



RDL[®]
Radio Design Labs

SPECIALISTS IN PRACTICAL PRECISION ENGINEERING™

STICK-ON[®] SERIES

Model ST-CL1 Compressor/Limiter

ANYWHERE YOU NEED...

- Positive Audio Level Protection
- Smooth Inaudible Gain Reduction
- Tight Audio Peak Control
- Very Low Noise Compressor
- Multi Stage Incremental Gain Reduction
- Fully Automatic Operation
- Superb Performance with Minimal Setup
- Select Average/Peak or Peak Only Control

You Need The ST-CL1!



The ST-CL1 Compressor/Limiter is part of the group of STICK-ON products from Radio Design Labs. The ST-CL1 is a unique, high-performance electronic module offering a sophisticated level of compression and limiting for line-level audio sources.

Audio circuits are direct coupled, producing the impeccable audio clarity and low-noise performance for which Radio Design Labs products are known.

The ST-CL1 features *incremental* gain reduction. This unique RDL circuitry continuously samples the audio at different rates and levels. Each stage of gain reduction preconditions the audio for the next gain reduction detector. Tailoring the audio for each subsequent increment of gain reduction, together with interactive release-time circuitry, produces nearly inaudible operation.

The ST-CL1 is very simple to install and set up for operation. Only two adjustments are needed: Input and Output. The lack of complicated adjustments does not take away from the versatility of the module. The ST-CL1 features a soft-knee compression threshold and compression ratio which automatically adjust to the program material, thereby eliminating the need for numerous installer settings. Three LED indicators cover the incremental ranges of compression, making setting of the input level quick and easy. The input gain determines the threshold and compression levels, with all internal levels optimized for the lowest noise performance. ST-CL1s may be strapped together for stereo operation, or average compression may be restricted by the user for total versatility!

Applications: There is almost no limit to the possible places the ST-CL1 can be effectively used! Anywhere line-level inputs need to be protected against level increases or overloads, placing the ST-CL1 in-line solves the problem. If automatic gain control and compression/limiting are both needed, the ST-CL1 can be used with the ST-GCA products to form an effective processing package. Some examples of possible applications are:

- Audio feeds into paging systems
- Recording machine audio inputs
- Feeds into radio transmission devices which could overmodulate
- Line level feeds into a telephone line which must not be overloaded
- Crucial points in any system which could be inadvertently overloaded with input audio
- Power amplifier inputs fed by any audio source that may have loud bursts resulting in overload or distortion

With its unique combination of sophisticated *incremental* compression, exceptional audio performance, convenient installation and low cost, the ST-CL1 is the optimum product wherever a compressor/limiter is needed!

Functional Description: The input circuit is a balanced bridge amplifier with adjustable gain trim intended to produce a full range of compression from line level signals. Audio passes through an instantaneous clamping circuit, through a voltage controlled amplifier into the output driver amplifier. A trimming control is provided for the output amplifier. Input and output signals may be balanced or unbalanced and the level adjustments accommodate -10 dBu, 0 dBu, or +4 dBu signals.

Two separate RMS detectors feed signals into three timing circuits. The threshold level and slope of each timing circuit are incremented to respond sequentially to signals of varying amplitude and energy levels. Outputs from the timing circuits are combined through a slope-determining summing amplifier into the voltage-controlled amplifier. A strapping terminal is provided for stereo connection when two ST-CL1s are used in a stereophonic application. This terminal also permits the user to restrict operation of the averaging detector if only fast/peak control is desired. Although the peak control is very fast, a separate clamping circuit will attack and thoroughly limit signals of an extreme amplitude with rise-times faster than the attack time of the peak limiting detector. This circuit is not activated by any normal program material, but is included as a positive protection against potential extreme overload signals. The output amplifier may be connected balanced or unbalanced and has a user-adjustable trim to set the desired line level output.



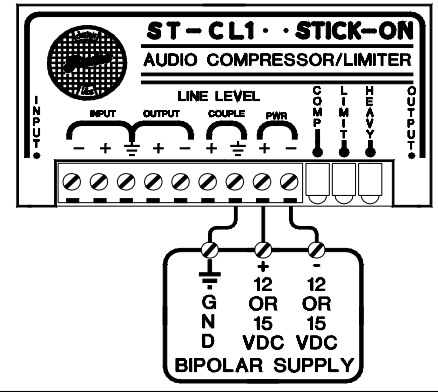
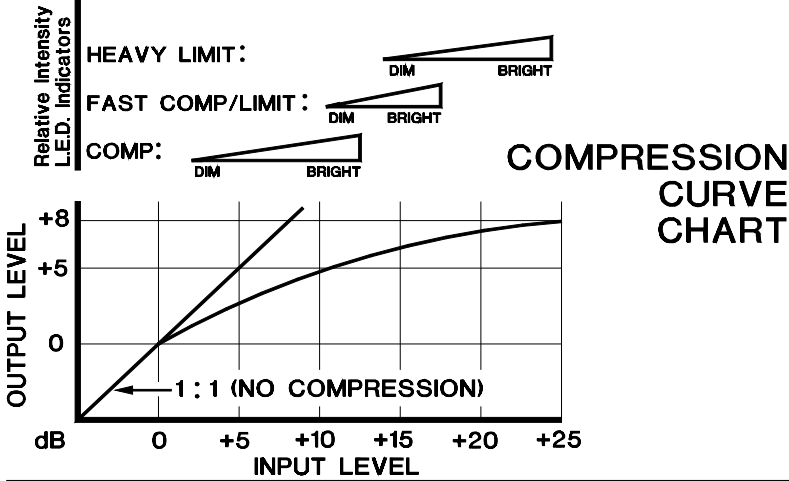
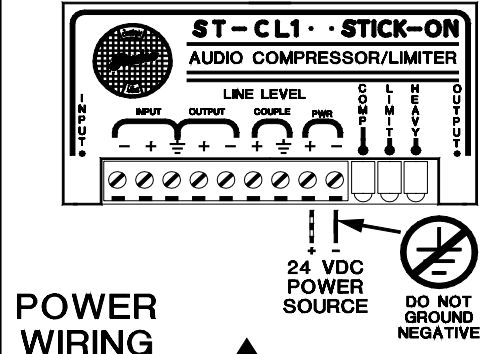
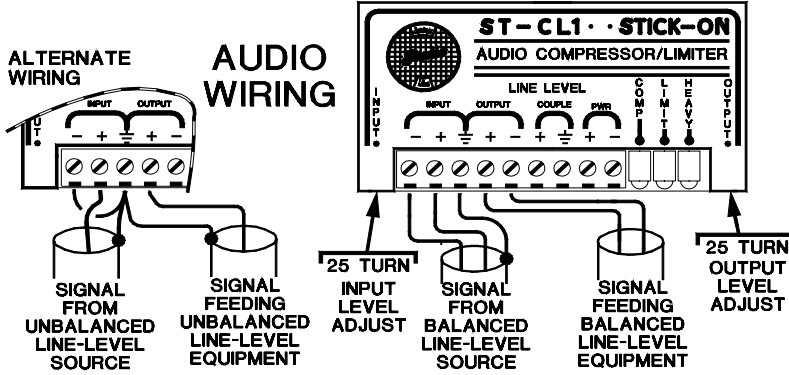
STICK-ON® SERIES

Model ST-CL1 Compressor/Limiter

Installation/Operation



EN55103-1 E1-E5; EN55103-2 E1-E4
Typical Performance reflects product at publication time exclusive of EMC data, if any, supplied with product. Specifications are subject to change without notice.



TYPICAL PERFORMANCE

Input Circuit:	Balanced Bridge 4 kΩ
Input Signal Range:	-10 to +4 dBu (for 6 dB gain reduction)
Output Circuit:	150 Ω Balanced (to drive balanced or unbalanced lines any impedance 150 Ω or higher)
Output Signal Range:	-1 to +8 dBu (balanced 600 Ω) -10 to -1 dBv (unbalanced)
Frequency Response:	10 Hz to 20 kHz +/- 0.50 dB
Noise below +4 dBu output:	< -80 dB (unweighted; input at full gain)
Total Harmonic Distortion:	< 0.050% 1 kHz below compression threshold < 0.150% 1 kHz at 3 dB gain reduction < 0.250% 1 kHz at 6 dB gain reduction
CMRR:	> 60dB
Attack Time:	500 ms Averaging Compressor 500 μs Fast Compression
Release Time:	100 μs Peak Compression/Limiting Automatically adjusting 1 ms to 500 ms
Compression Ratio:	Automatically adjusting 1.5:1 to INF: 1
Average Compressor Typical:	1.8:1
Fast Compressor Typical:	4:1
Peak Compressor Typical:	INF: 1
Interconnection:	Stereo interconnection provided
Indicators:	LEDs for Compression, Fast Compression, and Limiting
Power Requirement:	24 to 33 Vdc @ 60 mA, Floating

Radio Design Labs Technical Support Centers

U.S.A. (800) 933-1780, (928) 778-3554; Fax: (928) 778-3506

Europe [NH Amsterdam] (+31) 20-6238 983; Fax: (+31) 20-6225-287