

Solid State Logic
S O U N D | | V I S I O N



Super-Analogue™ Outboard

X-Rack Stereo Compressor User's Guide

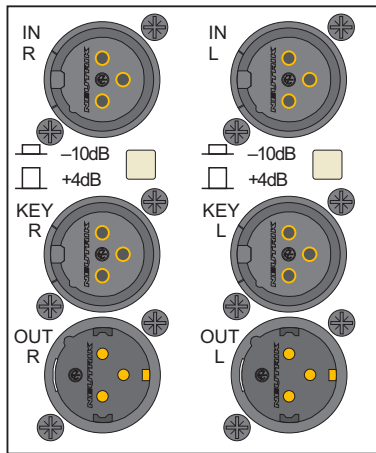
This documentation package contains the User's Guide for your new X-Rack Stereo Compressor module. Depending on the age of your X-Rack, these pages may already be present in your X-Rack Owner's Manual – please check to see if these pages match your Manual. If they do not, these pages should be filed alongside it.

Please Note. For correct operation of Total Recall™, your X-Rack unit must be running V1.3/1 or later software. Please refer to your X-Rack Owners Manual for instructions on how to check the current software version and how to obtain and install a newer version if required.

There may be a newer version of the X-Rack Owner's Manual available for download from our website (www.solid-state-logic.com)

J. Stereo Compressor Module

J.1 Connection



The rear panel of this dual width module carries two Input XLRs ('IN L' and 'IN R'), two Key Input XLRs ('KEY L' and 'KEY R') and two Output XLRs ('OUT L' and 'OUT R'). Connect the two inputs to the main output insert sends of your console or to your workstation outputs. Connect the outputs to the corresponding insert returns or to your workstation inputs. Once the module is connected switch the X-Rack on, then route signal to each channel in turn and check that the signal is returned to the correct input on your console or workstation.

The module input and output gains can be set to operate at a nominal level of either +4dBu or -10dBV, using the switch on the connector panel – select the appropriate level for the equipment you are connecting to. Note that both switches should be set the same for correct operation!

J.2 Operation

The X-Rack Stereo Compressor module is designed to provide flexible control over a stereo mix. The compressor design is based around the Bus Compressor found in the XL 9000 K Series console.

J.2.1 Compressor Controls 1

The main VCA is permanently in circuit; the compressor sidechain is enabled by the **IN** switch. The other sidechain controls are equally straight forward and hopefully require little explanation. The **ATTACK**, **RATIO** and **RELEASE** controls are multi-position switches; the **THRESHOLD** and **MAKE-UP** controls are continuously variable potentiometers.

It should be noted that the knee point of the compressor, set with the **THRESHOLD** control, purposely changes 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 illuminated compression meter 2 at the top of the module displays gain reduction for the compressor.

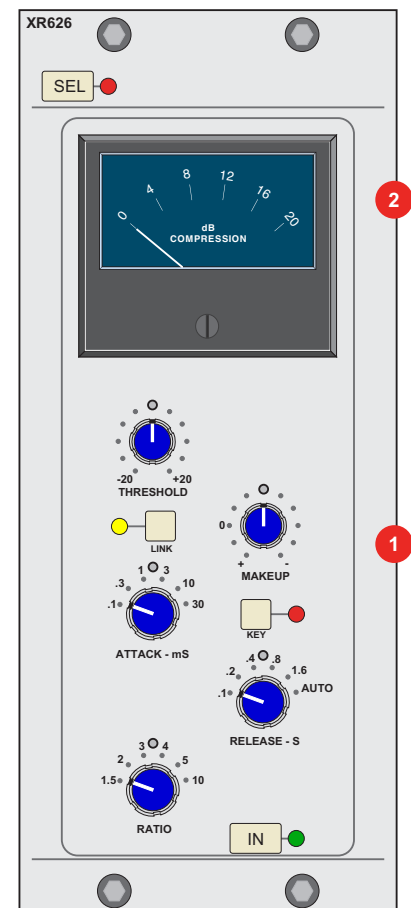
J.2.2 Key Input

The compressor sidechain can be driven either by the main stereo channel signal(s) where the loudest signal wins and provides the sidechain signal, or by an external signal applied to the 'KEY' input(s) on the rear of the module. Note that a stereo key input is provided which, in common with normal operation, also operates on a 'loudest wins' basis. Therefore, for a single mono source, either input can be used.

This feature is enabled by the **KEY** switch on the front panel and opens up the possibility to use the unit as a 'ducker' (for audio-follow applications) or, with external EQ, as a 'de-esser'.

J.2.3 Link Bus

A further option, selected by the **LINK** switch, is a sidechain link bus which enables multiple modules to be used together to create a multi-channel compressor. The combined sidechain can be driven from any of the Key Inputs and will of course operate on a 'loudest wins' basis.



J.3 Performance Specification

The following pages contain audio performance specification figures for the X-Rack Stereo Compressor module. No other Solid State Logic products are covered by this document and the performance of other Solid State Logic products can not be inferred from the data contained herein.

J.3.1 Measurement Conditions

For each set of figures, the specific unit and test setup will be stated at the beginning of that section. Any changes to the specified setup for any particular figure(s) will be detailed beside the figures to which that difference applies.

J.3.2 Measurement References

Unless otherwise specified the references used in this specification are as follows:

- Reference frequency: 1kHz
- Reference level: 0dBu, where 0dBu \approx 0.775V into any load
- Source impedance of Test Set: 50 Ω
- Input impedance of Test Set: 100k Ω
- All unweighted measurements are specified as 22Hz to 22kHz band limited RMS and are expressed in units of dBu
- All distortion measurements are specified with a 36dB/Octave low pass filter at 80kHz and are expressed as a percentage
- The onset of clipping (for headroom measurements) should be taken as 1% THD
- Unless otherwise quoted all figures have a tolerance of ± 0.5 dB or 5%

J.3.3 Performance

Signal applied to either Input and measured at Output. All switches released (including the IN switch – this defeats the sidechain but leaves the main VCA in-circuit).

Input Impedance	> 10k Ω
Output Headroom	> +26dBu at onset of clipping
THD + Noise *	< 0.03% (20Hz – 20kHz)
Frequency Response *	± 0.3 dB from 20Hz to 20kHz –3dB at 90kHz
Noise (input terminated with 50 Ω)	< –90dBu
Crosstalk	< –100dB
Common Mode Rejection	> 70dB from 50Hz to 1kHz > 60dB at 10kHz

* When the compressor is enabled, these measurements will be dependent on attack and release times and signal content.

J.4 Calibration Information

The X-Rack Stereo Compressor module is factory calibrated and should only need calibration if a potentiometer or other component has been replaced or if it is suspected that there is a problem with calibration.

In each of the following instructions it is assumed that the lid of the X-Rack has been removed and that power has been applied. It is also assumed that unless otherwise specified, all switches are released and all front panel potentiometers are at unity or minimum position as appropriate. The required accuracy for each adjustment will be specified along with the target value. All level and distortion measurements should be made with audio-band 20Hz to 20kHz filters unless otherwise specified.

All presets are accessible from the top of the unit. Adjustments for Left and Right are identical.

J.4.1 Distortion Null

Equipment Required:	Calibrated audio oscillator, audio distortion analyser and an oscilloscope
Test Signal:	1kHz sinewave @ 0dBu
Input and Output:	Oscillator to the Input of the channel being tested, Output to the distortion analyser. Use the oscilloscope to monitor the measured signal.
Unit Setup:	Set the Threshold to maximum (fully clockwise) and all other rotary controls to minimum (fully anti-clockwise). Switch the compressor IN.
Adjustment:	<ol style="list-style-type: none"> 1. Adjust VR3 (NULL 1) for minimum distortion 2. Adjust VR1 (NULL 2) for minimum distortion 3. Re-check VR3. Final result should be < 0.005%

J.4.2 VCA Gain (Law)

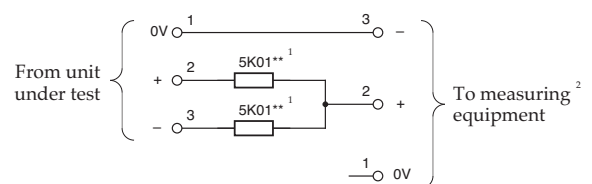
Equipment Required:	Calibrated audio oscillator and audio level meter
Test Signal:	1kHz sinewave @ 0dBu
Input and Output:	Oscillator to the Input of the channel being tested, Output to the audio level meter
Unit Setup:	Set the Threshold and Makeup to maximum (fully clockwise) and all other rotary controls to minimum (fully anti-clockwise). Switch the compressor In.
Adjustment:	<ol style="list-style-type: none"> 1. Adjust VR2 (dB/V) for +21dBu

J.4.3 Output Balance

Equipment Required:	Calibrated audio oscillator, audio level meter and a 'balance' adaptor (see below)
Test Signal:	1kHz sine wave at +24dBu
Input and Output:	Oscillator to the Input of the channel being tested, Output to the audio level meter via the 'balance' adaptor
Unit Setup:	Ensure that the compressor is switched OUT
Adjustment:	Adjust VR4 (BAL) for minimum level (< 55dB _r)

J.4.4 'Balance' Adaptor

For the output balance adjustment, a 'balance' adaptor such as that illustrated here will be required. This adaptor consists of a pair of close tolerance resistors in an in-line cable and is used to sum together a balanced output in order to correctly adjust the level balance of the measured output; perfect balance should result in complete signal cancellation.



- Note
1. Resistor tolerance should ideally be 0.01%
 2. Absolute level measured will depend upon the input impedance of the measuring equipment.

J.5 Connector Details

Audio Input	
Location:	Rear Panel
Conn' Type:	XLR Female
Pin	Description
1	Chassis
2	Audio +ve
3	Audio -ve

Key Input	
Location:	Rear Panel
Conn' Type:	XLR Female
Pin	Description
1	Chassis
2	Audio +ve
3	Audio -ve

Audio Output	
Location:	Rear Panel
Conn' Type:	XLR Male
Pin	Description
1	Chassis
2	Audio +ve
3	Audio -ve

J.6 Physical Specification *

Depth:	200mm / 7.9 inches 275mm / 10.9 inches
Height:	171mm / 6.75 inches
Width:	70mm / 2.8 inches 84mm / 3.3 inches
Weight:	520g / 1.2 pounds
Boxed size:	190mm x 290mm x 100mm / 7.5" x 11.5" x 4.0"
Boxed weight:	760g / 1.7 pounds

*including front panel knobs, excluding connectors
including front panel knobs and connectors*

*front/rear panels
overall width (front and rear panels are offset)*

* All values are approximate

J.7 Environmental Specification

As per X-Rack – see page 19.