

# GARMIN®

## JL AUDIO® AP AMPLIFIERS

### Installation Instructions

## Important Safety Information

#### WARNING

See the *Important Safety and Product Information* guide in the product box for product warnings and other important information.

This device must be installed according to these instructions. Failure to install this device in accordance with these instructions could result in serious personal injury, damage to the device and/or vessel, or poor product performance.

Disconnect the power supply to the vessel's audio system before beginning to install this device. To avoid possible serious personal injury or damage to the device and vessel, disconnect the power supply to the vessel's audio system before beginning to install the device.

Continuous exposure to sound pressure levels over 100 dBA may cause permanent hearing loss. The volume is typically too loud if you cannot hear people speaking around you. Limit the amount of time you listen at high volume. If you experience ringing in your ears or muffled speech, stop listening and have your hearing checked.

The wiring from the power source to the amplifier must run through an inline fuse or circuit breaker (not included) as close to the power source as possible. You must connect the positive wire to the fuse or circuit breaker. Connecting the amplifier to power without an inline fuse or circuit breaker may result in a fire if there is a short in the cable.

#### CAUTION

Install in a dry, well-ventilated location that does not interfere with your factory-installed systems. Mount this product securely to prevent damage or injury in severe conditions. Carefully route all system wiring away from moving parts and sharp edges; secure with cable ties or wire clamps and use grommets and loom where appropriate to protect from sharp edges.

To avoid possible personal injury, always wear safety goggles, ear protection, and a dust mask when drilling, cutting, or sanding.

#### NOTICE

Only use this product with 12 volt, negative-ground electrical systems. This product is not certified or approved for use in aircraft.

For ABYC® and NMEA® applications, circuit protection is required within 18 cm (7 in.) of the battery, unless the cable is an enclosure or a conduit.

This product is water-resistant. Do not submerge the device or subject it to high-pressure water spray. Exposure to water pressures beyond the listed water rating can damage the device.

When drilling or cutting, always check what is on the opposite side of the surface to avoid damaging the vessel.

It is strongly recommended that you have your audio system installed by a professional installer to ensure optimum performance.

You must read all installation instructions before beginning the installation. If you experience difficulty during the installation, go to [support.garmin.com](https://support.garmin.com) for product support.

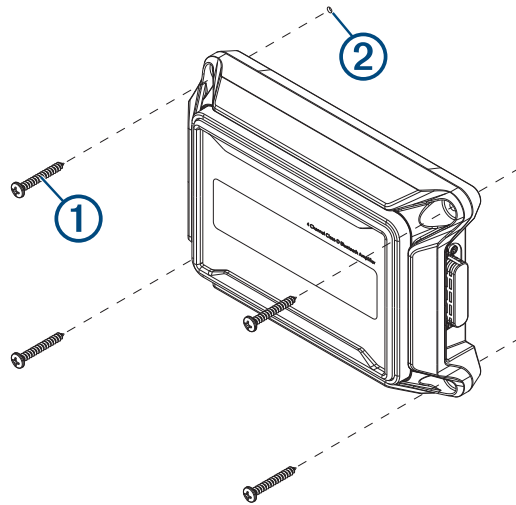
After installing an audio system, you should run the connected speakers and subwoofers at low to medium volumes during their first few hours of use. This helps to improve the overall sound by gradually loosening up the moving components in the new speakers and subwoofers, such as the cone, spider, and surround. See the installation instructions provided with your speakers, because there may be more details about the recommended low-to-medium volume usage time for each model.

## Tools Needed

- Phillips screwdriver
- Drill
- 3 mm ( $\frac{1}{8}$  in.) drill bit
- 2.5mm ( $\frac{3}{32}$  in.) drill bit (if surface mounting the remote)
- Jigsaw or rotary cutting tool (if flush mounting the remote)

## Mounting the JL Audio® AP200/4BT Amplifier

- 1 Identify the four M4 x 35 mm screws ① included with the device.



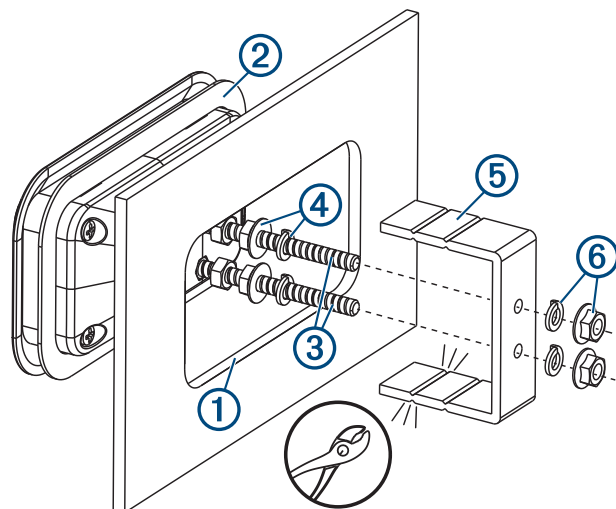
- 2 Place the amplifier onto the mounting location, and mark the locations of the pilot holes.
- 3 Using a 3 mm ( $\frac{1}{8}$  in.) drill bit, drill four pilot holes ② into the mounting surface.
- 4 Screw the device to the mounting surface using the four screws.

## Flush Mounting the JL Audio® AP200/4BT Remote

To flush mount the remote, you must have access to the back of the mounting surface.

In addition to the primary unit, the JL Audio AP200/4BT includes a remote that can be mounted on top of or flush with a flat surface.

- 1 Trim the included mounting template and make sure it fits in the desired mounting location.



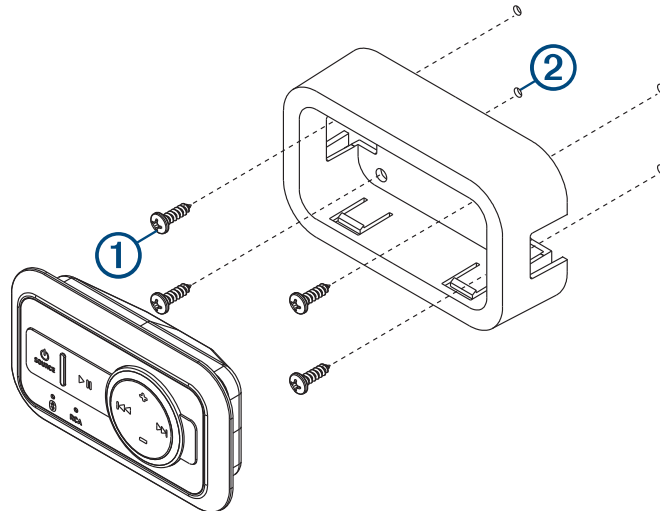
- 2 Secure the template to the mounting location.
- 3 Drill one or more holes into the corners of the mounting template to prepare the surface for cutting.

- 4 Using a jigsaw or rotary cutting tool, cut a hole ① for the remote into the mounting surface.  
**NOTE:** The thickness of the mounting surface must be less than or equal to 25 mm (1.00 in.).
- 5 Place the remote into the cutout to test the fit.
- 6 If necessary, use a file or sandpaper to refine the size of the hole.
- 7 Place the gasket ② around the back of the remote.
- 8 Insert the threaded studs ③ into the back of the remote and tighten them.
- 9 Screw a flange nut and lock washer ④ onto each threaded stud.
- 10 Align the threaded studs with the mounting bracket ⑤ and insert the assembly into the mounting surface.  
**NOTE:** If necessary, you can use a pair of pliers to break off segments of the mounting bracket to achieve the appropriate depth for the remote.
- 11 Secure the mounting bracket to the threaded studs using the remaining flange nuts and lock washers ⑥.
- 12 Tighten the interior set of flange nuts and lock washers against the mounting bracket to ensure the assembly is secure and remains in the desired position.

## Surface Mounting the JL Audio® AP200/4BT Remote

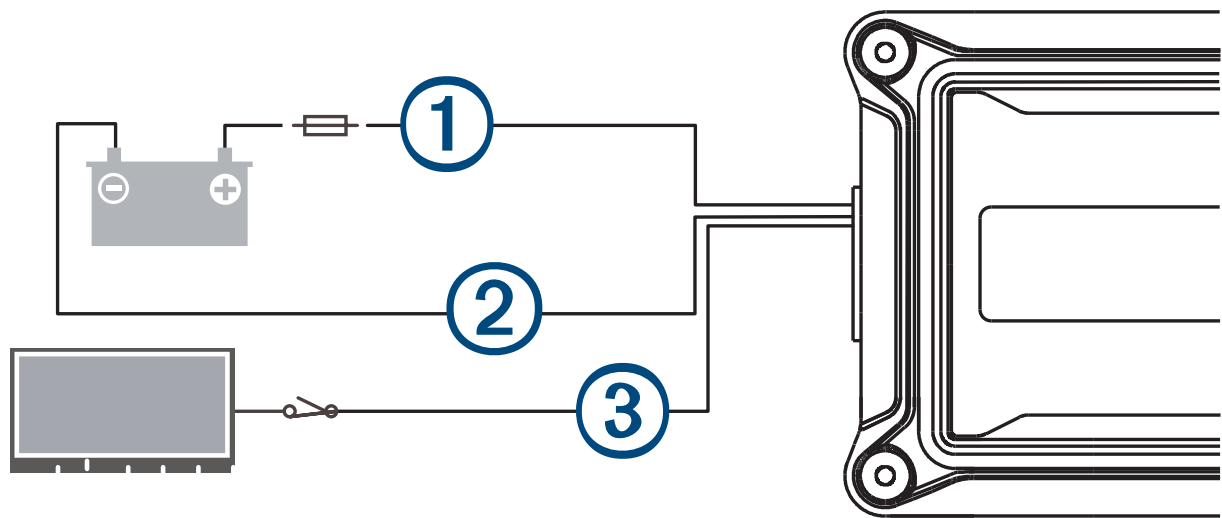
In addition to the primary unit, the JL Audio AP200/4BT includes a remote that can be mounted on top of or flush with a flat surface.

- 1 Locate the four M3 x 12 mm screws ①, as well as the device remote and the surface mount frame.



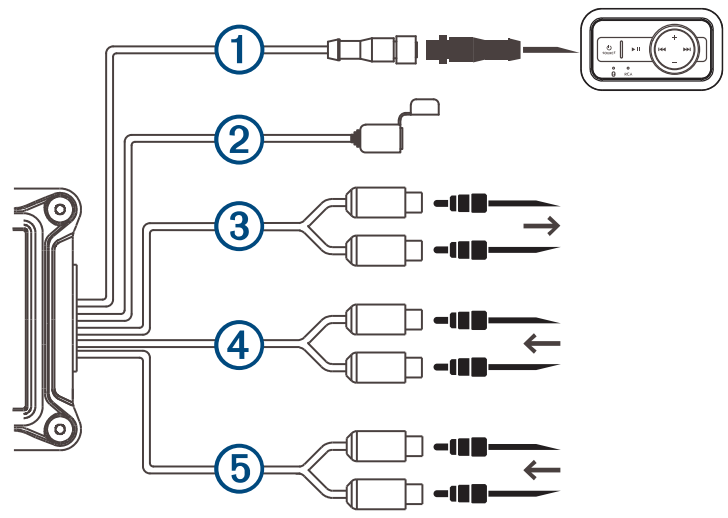
- 2 Place the surface mount frame in the mounting location and mark the location of the pilot holes.
- 3 Remove the surface mount frame from the mounting location.
- 4 Using a 2.5 mm ( $\frac{3}{32}$  in.) drill bit, drill four pilot holes ② into the mounting surface.
- 5 Screw the surface mount frame to the mounting surface using the four screws.
- 6 Insert the remote into the surface mount frame.  
There is an audible click when the remote is securely in place.

Power Wiring



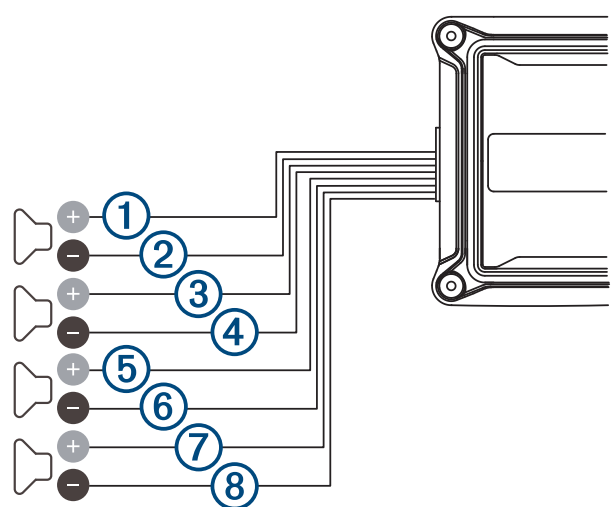
①	+12V DC (Red)+
②	Ground (Black)-
③	Remote in (Blue)+

JL Audio® AP200/4BT Signal Inputs/Outputs



①	Remote in
②	Service port
③	Line output
④	CH. 3/4 input
⑤	CH. 1/2 input


# JL Audio® AP200/4BT Outputs



①	CH. 1+ (White)
②	CH. 1- (White with black stripe)
③	CH. 2+ (Gray)
④	CH. 2- (Gray with black stripe)
⑤	CH. 3+ (Green)
⑥	CH. 3- (Green with black stripe)
⑦	CH. 4+ (Violet)
⑧	CH. 4- (Violet with black stripe)

The minimum impedance for each speaker output is 2 ohms.

## General Controls

Control	Function
 SOURCE Power/Source	<ul style="list-style-type: none"><li>Press to turn on the amplifier (backlighting turns on)</li><li>Hold to turn off the amplifier</li><li>While the amplifier is on, press to change the source: ⓧ = Bluetooth® Source <b>AUX</b> = Preamp Inputs Source</li></ul>
<b>+ / -</b> Volume	<ul style="list-style-type: none"><li>Press to adjust the volume level</li></ul>
<b>▶  </b> Pause/Resume	<ul style="list-style-type: none"><li>Press to pause or resume the current selection (Bluetooth only)</li></ul>
<b>▶▶</b> Forward	<ul style="list-style-type: none"><li>Press to select the next track (Bluetooth only)</li></ul>
<b>◀◀</b> Backward	<ul style="list-style-type: none"><li>Press to restart the track or select the previous track (Bluetooth only)</li></ul>

## Pairing Considerations

You can pair multiple devices to the JL Audio® AP200/4BT amplifier, but only one streaming device can connect at a time. When a connected streaming device is out of range for more than one minute, the amplifier

automatically disconnects the streaming device and returns to pairing mode. When the same device comes back into range, you must reconnect it to the amplifier manually.






## Pairing Your Bluetooth® Streaming Device

- 1 Select Bluetooth as a source on the amplifier.  
The Bluetooth LED flashes to indicate pairing mode is active.
- 2 Enable Bluetooth on your streaming device.
- 3 Select the JL Audio® AP200/4BT amplifier from your device's Bluetooth setup menu.

When successfully paired, the Bluetooth LED is solid.

## Adjusting the Input Sensitivity

The amplifier includes independent input sensitivity settings for each source and channel pair. Each setting must be configured separately.

- 1 Press  to choose which source you want to adjust between the Bluetooth® and **AUX** sources.
- 2 Hold  or  to select a channel pair.  
The button flashes when active.
- 3 Press  or  to adjust the input sensitivity from 1 to 11 (AUX default setting is 5, and Bluetooth default setting is 11).  
The device exits this page automatically after three seconds of inactivity.

## Setting the Input Sensitivity Level

### NOTICE

Do not increase any input sensitivity settings for any amplifier channel or channel pair in the system beyond the maximum level established during this procedure. Doing so will result in audible distortion and possible speaker damage.

You must readjust all input sensitivity settings if any equalizer boost is activated after setting the input sensitivity with this procedure. This applies to any EQ boost circuit, including source unit tone controls or EQ circuits. EQ cuts do not require readjustment.

### Required Equipment

- Digital AC voltmeter
- Sine wave test tone recorded at 0 dBFS reference level in the frequency range to be amplified.  
Do not use attenuated test tones (such as -10 dB or -20 dB).

**Full range channel/amplifier applications:** 1 kHz

**Subwoofer channel/amplifier applications:** 50 Hz

- Depending on your type of source unit, the sine wave may be played from a CD, USB thumb drive, portable media player, or a Bluetooth® audio source. You must disable any EQ/DSP modes on your portable media player during level setting.



Follow these steps to adjust the input sensitivity of each amplifier channel pair to achieve overall system balance. Each setting must be configured separately.

- 1 Disconnect the speakers from the amplifier's speaker output connectors.
- 2 Turn off all processing (such as bass/treble, loudness, or EQ) on the source unit, processors (if used), and amplifier.
- 3 Set the fader control to the center position and the subwoofer level control to  $\frac{3}{4}$  of maximum, if used.
- 4 Set all of the input sensitivity controls to "1".
- 5 Set the source unit volume to  $\frac{3}{4}$  of full volume to allow for reasonable gain overlap with moderate clipping at full volume.
- 6 Determine the target AC voltage for input sensitivity adjustment according to the nominal impedance of the speaker system connected to the amplifier outputs ([Target AC Voltage, page 7](#)).
- 7 Verify that you have disconnected the speakers before proceeding.
- 8 Play a track with an appropriate sine wave (within the frequency range to be amplified) at  $\frac{3}{4}$  source unit volume.
- 9 Connect the AC voltmeter to the speaker output terminals of the amplifier.

- 10 While observing the voltmeter, adjust the input sensitivity control to a setting closest to the target AC voltage.
- 11 After you have adjusted each source/channel section to its maximum low-distortion output level, reconnect the speakers.

You can adjust the input sensitivity controls downward if the amplifier requires attenuation to achieve the desired system balance.



## Resetting the Input Sensitivity

- 1 Turn off the amplifier.
- 2 Hold  and  for three seconds.

The input sensitivity returns to the default settings (AUX: 5; Bluetooth®: 11).

## Protection Mode

The amplifier includes built-in features to monitor for thermal and short circuit fault conditions.

Fault	Functions
Thermal (over temperature)	<ul style="list-style-type: none"> <li> turns red and audio output is muted.</li> <li>The amplifier returns to normal operation when the temperature returns to a safe level.</li> </ul>
Short Circuit (over current)	<ul style="list-style-type: none"> <li> turns red, the audio output is muted, and the audio may exhibit repetitive, audible ticking or thumping noise in the output.</li> <li>Possible causes include a speaker impedance lower than the optimum load range or a short circuit in the speaker wiring. A short circuit can be between the positive and negative speaker wires or between either speaker wire and the vehicle chassis or +12V.</li> <li>The amplifier returns to normal operation when impedance returns to a safe level. Some incidents may require you to restart the amplifier.</li> </ul>

## Appendix

### Target AC Voltage

Nominal Impedance	Stereo (CH. 1/2/3/4)	Bridged (CH. 1/2/3/4)
4 ohms	12.6 V	20.0 V
2 ohms	10.0 V	not recommended

## Specifications

### Amplifier

Amplifier Topology	Class D
Power Supply Type	Regulated MOSFET switching
Operating Voltage	14.4V DC (9V to 16V)
Operating Temperature	From -20 to 65°C (from -4 to 149°F)
Storage Temperature	From -40 to 85°C (from -40 to 185°F)
Minimum Copper Power/GND Wire	4 AWG Copper clad aluminum (CCA) wire is not recommended.
Recommended Fuse	35 A
Rated RMS Power @ 14.4V, <1% THD+N	40W x 4 @ 4 ohms 50W x 4 @ 2 ohms 100W x 2 @ 4 ohms bridged
Frequency Response	20 Hz to 20 kHz (+0, -3 dB)
S/N Ratio (A-weighted, 20 Hz-20 kHz noise bandwidth)	>70 dB (Referred to 1W)

EU Wireless Frequencies and Transmit Power	2400 - 2483,5 MHz: < 10 dBm
Water Rating	Amplifier: IEC 60529 IP67 <sup>1</sup> Remote: IEC 60529 IP67 <sup>1</sup>

### Inputs/Outputs

Type	Preamp AUX jacks
Inputs	Two stereo pairs (200mV to 2V RMS)
Outputs	One stereo pair (1V RMS)

### Bluetooth®

Profile / Spec.	5.0 / A2DP, AVRCP
Connection Range	Up to 11 m (35 ft)

### Dimensions

Amplifier L x W x H	185 x 125 x 47 mm (7.28 x 4.90 x 1.85 in.)
Remote L x W x H	Surface mount: 96.5 x 56.5 x 34.6 mm (3.80 x 2.22 x 1.36 in.)
	Flush mount: 94.6 x 54.6 x 7.5 mm (3.72 x 2.15 x 0.30 in.)
Remote Flush Mount Cutout W x H	80 x 40 mm (3.15 x 1.57 in.)

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IC: 1792A-0P2898

M/N: A0P2898

<sup>1</sup> The device is protected against the ingress of dust and withstands incidental exposure to water of up to 1 m for up to 30 min.