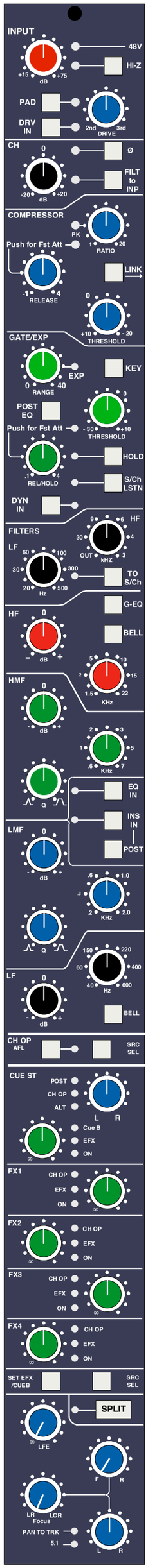


The Channel Input contains two completely independent preamp stages. Both feature electronically balanced inputs with very different but complimentary sonic qualities. The default preamp uses SSL's acclaimed Super Analogue circuitry to provide an extremely low noise, extended bandwidth front end with the minimum of signal colouration. The 'Drive In' switch routes the input signal to a completely different preamp featuring the VHD™ (variable harmonic drive) circuits developed for the E-Signature strip. VHD™ emulates the characteristics of a classic valve front end but with option to taylor the harmonic mix when the preamp is overdriven via the Drive Control. In conjunction with the PAD and Hi-Z Input impedance option,VHD™ can provide subtle valve style warmth to a mic signal or aggressive tonal shaping to existing DAW tracks. A centrally controlled Input Flip function reverses the routing of the Input and Monitor returns so that the DAW is automatically routed to the input preamp without requiring external patching.

The Channel section provides final gain trim and polarity inversion for the centrally selected channel source. Available input options are the output of the Input preamp, the balanced line level DAW return, or the channels associated track bus for patch free subgroups. FILT to INP locks the high and low pass filters to the channel source.

The Dynamics section contains a compressor section identical to that of the 9000K series and also found in SSL's Logic Fx range of outboard processing units. In normal use, the compressors true r.m.s side chain and over easy soft ratio function provide a very transparent compression action even with large amounts of gain reduction. The fast attack option offers the classic SSL compressor sound normally associated with its use on drum and percussion sources. Selecting Peak (PK) mode defeats the over easy soft ratio, modifies the release curve and attack times, and unleashes a far more aggressive sounding compressor ideal for more radical sonic shaping.

Normal the Dynamics section precedes the Equaliser and filters. Post EQ places the processing after the eq.

A new side chain monitor option routes the sidechain signal to the console AFL bus simplifying set up when either an external key input or the filters to side chain option is in use.

The Gate/Expander section is a new variant of the classic 4000 series three control design. It features the choice of a steep gate or gentle expander slope, with optional fast attack. HOLD offers a choice of the original variable release control or a new variable hold time mode with a fixed release time.

Continuously variable High and Low pass filters with individual true bypass for each section. Normally fed with the output of the eq section, dedicated switching located in the Channel section places the filters directly after the channel input. S/CH routes the filter section to the dynamics sidechain.

Four band parametric equaliser based on the classic 'Black Knob' eq developed for the original 4000E series console. The bell option for the shelving bands provides a fixed bandwidth parametric mode for each section.

G-Eq mode introduces steeper shelving curves with a controlled amount of undershoot at the turnover frequency, together with the classic gain/bandwidth interaction for the mid band sections which was a key characteristic of the original G-Series eq.

The balanced insert point has local switching to select a post eq signal instead of the default channel input signal. Additional centre section switching can place the insert post dynamics but pre eq providing complete flexibility in the order of internal and external signal processing routing. Processing order is graphically displayed on the channel TFT screen.

Normally the channel output receives the post fader, post channel mute, signal. The SRC SEL selects the alternate channel output feeds - Channel Input, Pre Fader or the active EFX send. Current source is shown on the channel TFT status display.

The Stereo Cue section routes a Pre Fader signal to a choice of two alternate cue busses, A or B. Additional source options are the Post fader channel feed, the Channel direct output or the Channel ALT input. The latter is defined as whichever input is not assigned to the main channel path and allows the stereo cue to be used as an additional line input. ON/OFF is switching is via a push push switch mounted on the send level control.

Four mono send controls feed the console Fx busses. These receive either the Post fader or Channel output signal. ON/OFF is switching is via a push push switch mounted on the send level control.

Either the Stereo Cue or any of the 4 mono sends can be nominated as an EFX send and in turn routed either to the 24 console track busses or the Channel Output.

When the Channel Output is sourced from either Input or Pre Fader, SPLIT offers a new approach to In-Line tracking on an analogue console by returning the DAW output back into the channel path just after the Channel Output pick off point. By using Input or Pre as teh channel output source, clean or processed signals are routed to the DAW, with the option to use the remaining channel processing and routing to monitor the DAW return in the analogue domain.

The Channel strip contains a fully featured 5.1 panning section for both the main console busses as well as the 24 Track busses. With the most complete implimenation found on any analogue console, the feature set includes a dedicated LFE send and fully variable centre divergence to vary the phantom/hard centre mix for sounds located in the front channels.

Channel Input (CHIP)

Two inputs, one dedicated as a line level DAW return, the other as the Channel Input. Normally the Channel Input feeds the Variable gain Input amplifier, and the DAW return a unity gain Line amp. However the input FLIP switch reverses the routing so that the DAW return can be processed by the Channel Input. The Input amplifier is based on the circuit developed for the 'Classic Channel' with the addition of a High Impedance (10K) mode coupled to changing the impedance of the 20dB input PAD. The Channel Input can be replaced by the output of one of the 24 Track Mix busses (Bus N > Channel N, 24+N, 48+N etc). A variable ±20dB channel trim section is located post the Channel/DAW Return (LINE) change over switch for reducing the level when the Input section is being abused for creative reasons. FILTR inserts the filter section in the Channel Path prior to the DAW Monitor change over (SPLIT MODE).

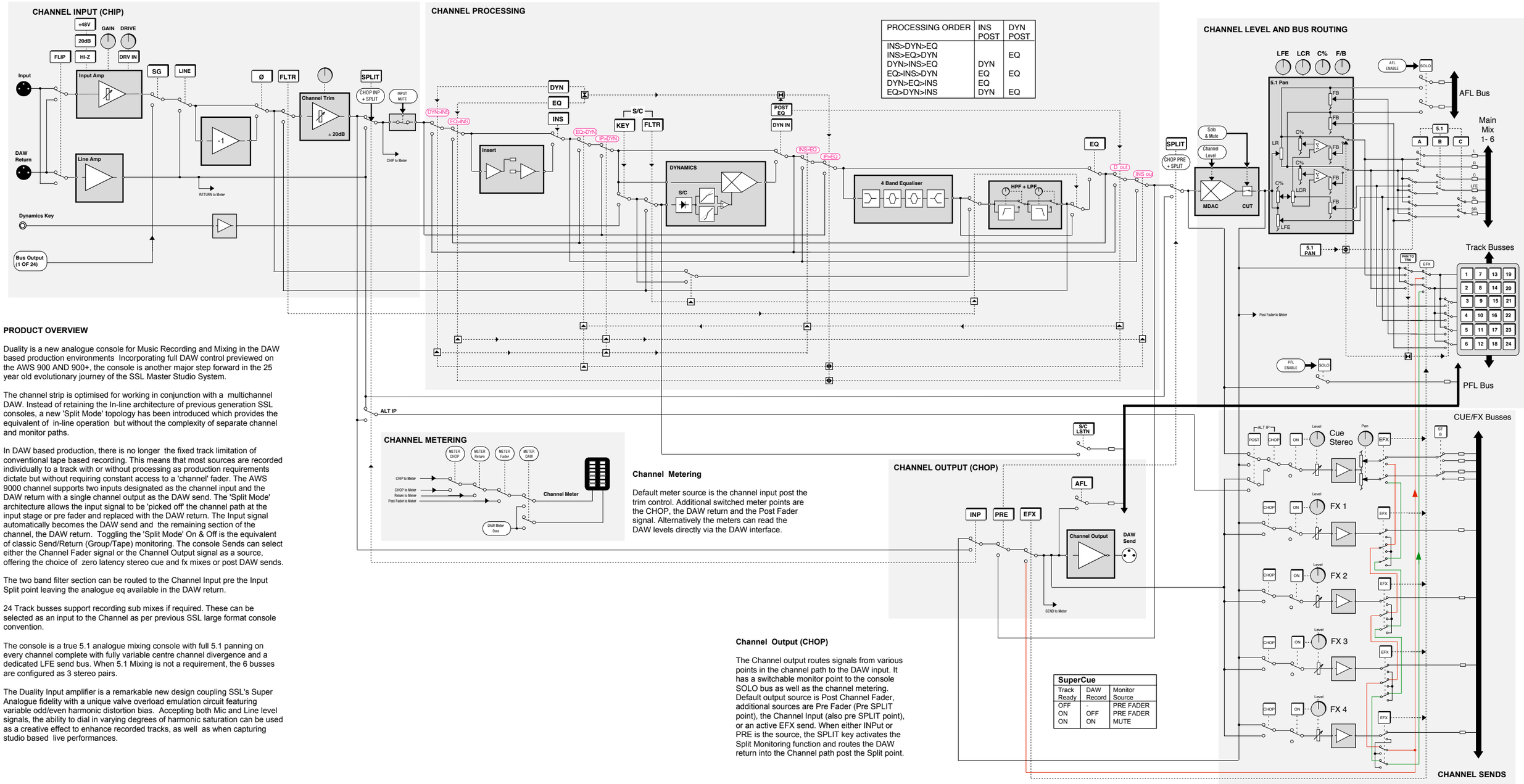
Channel Processing

Three processing blocks. A Balanced Send/Return loop for inserting outboard Fx. A Dynamics section similar to the AWS but with a choice of variable Release *or* variable Hold for the Expander/Gate. There is an external Key input and side chain monitor point. A 6 band E/G switchable EQ with the option to place the Filter section in the Channel input *or* Dynamics side chain. Processing order is controlled via three Routing switches. Two intercancelling options for the Insert, Post Dynamics or Post EQ, one for the EQ, Pre Dynamics. These give the six required processing order configurations as shown in the table.

Channel Level and Bus Routing

A balanced MDAC gain element as per AWS 900 feeding into a true 5.1 panning section with fully variable centre channel divergence. Default is for stereo panning to 3 pairs of busses. The 24 Track Busses normally receive the mono Post Fader output. TRACK routes the LR pan outputs to Odd/Even pairs. 5.1 mode enables the full panning options for both the main Mix busses and the Track Busses for stems if TRACK Is ON. The EFX routing replaces the normal feed to the Track busses and defeats the Track Bus 5.1 panning mode when active.

Mono PFL bus, also used for the Dynamics sidechain monitor and the CHOP (DAW Send Monitor). Stereo AFL bus fed pre Front/Back pan.



PROCESSING ORDER	INS POST	DYN POST
INS>DYN>EQ		
INS>EQ>DYN		EQ
DYN>INS>EQ	DYN	
EQ>INS>DYN	EQ	EQ
DYN>EQ>INS	EQ	
EQ>DYN>INS	DYN	EQ

PRODUCT OVERVIEW

Duality is a new analogue console for Music Recording and Mixing in the DAW based production environments Incorporating full DAW control previewed on the AWS 900 AND 900+, the console is another major step forward in the 25 year old evolutionary journey of the SSL Master Studio System.

The channel strip is optimised for working in conjunction with a multichannel DAW. Instead of retaining the In-line architecture of previous generation SSL consoles, a new 'Split Mode' topology has been introduced which provides the equivalent of in-line operation but without the complexity of separate channel and monitor paths.

In DAW based production, there is no longer the fixed track limitation of conventional tape based recording. This means that most sources are recorded individually to a track with or without processing as production requirements dictate but without requiring constant access to a 'channel' fader. The AWS 9000 channel supports two inputs designated as the channel input and the DAW return with a single channel output as the DAW send. The 'Split Mode' architecture allows the input signal to be 'picked off' the channel path at the input stage or pre fader and replaced with the DAW return. The Input signal automatically becomes the DAW send and the remaining section of the channel, the DAW return. Toggling the 'Split Mode' On & Off is the equivalent of classic Send/Return (Group/Tape) monitoring. The console Sends can select either the Channel Fader signal or the Channel Output signal as a source, offering the choice of zero latency stereo cue and fx mixes or post DAW sends.

The two band filter section can be routed to the Channel Input pre the Input Split point leaving the analogue eq available in the DAW return.

24 Track busses support recording sub mixes if required. These can be selected as an input to the Channel as per previous SSL large format console convention.

The console is a true 5.1 analogue mixing console with full 5.1 panning on every channel complete with fully variable centre channel divergence and a dedicated LFE send bus. When 5.1 Mixing is not a requirement, the 6 busses are configured as 3 stereo pairs.

The Duality Input amplifier is a remarkable new design coupling SSL's Super Analogue fidelity with a unique valve overload emulation circuit featuring variable odd/even harmonic distortion bias. Accepting both Mic and Line level signals, the ability to dial in varying degrees of harmonic saturation can be used as a creative effect to enhance recorded tracks, as well as when capturing studio based live performances.

Channel Metering

Default meter source is the channel input post the trim control. Additional switched meter points are the CHOP, the DAW return and the Post Fader signal. Alternatively the meters can read the DAW levels directly via the DAW interface.

Channel Output (CHOP)

The Channel output routes signals from various points in the channel path to the DAW input. It has a switchable monitor point to the console SOLO bus as well as the channel metering. Default output source is Post Channel Fader, additional sources are Pre Fader (Pre SPLIT point), the Channel Input (also pre SPLIT point), or an active EFX send. When either INPut or PRE is the source, the SPLIT key activates the Split Monitoring function and routes the DAW return into the Channel path post the Split point.

SuperCue		
Track Ready	DAW Record	Monitor Source
OFF	-	PRE FADER
ON	OFF	PRE FADER
ON	ON	MUTE

Channel Sends

A Stereo send to a choice of busses, CUE A or B. 4 Mono Sends. The stereo send can source a Pre (Default) or Post Channel fader signal or receive the current CHOP source. There is a further source to the Stereo Send which is the ALTernate input (i.e. whichever input is not feeding the channel path when the SPLIT mode is not active). In conjunction with the Master Cue A and B buss reassign to Main LR busses, additional mix sources can be routed into the console via the stereo channel send. The 4 Mono Fx Sends can source either post fader or CHOP signals. EFX routing allows a single send to be isolated from its associated bus and used as source for either the Track Busses (default) or the CHOP. Logic Interlocks prevent feedback paths by preventing EFX on a send sourced from the CHOP if EFX to CHOP Is active.

Duality Channel Strip

Compressor

Using the same classic design as found on the original 4000 series, the main bus compressor can be used as a single stereo unit or as a master 5.1 compressor. In the latter mode, two switches control whether the surround and LFE channels are included in the side chain gain reduction processing. **S/C ∑** defeats the normal 'dominant signal' side chain operation and substitutes a summing mode so that the gain reduction is proportional to the sound field energy as opposed to the loudest individual signal. The assignment of the compressor to the main mix busses is controlled via the output matrix switch panel.

Track Bus Masters

Three identical sets of controls which provide level trim and monitoring for the twenty four track busses. AFL is mono if a single bus is active and stereo for an odd/even pair selection.

Mix Reassign Matrix

Adds the selected Mix(es) post output level control to the main 6 Console Mix Busses. The three stereo mixes,the stereo CUE A & B mixes. plus the output of the stereo monitor selector, EXT B, can be reassigned to busses 1 & 2 (Mix A). The Track busses are partitioned as four groups of 6 and re-assigned to all of the main console busses. This gives up to four 5.1 stems or four triple stereo bus sets.

LFE Channel

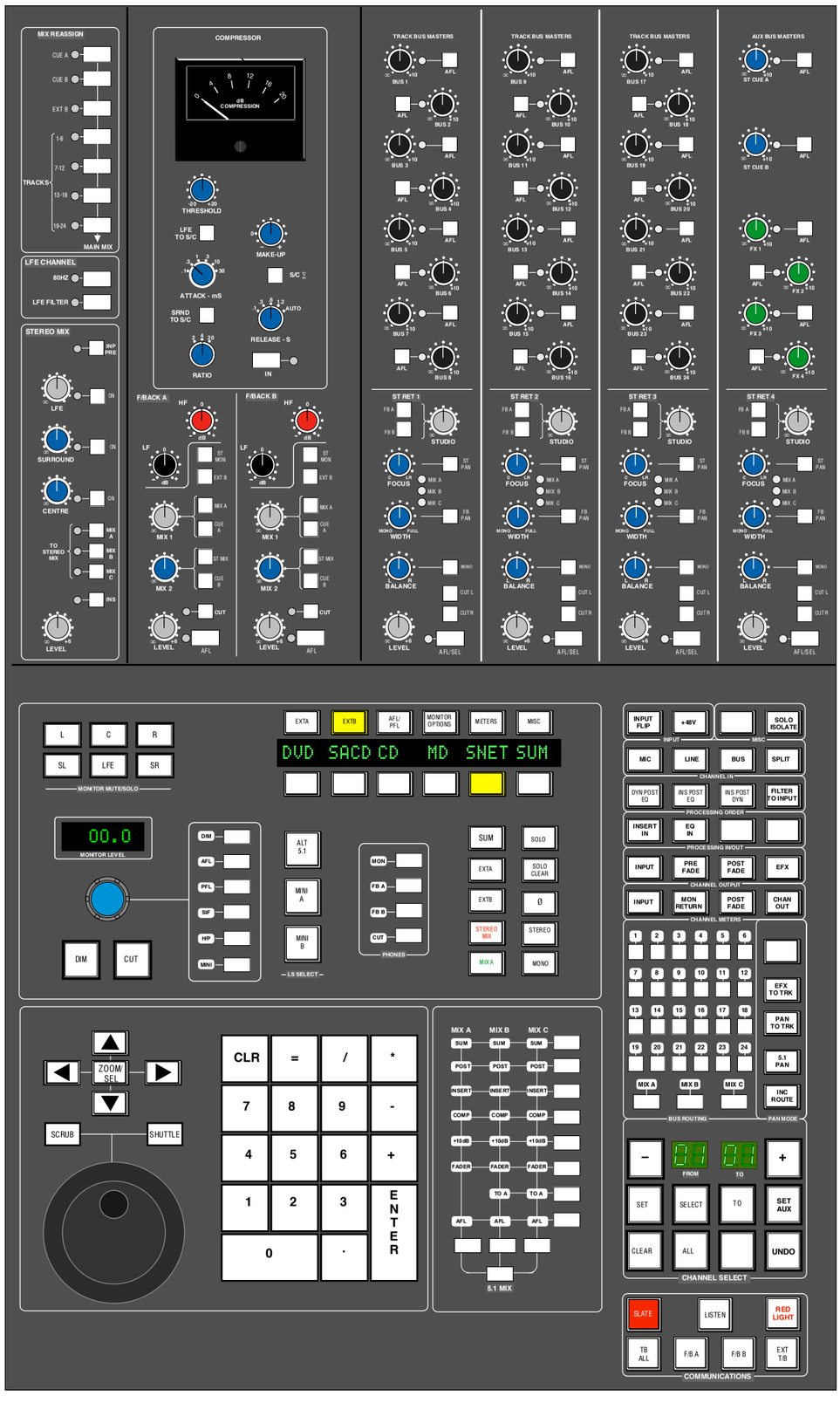
Inserts a low pass filter into the LFE mix bus (bus 4 or Bus BR) when working in Surround. Two filter frequencies are provided, the default 120 Hz filter or a switched 80Hz option. Filter slope is 12dB/Octave.

Stereo Mix Matrix

Sums the console main mix busses with two exclusive modes of operation. The three variable controls and their associated ON switches function as a 5.1 to Stereo Down mix matrix to control the centre, surround and LFE components added to the original 5.1 front L and R channels. Normally the Down Mix is sourced from the Main Mix bus outputs post processing and level control. INP PRE feeds the Matrix directly from the bus mix amps bypassing all processing. The MIX A, B and C switches engage the second mode of operation which is a simple buss sum of the 6 main console busses when they are used as three stereo pairs or stems. The summing is post processing and level control. The resulting stereo mix has a master level trim and a separate pre level control insert point. The insert return supports the 'SUM' option found on the Main console bus insert points but controlled via the MISC menu as opposed to a dedicated front panel key.

Stereo Foldback Outputs

Two identical sections F/BACK A & B, sum various console sources for use as Headphone or Studio monitoring feeds. Each Foldback channel receives six stereo mixes, either directly or via two independent mix level controls together with four additional dedicated stereo feeds from the Stereo Return channels. The two direct inputs are Stereo Monitor (ST MON) which is the Control Room monitor source post the fixed 5.1 down mix matrix and EXT B, the external stereo monitor selector. This provides a simple means of sending a mix or reference playback to the studio. The two mix level controls each have two selectable inputs, Mix 1 receives the CUE A and Stereo Mix A, Mix 2 receives CUE B and the output of the Stereo Mix Matrix. Via the two Mix controls, a number of simple ways are available to build headphone mixes, using the console Stereo Cue Sends and Mix busses. Each output has a master level control, high and low shelving eq and a mute(CUT) switch.



Main Bus Control

Control of the Main Bus Insert modes, re-assign, monitoring and Compressor routing, together with assigning the front panel Master fader to the Mix outputs is through a simple row/column switch and indicator matrix. The functions are controlled by the dedicated row keys on the right of the indicator matrix in conjunction with the Mix select keys located at the base of the indicator matrix columns. The 6 main Mix busses are initially configured as three independent stereo pairs, MIX A, MIX B and MIX C. Each pair has an switchable insert point with the option to be placed pre (default) or post level control. The '∑' mode permits the insert return to be summed with the main signal path. Control is via the first three rows of the Matrix. The fourth row controls the routing for the Master Bus compressor. This functions as single stereo unit inserted via the individual MIX keys or as a 5.1 compressor in conjunction with the 5.1 MIX key. The single master fader is assigned via the Fader row either to the individual stereo mix stems or as 5.1 master fader via the 5.1 MIX Key. The master fader level can be set for unity or +10dB operation either individually for each stem or globally for 5.1 mixes. Stereo Mixes B and C can be folded into the A mix via the TO A row. Each stem can be individually monitored via the AFL row.

Aux Bus Masters

Stereo level trim and monitoring for the two Stereo Cue busses A & B. Mono trim and AFL for the four mono cue busses.

Stereo Return Channels.

Each channel accepts a stereo line signal which can be routed to the main console mix busses with full control of level and panning, and independently to the Foldback outputs A and B via the Studio control and associated routing switches. Both feeds are post the individual input Cut switches. Default routing is to main mix busses 1 & 2 (Mix A) via the master Level control. The Balance control provides a differential L /R gain trim for the stereo input signal. This is followed by a variable stereo width control which can reduce the stereo image to a mono centre phantom point source. The MONO key sums the the inputs and simultaneously alters the action of the Balance control to that of a conventional two channel pan pot. Additional options available for surround panning are FB pan which redesignates the Width control as a Front/Back pan pot, and FOCUS which progressively subtracts the front L R signals and reroutes the sum to the C bus (Bus 3). ST PAN defeats the surround panning options and provides switched routing via the CHANNEL SELECT panel in conjunction with the AFL/SEL key to stereo MIX A, B, and C.

Channel Functions Switches

Central control of channel input selection, mic input phantom power, solo isolate, process order and IN/OUT status, channel output source and channel meter source.

Bus Routing

Central control of channel Main and Track Mix bus Routing via twenty four dedicated switches for the track busses and routing switches for the three main mix busses pairs , Mix A, B and C.

Pan Mode

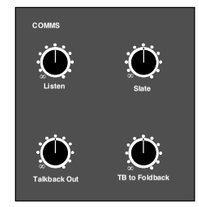
Selects additional options channel signal routing controlled via the adjacent Bus Routing panel. INC ROUTE works in conjunction with the channel select section and provides incremental bus routing for an array of channels. The selected channels will be incrementally routed to consecutive busses starting from the first bus selected. 5.1 PAN enables the channel 5.1 panning mode and links the MIX A, B & C routing keys to function as a group. PAN TO TRK routes the output of the current channel panning mode to the Track Busses. Stereo panning is between odd/even pairs, 5.1 panning divides the track busses into four six channel groups. EFX TO TRK replaces the channel feed to the Track busses with the active EFX send output. Stereo Cue EFX sends are automatically routed to odd/ even pairs.

Channel Select

In conjunction with the local channel select(SEL) switches, provides central access to channel functions controlled by the keys located above the Select area. SELECT enables or disables the panel . The **-** & **+** decrement or increment the selected channel or the range of an array of channels. ALL selects all console channels! Used with an active array of channels or the ALL function, SET AUX links Aux switched functions so that a group of channels can be controlled simultaneously. SET and CLEAR provide an alternative approach to routing and channel set up. With SET (or CLEAR) active, bus routing or channel settings can be preset via the central switches and transferred (or removed) from channels via the local SEL switches. The ALL key can be used to set (or clear) all console channels. UNDO undoes the last action.

Communications

Individual momentary Talkback keys to the two Foldback outputs and to the dedicated External Talkback output. Separate level adjustment is available for the Foldback and External Talkback sends. TB ALL is a Master talkback key to all outputs. SLATE (also momentary) routes the talkback signal to the console busses via its own level control. LISTEN is a latching function which routes a return (reverse) talkback feed to the currently selected MINI monitor output via the Listen Level control. RED Light is a latching switch which controls a pair of isolated relay contacts for external DC signalling control.



Duality **MASTER SECTION OVERVIEW**