The SL 611S Stereo Channel Module

The Stereo Input Module was first introduced in 1985 and can be fitted in place of the standard SL 611G I/O module. It has been designed to work in both SL 6000 and SL 4000 consoles, enabling a stereo input to be controlled by a single module. Slight wiring differences between stereo and mono I/O modules mean that the mainframe and patchbay should be specially pre-wired to accept Stereo Modules.

However, Stereo Modules can be fitted in a frame wired to accept only standard I/O modules. If this is the case then the inputs and insert points will appear on these patch points:

<table>
<thead>
<tr>
<th>Stereo Module Inputs and Outputs</th>
<th>Standard I/O patch labelling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Line Input L</td>
<td>Mic Input</td>
</tr>
<tr>
<td>Line Input R</td>
<td>Line Input</td>
</tr>
<tr>
<td>Insert Send L</td>
<td>Insert Send</td>
</tr>
<tr>
<td>Insert Send R</td>
<td>Insert Return</td>
</tr>
<tr>
<td>Insert Return L</td>
<td>Group Output</td>
</tr>
<tr>
<td>Insert Return R</td>
<td>Group Monitor Input</td>
</tr>
</tbody>
</table>

The SL 611S has comprehensive control facilities to cope with stereo inputs and their routing to the Quad busses and the multitrack Routing Matrix. Unlike the SL 611G module, there is only one signal path through the module so the routing is far simpler. Signals present at the input section are fed via the Large VCA Fader to the Routing Matrix at the top of the channel. The entire signal path is stereo.

No signal will pass out of the channel to the Quad bus and Group Outputs unless a destination is selected on the Routing Matrix.

Total Recall™ is also available for these modules and the Fader and Cut button are connected to the computer automation system in exactly the same way as with SL 611G I/O modules. Total Recall™ recognises the difference between I/O and Stereo Modules and will display the appropriate graphic.
The sections that follow will cover each section of the module in detail, starting with the input section.

Most of the controls will be familiar to you, however, there are several sections which are unique to the Stereo Module and give the engineer stereo control that would otherwise be difficult, if not impossible to achieve, without such a device.

**Input Section**

The SL 611S has an electronically balanced stereo line input which will accept either a Left/Right or Sum and Difference (M/S) stereo signal.

**GAIN** - Switchable gain control providing +/- 20dB of variable gain in 5dB steps.

**TRIM** - Centre detented, and trims the gain of the input by +/- 5dB.

**BAL** - Centre detented balance control which provides +/- 10dB of variable left/right gain offset.

Ø (PHASE) L - Reverses the phase of the left input.

Ø (PHASE) R - Reverses the phase of the right input. Note that pressing both phase buttons will phase reverse both left and right inputs.

**MONO L** - When pressed, the left input is fed to both the left and right sides of the channel and the right input to the channel is cut.

**MONO R** - When pressed, the right input is sent to both the left and right sides of the channel and the left input to the channel is cut.

When both MONO L and MONO R are selected, a mono sum of the
left and right inputs (compensated by a level drop of 3dB on each input signal) is fed through the channel.

M/S - When selected, the left input is assumed to be the Middle, or sum, input and the right input is assumed to be the Side, or difference, input. A decoding matrix is inserted with the M/S switch which derives left and right signals from the Sum and Difference inputs.

Just for your information, the following calculations are used to decode Sum and Difference signals:

\[
\text{Sum} = L + R \\
\text{Difference} = L - R
\]

Therefore, to derive the left and right signals from these inputs:

\[
L = \frac{(\text{Sum} + \text{Difference})}{2} \\
R = \frac{(\text{Sum} - \text{Difference})}{2}
\]

This becomes interesting if the matrix is inserted when normal stereo signals are present at the input. Try it with reverb returns!

**The Routing Matrix**

Unlike the SL 611G module, the only access to the Quad outputs (and the 32 Groups) is found at the top of the channel. The SL 611S Quad bus routing is designated A, B and C, to provide compatibility with the SL 6000 Console which has three stereo mix busses designated A, B and C. The A bus corresponds to the LF and RF Quad busses and the B bus to the LB and RB busses. The C bus selection is not used on the SL4000.
Unlike the I/O modules, SL 611S modules are identical when fitted to either SL 4000 or SL 6000 Series consoles.

The stereo channel can be routed to any combination of these outputs. The left channel signal will route to the odd numbered multitrack groups, the right channel signal to the even groups.

**Dynamics Section**

The Dynamics section is a stereo version of that found in the SL 611G with similar operational parameters.

The control element in this case is the channel fader VCA, so the point of effect of the Dynamics section is essentially fixed within the channel.

The Dynamics' sidechain, however, can be derived from a point PRE Equaliser, POST Equaliser or from the INSert ReTurN for external keying applications. As there is no Group amplifier associated with this module, signals from other modules cannot directly route to the unit's sidechain. However, by routing a signal from another module to an unused Group and patching from that Group Output into one of the Insert Returns, this effect can be achieved. This is especially useful for "ducking" stereo music behind an announcer or for gating stereo reverb returns.
Stereo Equaliser and Filter Section

Filters

The 12dB/octave high and low pass filters have a detented off position so that they may be completely removed from circuit if not required.

Equaliser

This three band stereo equaliser, with carefully matched components, allows accurate stereo control of the audio signal. The three bands each have continuously variable gain and frequency controls.

Each gain control provides +/- 15dB of gain at the frequency selected by the frequency pot. As with the mono equalisers in SL 611G modules, the frequency controls overlap, allowing two controls to work together on the same frequency band if required.

The HF and LF section can be switched from a shelving curve to a bell (peaking) type filter with the BELL switch. The MF section has switchable Q factor of 1 or 2 (HI Q).
The following buttons select the position of the Equaliser and Filters:

IN - Switches the Equaliser into circuit pre-fader.

DYN SC - Switches the Filters into the Dynamics' sidechain for selective compression and gating.

I/P - When the Filters are switched on with the detented controls, they will be directly after the Equaliser in the signal chain. If the I/P button is depressed, they are inserted at the front of the channel before any signal processing (Dynamics and EQ) and the PRE EQ insert point.

Insert Point

The stereo insert can be switched to three points in the signal path:

PRE EQ - The insert point will be before the Equaliser but post the Filters if the I/P button is selected.

POST EQ - The insert point will now appear directly after the Equaliser and Filters if they have been switched in.

POST VCA - Yes, the insert point is now after the channel VCA fader (not possible with the SL 611G I/O module) hence after the Equaliser and Dynamics section (which operates on the VCA).
Overload Indicators

A pair of overload indicators are fitted beneath the Insert switches. Overload detection circuitry monitors signals at four points in the module (channel input, post-insert, post-EQ and post-fader) and indicates when the signal is 3dB below clipping point.

Cue and Auxiliary Sends

As with the SL 611G module, six auxiliary busses are available, configured as one stereo and four mono sends. Each send level control has the SSL standard push on/push off facility (up is off) and can be switched pre or post-fader.

Pre-fader sends are normally cut when the channel is cut. Optionally, links on the motherboard may be set to cut pre-fader sends when their channel or assigned VCA Group Fader is closed. This is useful when studio floor foldback is being fed pre-fader from one of the auxiliary sends. In this case the studio feed will be active from a particular channel until the fader is closed. If the channel is assigned to a stereo source such as a tape machine, unwanted cueing and rewind noises will be prevented from reaching the floor when the fader is closed.

The stereo send (Cue Stereo) feeds the left and right channel signals to the left and right send busses via a single gain control. A centre detented balance control is also provided.
The MONO button sums the left and right channel signals and feeds the resultant signal to both sides of the send bus via the balance control which now acts as a pan.

Cue/Aux sends 1-2 and 3-4 normally feed L+R signals to their busses. When the STEREO LINK button is pressed, the Left channel signal can be fed to send 1 (and 3) and the Right channel signal may be fed to send 2 (and 4). This configures sends 1-2 and 3-4 as stereo pairs.

Sends from the left hand side of the console are fed to the LOCAL AUX SENDS panel. Sends from the right hand side of the console feed through the main CUE and AUX outputs.

Remote Facilities

Two momentary illuminated switches marked START and STOP (controlling relay contacts and reading opto isolated tally returns) provide remote control of external devices such as carts, tape machines, disc players or cue lights. When the FADER START button has been pressed, these functions will operate as the fader is opened and closed. (Switches on the logic card can be set so that the relay contacts are momentary or latching.)

Meter Controls

A single meter above the module can be switched to read:

L - left channel signal (after the Input GAIN control)
R - right channel signal (after the Input GAIN Control)
> < - the higher of the two signals

The meter will also read the channel VCA fader voltage when the VCA's switch on the SL 651G is selected.
Image Controls

Three controls provide a comprehensive stereo image processing system.

IN - The whole image section is switched into the channel when this button is pressed.

IMAGE WIDTH - This control varies the stereo image from full width stereo through mono to a reversed stereo (L/R reversed). The control has a centre detent in the Mono position.

IMAGE PAN - This positions the image, set with the IMAGE WIDTH control, in the stereo picture. With a mono image it provides normal panning; as the image widens, the effect of the pan pot diminishes such that it has no effect on a full stereo image.

Using these controls together can provide the engineer with some interesting perspective effects similar to those found on a video mixer. Stereo images may be flipped, collapsed and panned across the stereo 'picture'.

EXTRA WIDE - This switches in a width enhancement circuit which expands the image outside the normal stereo picture.

FILTER - The FILTER switch can be used to prevent odd phase anomalies on frequencies below 250Hz when the EXTRA WIDE control is in operation.
SOLO ISOLATE - Isolates the channel from the Solo Cut Bus. This is very useful when stereo channels are being used as effects returns. When a channel is soloed, any channels Solo Isolated will not be muted. The soloed channel may then be monitored in stereo with its associated effects return.

SOLO - Provides 'Solo in place' unless the AFL mode is selected on the SL 651G Master Facilities Module, in which case a mono (L+R) signal is monitored on the console AFL bus.

PFL - When operated, a mono (L+R) Pre-Fade Listen signal is sent to the monitors. As an option, the fader may be fitted with a switch so that the PFL signal may be monitored when the fader is held against its backstop.

CUT - Cuts (mutes) the channel. Connected to the SSL Studio computer as part of the automation system.

Fader

The fader facilities, including VCA grouping and automation, are exactly the same as the facilities found on SL 611G I/O module faders. The fader controls two VCAs, one each for left and right channel signals.