

**CS300.1**  
**CS60.4**  
**CS60.2**

CAR AUDIO  
POWER AMPLIFIER  
OWNER'S MANUAL



**JBL**

®

[www.jbl.com](http://www.jbl.com)

The Official Brand of Live Music.

**CS SERIES**

# INSTALLATION

## THANK YOU

for purchasing a JBL CS Series amplifier. In order that we may better serve you should you require warranty service for your new amplifier, please retain your original purchase receipt and register your new JBL amplifier online at [www.jbl.com](http://www.jbl.com).

## WARNING

Playing loud music in an automobile can hinder your ability to hear traffic and permanently damage your hearing. We recommend listening at low or moderate levels while driving your car. JBL accepts no liability for hearing loss, bodily injury or property damage resulting from the use or misuse of this product.

## IMPORTANT

To get the best performance from your JBL CS Series amplifiers, we strongly recommend that installation be entrusted to a qualified professional. Although these instructions explain how to install CS amplifiers in a general sense, they do not show specific installation methods that may be required for your particular vehicle. If you do not have the necessary tools or experience, do not attempt the installation yourself. Instead, please ask your authorized JBL car audio dealer about professional installation.

## INSTALLATION WARNINGS AND TIPS

- Always wear protective eyewear when using tools.
- Turn off the audio system and other electrical devices before you start. Disconnect the (–) negative lead from your vehicle's battery.
- At the installation sites, locate and make a note of all fuel lines, hydraulic brake lines, vacuum lines and electrical wiring. Use extreme caution when cutting or drilling in and around these areas.
- Check clearances on both sides of a planned mounting surface before drilling any holes or installing any screws. Remember that the screws can extend behind the surface.
- Before drilling or cutting holes, use a utility knife to remove unwanted fabric or vinyl to keep material from snagging in a drill bit.
- When routing cables, keep input-signal cables away from power cables and speaker wires.
- When making connections, make certain they are secure and properly insulated.
- If the amplifier's fuse must be replaced, use only the same type and rating as that of the original. Do not substitute another kind.

## CHOOSING A LOCATION AND MOUNTING THE AMPLIFIER

Choose a mounting location in the trunk or cargo area where the amplifier will not be damaged by shifting cargo. Amplifier cooling is essential for proper amplifier operation. If the amplifier is to be installed in an enclosed space, make sure there is sufficient air circulation for the amplifier to cool itself.

When mounting the amplifier under a seat, ensure that it is clear of all moving seat parts and does not affect the seat adjustments. Mount the amplifier so it is not damaged by the feet of backseat passengers. Make sure that the amplifier is mounted securely using nuts and bolts or the supplied mounting screws.

Mount the amplifier so that it remains dry – never mount an amplifier outside the vehicle or in the engine compartment.

# INSTALLATION

## POWER CONNECTIONS

The CS amplifiers require a reliable connection to the vehicle's electrical system in order to perform optimally. See Figures 1, 2 and 3 for terminal connection locations. Please adhere to the following instructions carefully:

### Ground Connection

Connect the amplifier's Ground (GND) terminal to a solid point on the vehicle's metal chassis, as close to the amplifier as possible. Refer to the wire gauge chart to determine minimum wire gauge size. Sand away any paint from this location; use a star-type-lock washer to secure the connection.

### Power Connection

Connect a wire (see chart at right for appropriate gauge) directly to the vehicle's positive battery terminal, and install an appropriate fuse holder within 18" of the battery terminal. *Do not install the fuse at this time.* Route the wire to the amplifier's location, and connect it to the amplifier's Positive (+12V) terminal. Be sure to use appropriate grommets whenever routing wires through the firewall or other sheet metal. *Failure to adequately protect the positive wire from potential damage may result in a vehicle fire.* When you are done routing and connecting this wire, you may install the fuse at the battery.

### Remote Connection

Connect the amplifier's Remote (REM) terminal to the source unit's Remote Turn-On lead using a minimum of 18-gauge wire.

**NOTE:** If your source unit does not have a remote turn-on connection, connect the amplifier's (REM) terminal to the vehicle's accessory circuit.

### Speaker Connections

Refer to the application guides on the pages that follow. Speaker connections should be made using a minimum of 16-gauge wire.

### Wire Gauge Chart

Amplifier Model	Maximum Current Draw	Minimum Wire Gauge
CS60.2	22A	#8 AWG
CS60.4	40A	#8 AWG
CS300.1	42A	#8 AWG

These recommendations assume 10' – 12' wire runs. If your installation differs markedly, you will need to adjust the wire gauge accordingly.

Figure 1. Terminal connection end plate for CS300.1.

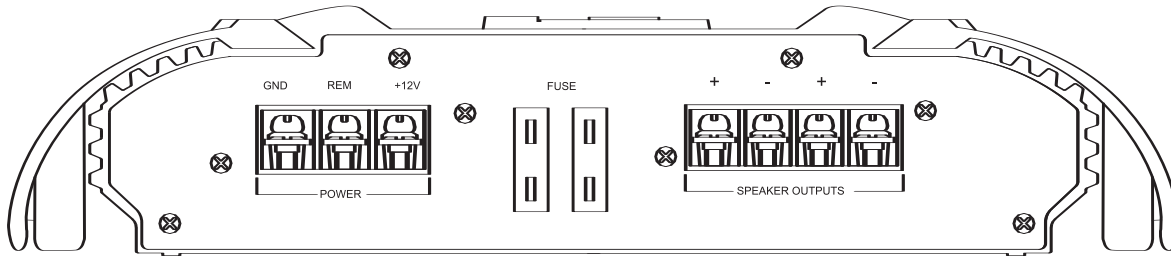


Figure 2. Terminal connection end plate for CS60.4.

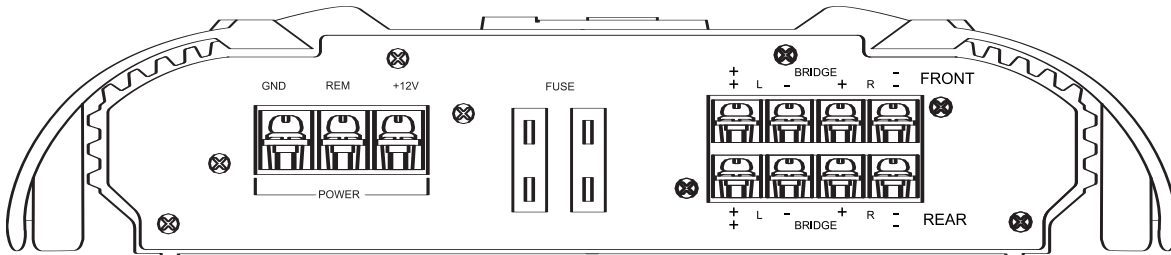
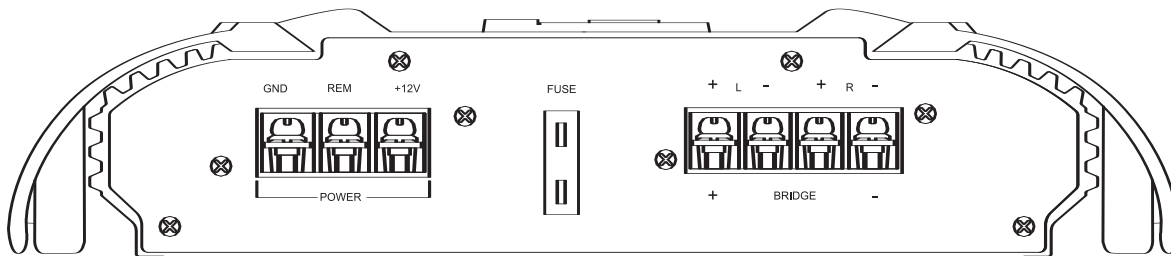


Figure 3. Terminal connection end plate for CS60.2.



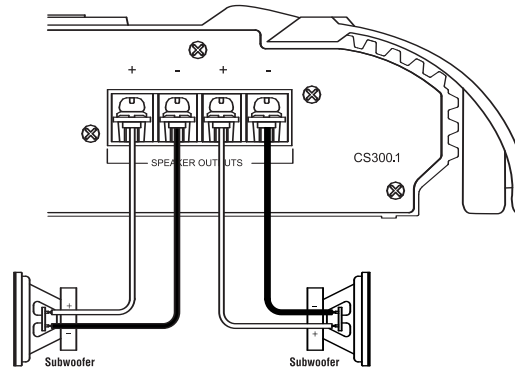
## APPLICATIONS - CS300.1

The CS subwoofer amplifier is a single-channel amplifier. There are two sets of terminals to make it easy to connect multiple woofers. Either set of (+/-) terminals may be used when connecting woofers.

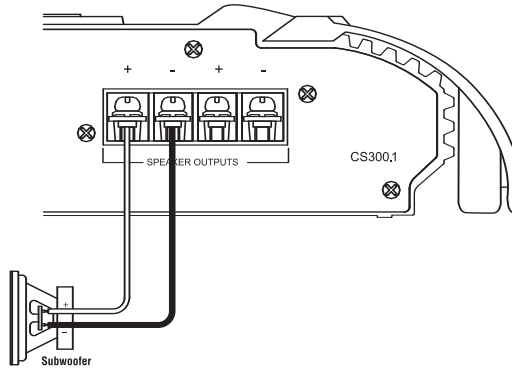
To the right are two application diagrams to help plan your subwoofer system installation. **Figures 4 and 5** show how to configure the CS300.1 subwoofer amplifier.

**NOTE:** For simplicity, Figures 4 and 5 do not show power, remote and input connections.

**NOTE:** Minimum speaker load is 2 ohms total.



**Figure 4.** CS subwoofer amplifier with two woofers connected.



**Figure 5.** CS subwoofer amplifier with one woofer connected.

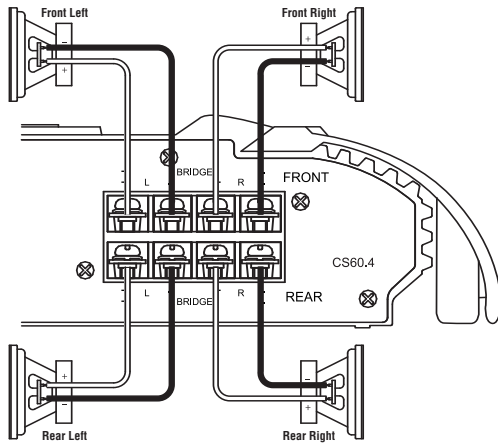


# APPLICATIONS - CS60.4

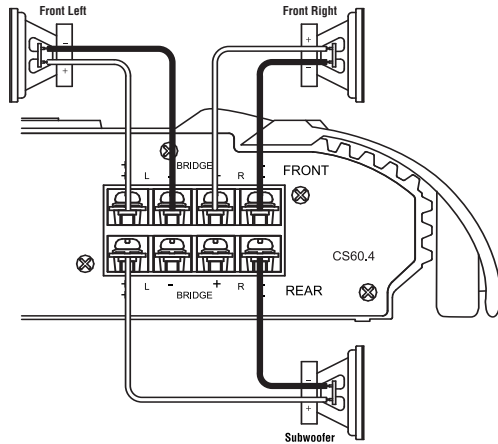
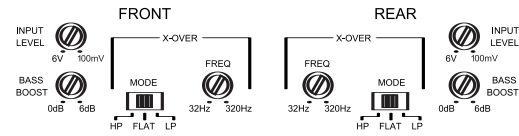
The CS60.4 can be set up for stereo 4-channel, 3-channel or bridged 2-channel operation, as shown in Figures 6 through 8.

**NOTE:** For simplicity, Figures 6 through 8 do not show power, remote and input connections.

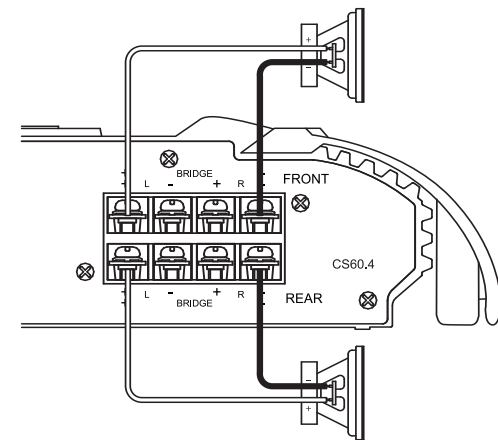
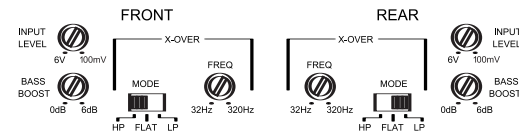
**NOTE:** Minimum speaker impedance for stereo operation is 2 ohms. Minimum speaker impedance for bridged operation is 4 ohms.



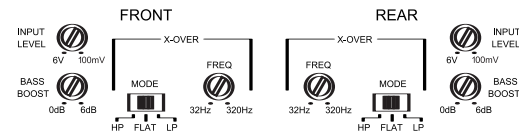
**Figure 6.** CS60.4 amplifier in 4-channel (stereo) operation to drive front and rear full-range speakers.



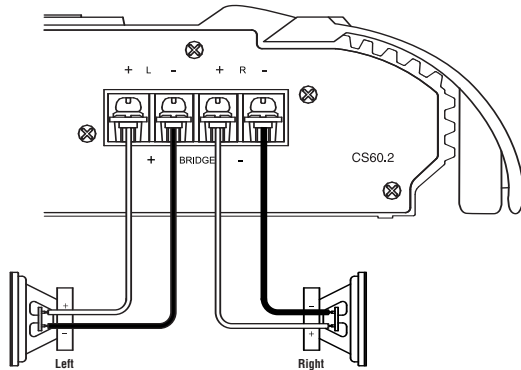
**Figure 7.** CS60.4 is set up for 3-channel operation to drive a set of full-range speakers and a subwoofer.



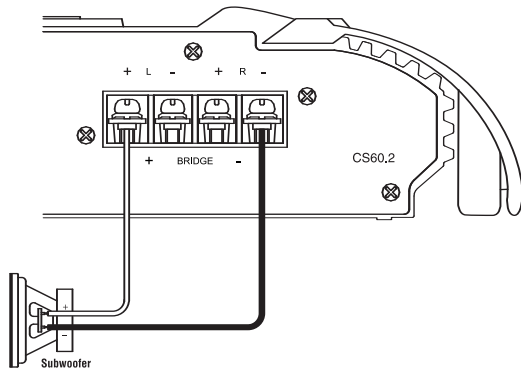
**Figure 8.** CS60.4 used in bridged 2-channel mode to drive a set of components or subwoofers. Set crossovers according to application.



## APPLICATIONS - CS60.2



**Figure 9.** CS60.2 used in 2-channel (stereo) operation to drive a set of full-range speakers.



**Figure 10.** CS60.2 used in bridge mode to drive a subwoofer.



## CONTROLS AND SETUP

### SETTING THE CROSSOVER(S)

Determine your system plans and set the crossover mode switch accordingly. If your system design does not include a subwoofer with the CS60.4, set the crossover mode to FLAT and skip to “Setting Input Sensitivity.”

Initially set the crossover frequency control midway. While listening to music, adjust the crossover for the least perceived distortion from the speakers, allowing them to reproduce as much bass as possible.

Systems using a separate subwoofer set the crossover mode to HP (high pass) for your full-range speakers. Adjust the crossover frequency to limit bass and provide increased system volume with less distortion.

For subwoofers, choose the highest frequency that removes vocal information from the sound of the subwoofer.

If using the CS60.4 or CS60.2 to drive a subwoofer(s), set the crossover mode to LP (low pass).

### SETTING INPUT SENSITIVITY

1. Initially turn the INPUT LEVEL control(s) to minimum (counter clockwise).
2. Reconnect the (–) negative lead to the vehicle’s battery. Apply power to the audio system and play a dynamic music track.
3. On the source unit, increase the volume control to 3/4 volume. Slowly increase the INPUT LEVEL control(s) toward three o’clock until you hear slight distortion in the music. Then reduce the INPUT LEVEL slightly until distortion is no longer heard.

**NOTE:** After the source unit is on, blue LEDs (on the top panel) will light, indicating the amplifier is on. If not, check the wiring, especially the remote connection from the source unit. Also refer to “Troubleshooting” guide at right.

## TROUBLESHOOTING

SYMPTOM	LIKELY CAUSE	SOLUTION
No audio (POWER LEDs are off)	No voltage at BATT+ or REM terminals, or bad or no ground connection	Check voltages at amplifier terminals with VOM
No audio (POWER LEDs are on)	Amplifier is overheated	Make sure amplifier cooling is not blocked at mounting location; verify speaker-system impedance is within specified limits
	Voltage more than 16V or less than 8.5V on BATT+ connection	Check vehicle charging system
No audio (POWER LEDs flash)	Voltage less than 9V on BATT+ connection	Check vehicle charging system
	DC voltage on amplifier output	Amplifier may need service; see enclosed warranty card for service information
Distorted audio	Input sensitivity is not set properly, or amplifier or source unit is defective	Check INPUT LEVEL setting; or check speaker wires for shorts or grounds
Distorted audio and POWER LEDs flash	Short circuit in speaker or wire	Remove speaker leads one at a time to locate shorted speaker or wire, then repair
Music lacks “punch”	Speakers are not connected properly	Check speaker connections for proper polarity

## SPECIFICATIONS

### CS300.1

- 200W RMS x 1 channel at 4 ohms and  $\leq 1\%$  THD + N
- Signal-to-noise ratio: 100dBA (reference 1W into 4 ohms)
- 300W RMS x 1 channel at 2 ohms, 14.4V supply and  $\leq 1\%$  THD + N
- Dynamic power: 460W at 2 ohms
- Effective damping factor: 6.395 at 4 ohms
- Frequency response: 10Hz – 300Hz (–3dB)
- Maximum input signal: 6V
- Maximum sensitivity: 100mV
- Output regulation: –0.07dB at 4 ohms
- Dimensions (L x W x H): 12-11/16" x 10-1/4" x 2-3/16"
- Fuses: 20A x 2

### CS60.4

- 60W RMS x 4 channels at 4 ohms and  $\leq 1\%$  THD + N
- Signal-to-noise ratio: 86dBA (reference 1W into 4 ohms)
- 80W RMS x 4 channels at 2 ohms, 14.4V supply and  $\leq 1\%$  THD + N
- 160W RMS x 2 channels at 4 ohms, 14.4V supply and  $\leq 1\%$  THD + N
- Dynamic power: 145W at 2 ohms
- Effective damping factor: 6.395 at 4 ohms
- Frequency response: 10Hz – 27kHz (–3dB)
- Maximum input signal: 6V
- Maximum sensitivity: 100mV
- Output regulation: –0.03dB at 4 ohms
- Dimensions (L x W x H): 13-1/4" x 10-1/4" x 2-3/16"
- Fuses: 25A x 2

### CS60.2

- 60W RMS x 2 channels at 4 ohms and  $\leq 1\%$  THD + N
- Signal-to-noise ratio: 86dBA (reference 1W into 4 ohms)
- 80W RMS x 2 channels at 2 ohms, 14.4V supply and  $\leq 1\%$  THD + N
- 160W RMS x 1 channel at 4 ohms, 14.4V supply and  $\leq 1\%$  THD + N
- Dynamic power: 160W at 2 ohms
- Effective damping factor: 6.395 at 4 ohms
- Frequency response: 10Hz – 27kHz (–3dB)
- Maximum input signal: 6V
- Maximum sensitivity: 100mV
- Output regulation: –0.03dB at 4 ohms
- Dimensions (L x W x H): 8-7/8" x 10-1/4" x 2-1/4"
- Fuses: 25A x 1



## Declaration of Conformity



We, Harman Consumer Group International  
2, route de Tours  
72500 Chateau du Loir  
France

declare in own responsibility that the products  
described in this owner's manual are in compliance  
with technical standards:

EN 55013:2001 + A1:2003  
EN 55020:2002 + A1:2003

  
Klaus Leberz  
Harman Consumer Group  
International  
Chateau du Loir, France 7/05

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This product is intended for mobile applications without connection to the 110/230 volts mains.

Features, specifications and appearance are subject to change without notice.

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