

OPERATIONAL MANUAL

CharterOak Acoustic Devices MODEL SCL-1 COMPRESSOR LIMITER



Thank you for purchasing the CharterOak SCL-1 Discrete Compressor Limiter. You have purchased one of the best sounding compressor amplifiers in the world. The SCL-1 is a solid-state compressor/limiter that employs all discrete electronics and ultra-high quality input and output transformers. There are no vacuum tubes, integrated circuits, or photo-optical devices in the SCL-1. As a result, the model SCL-1 offers extremely fast attack times without overcompensation and without the familiar pumping, gasping and distortion inherent in most compressor/limiters.

READ CAREFULLY BEFORE PROCEEDING

Any changes or modifications to this equipment will void your warranty and could void your authority to operate this equipment under the EC or FCC rules.

1. Copyright: You acknowledge that no title to the intellectual property in the SCL-1 is transferred to you.
2. Inspection: Inspect packing boxes, SCL-1, and cables for damage, unusual marks, or shortages. It is your responsibility to report damage, shortage, or misshipments in a timely manner. CharterOak Acoustic Devices and/or its dealers will not be responsible for claims arising from damage in shipping, nor will claims for shortage or misshipments be honored, more than 30 days after ship date without direct authorization from CharterOak.
3. Read this manual carefully and completely before attempting to use the SCL-1. Improper operation could result in damage to product. It is the user's responsibility to understand the safe use and operation of this device.
4. The shipping box of the SCL-1 system will include (1) Owner's Manual, (1) SLC-1 Unit, (1) a UL approved power cord, (1) Warranty Registration Card. Fill out the Warranty Registration Card and return to CharterOak Acoustic Devices at your earliest ability to activate the Lifetime Warranty.

The material contained in this manual consists of information that is property of CharterOak Acoustic Devices and is intended solely for use by the purchasers of the equipment described in this manual. CharterOak Acoustic Devices expressly prohibits the duplication of any portion of this manual or the use thereof for any purpose other than the operation and/or maintenance of the equipment described in this manual without the express written permission of CharterOak Acoustic Devices.

Serial numbers are located on the rear right side of each unit. We suggest that you record the serial numbers in the space provided below. Refer to it whenever you call or email CharterOak Acoustic Devices Service Department. Make sure that you return your completed warranty card immediately.

Features and specifications subject to change without notice.
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Serial No. _____
Purchase Date _____
Where Purchased _____



WARNINGS AND PRECAUTIONS

Always follow the basic warnings and precautions listed below to avoid the possibility of serious physical injury to you or others, death, damage to the device, from electrical shock, short-circuiting, damages, fire, or other hazards.

These warnings and precautions include but are not limited to the following:

This device contains no user-serviceable parts. Do not attempt to disassemble or modify the internal components of the SCL-1 in any way. Doing so will void your warranty.

Do not expose the SCL-1 to rain, or use it near water or in damp conditions.

If the audio cables become frayed or damaged, there is a sudden loss of sound during the use of the SCL-1, or if any unusual smells or smoke should appear to be caused by it, immediately turn off the power on all devices in use, disconnect the SCL-1, and have it inspected by qualified technicians.

Only use the AC line voltages supported by the multi-tap power transformer employed in the SCL-1. The SCL-1 has a voltage selector switch located at the rear of the unit which allows for 115 and 230 volt operation.

Do not place the audio or power cords near heat sources such as heaters or radiators, and do not excessively bend or otherwise damage the cords, place heavy objects on them, or place them in positions where anyone could walk on, trip over, or roll anything over them.

The SCL-1 is extremely robust and is designed to provide years of continuous operation, even in adverse environments. However, if possible, you should not expose the SCL-1 to any excessive dust or vibrations, or extreme cold or heat. This includes but is not limited to: a car on a hot day, direct sunlight for extended periods of time, or near a heater, radiator, or air conditioner.

NOTE: CHARTEROAK Acoustic Devices cannot be held responsible for damages caused by improper use or modifications of the SCL-1 discrete compressor limiter.



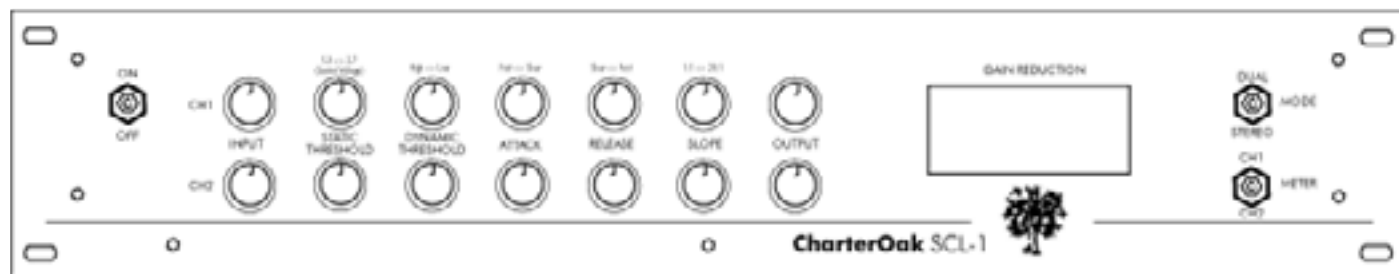
GETTING STARTED

The SCL-1 will provide a constant output level regardless of input level or frequency. The release characteristic is a function of the total dynamic range and the average program level. The device achieves this through waveform differentiation and integration. The SCL-1 employs a rectifier circuit that has a parabolic average charge curve. The intent of the circuit is to provide fast releases of rhythmic and staccato peaks, which release to a continually changing average level or sustained music, which is determined by the parabolic charge curve of the storage capacitors. The SCL-1 has low inherent noise and broad dynamic range. Its rich and balanced sound makes it an ideal choice for extremely high quality dynamics control in the recording, mixing, and broadcast environments. The SCL-1 is exceptional when used as a stereo buss compressor.

When used as a stereo buss compressor, the CharterOak SCL-1 completely eliminates the need for high pass and low pass filters, other equalizers used in side chains, and other convoluted signal paths. Most compressor limiters when used in the mix buss, will react to transient peaks in such a way as to make it sound like there is a ducker on the vocal or the rest of the mix. The circuit employed in the SCL-1 releases to a constantly changing average program level with a characteristic that is extremely musical due to the parabolic charge curve of the storage capacitors.

The SCL-1 employs NO MAGIC BLACK BOXES or other wallet shrinking components. All of the components used in the SCL-1 are readily available and are employed in a manner so as to provide high headroom for years of use, without the need for shut-down or service.

The SCL-1 can be used a stereo signal processor or two independent signal processors.



For stereo operation, set the MODE switch to STEREO and the meter switch to Channel 1. When using the unit with the MODE switch set to STEREO, the STATIC THRESHOLD, DYNAMIC THRESHOLD, ATTACK, RELEASE, and SLOPE controls on channel 1 control the unit. The INPUT and OUTPUT controls remain independent and constantly variable in both STEREO and DUAL modes of operation.

Begin by calibrating the STATIC THRESHOLD control on channel one for 2.9 VDC or "0" VU. To start, apply program material with peaks of at least "0" VU to the input jacks at the rear of the unit. The SCL-1 is intended for +4 **balanced operation**. Set the INPUT control at "7". Set the DYNAMIC THRESHOLD control at "7" or close to the lowest possible threshold. Set the ATTACK control at "3", or medium fast. Set the RELEASE control at "7" or medium fast. Set the SLOPE control at "5" or 10:1 compression. Gradually turn OUPUT control clockwise to achieve the desired output level. NOTE: These settings are intended to be a suggested starting point and can vary according to the level and rhythmic characteristics of the program material. If the compressor is inactive you need to take one or more of the following steps; increase INPUT level, lower DYNAMIC THRESHOLD, use faster ATTACK time, increase SLOPE.

It is suggested that you do not adjust the STATIC THRESHOLD control again until you are satisfied with your results. After you are satisfied with the dynamics and rhythm of your program material, you can use the STATIC THRESHOLD control as a constantly variable knee control. By slightly raising the control voltage towards 5.0 VDC or counter clockwise you can create



less potential for swing in the control circuit, thus softening the knee. Alternatively, you can slightly lower the control voltage towards 2.5 VDC or clockwise, creating the potential for more swing in the control circuit thus hardening the knee.

For dual mono operation, set the MODE switch to DUAL. The METER switch can now be used to monitor the activity on channels 1 and 2. Start by putting the METER switch in the channel 1 position. Calibrate the STATIC THRESHOLD control on channel 1 for 2.9 VDC or "0" VU. Put the METER switch in the channel 2 position and calibrate the STATIC THRESHOLD control on channel 2 for 2.9 VDC or "0" VU. To start, apply signal with peaks of "0" VU to the input jacks at the rear of the unit. Set the INPUT controls at "7". Set the DYNAMIC THRESHOLD controls fully clockwise or lowest possible threshold. Set the ATTACK controls at "3", or medium fast. Set the RELEASE controls at "7" or medium fast. Set the SLOPE control at "5" or 10:1 compression.

Exactly as when you are using the SCL-1 as a stereo compressor, it is suggested that you do not adjust the STATIC THRESHOLD control again after calibration until you are satisfied with your results. After you are satisfied with the dynamics and rhythm of your track, you can use the STATIC THRESHOLD control as a constantly variable knee control. By slightly raising the control voltage towards 5.0 VDC or counter clockwise you can create less potential for swing in the control circuit, thus softening the knee. Alternatively, you can slightly lower the control voltage towards 2.5 VDC or clockwise, creating the potential for more swing in the control circuit thus hardening the knee.

Gradually turn the OUPUT control clockwise to achieve the desired output level. NOTE: These settings are intended to be a suggested starting point and can vary according to the level and rhythmic characteristics of the program material.

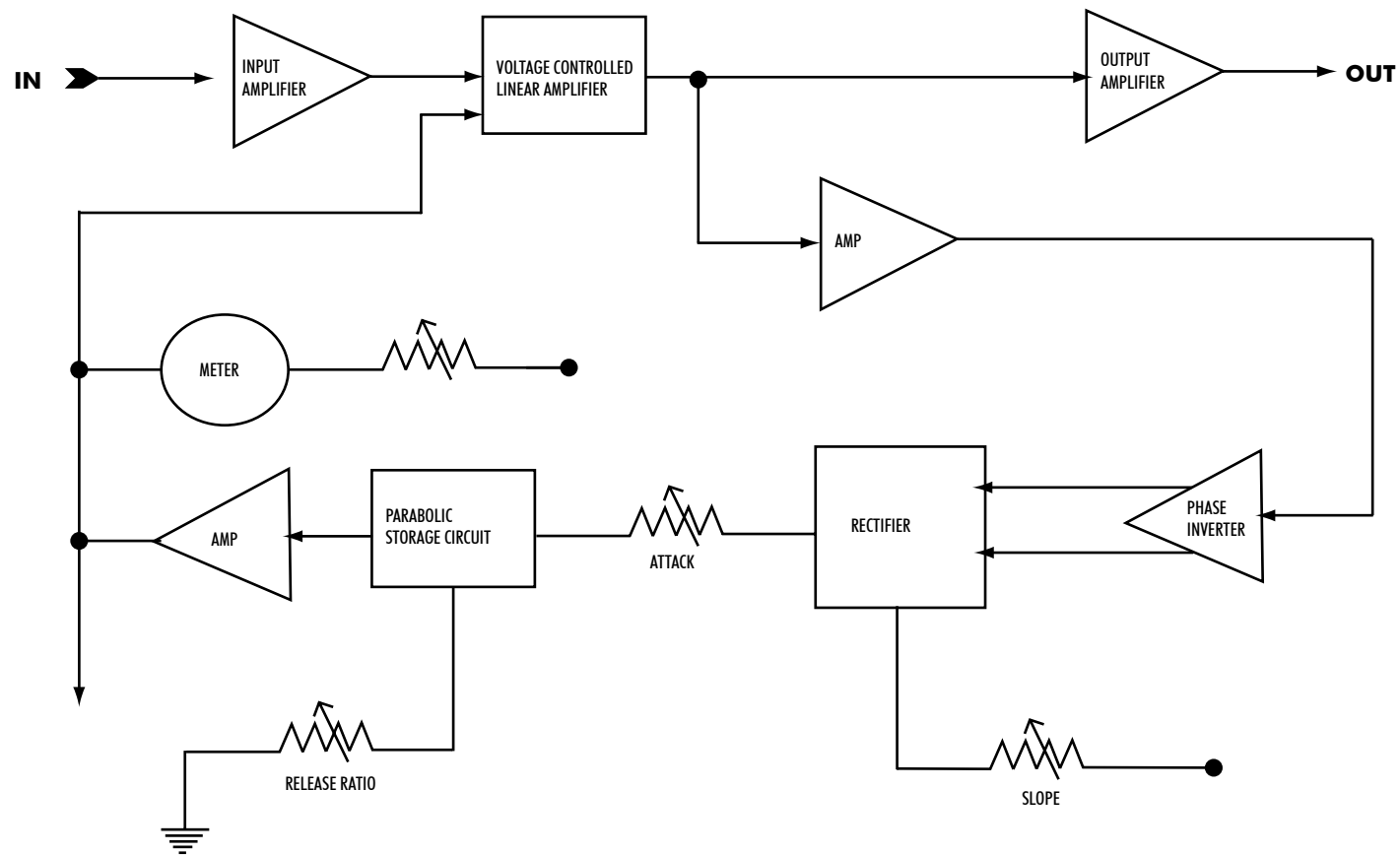
The SCL-1 has extremely high headroom and allows for several decibels of make up gain if necessary.

Always make sure you put enough signal into the compressor. Never be afraid to drive the unit. It will never pump or gasp or distort. In order to achieve the best results, all of the controls on the SCL-1 are constantly variable. The SCL-1 is capable of extremely fast attack times. Setting the ATTACK CONTROL on "0" or 100us can be useful, but is not recommended. Be careful to adjust the ATTACK and RELEASE controls in a manner so as to allow the peaks in the music to come through clearly. This will ensure that all of the rhythmic content of the music is preserved and enhanced.

Additionally, when using the SCL-1 as a stereo buss compressor, try to make sure that the average gain reduction is no less than -3 dB and no more than -20 dB. Average gain reduction on the order of -4dB to -8dB, will result in a +3dB slope shift, providing a higher average modulation level.



SIGNAL FLOW



SPECIFICATIONS

Frequency Response: 20Hz to 22kHz

Harmonic Distortion: Less than 1% with 20dB of gain reduction @ +20dBm output.

Maximum Output: +22 dBm

Signal to Noise Ratio: -80dB referenced to +10dBm

Attack Time: Adjustable from 100us to 5ms

Hold Time: Less than 2ms. Unit provides a soft clip. (Less than 3% total harmonic distortion @ 3dB clip)

Release Time: Adjustable from 20ms to 2 seconds.

Crosstalk: -90dB

Input Impedance: 600 Ohms balanced

Output Impedance: 600 Ohms balanced

Sync Tracking: Control circuits are matched to within less than .25dB over the entire gain reduction range

Power Requirements: 117 VAC or 230 VAC



WARRANTY

CharterOak Acoustic Devices will repair this product, free of charge, in the event of defect of materials or workmanship for the lifetime of the product. This warranty is extended only to the original purchaser. This warranty covers failures due only to defects in materials and workmanship which occur during normal, intended use and does not cover damage which occurs in shipment or failures which are caused by products not supplied by CharterOak Acoustic Devices. This warranty does not cover failures which arise from accident, misuse, abuse, neglect, mishandling, misapplication, faulty installation, improper adjustment, alteration or modification of product, incompatibilities, line-power surges, acts of God, or service performed by anyone other than CharterOak Acoustic Devices or its authorized agent.

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SCL-1 SESSION RECALL

INPUT	STATIC THRESHOLD	DYNAMIC THRESHOLD	ATTACK	RELEASE	SLOPE	OUTPUT
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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