE LED**, which will also stay illuminated to indicate that the channel strip is routed to at least one bus.



Routing to a Bus from a Path (or Paths)

The second way to route signals to Buses from Paths is to start with the Bus selection in the **BUS TRIM MASTERS AND ROUTING** section in the Centre Section of ORIGIN.

Press the bus switch (adjacent to the Bus Trim control) in the **BUS TRIM MASTERS AND ROUTING** section (e.g. Bus 1). This will flash the adjacent blue LED to show that the Bus is selected.



Now use the **ROUTE** switch in the Path (channel strip or FX return) that you wish to route from.

This will cause the corresponding **ROUTE LED** to light bright blue.

You can select multiple Paths (e.g. channels 1,2,3,4,5,6,7,& 8) which will mean that channels 1 to 8 will be routed to Bus 1. You can now press the selected bus switch again, or press the **SHIFT/CLEAR ROUTE** switch to escape routing mode. Now any path or bus that has at least one path route will have its routing LED dimly lit.

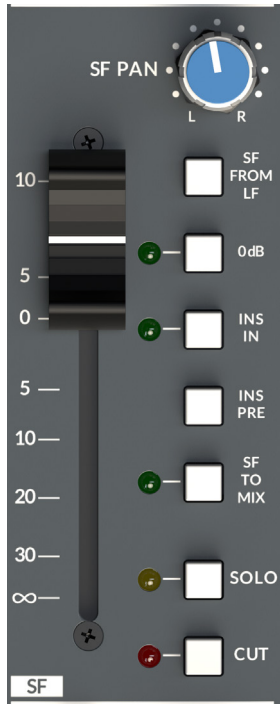
Channel Strip Bus routing options

PATH FLIP : The default channel strip to Bus routing is from the Small Fader path (SF), indicated by the **SF** LED. The **PATH FLIP** switch changes this to the Large Fader path (LF), indicated by the **LF** LED.

The bus routing is normally post fader, pre pan at unity gain. **FOLLOW PATH PAN** switches the Odd and Even Bus Routing to follow the **PAN** of the selected path.

NOTE : For more advanced routing features see Appendix A (Advanced Routing)

Small Fader (SF) Section



Small Fader (SF)

ORIGIN has two distinct signal paths in each channel strip. The Small Fader controls the signal level in one of those paths (the SF path). ORIGIN's Small Fader is a 60 mm high quality audio fader, with a fader law designed to provide more resolution around the 0 dB point, allowing subtle level changes from modest fader movements. The fader output is unity gain to the bus when the Pan control is hard left or right.

SF PAN

The Small Fader has a dedicated **SF PAN** control. As with other channel pan controls, the centre Pan level is -4.5 dB from 0 dB to each bus - a traditional SSL compromise between typical mono -3 and -6 dB centre points for constant perceived level or power.

SF FROM LF

The Small Fader (**SF**) signal feed may be sourced from the Large Fader (**LF**) path (post fader) using the **SF FROM LF** switch. This is useful when you want to use the Small Fader path to create a parallel mix from the Large Fader path, routing via the buses to give a parallel mix with its own fader level/trim control.

0dB

The **0dB** switch bypasses the fader to give a fixed unity gain through the Small Fader signal path. This is useful when levels are set or automated within the DAW, thus allowing a session to be easily recalled by fixing the console fader gain to unity.

Small Fader Insert

ORIGIN has a separate fully balanced Insert for both the Large Fader and Small Fader paths. The primary use of the insert is to bring external processing into the signal path. For example, to insert a dynamics unit such as those found in SSL's 500 series modules. In conjunction with an automatable level control (e.g. SSL Sigma), they can also be a way to 'automate' the path level.

Insert In (INS IN) and Insert Pre (INS PRE)

In common with other SSL consoles, the Insert Send is always active, while the Insert Return switches into the signal path using the **INS IN** switch. Typically the send is Post path processing, the **INS PRE** switch moves this point to Pre path processing. The channel insert sends and returns are found on the rear panel 25 way D-Type connectors. Typically these are wired to a patchbay for ease of use with other external devices. Wiring details are in the Connectors section, later in the document.

SF TO MIX

The **SF TO MIX** switch sends the Small Fader path to the main stereo Mix bus.

SOLO and CUT

The **SOLO** switch activates the Solo function for the Small Fader. The function of the **SOLO** switch is controlled by the **SOLO MASTER** section in the centre section. Typically the **SOLO** switch is an After Fader Listen (AFL) function. This can be switched to destructive Solo In Place using the **SF SIP** switch in the **SOLO MASTER** section. Additionally, the Small Fader Solo can be linked to the Large Fader Solo and/or changed to be a Pre Fade Listen using the **SOLO MASTER** section **PFL** switch.

The **CUT** switch mutes the output of the Small Fader.

Large Fader (LF) Section

Large Fader (LF)

The Large Fader controls the signal level in the LF path. ORIGIN's Large Fader is a 100mm high quality audio fader, with a fader law designed to provide more resolution around the 0 dB point, allowing subtle level changes from modest fader movements. The fader output is unity gain to the bus when the Pan control is hard left or right.

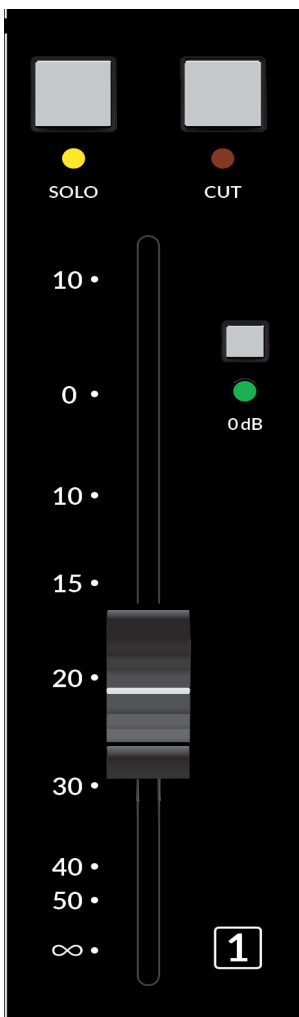


LF PAN

The Large Fader has a dedicated **LF PAN** control. As with other channel pan controls, the centre Pan level is -4.5 dB from 0 dB to each bus - a traditional SSL compromise between typical mono -3 and -6 dB centre points for constant perceived level or power.

Large Fader Insert

ORIGIN has a separate fully balanced Insert for both the Large Fader and Small Fader paths. The primary use of the insert is to bring external processing into the signal path. For example, to insert a dynamics unit such as those found in SSL's 500 series modules. In conjunction with an automatable level control (e.g. SSL Sigma), they can also be a way to 'automate' the path level.



Insert In (INS IN) and Insert Pre (INS PRE)

Following the EQ and compressor in the channel signal flow is a fully balanced insert point. In common with other SSL consoles, the Insert Send is always active, while the Insert Return switches into the signal path using the **INS IN** switch. Typically the send is Post path processing, the **INS PRE** switch moves this point to Pre path processing. The channel insert sends and returns are found on the rear panel 25 way D-Type connectors. Typically these are wired to a patchbay for ease of use with other external devices. Wiring details are in the Connectors section, later in the document.

LF TO MIX

The **LF TO MIX** switch sends the Large Fader path to the main stereo Mix bus.

0dB

The **0dB** switch bypasses the fader to give a fixed unity gain through the Large Fader signal path. This is useful when levels are set or automated within the DAW, thus allowing a session to be easily recalled by fixing the console fader gain to unity.

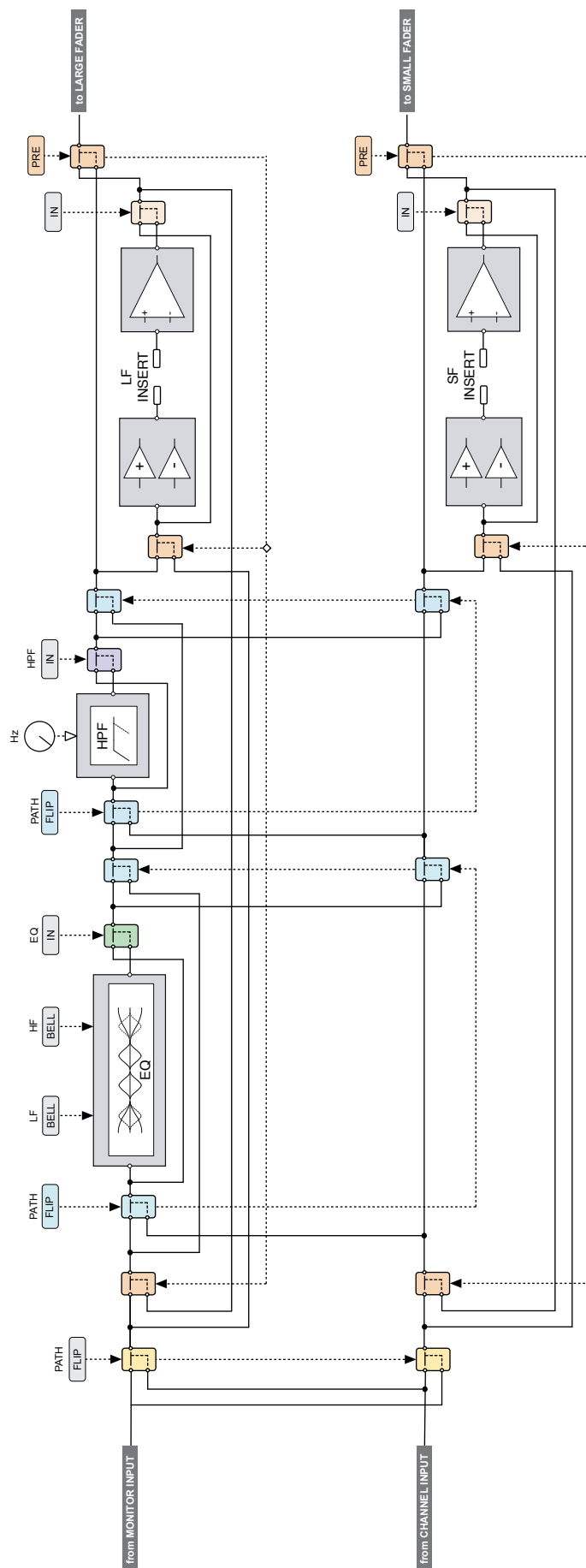
SOLO and CUT

The **SOLO** switch activates the Solo function for the Large Fader. The function of the **SOLO** switch is controlled by the **SOLO MASTER** section in the centre section. Typically the **SOLO** switch is an After Fader Listen (AFL) function. This can be switched to destructive Solo In Place using the **LF SIP** switch in the **SOLO MASTER** section. Additionally, the Large Fader Solo can be linked to the Small Fader Solo and/or changed to be a Pre Fade Listen using the **SOLO MASTER** section **PFL** switch.

See the **SOLO MASTER** section on page 30 for more details on the Solo options.

The **CUT** switch mutes the output of the Large Fader.

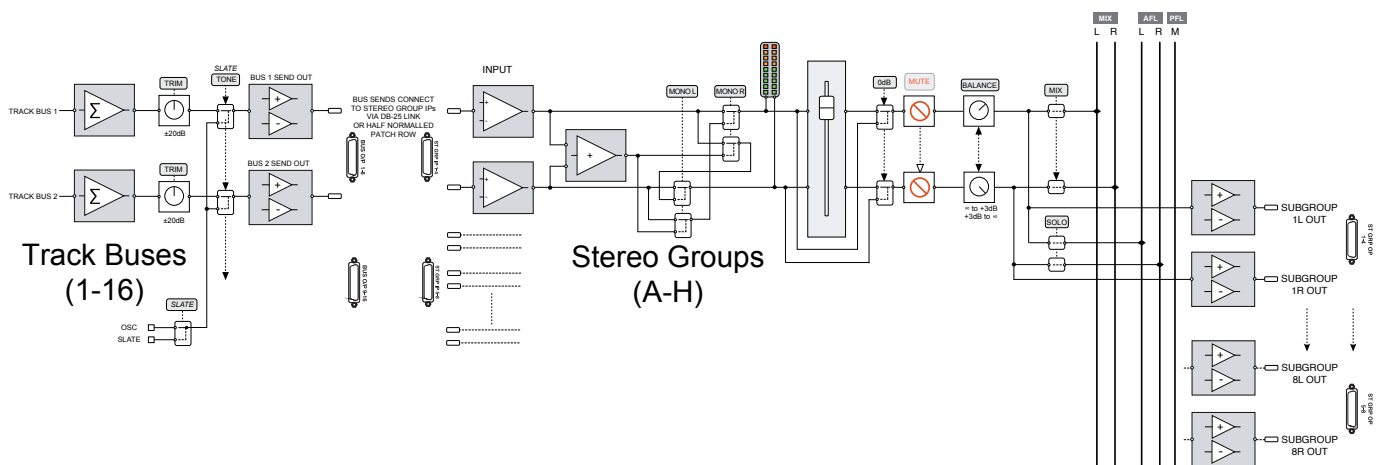
Path Block Diagram



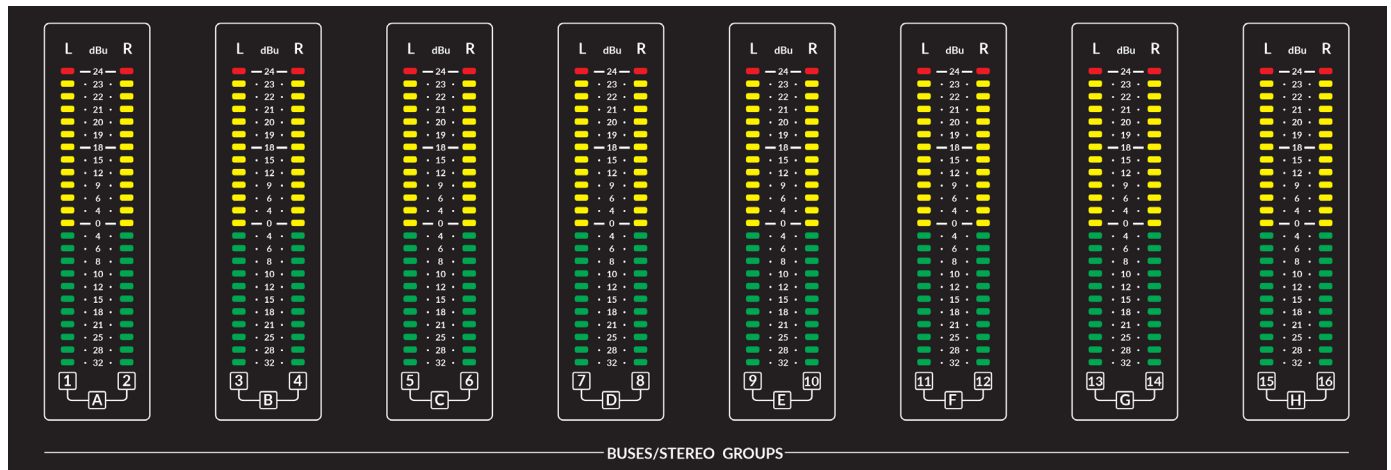
Stereo Groups



Origin has eight Stereo Groups in the centre of the console. These are stereo 'audio' groups, i.e. they have audio passing through their faders, as opposed to being VCA control groups. The inputs to these groups are via two DB-25 connectors on the rear of the console labelled ST GRP IP 1-8 and ST GRP IP 9-16. This is because typically they are connected to the 16 console Track Buses, either directly via a DB-25 to DB-25 link connector, or more typically via a patchbay. An overview of the Track Buses and Stereo Groups is shown in the block diagram below.



BUSES/STEREO GROUP METERS



Above the Centre Section are the eight stereo meters that show the levels coming into the Stereo Groups. As can be seen in the block diagram on the previous page, the meters are fed after the input buffers and Mono switching, but **before** the Fader and Balance controls. As the 'normal' wiring into the Stereo Groups is likely to be from the sixteen Track Buses, the meter labelling shows this relationship with a combination of numbers with paired connections to the letters A-H representing the eight Stereo Groups.

As with the channel metering, the meters are calibrated in dBu and they are peak meters with defined lines for +24 dBu and +18 dBu as well as 0 dBu. The meter has a fast 'peak' response and a slower release time to meter peaks while still showing useful signal levels. (see note about high level signal metering on page 6 of this guide)

MONO L and MONO R

After the input buffers into the Stereo Groups there is Mono switching which allows a Mono signal to be split to both left and right channels through the Stereo Group. The **MONO L** switch takes the left signal and sends it to left and right channels, the **MONO R** switch takes the right signal and sends it to left and right channels. If both **MONO L** and **MONO R** switches are pressed, both left and right paths are summed in mono through the Stereo Group.

BALANCE

The **BALANCE** control adjusts the balance of the left and right signals from the Stereo Group.

0dB

The **0dB** switch bypasses the stereo group fader to give a fixed unity gain through the Stereo Group signal path.

SOLO and CUT

The **SOLO** switch activates the Solo function for the Stereo Group Fader. The function of the **SOLO** switch is controlled by the **SOLO MASTER** section in the centre section. Typically the **SOLO** switch is an After Fader Listen (AFL) function. This can be switched to destructive Solo In Place using the **SUBGROUP SIP** switch in the **SOLO MASTER** section.

See the **SOLO MASTER** section on page 30 for more details on the Solo options.

ORIGIN Master Section

Overview

Bus Trim Masters and Routing
Sixteen +/-10 dB Trims for the track buses
Routing assign switches for each bus

Talkback and Listen Mic
XLR input for Talkback Mic
Level Trims and +48V switches for Talkback and rear panel Listen Mic input

Bus Compressor
SSL Bus Compressor with traditional and additional Ratio settings, switchable Sidechain High Pass Filter and Sidechain from Insert Return Switch

Oscillator
400 Hz Internal Oscillator with additional switched 3.5mm Jack external input. Level Trim plus To Mix and To Bus switches

Misc Section
Unique Auto Sleep function enables automatic detection of prolonged inactivity to put the console in standby, drastically reducing power consumption. Wake/Sleep for manual control of the power state.

Solo Master Section
Comprehensive Solo controls provide choice of Solo In Front with Mix Balance, Solo In Place for Large, Small & Group Faders and PFL options.
Solo Level, Solo Clear and Red Light Switch complete the available options.

Meters Section
Peak Hold selection plus Peak Clear for all console LED Meters.
Mix Meter Follow Monitor Source option increases main mix meter flexibility. Independent DIM controls for path Channel and Monitor Inputs reduce meter distractions in busy sessions

CUE and AUX Masters
Master Output Trims and AFL Switches for Stereo Cue A and B buses plus mono Aux Buses 1 to 4

Stereo Returns
Stereo Return inputs with ability to route to Mix and Track Buses plus level controlled Feeds to Stereo Foldback Outputs A & B

Monitor Level Controls
With independent Trims for Alternate Monitors 1 & 2, variable DIM level, MONO plus Left & Right, MUTES and 0/L polarity switch.

Monitor Source Selector
Three Stereo External Sources plus a front panel stereo 3.5mm Jack input. Sum switch allows selected monitor sources to be listened to simultaneously.

Monitor Speaker Selector
Main Monitor plus two Alternate monitor sets plus headphones with level control (under console armrest)

Mix Fader
High Quality 100 mm Audio Fader
Fully balanced switched Insert for external bus processing

Communications Section
Master Talkback and Listen controls. Matrix of sources and outputs manage communications and foldback to studio floor and artists. Listen to Talkback feature provides a simple way for artist to artist communication in larger recording rooms.

ORIGIN Master Section Detail



Stereo Returns

ORIGIN has four Stereo Returns for external stereo sources such as external effects or additional stereo submixes.

ROUTE

The Stereo Groups are able to be routed to the Track Buses in pairs and the routing works in an identical way to the Channel routing (for more details see page 12 or Appendix A). The **ROUTED TO BUS** LED illuminates at half brightness when the return is routed to any of the sixteen buses.

TO F/BACK A

Feeds the Stereo Return signal to Foldback A. Typically this is used to add an external effect (such as reverb) to an artists headphone feed.

TO F/BACK B

In the same way as the previous control, this feeds the Stereo Return signal to Foldback B.

LEVEL

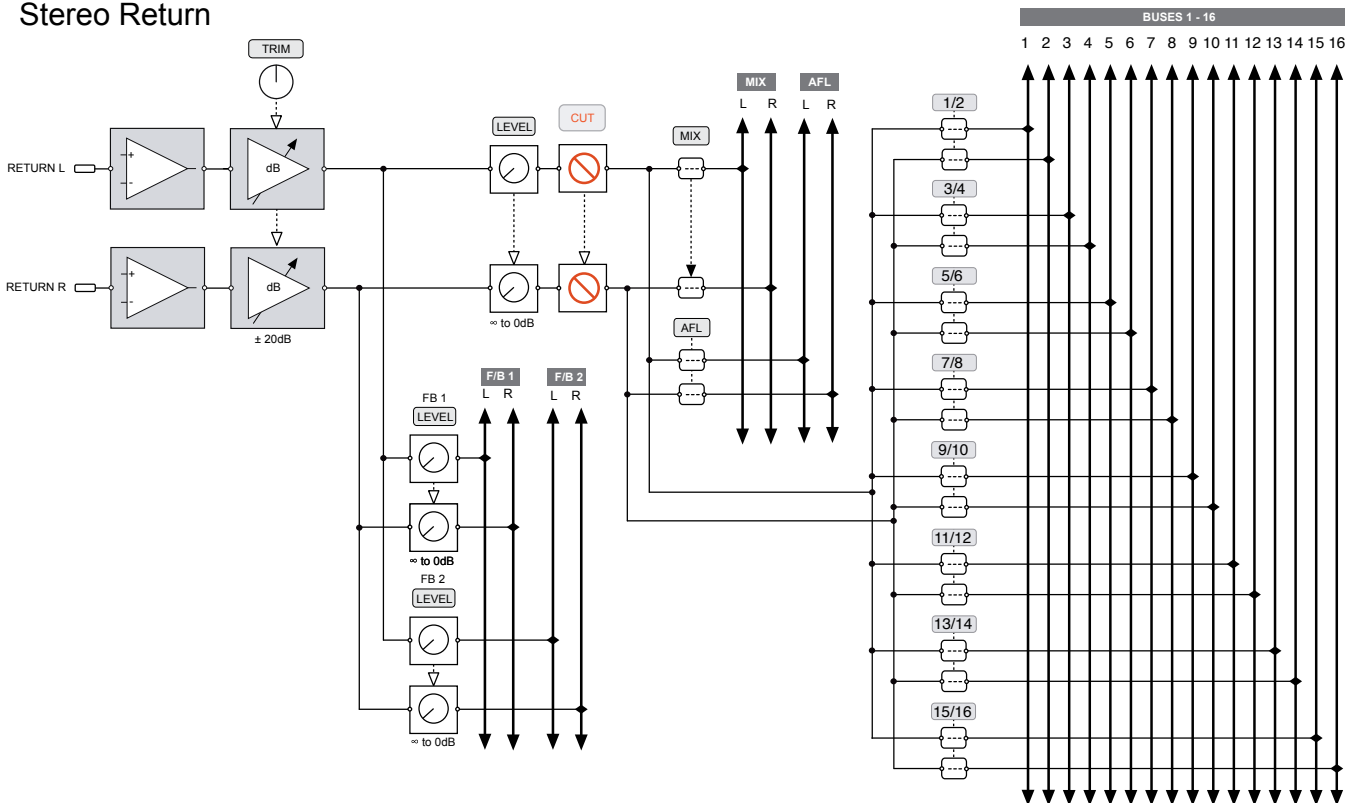
Controls the amount of the Stereo Return to the main stereo Mix Bus (or AFL)

MIX - Routes the Stereo Return to the main stereo Mix Bus

AFL - Routes the Stereo Return to the After Fade Listen (AFL) bus (and forces the monitoring to AFL)

CUT - Mutes the Stereo Return signal to the main Stereo Mix Bus

Stereo Return



Bus Masters Trim and Routing

ORIGIN has sixteen track buses. These are normally connected to the eight Stereo Group buses (see page 18). This connection is either directly via a DB-25 to DB-25 connection on the rear of the console, or more typically via normalised jack connections on a patchbay.

Bus Trim Controls

Upper left in the 6U Master Section, these 16 knobs are the individual +/- 10dB level trims for the individual buses.



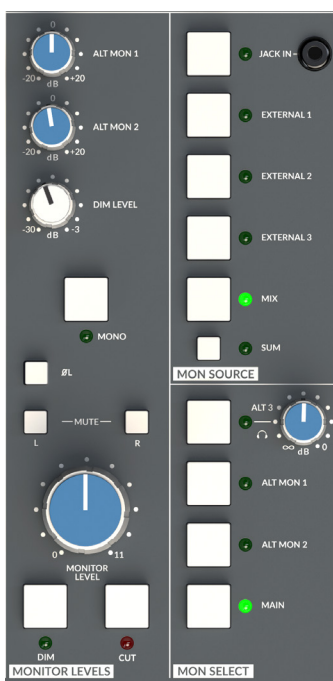
Route Switches and LEDs

Next to each of the Bus Trim controls is a Route switch and LED. These switches and LEDs interact with the intelligent console bus routing system to both show and assign the channels (and Stereo Returns) to the Buses. As described on page 12 and in Appendix A, these switches can be used to assign or de-assign signals to the track buses. When the LEDs are illuminated with a solid (non-flashing) light this indicates something is routed to that Bus. If the LED is not illuminated then there are no signals routed. If the LEDs are flashing, this indicates the section is in 'Assign' mode and therefore using the Route switches will enable or disable signals. A more thorough explanation of ORIGIN's powerful routing options can be found in the ROUTING section in Appendix A.

Monitoring

ORIGIN has a comprehensive control room monitor control and switching system. It supports up to three independent sets of stereo monitors plus a headphone output. The section is split into three sub-sections covering monitor source, switching, level control and audio image. In addition, there is a 'Studio' loudspeaker provision for a set of artist monitors located in the recording area, these are described in the Communications section on page 26.

MON SOURCE



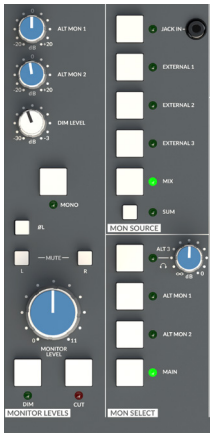
A choice of five monitor sources are available with the default source being the internal **MIX** Bus. This may be overridden by an intercancelling choice of three external sources (**EXTERNAL 1, 2 & 3**) plus an additional source from the front panel 3.5mm **JACK IN** Socket for sources such as a tablet or mobile phone. External 1, 2 and 3 inputs are connected via a DB-25 connector on the rear panel, these connections are also likely to be connected via an external patchbay.

An LED adjacent to the source switch shows current selection. There is also a source **SUM** feature which allows a combination of any or all monitor sources to be listened to at the same time.

MON SELECT including headphones.

Three sets of control room monitors may be connected and selected from the **MONitor SELECT** section. The available choices are **MAIN**, **ALT MON 1** and **ALT MON 2** and these are chosen with the switch next to the label. An LED also indicates which monitor outputs are selected. All of the monitor outputs are identical fully balanced outputs.

In addition to the Main and Alternate monitor outputs, there is also a pair of paralleled 1/4" Stereo Headphone sockets located under the front armrest at the centre of the console. The output to these is selected and the level controlled by the **ALT 3** / switch and shown by the adjacent



LED. The headphone selection can be set up to intercancel with the other monitor selection switches (see Appendix B - Setup Functions), however the level control is independent of the large **MONITOR LEVEL** control in the **MONITOR LEVELS** section, but the output does follow the monitor **CUT** switch.

ALT3 output is also paralleled to a DB-25 connector on the rear of the console. It is therefore available as an additional monitor output with independent level control (same pot as the headphone level).

MONITOR LEVELS

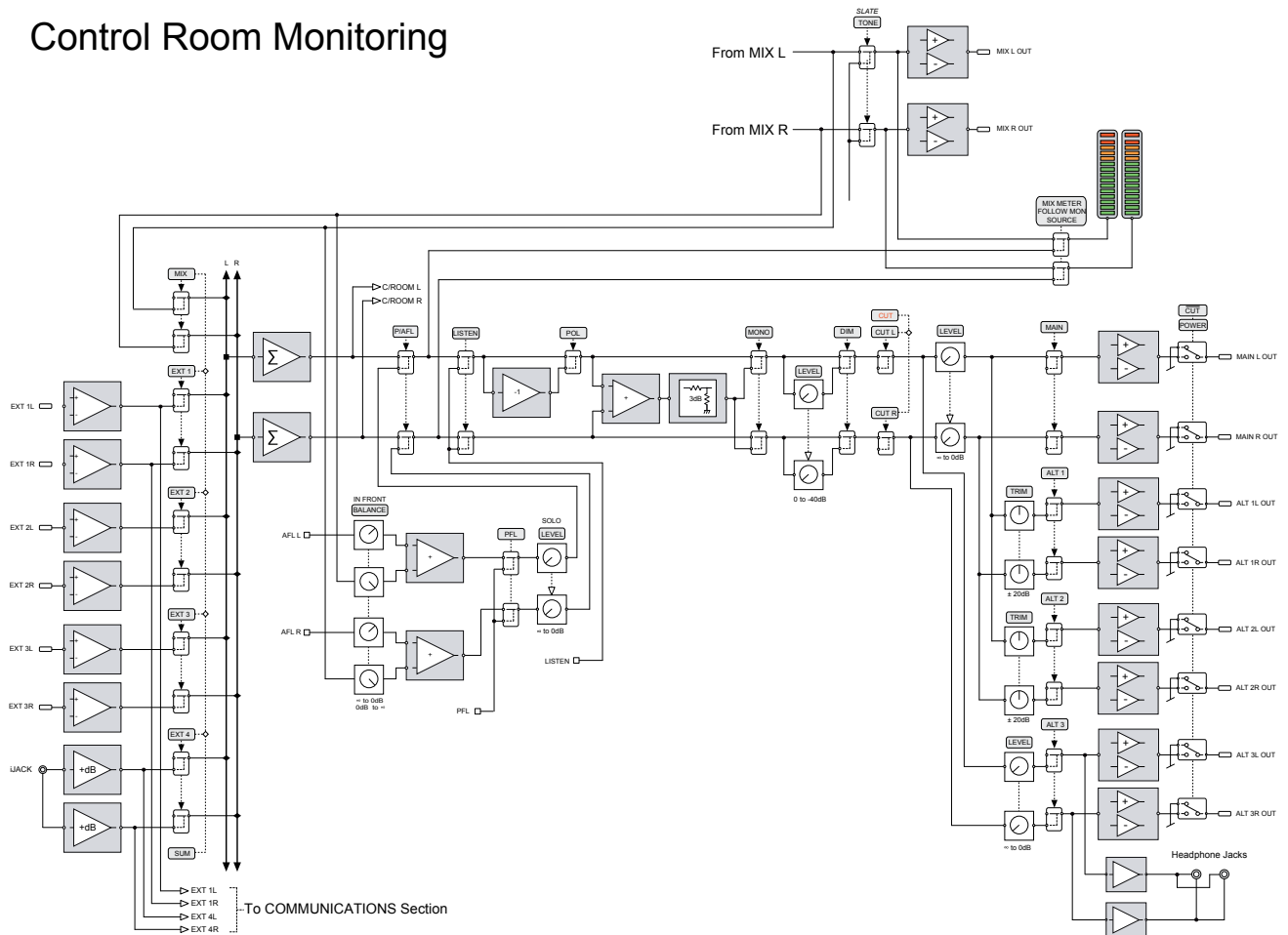
This section contains the main **MONITOR LEVEL** control plus additional level, mute and polarity switching.

The large **MONITOR LEVEL** pot is a precision audio taper pot that is calibrated from 0 to 11 (first featured on an SL 4000 G-Series console supplied to Rhino Studios, Sydney in the 1980's and inspired by mythical guitarist Nigel Tufnel's custom amplifiers). This level control



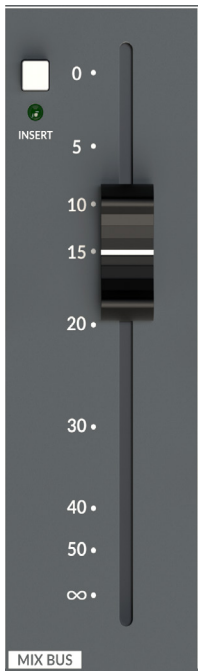
is the master level control for the **MAIN**, **ALT MON 1** and **ALT MON 2** monitor selections. Underneath the control are switches for **CUT** and **DIM**. The **CUT** mutes the monitor outputs, the **DIM** control reduces the output of the monitor output by an amount between -3dB and -30dB as determined by the **DIM LEVEL** control higher up in this section. Above the large level control are **MUTE L** and **MUTE R** switches to independently cut the output of the left and right monitors respectively. A large **MONO** switch mono's the L and R output to the monitors and reduces the level by 3dB to give a perceived equal loudness when this is selected. The remaining controls in this section are trim levels for ALT MON 1 and ALT MON 2. These allow additional monitors to be trimmed to match the level of the main monitors to allow useful comparisons of a mix on the different monitor sets.

Control Room Monitoring



MIX BUS Fader

The main stereo MIX BUS fader is a 100mm high quality audio taper fader that controls the level of the main Mix Bus Out from the console. The Mix Bus Fader is calibrated so that unity gain (0dB) is at the top of its travel. As can be seen in the block diagram below, the fader follows the dedicated, balanced Mix Bus Insert Send and Return, which in turn is ahead of the classic SSL Bus Compressor. An Oscillator inject is the last point in the Mix Bus signal flow, this inject is switched on using the **TO MIX** switch in the Master Section **OSCILLATOR** controls.



MIX BUS Insert

ORIGIN's Mix Bus has a dedicated, fully balanced Insert Send and Return. The Insert Send is always active, with the Insert Return being switched into the Mix Bus circuit using the **INSERT** switch located next to the Mix Bus fader (see picture left). This Insert is an ideal place to insert mix bus processing devices such as SSL's Fusion.

MIX BUS COMPRESSOR

The classic SSL Bus Compressor in ORIGIN is a stereo compressor applied across the Main Mix bus that uses exactly the same classic design as the original unit found on the SL4000 G-Series console released in 1989 (which in-turn was evolved from the earlier E-Series consoles).

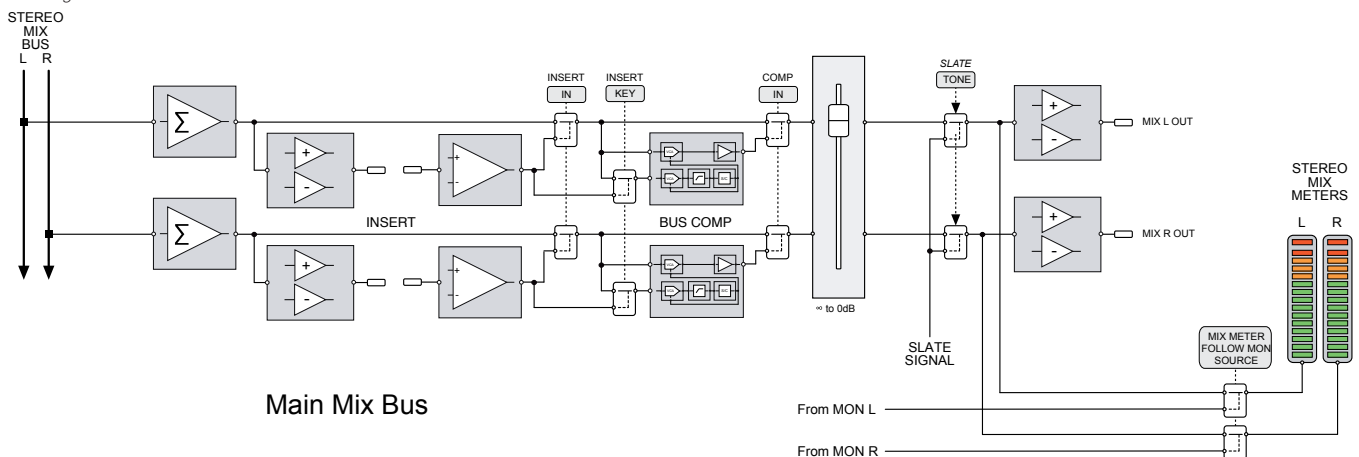
The 'soft' knee point of the compressor, ie. the level at which compression starts to take place, is set by the **THRESHOLD** control (± 20 dB). This is intentionally designed to change depending on the setting of the **RATIO** control; decreasing the **RATIO** setting lowers the effective threshold, hence maintaining the perceived 'loudness' of the compressed signal.



The **RATIO** switch has six settings, 1.5:1, 2:1, 3:1, 4:1, 5:1 and 10:1. **ATTACK** time is switchable in six steps between 0.1 and 30 ms, and the **RELEASE** time is selectable between 0.1 and 1.6 seconds in five steps. The **AUTO** release selection adjusts the release time according to the signal envelope. The gain **MAKEUP** simply acts as a level control to compensate for the lowered level that is a consequence of compressing the signal. This control may be set so as not to change the overall output level when the compressor is switched in.

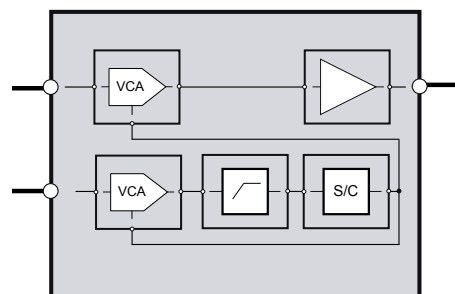
The compressor features a classic 'dominant' sidechain architecture. The left and right channels are independently rectified using a true peak full wave detector circuit, and the dominant (loudest) channel controls the gain reduction of the overall stereo level via the user selected time constants.

Block Diagram of the main Mix Bus section



As an enhancement to the earlier design, the ORIGIN Mix Bus Compressor has a 2nd order **SIDECHAIN HPF** (High Pass Filter) with 5 selectable filter frequencies (30, 60, 120, 185 and 300 Hz). Using this control to remove bass frequencies from the sidechain reduces pumping effects when bass heavy mix bus signals 'dominate' the action of the compressor.

The 'Key from **INSERT RETURN**' feature switches the sidechain source from the Mix Bus path to the Mix Bus Insert Return allowing an independent key of the Bus Compressor.

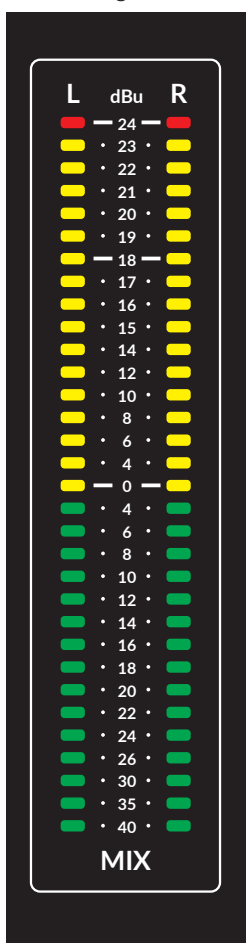


BUS COMP

The illuminated **COMPRESSION** meter displays gain reduction in dB.

MIX Bus Meter

The 32 segment LED stereo **MIX** Bus Meter normally measures directly across the Mix L and Mix R outputs (as seen in the block diagram on the previous page). There is a switch in the **METERS** controls in the Master Section (see page 31) which changes the MIX Meter to follow the monitor source selection (pre Monitor Level Control, but post AFL/PFL selection). This provides a useful way to meter other sources on the MIX meter or meter selections from AFL/PFL.



Another useful use for this meter is monitoring/setting Oscillator levels as this meter is fed directly when the Oscillator **TO MIX** function is selected (see page 32).



The fast response peak meter has defined markings for +24 dBu and +18 dBu as well as 0 dBu. The meter has a fast 'peak' response and a slower release time to meter peaks while still showing useful signal levels.

The Mix Meter brightness may be 'dimmed' by holding the **MISC** section '**SHIFT**' switch and simultaneously pressing the **METERS** section '**DIM MON METERS**' switch.



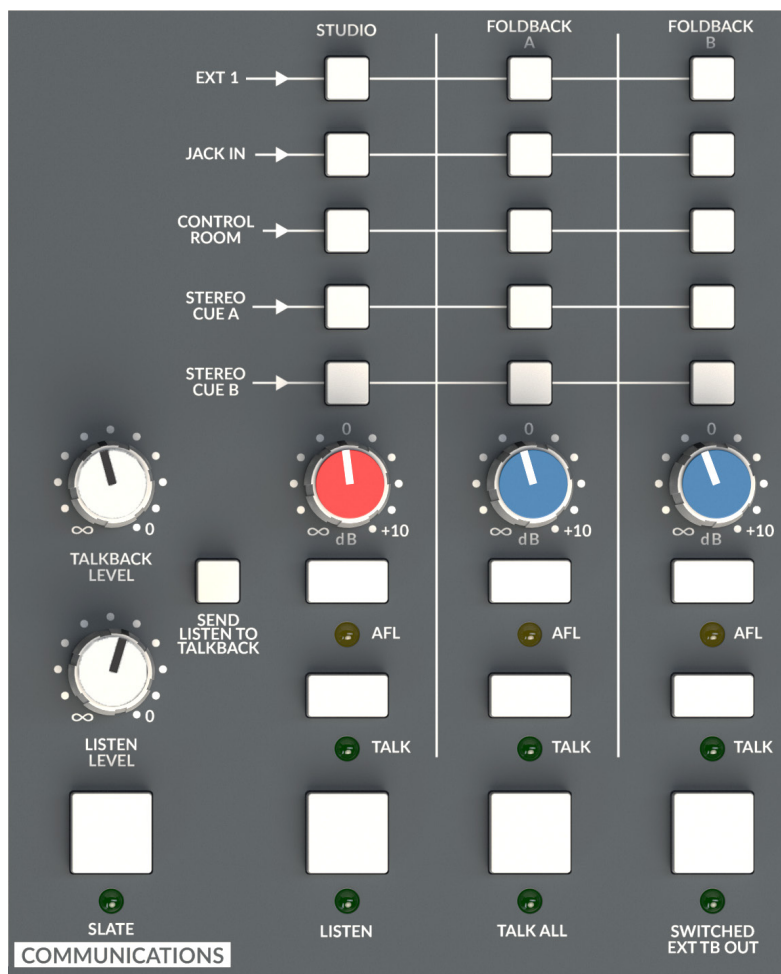
COMMUNICATIONS

As the name implies, the **COMMUNICATIONS** section is the hub of how the control room communicates with the artists and studio floor. The section is laid out with three columns which represent the three main destinations for the studio, namely **FOLDBACK A**, **FOLDBACK B** and **STUDIO**. Typically **FOLDBACK A** and **FOLDBACK B** are used to feed artist headphones, while the **STUDIO** output is used to feed loudspeakers in the performance area/studio floor.

For each of these three destinations there is a column of 'source' switches. These connect the sources (listed to the left of the switches) with the corresponding destination. For example, pressing the **STEREO CUE A** switch in the **FOLDBACK A** column will send the Stereo Cue A bus to Foldback Output A.

Communications Source Options

- EXT 1:** Source connected to External 1
- JACK IN:** Source connected to the 3.5mm Jack in the Monitor Section
- CONTROL ROOM:** The source selected in the **MON SOURCE** section (see page 22)
- STEREO CUE A:** The Stereo Cue A bus (after the master level control in the CUES AND AUX MASTERS section, page 29)
- STEREO CUE B:** The Stereo Cue B bus (after the master level control in the CUES AND AUX MASTERS section, page 29)



TALKBACK and LISTEN LEVEL Controls

Under each column of the source selection switches there is a master level control for the three destinations. The **STUDIO** output control is identified with a RED cap, with the Foldback outputs identified in BLUE. Details about the Talkback and Listen Mic inputs can be found later in the guide (page 29).

AFL (After Fade Listen)

Underneath the level controls for each section there is an **AFL** switch. This feeds the appropriate communications output to the AFL bus and forces the monitoring to switch to the AFL bus.

TALK

For each section there is an independent **TALK** switch. This sums the Talkback Mic signal to the corresponding communications bus when pressed. This is a momentary switch with an automatic latch feature, i.e. if it is pressed and held it will act momentarily (i.e. switch off when released), if it is pressed briefly it will 'latch' on until pressed again. When the **TALK** feature is activated, by default the monitors are also **DIM**med. This interaction is programmable by holding down the **TALK** switch and simultaneously pressing the **DIM** switch. This will link or unlink the **DIM** function to the **TALK** switch. This setting is remembered by the console even when the console is powered down.

The Talkback Mic input connection and gain controls are detailed later in the guide (page 28).

TALK ALL

TALK ALL is a grouped 'TALK' function. Typically this simultaneously activates the **TALK** function for all three communications destinations. This is a momentary switch with an automatic latch feature (see previous paragraph). If it is pressed briefly it will 'latch' on until pressed again. The **TALK ALL** function is also programmable, holding down the **TALK ALL** switch and simultaneously pressing a **TALK** switch (or **LISTEN**, or **SEND LISTEN TO TALKBACK** switches) will link or unlink the **TALK** function (and/or the others) to the **TALK ALL** switch. This setting is remembered by the console even when the console is powered down.

The **DIM** function is not directly connected to the **TALK ALL** function. **DIM** will be activated if any of the functions connected to **TALK ALL** have a **DIM** function attached.

LISTEN

The **LISTEN** switch switches the Listen Mic input into the control room monitoring. The Listen Mic input connection and gain controls are detailed later in the guide (page 29). Typically, the Listen Mic is an omnidirectional mic (or mics) located centrally on the studio floor (e.g. mounted on the ceiling). The Listen Mic Input is connected to the Listen Mic Compressor (LMC). The LMC circuit is designed to allow a microphone connected to the Listen Input to maintain similar level signals regardless of whether the source is close or distant. i.e. if an artist is close to the microphone and another artist is distant from it, the Listen Mic and LMC will allow the control room to hear both artists legibly and at a similar level. This is a momentary switch with an automatic latch feature, i.e. if it is pressed and held it will act momentarily (i.e. switch off when released), if it is pressed briefly it will 'latch' on until pressed again.

The **LISTEN** function can be connected (or disconnected) to the **TALK ALL** function by pressing and holding the **TALK ALL** switch and simultaneously pressing the **LISTEN** switch. When the **TALK ALL** switch is released, the **LISTEN** switch will now be linked to it. Repeating this operation will unlink the function.

SEND LISTEN TO TALKBACK

This feature connects together the Talkback and Listen Mic signals to allow a simple 'conference' system. This can be useful where the Listen Mic is a convenient way for all artists in the session to talk to each other. For example, a session with musicians on the Studio Floor, some in the Control Room and others in Isolation Booths. Using the Listen and Talkback features with **SEND LISTEN TO TALKBACK** feature enabled would allow everyone to converse with one another.

CAUTION: If this feature is used with a listen mic in the same room as the talkback destination (e.g. studio loudspeakers, or loose headphones), there is potential for feedback/howlround from the combination of the Listen Mic, TALK button and the STUDIO output.

SWITCHED EXT TB (External Talkback) OUT

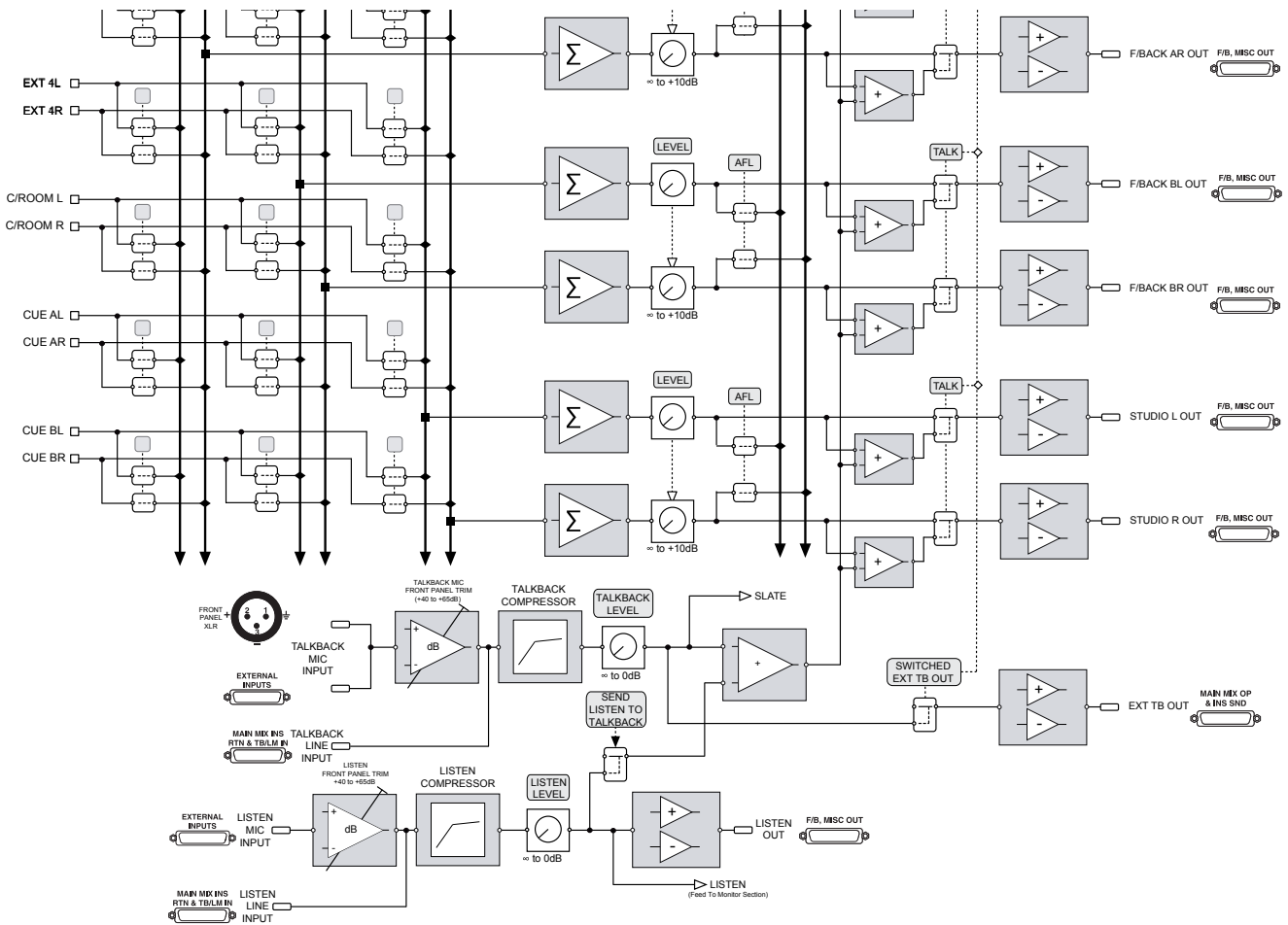
When pressed, this sends the Talkback amplifier output directly to the DB-25 connector on the rear of the console (and potentially then to a patchbay, if one is connected). This is useful when you want to use the Talkback circuits to feed external devices such as a third party artist cue mix system. This is a momentary switch with an automatic latch feature, i.e. if it is pressed and held it will act momentarily (i.e. switch off when released), if it is pressed briefly it will 'latch' on until pressed again.

The Switched External Talkback function can be connected (or disconnected) to the Talk All function by pressing and holding the **TALK ALL** switch and simultaneously pressing the **SWITCHED EXT TB OUT** switch. When the **TALK ALL** switch is released, the **SWITCHED EXT TB OUT** switch will be linked to it. Repeating this operation will unlink the function.

SLATE

When pressed, this momentary only switch sends the Talkback signal directly to the all of 16 track Bus Outputs and to the main stereo Mix Bus Output, replacing the signals that are feeding those outputs and CUTting the Main Monitor. Traditionally this function was used to place a 'take marker' (e.g. "This is Take 1") onto the recorder attached to the Bus and/or Mix console outputs.

A block diagram of the communications section is shown on the next page.



TALKBACK and LISTEN MIC

In the image on the right we can see the **TALKBACK** and **LISTEN** sections in the Master Section. The **TALKBACK** section has an XLR input for a Master Section mounted (or connected) Talkback Microphone, a hole for a flat blade trim tool to access and adjust the gain trim setting for the Talkback microphone input and a **+48V** phantom power switch for the input. Similarly the **LISTEN** section has a hole for a flat blade trim tool to access and adjust the gain trim setting for the Listen Microphone Input and a **+48V** phantom power switch.



Talkback Microphone Connections (Mic and Line Inputs)

The Talkback Amplifier has a front panel XLR connector, as shown in the picture above, it also has a paralleled connection on the "EXTERNAL INPUTS" DB-25 rear connector if an externally located Talkback mic is desirable. If this DB-25 input is connected to a patchbay, it allows the external Talkback Mic Amp to be over patched.

After the Talkback Mic Pre gain stage there is a second, summed, line-level input available on the "MAIN MIX INS RTN & TB/LM IN" DB-25 rear connector. This can be seen in the lower half of the block diagram above. This allows an externally amplified Mic Pre signal to be fed through the Talkback Mic Compressor (This is the same circuit as the infamous SSL Listen Mic Compressor). With the **SWITCHED EXT TB OUT** switch pressed in the **COMMUNICATIONS** part of the Master Section, there is a Talkback Mic output signal on the "MAIN MIX OP & INS SEND" DB-25 rear connector (and on the patchbay, if connected), this gives an input and output path to use this compressor creatively. If you are using this feature, don't forget to disconnect, or over patch the Talkback Mic Amp connections to prevent the talkback mic signals being summed with the external Line input!

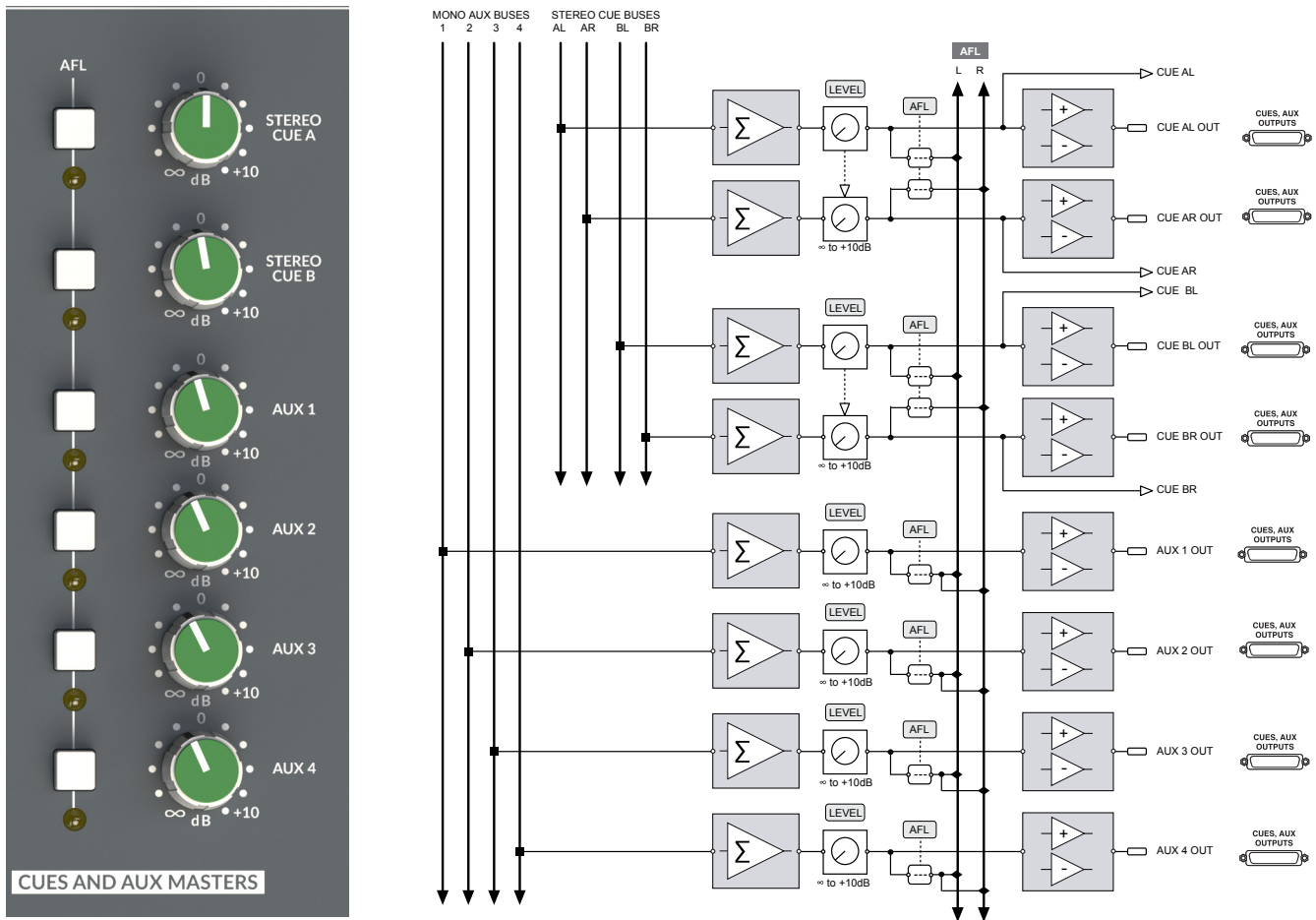
Listen Microphone Connections (Mic and Line Inputs)

The Listen Mic Amplifier connection is on the "EXTERNAL INPUTS" DB-25 rear connector. If this DB-25 input is connected via a patchbay, it allows the Listen Mic Amp to be over patched.

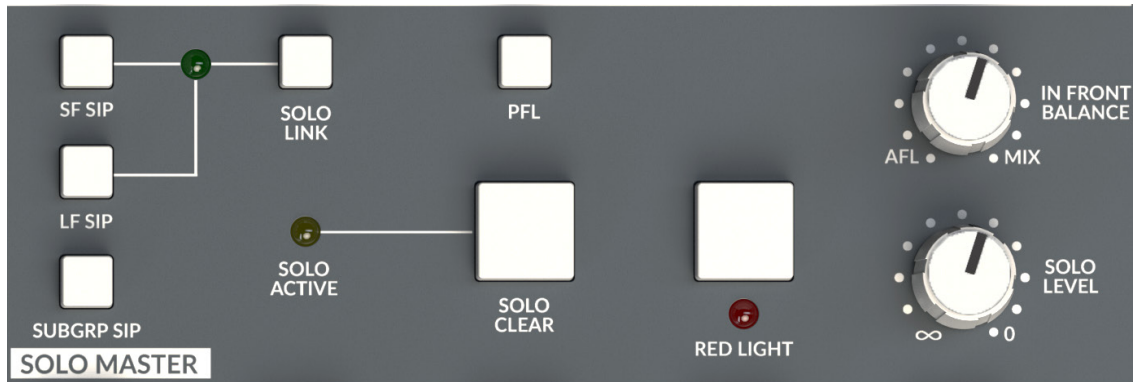
As with the Talkback Mic, after the Listen Mic Pre gain stage there is a second, summed, line-level input available on the "MAIN MIX INS RTN & TB/LM IN" DB-25 rear connector. This can be seen in the lower half of the block diagram on the previous page. This allows an externally amplified Mic Pre signal to be fed through the Listen Mic Compressor (This is the same circuit as the infamous SSL Listen Mic Compressor of Hugh Padgham/Peter Gabriel's Intruder snare sound fame). There is a Listen Mic output signal on the "F/B, MISC OUT" DB-25 rear connector (and on the patchbay, if connected). This gives an input and output path to use this compressor creatively. If you are using this feature don't forget to disconnect, or over patch the Listen Mic Amp connections to prevent the Listen mic signals being summed with the external Listen Line input!

CUES AND AUX MASTERS

This section has the master level controls for the A and B Stereo Cue Mix buses and mono Aux buses 1-4. **AFL** switches the selected signal into the Monitor section to allow the selected bus to be auditioned.



AFL, PFL and the SOLO MASTER Section



ORIGIN has a comprehensive and flexible After Fade Listen, Pre Fade Listen (AFL/PFL) and Solo In Place (SIP) system. With no options selected, the **SOLO** switches in the console channel strips activate the AFL function, i.e. they send the selected path to the stereo AFL bus and the monitoring switches to output the AFL bus. The benefit of this approach is two fold, it is non-destructive, i.e. any paths being used to track or mix will not be Cut by the use of the Solo switch, and also it allows the selected path, or paths to be listened to against the Mix Bus signal, using the **IN FRONT BALANCE** control.

SF SIP (Solo In Place), LF SIP, SUBGRP SIP and SOLO LINK

If a destructive Solo would be preferred to AFL, then the SIP (Solo In Place) switches are used to link the Solo and Cut actions. These SIP functions are split into separate options for the Large Fader (**LF SIP**), Small Fader (**SF SIP**) and Subgroup (**SUBGRP SIP**) sections of the console. This allows the different sections to be in different modes, for example, if the Small Fader paths are being used as sends to a recorder, it may be useful to have these in AFL mode so that a **SOLO** selection of any Small Fader wouldn't **CUT** the send from any of the other Small Fader record paths.

The **SOLO LINK** switch connects together the Solo/Cut connections for both the Large Fader and Small Fader paths. **SOLO LINK** active is indicated by a green LED at the intersection of the lines linking the SIP functions. For **SOLO LINK** to be active, both **LF SIP** and **SF SIP** switches must be in the same mode (i.e. both pressed, or both unpressed), if one of these is not pressed, the LED will not illuminate and **SOLO LINK** will not be active.

SOLO ACTIVE and SOLO CLEAR

Whenever a console **SOLO** or **AFL** function is active the yellow **SOLO ACTIVE LED** will illuminate. Any active **SOLO** or **AFL** functions can be cancelled using the **SOLO CLEAR** switch. When this is pressed, the **SOLO ACTIVE LED** will extinguish.

PFL (Pre Fade Listen)

Selecting **PFL** will change the default After Fade Listen (AFL) mode to Pre Fade Listen, i.e. Solo'd signals will be sent Pre Fader to the Monitoring. Switches labelled **AFL** (such as those in the Stereo Return section) will always be AFL and are not affected by the PFL selection.

SOLO LEVEL

This control adjusts the level of either the AFL signal or the PFL signal (depending on whether the PFL switch is selected).

IN FRONT BALANCE

In default mode (i.e. Not SIP or PFL) Pressing a channel **SOLO** switch routes a mix of the AFL signal and the selected left and right monitor sources to the monitor outputs. The **IN FRONT BALANCE** level control adjusts the balance between AFL signal and MIX in the Monitors. This is useful, for example, to EQ a source in context with the Mix and not in isolation. The **IN FRONT BALANCE** control is adjusted to taste to give a useful balance depending on the source being listened to.

*NOTE : If the **IN FRONT BALANCE** control is left fully clockwise (i.e. an all mix bus balance) then it may appear that the AFL/Solo function isn't working as there is no AFL signal feeding the monitoring, (i.e. you're only listening to the mix bus signal, i.e. no AFL/Solo signal)!*

RED LIGHT

The **RED LIGHT** function closes a relay on the DB-9 UTILITY connector on the rear panel of the console. Typically this is used for a Record Light for the studio, to indicate not to disturb the recording area. If nothing is connected to the UTILITY connector, then this switch has no function (other than illuminating the associated red front panel LED!). The **RED LIGHT** relay switch closure will change state when the console goes to SLEEP. This could be used to switch off other studio equipment, or to signal externally that the console is in sleep mode, if the RED LIGHT function is not required.

METERS Section



MIX METER FOLLOW MON SOURCE

The **MIX** meter typically shows the level of the main stereo Mix bus. Pressing the **MIX METER FOLLOW MON SOURCE** switch switches the **MIX** meter to follow the selection on the **MON SOURCE** section. This is useful to meter, or calibrate an external source connected to one of the four External Source selectors.

PEAK MODE SELECT

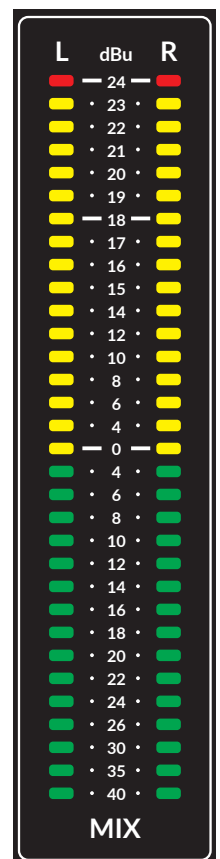
The meters in ORIGIN are fast detecting 'peak' meters. These meters have some options for displaying peaks and the **PEAK MODE SELECT** switch cycles around these modes with repeated pressing. The options are:

- No Peak Hold. The meter displays instantaneous peak values only
- First Press - 1 second Peak Hold. Peak level LED stays illuminated for approximately 1 second and then automatically resets. This mode can be identified when selected by the red +24dBu LEDs illuminating for approx. 1 second and then falling to the current metered level.
- Second Press - 3 second Peak Hold. Peak level LED stays illuminated for approximately 3 seconds and then automatically resets. This mode can be identified when selected by the red +24dBu LEDs illuminating for approx. 3 seconds and then falling to the current metered level.
- Third Press - Permanent Peak Hold. The LED indicating Peak level achieved stays illuminated indefinitely and can be reset using the **PEAK CLEAR** function (see below). This mode can be identified when selected by the red +24dBu LEDs rippling across 8 channel sections.
- Fourth Press - returns to the no Peak Hold state.

The console will remember the setting when powered off, so the start state for the first press may be offset (e.g. if in 1 second Peak hold when powered off, the next press after power on will be 3 second.)

PEAK CLEAR

Resets the captured Peak level (and indication) for all meters when permanent Peak Hold mode is selected (see **PEAK MODE SELECT** above).



DIM CHAN METERS and DIM BUS METERS

ORIGIN has high brightness LED meters. It may be useful to reduce the brightness of the meters when lighting conditions, or what the user focuses on, needs to change. The **DIM CHAN METERS** switch switches between bright and dim **CHAN** meters (above the channel paths), When this switch is pressed with the **MISC** section **SHIFT** switch, the **BUSES/STEREO GROUP** meters change brightness.



DIM MON METERS and DIM MIX METERS

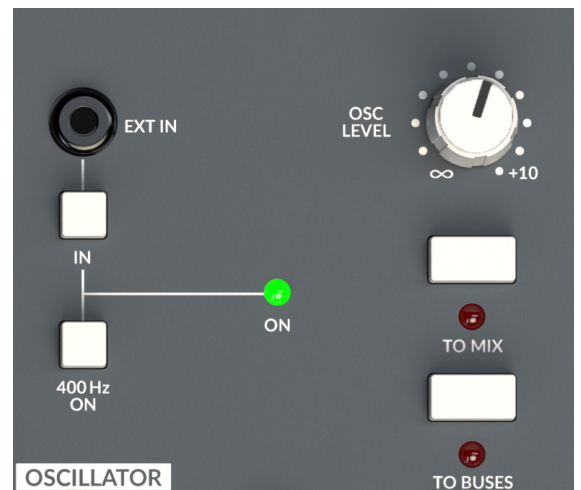
Similar to the previous item, the **DIM MON METERS** switch switches between bright and dim **MON** meters (above the console channels), When this switch is pressed with the **MISC** section **SHIFT** switch, the **MIX** meter changes brightness.

OSCILLATOR

ORIGIN has a simple, yet flexible **OSCILLATOR** section. It is designed to take advantage of the power of modern hand held devices and the software applications available for them.

400 Hz ON and EXT IN

The in-built sine wave oscillator is fixed to 400Hz. This frequency was chosen over the more typical 1kHz as it's easier on the ear when listened to for prolonged periods, such as when doing alignment or signal level checks. The **400Hz ON** switch enables the Oscillator and sends this signal to the rear F/B, MISC OUT DB-25 connector on the rear of the console, and typically from there to the patchbay. The internal Oscillator may be over-ridden by selecting the **IN** switch for any source connected to the 3.5 mm Jack **EXT IN** socket immediately above it. This is designed to allow an external signal source to be connected such as a tablet or mobile phone, typically running an application to generate test signals or sweeps.



OSC LEVEL

The **OSC LEVEL** control adjusts the level of the Oscillator, both the internal Oscillator and the external input.

TO MIX and TO BUSES

These switches send the Oscillator (or **EXT IN**) signal to the 16 track buses (**TO BUSES**) or the stereo Mix bus (**TO MIX**). Either of these selections over-ride the default signals being fed to the respective outputs, so take care not to press them when recording from these outputs..

The MISC Section

ORIGIN's **MISC** section is the home for a variety of functions.

SHIFT/ CLEAR ROUTE

The bottom switch in the **MISC** switch section has two basic functions which depend on the context of it being pressed.

SHIFT

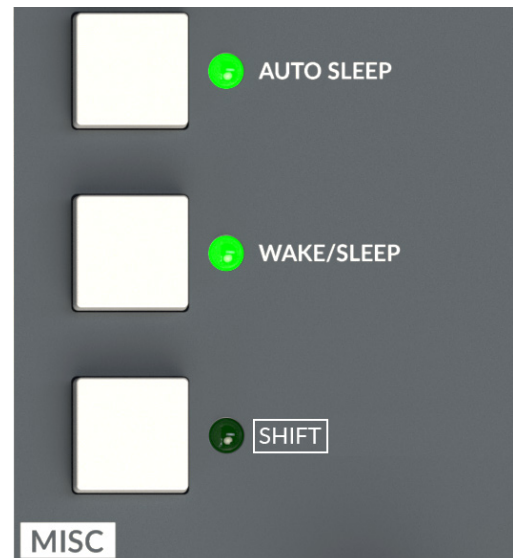
The **SHIFT** switch provides secondary or setup functions to some of the switches in the Master Section.

For the **METERS** section, the Secondary functions are identified by a white outline around the switch label, such as the **DIM MIX METERS** function. Pressing **SHIFT** and the respective switch simultaneously activates the secondary function.

CLEAR ROUTE

The **SHIFT** switch also has some interaction with the Track Bus Routing functions. When a channel or a bus is in Route Select mode (flashing blue LED) pressing **SHIFT** will escape back to the normal console state. i.e. it acts to cancel/clear Route Select function.

If **SHIFT** is pressed and held down and a **ROUTE** switch selected, either in a Channel, Stereo Return or in the the Buses section, then routes to and/or from the selected path will be cleared. (see Appendix A)



Power Management Tools

ORIGIN is designed with some clever and useful tools to help manage the power requirements of the console. Older analogue consoles (and other studio devices) typically don't like being switched on and off. This is partly because of the heat/cool cycles causing issues with components such as valves(tubes), transformers, relays and capacitors. Additionally because of the electrical stresses caused by inrush currents when large linear power supplies are switched on. For these reasons, many older studio consoles are left on 24 hours a day with the associated cooling/air conditioning plant also running at the same time. ORIGIN's circuitry and power supplies are designed to be powered on and off under the control of the console's Power Management Tools. This allows the console to be regularly powered on and off without issue and hence we have provided a **WAKE/SLEEP** switch and an **AUTO SLEEP** function to provide a timed power down along with simple switches for this useful feature.

AUTO SLEEP and WAKE/SLEEP

Origin can be put into Sleep mode by pressing and holding the **WAKE/SLEEP** switch for approximately 3 seconds. When the console is in Sleep mode, the **WAKE/SLEEP LED** will pulse smoothly at about 1 pulse per second. The console can be awoken from Sleep by pressing the **WAKE/SLEEP** switch.

When the console enters 'Sleep' mode it carries out a controlled power down sequence. The Monitor Output Relays disconnect the Monitor Loudspeakers, next the Master Section powers down with a controlled shutdown of the power rails, shortly followed by the power rails for the console channels. Similarly when waking, the power up sequence is controlled. This means that monitors left powered and connected are not affected by loud thumps caused by sudden circuit activation in the console.

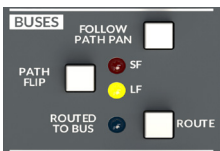
The **AUTO SLEEP** switch enables the Auto Sleep function which monitors meter activity. If no activity is detected over a preset amount of time (15 seconds to 75 minutes, see Appendix B - Setup Functions), the console automatically enters Sleep mode. As above, when the console is in Sleep mode, the **WAKE/SLEEP LED** pulses smoothly at about 1 pulse per second and the console can be awoken from Sleep by pressing the **WAKE/SLEEP** switch. Approximately 60 seconds before the Sleep mode is activated the **WAKE/SLEEP LED** flashes quickly to indicate the console is about to go to sleep.

How it works - The console detects activity on any of the LED meters and/or the Routing/Talkback/Comms/Meter switch functions to detect the console is in use. If no activity is detected for a preset period, the console can enter a 'Sleep' state, where the bare minimum of circuitry is powered and the console is ready at any moment to Wake to its pre-sleep state. When in Sleep mode ORIGIN consumes approximately 4% of the power needed in its wake state (approximately 40 W in sleep state and <1 kW in its wake state).

Appendix A - ORIGIN Advanced Routing

ORIGIN is equipped with 16 buses, these buses are 'normally' connected in odd/even pairs to the 8 Stereo Group Buses. This connection may be directly connected via DB25 connectors on the rear panel, or more typically, connected via half-normalled connections on a patchbay for the console.

Typically on older analogue consoles, the track routing switches were located at the top of the channel strip, in ORIGIN we have used some clever routing switching to minimise the amount of channel depth (and back stretching!) used for the routing feature while at the same time adding a powerful and elegant way to route paths to buses.



The key to routing to track buses with ORIGIN is using the **ROUTE** switch in the **BUSES** section of the channel strip (or a Stereo Return).



This works with the switches in the **BUS TRIM MASTERS AND ROUTING** section in the centre section of the console.

Routing Terms

Channel(s): a path or group of paths from which the signal can be routed from. Note: Includes Stereo Returns.

Crosspoint: (or Routing Crosspoint), the audio connection between **Channel** and **Track Bus**.

Idle Mode: mode in which no selection is active, this is the 'normal' state for the routing system.

Range Routing: the act of modifying Crosspoints for a range of **Channels** or **Track Buses**.

Range Selection: the act of selecting a range of paths or **Track Buses**.

Select Mode: Indicated by Blue Flashing LED(s). The routing system state to create or remove routes (**Crosspoints**)

Track Bus or Buses: The 16 summing buses that **Channels** can be routed to.

From Channel(s): Routing starting with the **Channel** or **Channels** and routing TO a **Track Buses** or **Track Buses**

To Bus(es): Routing starting with the **Track Buses** or **Track Buses** and routing FROM a **Channel** or **Channels**

'From Channel' Routing - The typical approach for Analogue Consoles

In a typical older analogue console the routing from channels to buses is done with 'routing switches' in the channel strip. The routing in ORIGIN can be used in exactly the same way.

Simple Channel to Bus Routing

Starting with the simplest case of routing a **Channel** to a single **Track Bus**...

Press the **ROUTE** switch in the **BUSES** section on the **Channel** you wish to route from, this will put the **Channel** into **Select Mode** and flash the **ROUTED TO BUS** LED in the **Channel**, you now use the switches in the **BUS TRIM MASTERS AND ROUTING** centre section panel to select which **Track Bus** this channel strip will route to e.g. **Track Bus 1**. When the switch next to the **Track Bus** is pressed the corresponding **Track Bus** blue LED will brightly illuminate to indicate that the channel strip is routed to **Track Bus 1**. When the flashing channel strip **ROUTE** switch is pressed again, the LED in the **BUS TRIM MASTERS AND ROUTING** section stays dimly illuminated to show the **Channel** is routed to a **Track Bus** and the **Channel ROUTED TO BUS** LED will also stay dimly illuminated to indicate that a **Channel** is routed to **Track Bus 1**.

Routing to Multiple Buses

As with the simple case above, the same process can be used to route a **Channel** to multiple **Track Buses**...

Press the **ROUTE** switch in the **BUSES** section on the **Channel** you wish to route from, this will put the **Channel** into **Select Mode** and flash the **ROUTED TO BUS** LED in the **Channel**, you now use the switches in the **BUS TRIM MASTERS AND ROUTING** centre

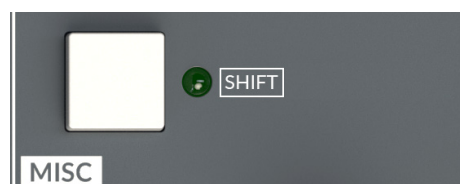
section panel to select multiple **Track Buses** this channel strip will route to e.g. **Track Bus** 1, 2, 3 and 4. When the switch next to the **Track Bus** is pressed the corresponding **Track Buses** blue LED will brightly illuminate to indicate that the channel strip is routed to **Track Buses** 1 to 4. When the flashing channel strip **ROUTE** switch is pressed again, the LEDs in the **BUS TRIM MASTERS AND ROUTING** section stays dimly illuminated to show the **Channel** is routed to **Track Buses** and the **Channel ROUTED TO BUS** LED will also stay dimly illuminated to indicate that a **Channel** is routed to **Track Buses** 1 to 4.

Range Routing - more channels to more buses with less switch presses!

In the previous example, instead of pressing multiple **Track Bus** switches for buses 1 to 4 it is possible just to simultaneously press **Track Bus** switches 1 and 4 to route to a range of **Track Buses** simultaneously.

Similarly to route a range of **Channels** to multiple **Track Buses** it is possible to use a **Range Selection** of **Channel ROUTE** switches to route from multiple **Channels** to a **Track Bus** or **Track Buses**.

A good example of this might be routing a range of **Channels** to a pair of **Track Buses**, for example to make a Drum stem, or submix from eight channels of drum mic's on **Channels** 1 to 8 mixed to **Track Buses** 1 and 2. To do this, use a range of **Channel ROUTE** switches on channels 1 to 8 by simultaneously pressing the **ROUTE** switches on **Channel** 1 and **Channel** 8. This should now put **Channels** 1 to 8 into **Select Mode** and the **Channel** Blue **ROUTE** LEDs flashing. Now by pressing **Track Bus** switches 1 and 2 simultaneously, all eight **Channels** will be routed to **Track Buses** 1 and 2. To return to **Idle Mode** (dimmed LEDs) from **Select Mode** (flashing and bright LEDs) you can now press the Range Selection of **Channels** 1 to 8 again, or more simply press the Master Section **SHIFT** switch to escape from **Range Selection** mode.



'To Bus' Routing - The other (more logical!) approach to routing

Having central, per **Track Bus**, routing select switches allows ORIGIN to provide a second way to route to **Track Buses**. This starts from the bus, not from the **Channel** and in some ways is more logical once the principles are understood. Fundamentally with this way of routing, it starts with putting the **Track Bus** into **Select Mode**, so routing starting with the **Track Bus**, not the **Channel**.

Simple Track Bus from Channel Routing

Starting with the simplest case of routing to a **Track Bus** from a single **Channel**...

Press the switch next to the chosen **Track Bus**, in the **BUS TRIM MASTERS AND ROUTING** section this will put the **Track Bus** into **Select Mode** and flash the **Track Bus LED** next to the **BUS TRIM** knob, you now use the **ROUTE** switch in the **BUSES** section of the **Channel** to select which **Channel** routes to this **Track Bus**. When the **ROUTE** switch in the **Channel** is pressed the corresponding **ROUTED TO BUS** blue LED will brightly illuminate to indicate that the **Channel** is routed a **Track Bus**. When the flashing **Track Bus** switch is pressed again, the LED in the **BUS TRIM MASTERS AND ROUTING** section stays dimly illuminated to show the **Channel** is routed to a **Track Bus** and the **Channel ROUTED TO BUS** LED will also stay dimly illuminated to indicate that a **Channel** is routed to a **Track Bus**.

Routing from Multiple Channels

As with the simple case above, the same process can be used to route multiple **Channels** to a **Track Bus**...

Press the switch next to the chosen **Track Bus**, in the **BUS TRIM MASTERS AND ROUTING** section this will put the **Track Bus** into **Select Mode** and flash the **Track Bus LED** next to the **BUS TRIM** knob, you now use the **ROUTE** switches in the **BUSES** section of a selection of **Channels** to select which **Channels** to route to this **Track Bus**. e.g. **Channels** 1, 2, 3 and 4. When the **ROUTE** switched in each **Channel** is pressed the corresponding **ROUTED TO BUS** blue LEDs will brightly illuminate to indicate that the **Channels** are routed the **Track Bus**. When the flashing **Track Bus** switch is pressed again, the LED in the **BUS TRIM MASTERS AND ROUTING** section stays dimly illuminated to show **Channels** 1 to 4 are routed to the **Track Bus** and the **Channel ROUTED TO BUS** LEDs will also stay dimly illuminated to indicate that those **Channels** are routed to a **Track Bus**.

Range Routing 2 - more buses from more channels with less switch presses!

In the previous example, instead of pressing multiple **Channel ROUTE** switches for channels 1 to 4 it is possible just to simultaneously press **Channel ROUTE** switches 1 and 4 to route to a range of **Channels** simultaneously.

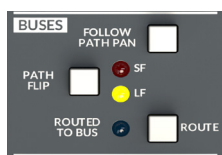
Similarly to route to a range of **Track Buses** from multiple **Channels** it is possible to use a **Range Selection** of both **Track Bus** switches and **Channel ROUTE** switches.

Looking at the drum submix again, but this time starting from **Track Buses** 1 and 2. As a reminder the task is to route a range of **Channels** to a pair of **Track Buses** to make a Drum stem, or submix from eight channels of drum mic's on **Channels** 1 to 8 mixed to **Track Buses** 1 and 2, this time starting from the **Track Buses**. Start by pressing **Track Bus** switches 1 and 2 simultaneously, this puts **Track Buses** 1 and 2 into **Select Mode** and the corresponding blue **Track Bus** LEDs flashing. Now use a range of **Channel ROUTE** switches on channels 1 to 8 by simultaneously pressing the **ROUTE** switches on **Channel** 1 and **Channel** 8. All eight **Channels** (i.e. 1 TO 8) will be routed to **Track Buses** 1 and 2. To return to **Idle Mode** (dimmed LEDs) from **Select Mode** (flashing and bright LEDs) you can now press the Range Selection of **Track Buses** 1 and 2 again, or more simply press the Master Section **SHIFT** switch to escape from **Range Selection** mode.

Interrogating Routing - Finding Out What Is Routed Where?

Finding out what signals are routed where is a simple switch press away!

Where Is This Channel Routed?



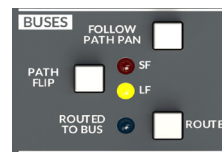
If a **Channel ROUTED TO BUS** LED is dimly illuminated in **Idle Mode** (normal operating mode) then it means that **Channel** is routed to a **Track Bus**. To find out which **Track Bus** it is routed to press the channel's **ROUTE** switch. This will brightly illuminate the **Track Bus** routing LEDs in the Master Section, showing which **Track Buses** the **Channel** is routed to. Press the selected **ROUTE** switch again to escape **Select Mode**.



What Is Routed To This Track Bus?

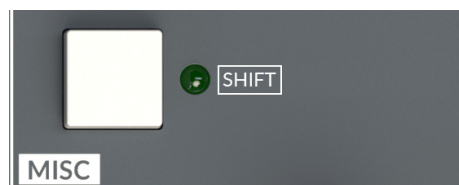


If a **Track Bus** LED is dimly illuminated in **Idle Mode** (normal operating mode) then it means that a **Channel** or **Channels** is/are routed to that **Track Bus**. To find out which **Channels** are routed to it press the **Track Bus** switch. This will brightly illuminate the **Channel ROUTED TO BUS** LEDs in the **Channels**, showing which **Channels** are routed to that **Track Bus**.



Clearing Routes Quickly - the SHIFT switch

The **SHIFT** switch in the **MISC** section of the Master Section can be used to quickly clear routing. Pressing and holding the **SHIFT** switch puts the switch into **CLEAR ROUTE** mode. With the **SHIFT** switch held down the next press of either a **Channel ROUTE** switch or **Track Bus** switch will clear any/all routing from that **Channel** or to that **Track Bus** respectively.



Clearing ALL Routes/Crosspoints Quickly

The **SHIFT/CLEAR ROUTE** function also works with **Range Selections**. So a very quick way to clear all console routing from all **Channels** to all **Track Buses** is to press and hold the **SHIFT** switch to put the console into **CLEAR ROUTE** mode and simultaneously press the **Track Bus 1** and **Track Bus 16** switches in the centre section, this will clear all routes from **Track Buses 1 to 16**, i.e. all **Track Bus** routes/**Crosspoints**.

Routing LED Status Summary

A table of Track Bus and Path LED statuses.

LED Status	Path ROUTED TO BUS LED	Track Bus LED
Off	No Path Routing	No Paths Routed to Bus
On (Flashing)	Path to Bus Routing Active	Bus to Path Routing Active
On (Bright)	Selected Path when Bus Routing Active	Selected Bus when Path Routing Active
On (Dim)	Path Routed to Bus	Path Routed to Bus

Incremental Channel to Bus Routing

There is a shortcut to setup single Channel to single Bus routing (e.g. Channel 1 to Bus 1, Channel 2 to Bus 2 etc.) which may be useful if working with multiple channels to a recorder attached to the Buses.

- Press and hold Channel 1 **ROUTE** key
- Channel 1 now selected, blinking
- Press and hold Channel 16 **ROUTE** key
- Channel 1 to Channel 16 now selected, all blinking
- Keep holding both switches down for 3 to 5 seconds
- Channel 1 to Channel 16 **ROUTE LEDs** will blink faster
- 1 to 1 incremental routing is made for the selected range.

NOTE: This incremental routing will override any existing Channel to Bus routes for the selected range.

Additionally, there is an option to change the way the incremental routes are made. The default is that the incrementally routed Bus follows the Channel Selection, i.e. if a range of Channel 9 to Channel 16 is selected, then the Bus Routing will be Channel 9 to Bus 9, Channel 10 to Bus 10 etc. to Channel 16 to Bus 16.

This default routing can be amended using the Incremental Routing Setup option (See Page 39). With the optional setting, the incrementally routed bus defaults to starting at Bus 1 and increments from there. i.e. using the previous example, if a range of Channel 9 to Channel 16 is selected, then the Bus Routing will be Channel 9 to Bus 1, Channel 10 to Bus 2 etc. to Channel 16 to Bus 8.

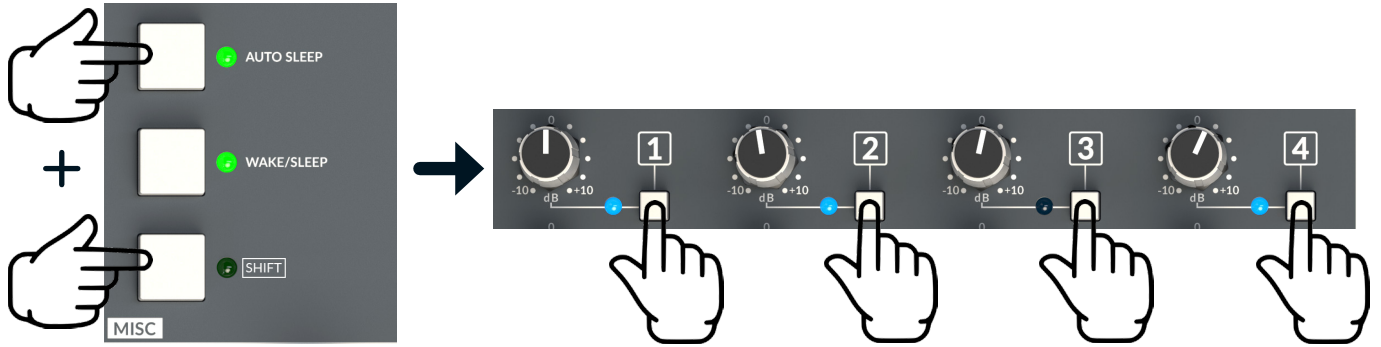
Latching/Momentary Key Function

The Routing keys have a similar automated latching/momentary feature to the Comms/Talkback switches, i.e. a fast press will 'latch' the key, a longer press will make the key momentary.

Appendix B - Setup Functions

AUTO SLEEP Setup

To setup the **AUTO SLEEP** timeout, *press and keep pressed* both the **SHIFT** and **AUTO SLEEP** keys. This activates the Bus Routing keys and LEDs to show AUTO SLEEP timeout where Bus LED's 1-4 are the console's AUTO SLEEP timeout setting and the adjacent keys can be used to change the AUTO SLEEP timeout.



The LEDs show the timeout in binary format, with the left most LED (1) showing the least significant digit, and the right most LED (4) the most significant digit. Each Binary number from 1 to 1111 is a 5 minute interval. So the AUTO SLEEP timing is represented by the following table...

Bus LED				Time Until SLEEP
1	2	3	4	(Minutes)
○	○	○	○	15 seconds**
●	○	○	○	5
○	●	○	○	10
●	●	○	○	15
○	○	●	○	20
●	○	●	○	25
○	●	●	○	30
●	●	●	○	35
○	○	○	●	40
●	○	○	●	45
○	●	○	●	50
●	●	○	●	55
○	○	●	●	60
●	○	●	●	65
○	●	●	●	70
●	●	●	●	75

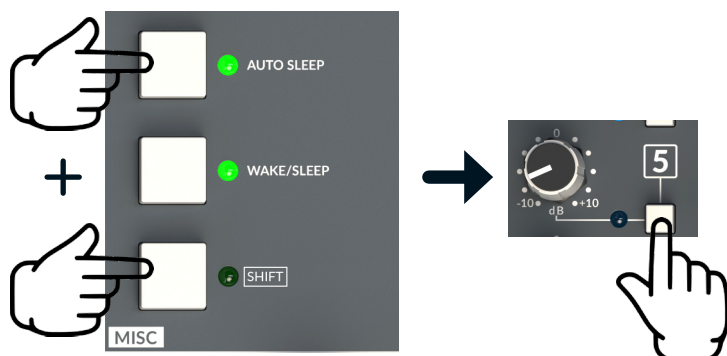
For example, the LED combination in the picture above means a time until Sleep of 55 minutes (1101)

The factory default Auto Sleep setting is 20 minutes.

** the 15 second setting may be useful to check if Auto Sleep is operating as expected.

ALT 3/Headphone Selection Setup

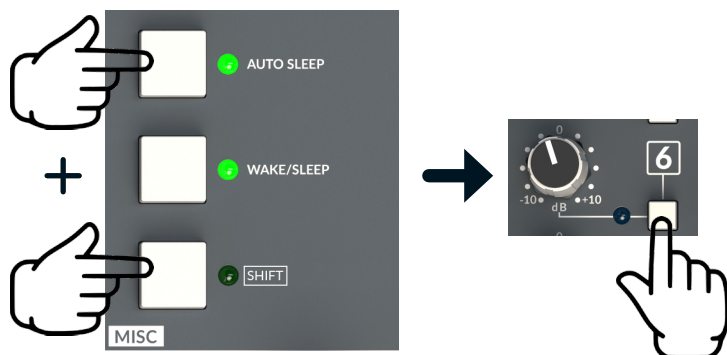
The ALT 3/Headphone Monitor Output key can be setup to intercancel with the other three Monitor Outputs (Main, ALT 1, ALT 2), rather than be an independent selection. This is another setting accessed with a simultaneous press of the **SHIFT** and **AUTO SLEEP** keys to access the setup menu, and with the Bus 5 key/LED selecting and showing the status as per the table below.



Bus LED	
5	Monitor Select Function
<input type="radio"/>	ALT 3/🎧 independent of Main/ALT 1/ALT 2 monitor selection. (Default)
<input checked="" type="radio"/>	ALT 3/🎧 intercancels with Main/ALT 1/ALT 2 monitor selection.

Automatic Incremental Routing Setup

This Setup option controls the behaviour of the Automatic Incremental Routing feature (See page 37). This is another setting accessed with a simultaneous press of the **SHIFT** and **AUTO SLEEP** keys to access the setup menu, and with the Bus 6 key/LED selecting and showing the status as per the table below.



Bus LED	
6	Monitor Select Function
<input type="radio"/>	Channel number dictates the automatic bus assignment (e.g. Ch9 -> Bus 9, Ch10 -> Bus 10). (Default)
<input checked="" type="radio"/>	Lowest channel in selection goes to Bus 1, next channel to Bus 2, etc. (e.g. Ch9->Bus 1, Ch10-> Bus 2).

Factory Setup Reset

Factory reset is provided to restore the console to its default settings and conditions.

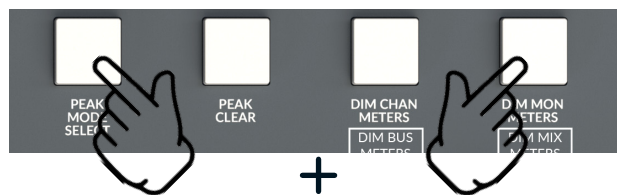
Factory reset affects:

- Routing (all routes cleared)
- Comms settings (Monitor Dim assignments, Talk All assignments)
- Autosleep state
- Any Setting
- Monitor and Source Selection

To perform a Factory Reset:

Power up the console (either from off or from Sleep state)

Press and hold PEAK MODE SELECT + DIM MON METERS switches during and for the duration of the meter start-up sequence which happens during power up.



Red Peak LEDs on every meter will start flashing which means that the Factory Reset has been performed.

Release the switches -> console restarts with settings back to Factory Default.

Appendix C - Performance Specification

Audio Performance

Default test conditions (unless otherwise stated):

- Source impedance of Test Set: 40 Ω
- Input impedance of Test Set: 200 k Ω
- Reference frequency: 1 kHz
- Reference level: 0 dBu where 0 dBu = 0.775 V into any load
- Unless specified, all unweighted measurements are specified as 20 Hz to 20 kHz band limited RMS and are expressed in units of dBu
- The onset of clipping (for headroom measurements) should be taken as 1% THD
- All distortion measurements are specified with a 36 dB/Octave low pass filter at 20 kHz and are expressed as a percentage
- All levels are intended balanced

Unless otherwise quoted all figures have a tolerance of ± 0.5 dB or 5%.

PureDrive™ Channel Input Microphone/Line Amplifier

Measurement	Conditions	Value
Gain	**dependent on potentiometer tolerances	Mic Amp Gain Variable from +5 dB to +70 dB** Line Amp Gain Variable from -10 dB to +55 dB**
Input Impedance		1.4 k Ω
Max Input Level	1% THD	Mic Amp : +21 dBu
Output Headroom		>+26.5 dBu at onset of clipping
Frequency Response	- 20 Hz to 20 kHz - -3 dB high rolloff	- +0/-0.2 dB - > 90 kHz
THD+Noise	(-10 dBu applied, +30 dB gain) @ 1 kHz (-10 dBu applied, +30 dB gain) @ 10 kHz	- <0.004% at 1 kHz (20 Hz to 20 kHz) - <0.018% at 10 kHz (20 Hz to 40 kHz)
CMRR	(-10 dBu applied, +30 dB gain)	- > 57.5 dB 20 Hz to 20 kHz
Equivalent Input Noise (EIN)	Mic Amp, 150 Ω termination, maximum gain	- <-127.5 dBu (A-weighted)

Monitor Input Line Input Amplifier

Measurement	Conditions	Value
Gain	**dependent on potentiometer tolerances	Variable from -20 dB to +20 dB**
Input Impedance		10 k Ω
Max Input Level	1% THD	>+28 dBu before clipping
Output Headroom		>+27.5dBu at onset of clipping
Frequency Response	- 20 Hz to 20 kHz - -3 dB high rolloff	+0/-0.03 dB > 156 kHz
THD+Noise	(-10 dBu applied, +20 dB gain) @ 1 kHz (-10 dBu applied, +20 dB gain) @ 10 kHz	<0.0003% at 1 kHz (20 Hz to 20 kHz) <0.0009% at 10 kHz (20 Hz to 40 kHz)
CMRR		> 65 dB 20 Hz to 20 kHz
Equivalent Input Noise (EIN)	150 Ω termination, maximum gain	<-104 dBu

Channel Equaliser

Signal applied to line input and measured at the channel insert send. EQ switched in with EQ controls centred in shelf mode.

Measurement	Conditions	Value
Output Headroom		>+26.5 dBu at onset of clipping
THD+Noise	+20 dBu @ 1 kHz +20 dBu @ 10 kHz	<0.003% at 20 dBu @1 kHz (filter 20 Hz to 20 kHz) <0.003% at 20 dBu @10 kHz (filter 20 Hz to 40 kHz)
Noise		<-80dBu

Overall Channel Signal Chain Specifications

Signal applied to Line Input of a channel and routed to specified output by shortest path. All controls set flat, out or at unity gain as appropriate. Pan set to full left or right.

Measurement	Conditions	Value
	Auxiliary Send, Track Bus and Main Mix Bus Outputs	
Output Headroom	into 600 Ω at onset of clipping into 10 k Ω at onset of clipping	>24 dBu >26.5 dBu
THD+Noise	+20 dBu @ 1 kHz +20 dBu @ 10 kHz	<0.0008% @1 kHz (filter 20 Hz to 20 kHz) <0.0008% @10 kHz (filter 20 Hz to 40 kHz)
Frequency Response		
Track Buses	- 20 Hz to 20 kHz - -3 dB high rolloff	+0/-0.3 dB >70 kHz
Main Mix Bus	- 20 Hz to 20 kHz - -3 dB high rolloff	+0/-0.3 dB >70 kHz
Auxilliary Buses	- 20 Hz to 20 kHz - -3 dB high rolloff	+0/-0.3 dB >70 kHz
Pot centre detent accuracy:		+/-1 dB, typically <0.5 dB

Crosstalk

Signal applied to Line Input of a mono channel, and routed to specified output by shortest path. All controls set flat, out or at unity gain as appropriate. Pan set to full left or right.

Measurement	Conditions	Value
Channel Muting	20 Hz to 20 kHz	<-100 dB
Maximum Fader Attenuation	20 Hz to 20 kHz	<-89 dB
Pan pot Isolation	20 Hz to 20 kHz	<-55 dB
Routing Channel to Main Mix		<-94 dB from 20 Hz to 20 kHz
Routing Channel to Track Buses	Channel routed to all buses apart from one under test Channel not routed	<-64 dB from 20 Hz to 20 kHz <-113 dB from 20 Hz to 20 kHz
Mic Input	-50 dBu applied to Mic Input at maximum gain, measured at Direct Output, Monitor path selected	<-95 dB

Overall Console Noise

Measured at main Mix outputs, channels routed as required with pans / balance controls centred, using Line input with termination. All controls set flat, out or at unity gain as appropriate, channel and master faders calibrated for 0dB.

Measurement	Conditions	Value
Line to Mix (Pan to centre)	1 channel routed 16 channels routed 24 channels routed 32 channels routed	<-93 dBu <-85 dBu <-83 dBu <-79 dBu

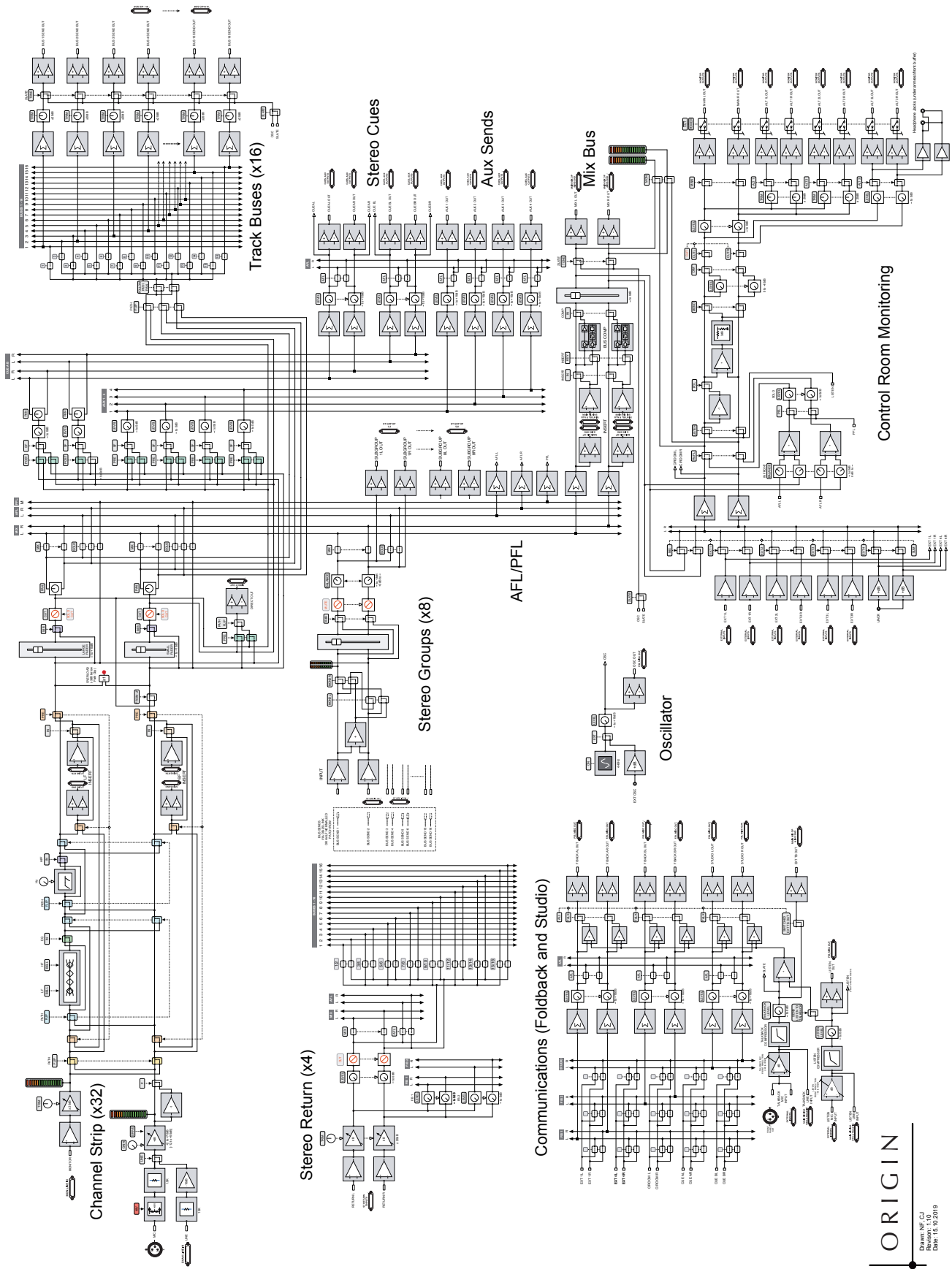
Environmental Requirements

Temperature range:

Operating: +1 to 30 °C (+34 to 86 °F).

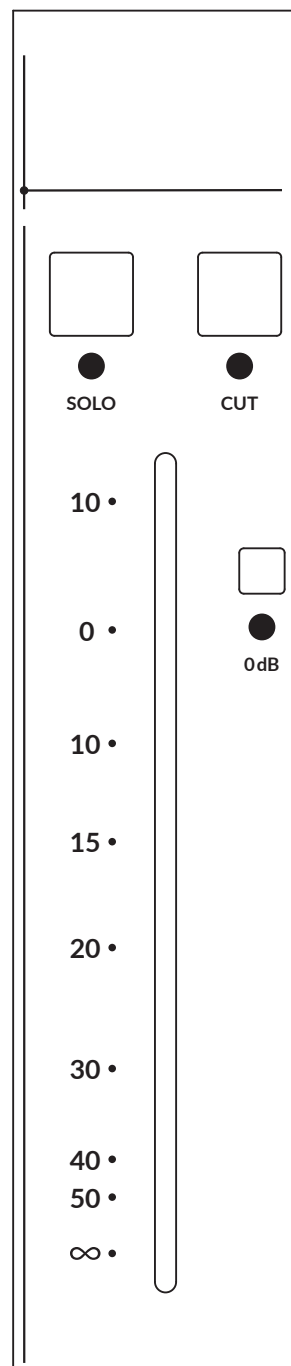
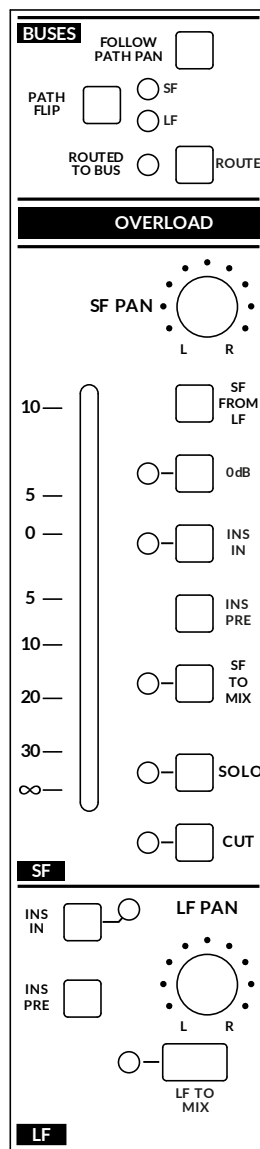
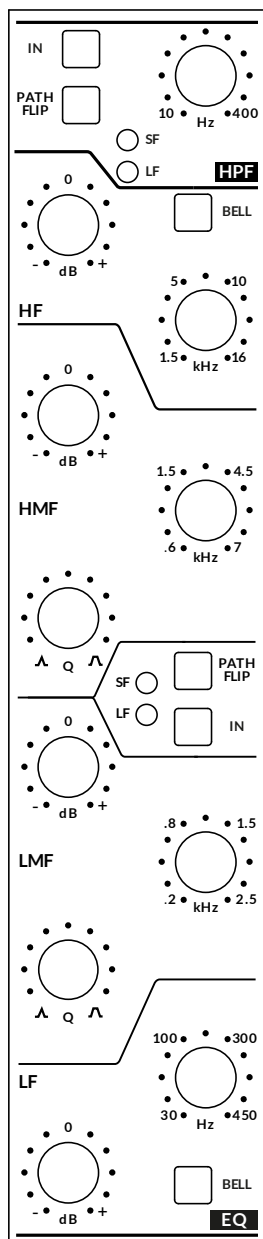
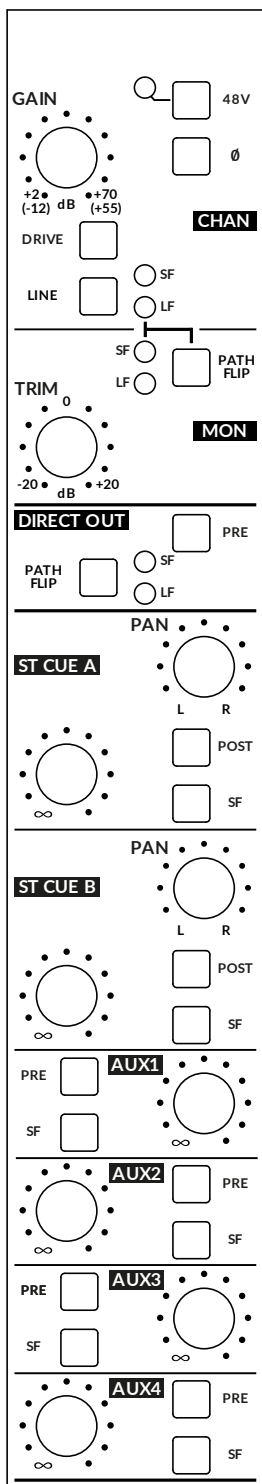
Storage: -20 to 50 °C (-4 to 122 °F).

Appendix D - ORIGIN Block Diagram

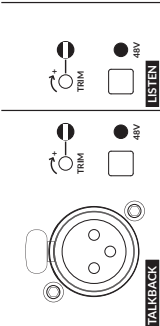


Appendix E - Recall Sheets

Channel Recall Sheet



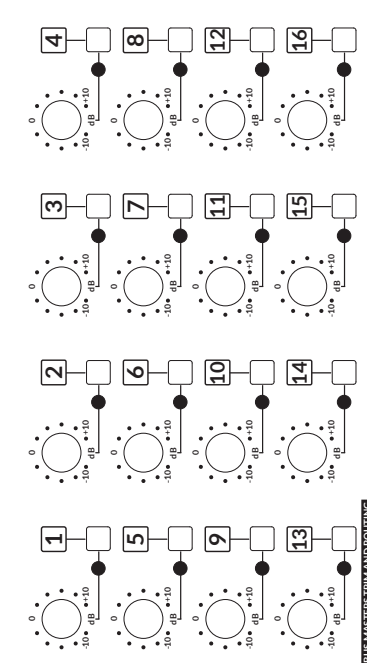
Master Section Recall Sheet



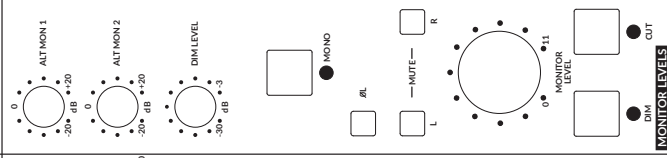
TALKBACK **LISTEN**

ORIGIN
Solid State Logic
OXFORD • ENGLAND

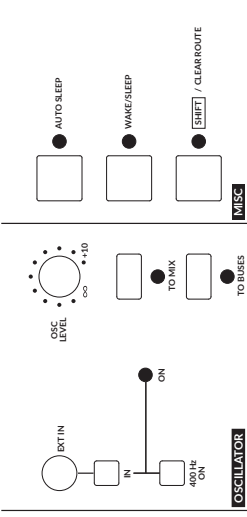
BUS MASTERS TRIM AND ROUTING



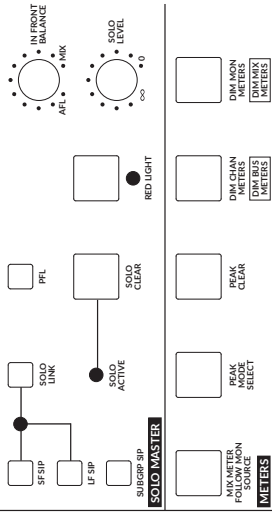
MONITOR LEVELS



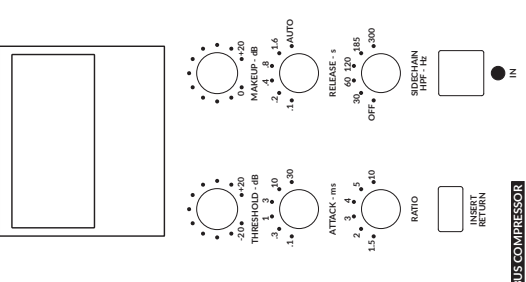
OSCILLATOR



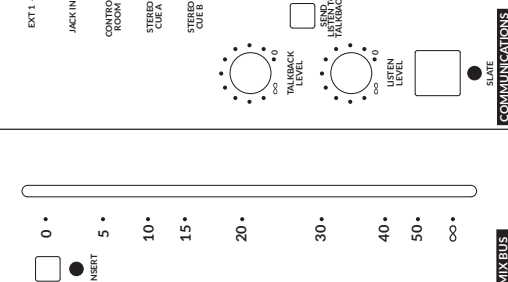
SOLO MASTER



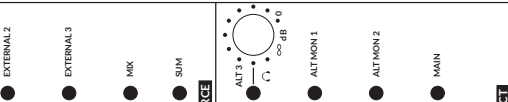
COMPRESSION




COMMUNICATIONS



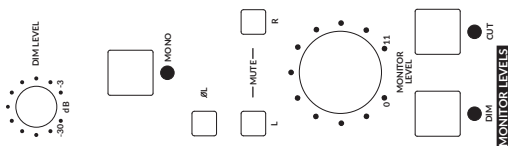
MIXBUS



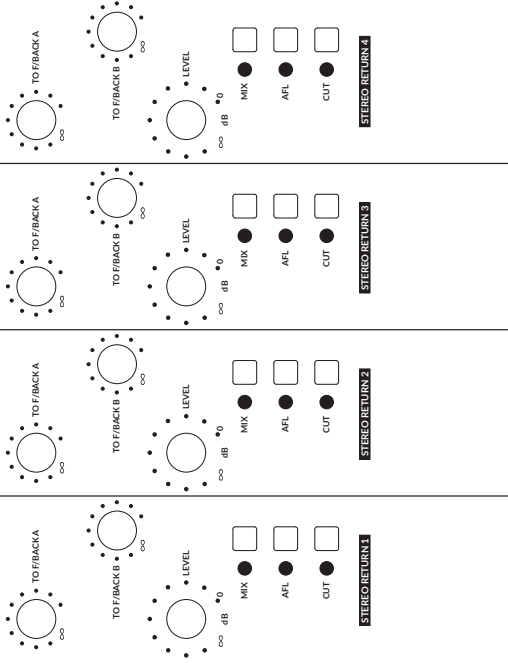
MONITOR SELECT



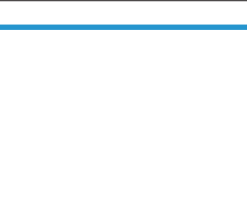
SOLO METER



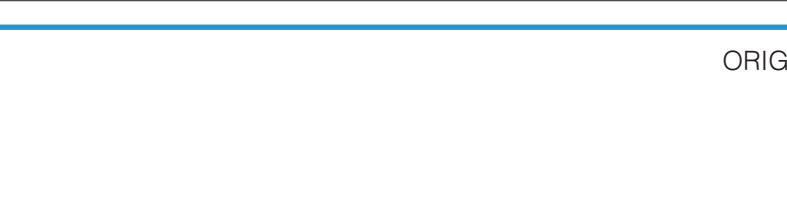
STUDIO











MISC



CUES AND AUX MASTERS



Stereo Group Recall Sheet

<p>ST GRP 1-2</p> <p><input type="checkbox"/> MONO <input type="checkbox"/> MONO</p> <p> BALANCE</p>	<p>ST GRP 3-4</p> <p><input type="checkbox"/> MONO <input type="checkbox"/> MONO</p> <p> BALANCE</p>	<p>ST GRP 5-6</p> <p><input type="checkbox"/> MONO <input type="checkbox"/> MONO</p> <p> BALANCE</p>	<p>ST GRP 7-8</p> <p><input type="checkbox"/> MONO <input type="checkbox"/> MONO</p> <p> BALANCE</p>	<p>ST GRP 9-10</p> <p><input type="checkbox"/> MONO <input type="checkbox"/> MONO</p> <p> BALANCE</p>	<p>ST GRP 11-12</p> <p><input type="checkbox"/> MONO <input type="checkbox"/> MONO</p> <p> BALANCE</p>	<p>ST GRP 13-14</p> <p><input type="checkbox"/> MONO <input type="checkbox"/> MONO</p> <p> BALANCE</p>	<p>ST GRP 15-16</p> <p><input type="checkbox"/> MONO <input type="checkbox"/> MONO</p> <p> BALANCE</p>
<p><input type="checkbox"/> SOLO <input type="checkbox"/> CUT</p> <p><input type="checkbox"/> 0 • <input type="checkbox"/> 10 •</p> <p><input type="checkbox"/> 0dB <input type="checkbox"/> GRP TO MIX</p> <p><input type="checkbox"/> 10 • <input type="checkbox"/> 15 •</p> <p><input type="checkbox"/> 20 • <input type="checkbox"/> 30 •</p> <p><input type="checkbox"/> 40 • <input type="checkbox"/> 50 •</p> <p><input type="checkbox"/> ∞ •</p> <p>A</p>	<p><input type="checkbox"/> SOLO <input type="checkbox"/> CUT</p> <p><input type="checkbox"/> 0 • <input type="checkbox"/> 10 •</p> <p><input type="checkbox"/> 0dB <input type="checkbox"/> GRP TO MIX</p> <p><input type="checkbox"/> 10 • <input type="checkbox"/> 15 •</p> <p><input type="checkbox"/> 20 • <input type="checkbox"/> 30 •</p> <p><input type="checkbox"/> 40 • <input type="checkbox"/> 50 •</p> <p><input type="checkbox"/> ∞ •</p> <p>B</p>	<p><input type="checkbox"/> SOLO <input type="checkbox"/> CUT</p> <p><input type="checkbox"/> 0 • <input type="checkbox"/> 10 •</p> <p><input type="checkbox"/> 0dB <input type="checkbox"/> GRP TO MIX</p> <p><input type="checkbox"/> 10 • <input type="checkbox"/> 15 •</p> <p><input type="checkbox"/> 20 • <input type="checkbox"/> 30 •</p> <p><input type="checkbox"/> 40 • <input type="checkbox"/> 50 •</p> <p><input type="checkbox"/> ∞ •</p> <p>C</p>	<p><input type="checkbox"/> SOLO <input type="checkbox"/> CUT</p> <p><input type="checkbox"/> 0 • <input type="checkbox"/> 10 •</p> <p><input type="checkbox"/> 0dB <input type="checkbox"/> GRP TO MIX</p> <p><input type="checkbox"/> 10 • <input type="checkbox"/> 15 •</p> <p><input type="checkbox"/> 20 • <input type="checkbox"/> 30 •</p> <p><input type="checkbox"/> 40 • <input type="checkbox"/> 50 •</p> <p><input type="checkbox"/> ∞ •</p> <p>D</p>	<p><input type="checkbox"/> SOLO <input type="checkbox"/> CUT</p> <p><input type="checkbox"/> 0 • <input type="checkbox"/> 10 •</p> <p><input type="checkbox"/> 0dB <input type="checkbox"/> GRP TO MIX</p> <p><input type="checkbox"/> 10 • <input type="checkbox"/> 15 •</p> <p><input type="checkbox"/> 20 • <input type="checkbox"/> 30 •</p> <p><input type="checkbox"/> 40 • <input type="checkbox"/> 50 •</p> <p><input type="checkbox"/> ∞ •</p> <p>E</p>	<p><input type="checkbox"/> SOLO <input type="checkbox"/> CUT</p> <p><input type="checkbox"/> 0 • <input type="checkbox"/> 10 •</p> <p><input type="checkbox"/> 0dB <input type="checkbox"/> GRP TO MIX</p> <p><input type="checkbox"/> 10 • <input type="checkbox"/> 15 •</p> <p><input type="checkbox"/> 20 • <input type="checkbox"/> 30 •</p> <p><input type="checkbox"/> 40 • <input type="checkbox"/> 50 •</p> <p><input type="checkbox"/> ∞ •</p> <p>F</p>	<p><input type="checkbox"/> SOLO <input type="checkbox"/> CUT</p> <p><input type="checkbox"/> 0 • <input type="checkbox"/> 10 •</p> <p><input type="checkbox"/> 0dB <input type="checkbox"/> GRP TO MIX</p> <p><input type="checkbox"/> 10 • <input type="checkbox"/> 15 •</p> <p><input type="checkbox"/> 20 • <input type="checkbox"/> 30 •</p> <p><input type="checkbox"/> 40 • <input type="checkbox"/> 50 •</p> <p><input type="checkbox"/> ∞ •</p> <p>G</p>	<p><input type="checkbox"/> SOLO <input type="checkbox"/> CUT</p> <p><input type="checkbox"/> 0 • <input type="checkbox"/> 10 •</p> <p><input type="checkbox"/> 0dB <input type="checkbox"/> GRP TO MIX</p> <p><input type="checkbox"/> 10 • <input type="checkbox"/> 15 •</p> <p><input type="checkbox"/> 20 • <input type="checkbox"/> 30 •</p> <p><input type="checkbox"/> 40 • <input type="checkbox"/> 50 •</p> <p><input type="checkbox"/> ∞ •</p> <p>H</p>

