LoC™ 22

Line Output Converter



OWNER'S MANUAL

Installation Applications

This product is designed for operation in vehicles with 12 volt, negative-ground electrical systems. Using this product in systems with positive ground and/or voltages other than 12 volts may result in damage to the product and will void the warranty. This product is not certified or approved for use in aircraft.

Safety Considerations

- Install this product in a dry, well-ventilated location that does not interfere with your vehicle's safety equipment (air bags, seat belt systems, ABS brake systems, etc.).
- Securely mount this product so that it does not come loose in the event of a collision or sudden jolt to the vehicle.
- Check before drilling to make sure that you will not be drilling into a gas tank, brake line, wiring harness or other vital vehicle system.
- Do not run system wiring outside or underneath the vehicle. This is an extremely dangerous practice, which can result in severe damage/injury.
- Use good quality crimp connectors (or solder with heat shrink tubing) when making connections to a vehicle's electrical system.
- Take the necessary precautions when making connections to the vehicle's battery.
- Protect all system wires from sharp metal edges and wear by carefully routing them, tying them down and using grommets and loom where appropriate. Failure to do so may result in a dangerous short circuit.

Planning Your Installation

It is important that you take the time to read this manual and that you plan your installation carefully. It is very easy to damage expensive vehicle systems in modern automobiles. Never assume that you have found appropriate wires without consulting a reliable wiring diagram or without performing signal testing with proper test equipment. If you are uncomfortable or unfamiliar with reading diagrams or testing signals, please enlist the services of your authorized JL Audio dealer to perform the installation.

Product Description

The LoC™ 22 is an active two-channel processor engineered to adapt the outputs from factory audio systems for use with aftermarket amplifiers and signal processors.

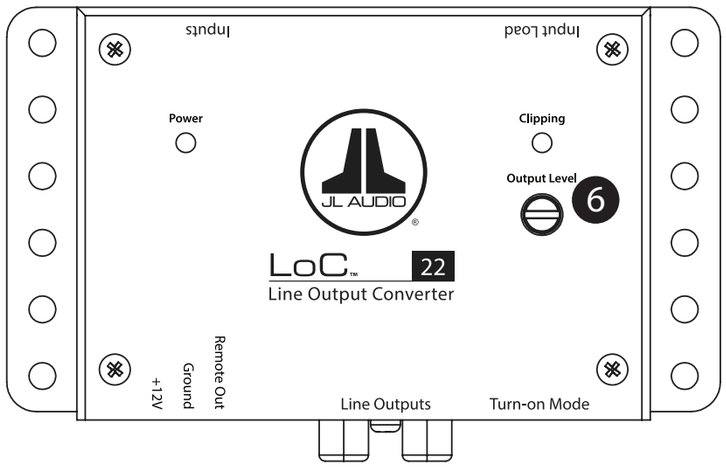
The LoC™ 22 is equipped with the following features:

1. Fully active, all analog circuit design by Bruce Macmillan, handles powerful factory amplifier outputs, up to 40 volts per channel
2. Differential-balanced input architecture offers noise rejection and compatibility with most analog outputs from OEM source units and amplifiers
3. Dual range input load switch for maximum compatibility with OEM amplifiers
4. One stereo pair of crystal-clear, line-level RCA output jacks (up to 8V RMS)
5. Automatic turn-on via DC-Offset or Signal-Sensing
6. A dedicated 12V remote turn-on output to activate aftermarket signal processors or amplifiers (similar to an aftermarket head unit's remote turn-on lead)
7. Onboard LED clipping indicator for quick & easy output level setting

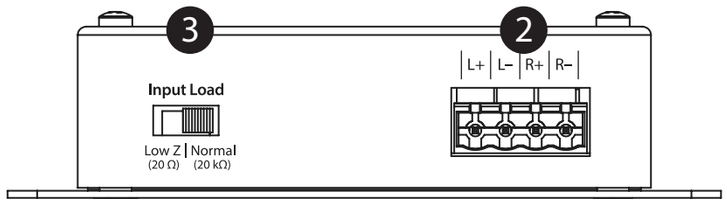
What's Included

(1) LoC™ 22 Line Output Converter
(1) 3-pin Power Connector plug
(1) 4-pin Input plug
(1) User manual

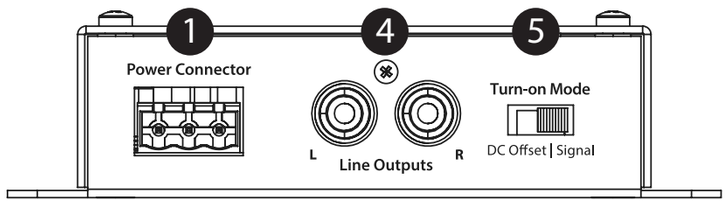
LoC™ 22 Top View



LoC™ 22 Input Panel



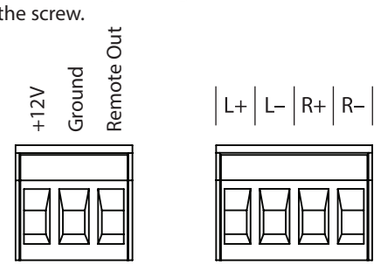
LoC™ 22 Power Connector / Line Outputs Panel



1. **Power Connector**
2. **Input Connector**
3. **Input Load**
4. **Line Outputs**
5. **Turn-on Mode**
6. **Output Level**

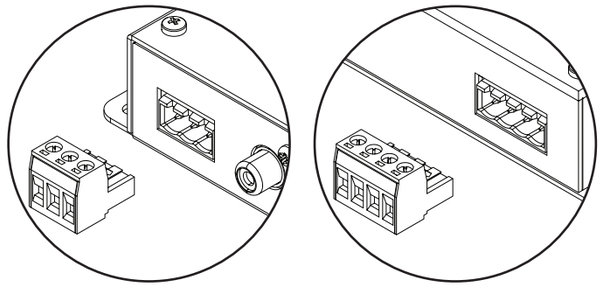
Installation Procedure/Making Connections

The LoC™ 22 uses removable plugs for making power and input signal connections. Receptacles in each plug accept up to 16 AWG wire. To attach wires, remove the plugs from the LoC™ 22 and use a small flathead screwdriver to back out the set screws. Strip 1/4 inch (6 mm) of insulation from the end of each wire and insert the bare wire into the receptacle, seating it firmly so that no wire is exposed. While holding each wire in place, tighten the set screw firmly, taking care not to strip the head of the screw.



! IMPORTANT

Use caution to ensure correct polarity and wire placement of the Power and Input signal connections.



! IMPORTANT

Make sure to observe proper orientation when inserting the plugs into the LoC™ 22. Each plug is keyed to fit in one direction only. When inserted correctly, the set screws should be facing up.

1 Power Connector

The LoC™ 22 has a 3-pin "Power Connector" jack located next to the "Line Outputs". The Power Connector jack accepts the removable 3-pin plug and is used to make the following connections:

Plug	Connection	Description
Power Connector	+12V	Positive (+12V) Power Connection
	Ground	Negative (GND) Ground Connection
	Remote Out	Positive (+12V) Turn-On Output

! IMPORTANT

Failure to make safe, tight, high-integrity connections can result in fire and extensive damage.

1. **+12V:** Connect this to a constant positive (+12V) source. The internal circuitry of this connection is equipped with a self-resetting fuse designed to protect the unit internally. To protect the vehicle and its electrical system from damage, always install an appropriate fuse within 18 inches (45 cm) of the +12V connection point. If this is the only device using the connection point, we recommend using a 1A fuse.
2. **Ground:** Connect to a clean, solid metal grounding point. Ideally, the +12V and Ground connections should be run to the same distribution points that the amplifiers use for their power and ground connections. **This will minimize the possibility of noise in the system.**
3. **Remote Out:** This connection provides a positive (+12V) turn-on voltage (100 mA limit) to activate other aftermarket signal processors or amplifiers (similar to an aftermarket head unit's remote turn-on lead). If your equipment requires more than 100 mA total for activation, this connection can be used to trigger a relay to control the equipment in your system.

2 Input Connector

The LoC™ 22 accepts two channels of speaker-level audio output from an OEM audio source (up to 40 V RMS per channel). Engineered to combat induced cable noise, the input architecture is set up in a differential-balanced configuration, making these inputs compatible with virtually any analog audio signal. Connections are made via a 4-pin plug located on the side of the unit, with the audio inputs separated in pairs (Left and Right). Refer to the table below when making connections with your OEM audio source.

Plug	Connection		Description	
Inputs	L+	Ch. 1 input	(+) Positive Left Channel Signal	If the OEM subwoofer signal is mono (one ch. only), connect it to both the left and right channels, in parallel.
	L–		(–) Negative Left Channel Signal	
	R+	Ch. 2 input	(+) Positive Right Channel Signal	
	R–		(–) Negative Right Channel Signal	

! IMPORTANT

It is very easy to damage expensive vehicle systems in modern automobiles. Never assume that you have found appropriate wires without consulting a reliable wiring diagram or without performing signal testing with safe test equipment. If you are uncomfortable with reading diagrams or testing signals, please enlist the services of your authorized JL Audio dealer to perform the installation.

! IMPORTANT

It is vital to observe the correct electrical polarity of each channel's input signal. Failure to do so can result in loss of signal and poor performance.

3 Input Load

Some factory audio amplifiers employ a load detection circuit that looks for a low-impedance load (expecting a speaker) in order to enable audio output. When a high-impedance load is connected to these factory amplifiers, the audio outputs will mute.

After installing the LoC™ 22 and turning on the audio system, if there is no output from the factory amplifier, change the position of the "Input Load" switch from the default "Normal" position to the "Low Z" position. This will present a safe and appropriate load to the factory amplifier and correct the muting behavior. Refer to the "Output Level" section for additional information.

4 Line Outputs

The LoC™ 22 is equipped with a pair of analog RCA-type, line-level output jacks to feed audio signals to your aftermarket system. Analog outputs are compatible with most types of aftermarket signal processors or amplifiers. The level of this output is configured using the "Output Level" control and "Clipping" LED located on top of the LoC™22. Refer to the "Output Level" section for additional information.

5 Turn-On Mode

There are two options to activate the LoC™ 22, which can be selected via the "Turn-on Mode" switch. Refer to the table below for detailed info and decide with option is best suited for your specific system.

Setting	Mode	Function
DC Offset (Preferred)	DC Offset Sensing (Auto)*	Automatically turns on and off by detecting the presence of small DC signal in OEM audio outputs.
Signal	Signal Sensing (Auto)*	Automatically turns on by detecting OEM audio signals and turns off after signal is removed (varies, depending on input signal levels).

6 Output Level

The "Output Level" control and "Clipping" LED are used together to assure clean, unclipped audio output is delivered to your aftermarket amplifiers or signal processors. Rotating the control clockwise will result in increased output (louder for a given input voltage). Rotating the control counter-clockwise will result in decreased output (quieter for a given input voltage). Follow the steps below to adjust the output level of the LoC™ 22.

Necessary Equipment

CD with a sine-wave test tone recorded at 0 dBfs reference level in the frequency range to be amplified for that set of channels (50 Hz for subwoofer channels, 1 kHz for a midrange application). Do not use attenuated test tones (-10 dB, -20 dB, etc.). If your OEM source unit is not equipped with a CD player, you may transfer the test tone to a portable media player or thumb drive and connect to your source unit's auxiliary input. Make sure to disable any EQ/DSP modes on your portable media player during level setting.

The Six-Step Procedure

1. Disconnect the RCA cables from the "Line Output" jacks.
2. Turn off or center all processing (bass/treble, loudness, EQ, etc.) on the source unit. Set the fader control to the center position and set the source unit volume to ¾ of maximum.
3. Set the "Input Load" switch to "Normal". Turn the "Output Level" control all the way down.
4. Verify that you have disconnected the "Line Output" jacks before proceeding. Play a track with an appropriate sine wave (within the frequency range to be amplified) at ¾ source unit volume.
5. Slowly increase the "Output Level" control until the "Clipping" LED turns solid green. This corresponds to 2V RMS output. If you continue to increase the level, the "Clipping" LED will change to red above 8V RMS, indicating output clipping. Note: If the LoC™ 22 does not power up at all, this may indicate that the factory amplifier employs a load detection circuit that looks for a low-impedance load (expecting a speaker) in order to enable audio output. If there is no output from the factory amplifier, change the position of the "Input Load" switch from the default "Normal" position to the "Low Z" position. This will present a safe and appropriate load to the factory amplifier and correct the muting behavior.
6. Once you have adjusted the LoC™ 22's "Output Level" control, reduce the source unit's volume to prevent sudden output bursts and reconnect the "Line Output" jacks. Proceed with adjusting the amplifier's input sensitivity controls accordingly.

It will be necessary to re-adjust the "Output Level" control if any of the source unit's sound settings are changed after configuring the "Output Level" with this procedure. This applies to equalizer/tone and balance/fader controls.

Specifications

Electrical Specifications	
Power Supply Type	Switching, MOSFET PWM, Regulated
Operating Voltage	9 – 16V DC
Standby / Operating Current Draw	< 1.6 mA / 0.13 A at 13.8V
Frequency Response	3 Hz - 32 kHz (+0 dB, -1dB)
S/N Ratio @ 2V RMS	Gain at Min: 118 dB Gain at Max: 103 dB (20 kHz Bandwidth)
Remote Output Capacity	100 mA (maximum)
Recommended Fuse Value / Type	1 A / Fast-Acting, ATO/ATC or similar
OEM Input Section	
Number of Input Channels / Type	Two / Differential-Balanced
Input Voltage	40V RMS per channel (maximum)
Input Impedance	Normal: 20 kΩ / Low Z: 20 Ω
Turn-On Threshold	DC-Offset: 4.5 V
	Signal-Sensing: 5 mV On/3.5 mV Off at 1 kHz (Left Input)
Output Section	
Number of Output Channels / Type	Two / Unbalanced, via RCA Jacks
Max. Unclipped Output	8V RMS
Output Impedance	450 ohms
Gain Range	-27.3 dB (full CCW) to +3.2 dB (full CW)
THD + Noise	0.01% at 2V RMS (1kHz)
Dimensions	
L x W x H	4.72 in. x 3.04 in. x 1.23 in. (120 mm x 77 mm x 31 mm)

Limited Warranty – Electronics (USA)

JL Audio warrants this product to be free of defects in materials and workmanship for a period of two (2) years from the original date of purchase. This warranty is not transferable and applies only to the original purchaser from an authorized JL Audio dealer. Should service be necessary under this warranty for any reason due to manufacturing defect or malfunction, JL Audio will (at its discretion), repair or replace the defective product with new or remanufactured product at no charge. Damage caused by the following is not covered under warranty: accident, misuse, abuse, product modification or neglect, failure to follow installation instructions, unauthorized repair attempts, misrepresentations by the seller. This warranty does not cover incidental or consequential damages and does not cover the cost of removing or reinstalling the unit(s). Cosmetic damage due to accident or normal wear and tear is not covered under warranty.

Warranty is void if the product's serial number has been removed or defaced.

Any applicable implied warranties are limited in duration to the period of the express warranty as provided herein beginning with the date of the original purchase at retail, and no warranties, whether express or implied, shall apply to this product thereafter. Some states do not allow limitations on implied warranties, therefore these exclusions may not apply to you. This warranty gives you specific legal rights, and you may also have other rights, which vary from state to state.

If you need service on your JL AUDIO product:

All warranty returns should be sent to JL Audio 's Electronics Service Facility freight-prepaid through an authorized JL Audio dealer and must be accompanied by proof of purchase (a copy of the original sales receipt). Direct returns from consumers or non-authorized dealers will be refused unless specifically authorized by JL Audio with a valid return authorization number. Warranty expiration on products returned without proof of purchase will be determined from the manufacturing date code. Coverage may be invalidated as this date is previous to purchase date. Non-defective items received will be returned freight-collect. Customer is responsible for shipping charges and insurance in sending the product to JL Audio. Freight damage on returns is not covered under warranty.

For Service Information in the U.S.A. please call
JL Audio Customer Service:
(954) 443-1100
9:00 AM – 5:30 PM (Eastern Time Zone)
JL Audio, Inc.
10369 North Commerce Pkwy.
Miramar, FL 33025
(Do not send product for repair to this address)

International Warranties:
Products purchased outside the United States of America are covered only by that country's distributor and not by JL Audio, Inc.