



A Garmin Brand

## FUSION<sup>®</sup> APOLLO<sup>™</sup> MULTICHANNEL 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.

Disconnect the power supply to the vessel's audio system before beginning to install this device.

##### CAUTION

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.

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

##### NOTICE

**YOU MUST NOT USE THIS AMPLIFIER WITH ANY THIRD-PARTY MARINE AUDIO SYSTEMS.** This amplifier is compatible only with Fusion DSP-enabled marine audio equipment and may cause damage to third-party speakers due to the amplifier power output.

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.

**NOTE:** After installing the amplifier, you must set up your connected stereo using the Fusion-Link<sup>™</sup> app to select and activate the correct DSP profile.



## Tools Needed

- 40 A inline fuse or circuit breaker
- Drill and 3 mm ( $1/8$  in.) drill bit (or a drill bit appropriate for your provided mounting hardware and mounting-surface material).
- Screwdrivers:
  - 5 mm ( $7/32$  in.) flat (slotted)
  - 4 mm ( $5/32$  in.) flat (slotted)
  - 3 mm ( $1/8$  in.) flat (slotted)
  - #2 Phillips
  - #0 Phillips
- Wire cutter
- Wire stripper
- Wires and cables:
  - 4 AWG (21 through 25 mm<sup>2</sup>) marine-grade, fully-tinned copper wire for power and ground  
**NOTE:** You may need larger-diameter (smaller gauge number) wire for longer runs to account for voltage drop ([Connecting to Power, page 9](#))
  - 16 AWG (1.3 through 1.5 mm<sup>2</sup>) marine-grade, fully-tinned copper wire for standard speakers  
You can purchase this wire from your Fusion or Garmin® dealer:
    - 010-12899-00: 7.62 m (25 ft.)
    - 010-12899-10: 15.24 m (50 ft.)
  - 12 AWG (3 through 4 mm<sup>2</sup>) marine-grade, fully-tinned copper wire for high-power full-range speakers or subwoofers using the high power adapter (bridged mode)  
You can purchase this wire from your Fusion or Garmin dealer:
    - 010-12898-00: 7.62 m (25 ft.)
    - 010-12898-10: 15.24 m (50 ft.)**NOTE:** You may need larger-diameter (smaller gauge number) wire for longer runs of speaker or subwoofer wire.
  - 20 AWG (0.5 through 0.75 mm<sup>2</sup>) marine-grade, fully-tinned copper wire for the remote-on signal
  - 2-channel RCA cable (1 per stereo channel pair) ([Signal and Speaker Connection Considerations, page 10](#))
  - 1-channel RCA cable (1 per mono channel) ([Signal and Speaker Connection Considerations, page 10](#))  
You can purchase a suitable length of RCA cable at [garmin.com/apollo\\_amplifier\\_accessories](http://garmin.com/apollo_amplifier_accessories) or from your Fusion or Garmin dealer.
- Cable ties (optional)

## Mounting Considerations

### ⚠ CAUTION

In high ambient temperatures and after extended use, the device enclosure may reach temperatures deemed dangerous to touch. To avoid possible personal injury, the device must be installed in a location where it will not be touched during operation.

### NOTICE

This device should be mounted in a well-ventilated location that is not exposed to extreme temperatures or conditions. The temperature range for this device is listed in the product specifications. Extended exposure to temperatures exceeding the specified temperature range, in storage or operating conditions, may cause device failure. Extreme-temperature-induced damage and related consequences are not covered by the warranty.

This device is designed for installation only in a dry location. Installing this device in a location where it may come in contact with more than occasional dripping water or become submerged may result in damage. Water damage is not covered by the warranty.

You must not mount this device upside-down on the underside of a horizontal mounting surface. Mounting the device in an upside-down orientation reduces the effectiveness of heat dissipation, and may lead to shutdown due to thermal protection.

If you are mounting the device on fiberglass, when drilling the pilot holes, use a countersink bit to drill a clearance counterbore through only the top gel-coat layer. This will help to avoid cracking in the gel-coat layer when the screws are tightened.

You can mount this amplifier using one of two methods:

- You can use the included bracket and pan head screws to mount the amplifier ([Installing the Mounting Bracket, page 4](#)).
  - Mounting the amplifier using the bracket allows you to quickly attach and detach the amplifier from the mounting surface.
  - Mounting the amplifier using the bracket requires clear space above the mounting location to allow for connecting the amplifier to the bracket and installing the locking wedge.
- You can use the included flat-head, countersunk screws to mount the amplifier directly to the mounting surface ([Mounting the Device Directly to the Surface, page 7](#)).
  - Mounting the amplifier directly to the surface does not allow you to quickly detach the amplifier.
  - Mounting the amplifier directly to the surface does not require as much clear space above the mounting location, so it may be a more suitable choice for installing in a smaller space.

When selecting a mounting location, observe these considerations:

- You must mount the amplifier in a location that does not interfere with the fuel tank or electrical wiring.
- You must mount the amplifier in a location where it is not exposed to water.
- You must mount the amplifier in a location where it is not exposed to fuel or fuel vapor.
- You must mount the amplifier in a location with adequate ventilation where it is not exposed to extreme temperatures.
- If you mount amplifier in an enclosed space, you should install a cooling fan with appropriate ducts to aid in airflow.
- You should mount the amplifier so that the cables can be connected easily.
- You must not mount the amplifier upside-down on the underside of a horizontal mounting surface.
- To avoid interference with a magnetic compass, you should mount the amplifier the specified distance away from a compass. This distance is listed in the specifications section.
- You must not mount the amplifier in close proximity to other navigation-critical equipment, antennas, or radio-communication equipment on the vessel.

## Installing the Mounting Bracket

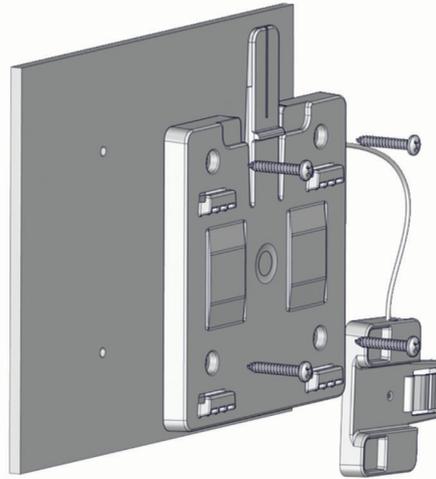
### NOTICE

Pan-head screws are included, but they may not be suitable for the mounting surface. If you provide different mounting hardware, you must not use fasteners with a countersunk head. Hardware with a countersunk head will damage the mounting bracket.

Before you install the mounting bracket, you must select a mounting location and determine what screws and other mounting hardware are needed for the surface.

Mounting the device using the mounting bracket allows you to quickly attach and remove the device as needed.

- 1 Use the included template to verify that the mounting location has sufficient clearance to install the device.



**NOTE:** You must install the bracket with the release tab pointing up to properly secure the amplifier in the bracket.

- 2 Using a 3 mm ( $1/8$  in.) bit or a bit appropriate for your provided hardware and mounting-surface material, drill the pilot holes marked on the template.

### NOTICE

If you are mounting the device on fiberglass, when drilling the pilot holes, use a countersink bit to drill a clearance counterbore through only the top gel-coat layer. This will help to avoid cracking in the gel-coat layer when the screws are tightened.

- 3 Using the included pan-head screws or other pan-head mounting hardware, secure the bracket to the mounting surface.

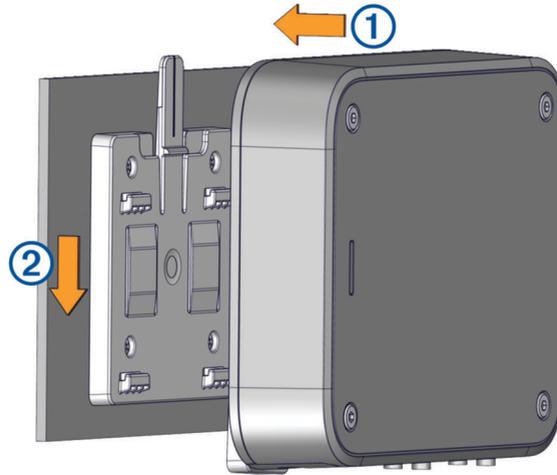
### NOTICE

You must use pan-head screws, because countersunk screws will damage the bracket.

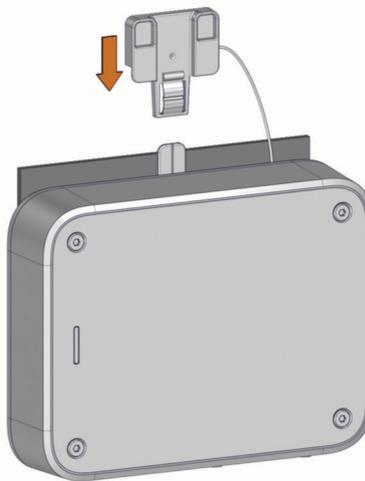
## Connecting the Device to the Mounting Bracket

You must secure the mounting bracket to the surface before you can connect the device.

- 1 Hold the device over and slightly above the mounting bracket.



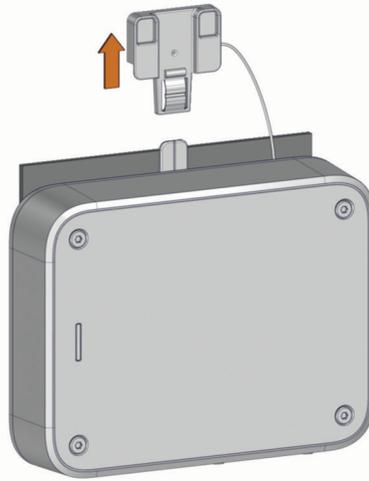
- 2 Place the device onto the bracket ① and pull down ② until the tab audibly clicks.
- 3 Insert the wedge over the tab on the top of the mounting bracket it and push down to lock the device in the bracket.



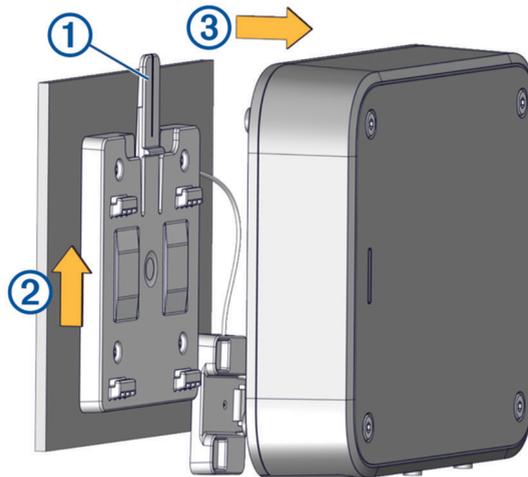
- 4 Install the included screw covers in the four holes on the top of the amplifier (optional).

## Removing the Device from the Mounting Bracket

- 1 Lift up to remove the wedge, which unlocks the tab on the mounting bracket.



- 2 Press the tab ① on the mounting bracket, and lift up ② on the amplifier to disconnect it from the mount ③.



## Mounting the Device Directly to the Surface

If you are installing the device in a location with limited space, or you do not want to use the bracket, you can mount the device directly to the surface.

**NOTE:** Countersunk screws are provided to mount the device directly to the surface. If you choose to use your own hardware to mount the device directly to the surface, countersunk heads are recommended.

- 1 Using the provided template, mark the pilot hole locations for the four mounting holes on the device, observing these considerations:
  - Because you are not using the bracket, you do not need to observe the upper clearance line on the template.
  - You must observe the lower clearance line on the template so that you have the space needed to make the cable connections.
- 2 Using a 3 mm ( $\frac{1}{8}$  in.) bit or a bit appropriate for your provided hardware and mounting-surface material, drill the pilot holes.

### NOTICE

If you are mounting the device on fiberglass, when drilling the pilot holes, use a countersink bit to drill a clearance counterbore through only the top gel-coat layer. This will help to avoid cracking in the gel-coat layer when the screws are tightened.

- 3 Using the provided countersunk screws, secure the device to the mounting surface.
- 4 Install the included screw covers in the four holes on the top of the amplifier (optional).

## Connection Considerations

### NOTICE

You should disconnect the power supply to the audio system before making any connections to the amplifier. Failure to disconnect the audio system may result in damage to the amplifier or audio system.

All terminals and connections must be protected from contact with other conductive materials, such as the vessel chassis and other wires. Improper terminal or wire contact may result in damage to the audio system.

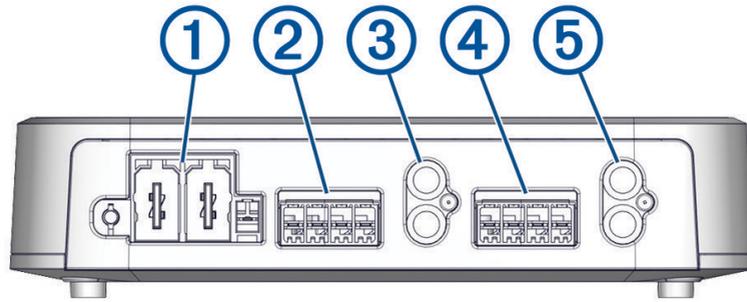
When routing power, speaker, and RCA cables, make sure they are not pinched or crushed. A pinched cable may result in contact with other conductive materials which may damage the audio system.

**NOTE:** You must connect the amplifier to the AMPLIFIER ON wire from the stereo for the amplifier to turn on and off with the stereo.

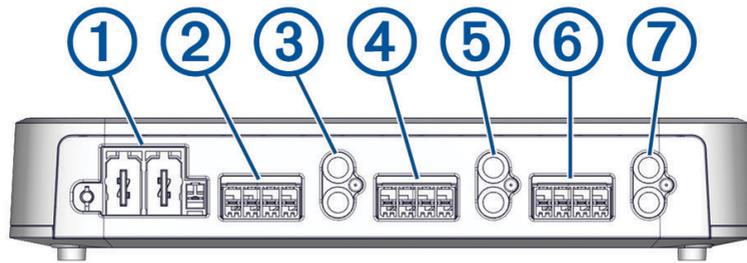
When selecting and routing cables, consider the following:

- You should use RCA signal cables that are of the appropriate length to connect the stereo to the amplifier. Avoid using cables that are much longer than needed.
- When routing cables, you should not route RCA cables alongside the power cables. Routing audio cables next to the power cables may introduce interference or unwanted noise in the audio signal.
- When routing cables, protect them from sharp objects. You should use rubber grommets when routing cables through metal panels to protect the cables.

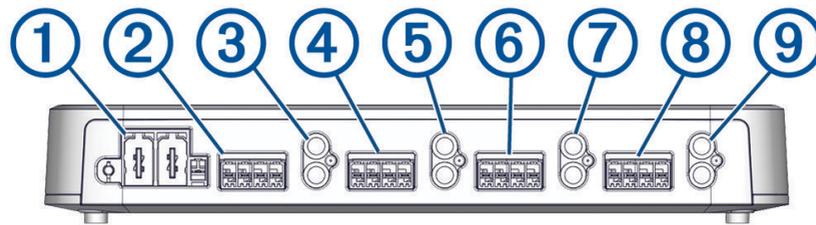
## Port Identification



MS-AP41200 4-Channel Amplifier



MS-AP61800 6-Channel Amplifier



MS-AP82400 8-Channel Amplifier

- |   |  |
|---|--|
| ① | Power block port ( <i>Connecting to Power</i> , page 9)                                    |
| ② | Zone 1 speaker block port ( <i>Signal and Speaker Connection Considerations</i> , page 10) |
| ③ | Zone 1 RCA input   |
| ④ | Zone 2 speaker block port  |
| ⑤ | Zone 2 RCA input   |
| ⑥ | Zone 3 speaker block port  |
| ⑦ | Zone 3 RCA input   |
| ⑧ | Zone 4 speaker block port  |
| ⑨ | Zone 4 RCA input   |

## Connecting to Power

### ⚠ WARNING

The positive wire (not included) from the power source to the amplifier must run through a 40 A inline fuse or circuit breaker (not included) as close to the power source as possible. 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.

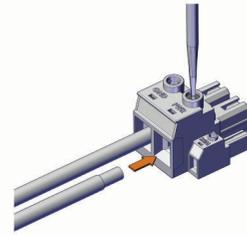
You should use 4 AWG (21 through 25 mm<sup>2</sup>) marine-grade, fully-tinned copper wire (not included) to connect the amplifier to power and ground for most installations. For power-cable runs longer than 5 m (16 ft.), you should consider using larger-diameter (smaller gauge number) wire to minimize power loss.

You must connect the REM terminal on the amplifier block to either the AMPLIFIER ON wire from the connected stereo or to a constant 12 Vdc power source using a switch.

### NOTICE

Connecting to the AMPLIFIER ON wire from the stereo instead of using an external switch is recommended to avoid damaging your speakers when the stereo turns on or off.

- 1 Route 4 AWG (21 through 25 mm<sup>2</sup>) marine-grade, fully-tinned copper ground wire (not included) to the amplifier and to a ground location on the boat.
- 2 Using a 5 mm (<sup>7</sup>/<sub>32</sub> in.) flat (slotted) screwdriver, connect the ground wire to the GND terminal on the power connection block.
- 3 Connect the other end of the ground wire to the ground location.
- 4 Route 4 AWG (21 through 25 mm<sup>2</sup>) marine-grade, fully-tinned copper power wire (not included) to the amplifier and to the power source.
- 5 As close to the power source as possible, install a 40 A inline fuse on the power wire in an accessible location or connect the power wire through a 40 A circuit breaker.



### ⚠ WARNING

Connecting the amplifier to power without a 40 A inline fuse or circuit breaker may result in a fire if there is a short in the cable.



- 6 Using a 5 mm (<sup>7</sup>/<sub>32</sub> in.) flat (slotted) screwdriver, connect the power (+) wire to the PWR terminal on the power connection block.
- 7 Route a 20 AWG (0.5 through 0.75 mm<sup>2</sup>) marine-grade, fully-tinned copper remote-on wire (not included) from the amplifier to the AMPLIFIER ON wire on the stereo.

**NOTE:** The amplifier and the stereo must connect to a common ground terminal point for the AMPLIFIER ON signal to function properly.

- 8 Using a 4 mm (<sup>5</sup>/<sub>32</sub> in.) flat (slotted) screwdriver, connect the remote-on wire to the REM terminal on the power connection block.

## NOTICE

You should wait to connect the power terminal block to the amplifier. Make all of the other connections to the stereo and speakers before completing the connection to power (*Completing the Connections, page 13*).

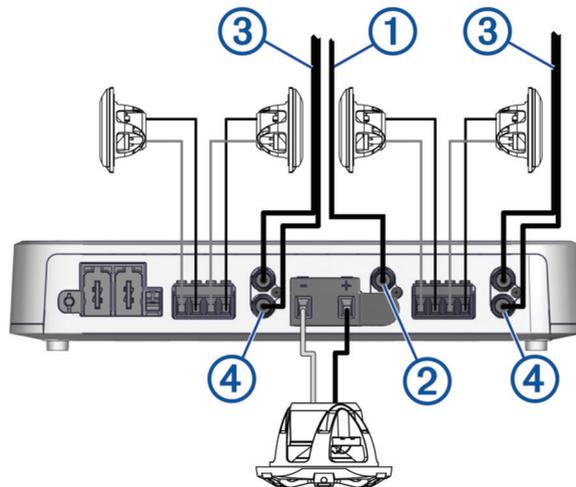
### Signal and Speaker Connection Considerations

When connecting your stereo and speakers to the amplifier, observe the following considerations:

- All speakers connect to the amplifier using terminal blocks (*Connecting Standard Full-Range Speakers to the Amplifier, page 11*).
- When connecting standard full-range speakers, you should use 16 AWG (1.3 through 1.5 mm<sup>2</sup>) marine-grade, fully-tinned copper wire.
- When connecting high-power full-range speakers or a subwoofer in bridge mode using the included high power adapter, you should use 12 AWG (3 through 4 mm<sup>2</sup>) marine-grade, fully-tinned copper wire (*Connecting High-Power Full-Range Speakers or a Subwoofer to the Amplifier, page 12*).
- Each set of zone speaker terminals on the amplifier is paired to the RCA inputs for that zone.
- Each channel supports a nominal 4 Ohm speaker load impedance, and a 2 Ohm minimum speaker load impedance.
- You can connect either a zone line out or a subwoofer line out from the stereo to any of the zone RCA inputs on the amplifier.
- You should observe the zone and polarity markings for each channel when connecting speakers to the amplifier. The speaker ports for each zone are marked with negative (-) and positive (+) for the left (L) and right (R) channels. When connecting a high-power full-range speaker or a subwoofer in bridge mode, the speaker terminal polarity is marked on the high power adapter.

In the following example, a single 4 Ohm subwoofer is connected to ZONE 2 using the high power adapter, and pairs of 4 Ohm standard full-range speakers are connected to the right and left channels for the other two zones.

In this example, you must connect the single RCA subwoofer line out connector from the stereo ① to the uncovered L RCA port for ZONE 2 on the amplifier ②, and you must connect the two RCA zone line out connectors from the stereo ③ to the other two zone RCA ports on the amplifier ④.



## Connecting Standard Full-Range Speakers to the Amplifier

You must use the provided terminal blocks to connect standard full-range speakers to the amplifier.

- 1 Route 16 AWG (1.3 through 1.5 mm<sup>2</sup>) marine-grade, fully-tinned copper speaker wire (not included) to the speakers and the amplifier.

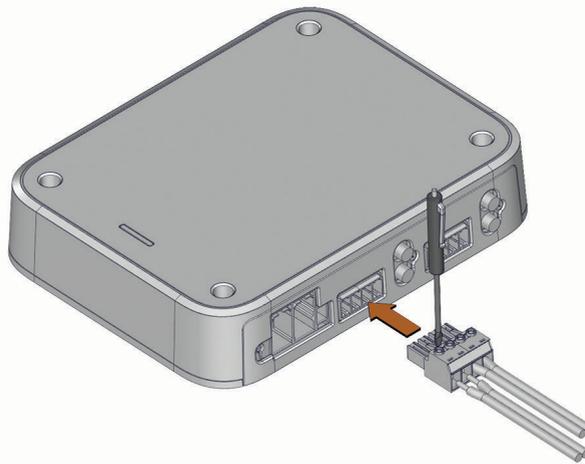
**NOTE:** You should label both ends of the speaker, including polarity, so you can easily identify which wires route to which speakers.

- 2 Connect the speaker wire to the speakers, observing polarity.

**NOTE:** Incorrectly connecting the speaker wire by crossing the polarity may result in poor sound quality.

- 3 Using a #0 Phillips or a 3 mm (1/8 in.) flat (slotted) screwdriver, connect the speaker wires to the speaker terminal blocks, observing the polarity.

**NOTE:** The speaker terminal blocks are not labeled. Refer to the labels on the amplifier ports when determining polarity.



- 4 When all speaker wires are connected to the terminal block, press the assembled terminal block into the appropriate ZONE port on the amplifier to complete the speaker connection for the zone.
- 5 Use a 2-channel RCA cable (not included) to connect the RCA zone line out connectors from the stereo to the RCA input ports for the appropriate zone on the amplifier ([Signal and Speaker Connection Considerations, page 10](#)).
- 6 Repeat this procedure for all of the speakers you want to connect to the amplifier.

## Connecting High-Power Full-Range Speakers or a Subwoofer to the Amplifier

### NOTICE

The provided high power adapter places two adjacent channels into bridged mode. You should connect only one 4 Ohm high-power full-range speaker or subwoofer to the amplifier when using the high power adapter. Connecting a load of less than 4 Ohm when using the high power adapter may cause damage to the amplifier, speakers, or subwoofers.

You must install the provided high power adapter on the speaker terminal block when connecting a high-power full-range speaker or subwoofer to a zone. This adapter guarantees that the correct speaker terminals are connected and it signals to the amplifier that the zone is operating in high-power mode (commonly referred to as bridged mode). If needed, you can purchase additional adapters from your Fusion dealer.

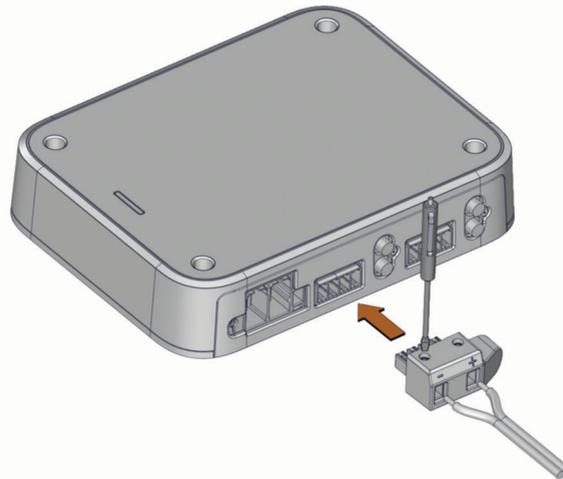
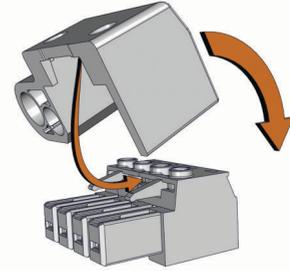
- 1 Place the high power adapter over an empty speaker terminal block and press until it clicks in place.
- 2 Route 12 AWG (3 through 4 mm<sup>2</sup>) marine-grade, fully-tinned copper speaker wire (not included) to the high-power full-range speaker or subwoofer and the amplifier.

**NOTE:** You should label both ends of the speaker wire, including polarity, so you can easily identify which wires route to which speakers.

- 3 Connect the speaker wire to the full-range speaker or subwoofer, observing polarity.

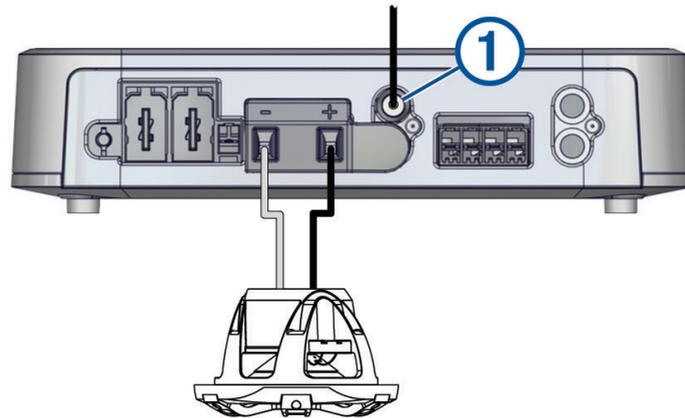
**NOTE:** Incorrectly connecting the speaker wire by crossing the polarity may result in poor sound quality.

- 4 Using a #0 Phillips or a 3 mm (1/8 in.) flat (slotted) screwdriver, connect the speaker wires to the speaker terminal blocks, observing the polarity labeled on the high power adapter cover.



- 5 When both speaker wires are connected to the terminal block using the high power adapter, insert the assembled terminal block into the appropriate ZONE port on the amplifier to complete the connection for the zone.
- 6 Complete an action:
  - If you are connecting a subwoofer, connect a 1-channel RCA cable (not included) to the RCA subwoofer line-out connector from the stereo for a zone you want to use with the subwoofer.
  - If you are connecting high-power full-range speakers, connect a 2-channel RCA cable (not included) to the RCA zone out connector from the stereo for a zone you want to use with the high-power full-range speakers.

- 7 Connect the other end of the RCA cable from the stereo to the open RCA input port ① for the channel powering the subwoofer or the channels powering the high-power full-range speakers.



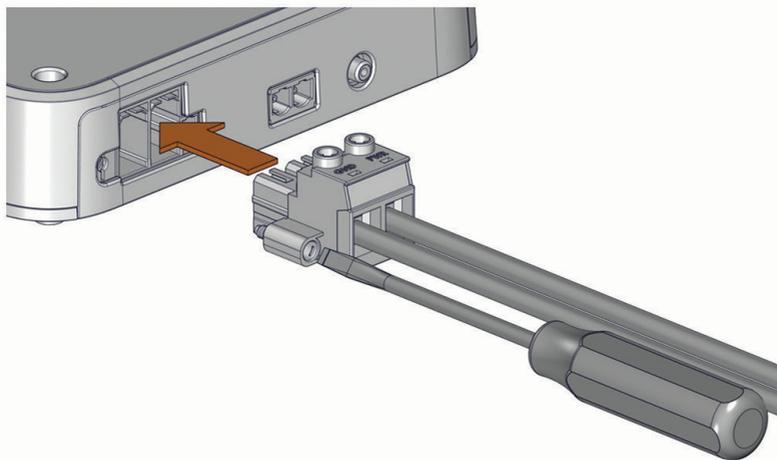
**NOTE:** Each high-power full-range speaker connects to only one channel from the 2-channel RCA cable from the stereo. Be sure to connect the left RCA channel connector to the RCA port on the amplifier for the channel powering the left high-power full-range speaker, and to connect the right RCA channel connector to the RCA port on the amplifier for the channel powering the right high-power speaker.

- 8 Repeat this procedure for additional high-power full-range speakers or additional subwoofers.

### Completing the Connections

Before you connect the amplifier to the power source, you should complete all other connections to the amplifier .

- 1 Make sure all speaker wires are connected between the speakers and/or subwoofer(s) and the amplifier, using speaker terminal blocks.
- 2 Make sure all RCA cables are connected between the stereo and the amplifier.
- 3 Make sure the power and ground cables are connected to the power terminal block and the power source ([Connecting to Power, page 9](#)).
- 4 Make sure the amplifier remote-on wire is connected to the power terminal block and to the amplifier turn-on wire from the stereo ([Connecting to Power, page 9](#)).
- 5 Insert the assembled power terminal block into the power port on the left side of the amplifier.



- 6 Using a 5 mm ( $7/32$  in.) flat (slotted) screwdriver, secure the power terminal block to the amplifier.

## NOTICE

After you have completed all connections, you must configure the DSP profile for the amplifier before playing music. If the DSP profile is not set up, you may damage the connected speakers (*Configuring the Amplifier*, page 14).

---

### Configuring the Amplifier

To configure the amplifier for use with your stereo and speakers, you must use the Fusion-Link app to set up the DSP profile after you have completed the connections.

**TIP:** You can view a video tutorial to help set up a DSP profile for your system at [garmin.com/videos/fusion\\_link\\_app](https://garmin.com/videos/fusion_link_app).

- 1 Follow the instructions in your stereo owner's manual to download the Fusion-Link app and connect it to the stereo.
- 2 Select the appropriate amplifier, speakers, and/or subwoofer(s) for each zone in the Fusion-Link app.
- 3 Follow the instructions in the Fusion-Link app to select a configured profile for the connected amplifier, speakers, and/or subwoofer(s).
- 4 Send the DSP profile to the connected stereo and test the sound.
- 5 Repeat steps 3 and 4 until the audio system sounds satisfactory.

## Specifications

|  |  |
|--|--|
| Compass-safe distance  | MS-AP41200: 75 cm (30 in.)<br>MS-AP61800: 145 cm (57 in.)<br>MS-AP82400: 245 cm (96 <sup>1</sup> / <sub>2</sub> in.) |
| Operating temperature range  | From 0 to 50°C (from 32 to 122°F)  |
| Storage temperature range  | From -20 to 70°C (from -4 to 158°F)  |
| Water rating   | IEC 60529 IPX2 <sup>1</sup>  |
| Maximum wire gauge   | Power: 2 AWG (33.63 mm <sup>2</sup> )<br>Speakers: 12 AWG (3.31 mm <sup>2</sup> )                                    |
| Weight   | MS-AP41200: 2.2 kg (4 lbs 13.6 oz)<br>MS-AP61800: 2.7 kg (5 lbs 15.2 oz)<br>MS-AP82400: 3.15 kg (6 lbs 15.1 oz)      |
| Amplifier class  | Class D  |
| Frequency response   | 20 Hz to 20 kHz  |
| CEA-2006 power rating per channel @ 14.4 Vdc, 4 Ohm, ≤ 1% THD+N, 1 kHz, AES17-20 kHz BW                      | 150 W RMS per channel  |
| CEA-2006 power rating per channel @ 14.4 Vdc, 2 Ohm, ≤ 1% THD+N, 1 kHz, AES17-20 kHz BW                      | 290 W RMS per channel  |
| CEA-2006 power rating per channel @ 14.4 Vdc, 4 Ohm bridged, ≤ 1% THD+N, 1 kHz, AES17-20 kHz BW <sup>2</sup> | 580 W RMS per channel  |
| Peak power output  | MS-AP41200: 1200 W<br>MS-AP61800: 1800 W<br>MS-AP82400: 2400 W   |
| Input impedance  | 22 kOhm  |
| Input sensitivity @ rated power output, 4 Ohm  | 1.6 Vrms   |
| Signal to noise ratio @ rated power output, 4 Ohm  | All models: 97 dBA   |
| Signal to noise ratio @ 1 W, 4 Ohm   | All models: 75 dBA   |
| Separation/crosstalk   | MS-AP41200: 61 dB<br>MS-AP61800: 58 dB<br>MS-AP82400: 58 dB  |
| Operating voltage  | 10.8 to 16 Vdc   |
| Current draw, in standby/off using AMPLIFIER ON wire (@14.4 Vdc input)                                       | less than 5 mA   |
| Current draw, on, no audio (@14.4 Vdc input)   | MS-AP41200: 1.15 A<br>MS-AP61800: 1.32 A<br>MS-AP82400: 1.6 A  |
| Power-cable fuse or circuit breaker rating (not included)  | 40 A   |
| Remote turn-on   | Greater than 4 Vdc   |

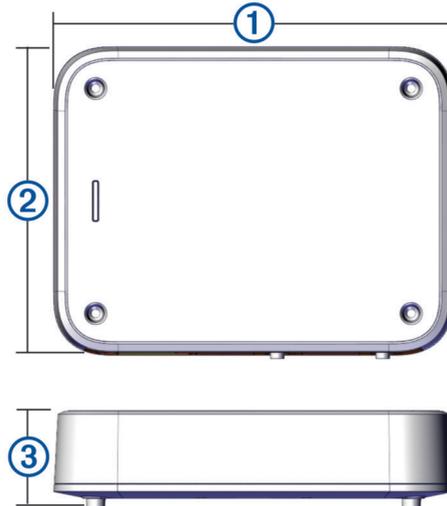
<sup>1</sup> Protection against vertically-dripping water when installed properly with the connectors pointing downward.

<sup>2</sup> Two adjacent channels of the amplifier are placed in bridged mode when using the high power adapter.

Protection circuits

Reverse voltage  
Input under/over voltage  
Over temperature  
Output short circuit

## Dimensions



**NOTE:** A MS-AP41200 amplifier is shown for illustration purposes. Refer to the table for model-specific measurements.

|   |  |
|---|--|
| ① | MS-AP41200: 235 mm (9 1/4 in.)<br>MS-AP61800: 297 mm (11 11/16 in.)<br>MS-AP82400: 359 mm (14 1/8 in.) |
| ② | 180 mm (7 1/16 in.)  |
| ③ | 45 mm (1 3/4 in.)  |

## More Information

### Troubleshooting

Before you contact your Fusion dealer or service center, you should perform a few simple troubleshooting steps to help diagnose the problem.

If the Fusion amplifier has been installed by a professional installation company, you should contact the company so a technician can assess the problem and advise you about possible solutions.

## LED Power Indicator Bar Colors

The single LED power indicator bar on the amplifier changes colors to indicate status and potential faults. You can use these LED color reference tables when troubleshooting the amplifier.

| LED Color | Status            |
|-----------|-------------------|
| Off       | Power off         |
| Green     | Operational       |
| Orange    | Recoverable fault |
| Red       | Critical fault    |

## LED Is Off

| Potential Cause  | Potential Resolution   |
|--|--|
| Power connection issue ( <a href="#">Connecting to Power, page 9</a> ) | <ul style="list-style-type: none"><li>• Check the power wiring connections to the power terminal block and make sure they are securely connected using the terminal screws.</li><li>• Check the connection between the power terminal block and the amplifier, and make sure the power terminal block is seated securely in the port.</li><li>• Check the power wiring connections to the inline fuse, circuit breaker (if applicable), and battery, and repair or tighten any disconnected or loose wires.</li><li>• Check the inline fuse (if applicable), and replace it if the fuse is blown. If the fuse blows again, disconnect the amplifier from power and contact Garmin Support (<a href="http://support.garmin.com">support.garmin.com</a>).</li><li>• Check the circuit breaker (if applicable), and reset it if necessary. If the breaker continues to trip, disconnect the amplifier from power and contact Garmin Support (<a href="http://support.garmin.com">support.garmin.com</a>).</li><li>• If you connected a subwoofer or high-power full-range speakers using the high-power adapter (bridged mode), check the settings in the DSP profile. Using generic or no profile settings with speakers in bridged mode may cause power issues.</li><li>• Make sure the supply voltage is within the specified operating range for the amplifier.</li><li>• Make sure you are using the appropriate gauge for the length of the power cable run, and replace the cable with a thicker gauge, if needed.</li></ul> |
| Remote turn-on wire connection issue                                   | <ul style="list-style-type: none"><li>• Check the remote turn-on wire connection to the power terminal block and make sure it is securely connected using the terminal screws.</li><li>• Check the remote turn-on wire connection to the stereo and repair or tighten a disconnected or loose wire.</li><li>• Make sure the stereo and the amplifier are connected to a common ground.</li><li>• If you connected the remote turn-on wire to a switch instead of the stereo, make sure the switch is installed correctly.</li></ul>  |

## LED Is Green and There Is No Sound

| Potential Cause                    | Potential Resolution   |
|------------------------------------|--|
| Power or volume issue              | <ul style="list-style-type: none"> <li>• Make sure the stereo is powered on.</li> <li>• Make sure the volume is not set too low or muted.</li> <li>• Check the volume limit setting on the stereo. A low limit setting may result in volume issues.</li> </ul>   |
| DSP settings issue                 | <p>Check the DSP settings in the Fusion-Link app and make sure the correct speakers and amplifier are selected.</p> <p><b>NOTE:</b> After you configure the settings, you must select the option in the app to send the DSP settings to the devices.</p>   |
| Signal or speaker connection issue | <ul style="list-style-type: none"> <li>• Check the RCA cable connections to the stereo and the amplifier, and re-connect all disconnected cables, if needed.</li> <li>• Check the speaker wiring connections to the speaker terminal blocks and make sure they are securely connected using the terminal screws. Reconnect or tighten the wires, if needed.</li> <li>• Check the connection between the speaker terminal blocks and the amplifier, and make sure the speaker terminal blocks are seated securely in the ports.</li> <li>• Check the wire gauge used to connect the speakers to the amplifier, and make sure it is appropriate for the length of the wire run (<a href="#">Signal and Speaker Connection Considerations, page 10</a>).</li> </ul> |
| RCA channel or cable issue         | <ul style="list-style-type: none"> <li>• Check the RCA cable for damage and replace it if needed.</li> <li>• Check the RCA cable connection to the stereo and make sure it is connected to the intended output.</li> <li>• If the RCA cable is connected to the intended output, try connecting it to another zone output from the stereo to determine if there may be an issue with the stereo.</li> </ul>  |
| Intermittent power issue           | <p>Check the power cables to make sure they are the appropriate gauge, are fused, and are connected properly (<a href="#">Connecting to Power, page 9</a>).</p>  |

## LED Is Green and the Sound Is Not Optimal

| Issue   | Potential Resolution   |
|---|--|
| There is a hum or other unexpected noise from a speaker | <p>Route the RCA cables away from other cables, especially power cables. Routing RCA cables alongside power cables may introduce interference or unwanted noise in the audio signal.</p> <p>Install ground-loop isolators inline with the RCA cables from the stereo.</p> <p><b>NOTE:</b> You should install ground-loop isolators on the RCA cables where they connect to the stereo, not where they connect to the amplifier.</p>  |
| The sound is distorted or clipping                      | <p>Check the DSP settings in the Fusion-Link app and make sure the correct amplifier, speakers, and/or subwoofer are selected.</p> <p><b>NOTE:</b> After you configure the settings, you must select the option in the app to send the DSP settings to the devices.</p>  |
| Bass response is reduced or uneven                      | <ul style="list-style-type: none"> <li>• Check the polarity of the subwoofer wires and correct it if needed.</li> <li>• Check the DSP settings in the Fusion-Link app and make sure the correct amplifier, speakers, and/or subwoofer are selected.</li> <li>• In the DSP settings, try different phase settings for the subwoofer out to see if it sounds better.</li> </ul> <p><b>NOTE:</b> After you configure the settings, you must select the option in the app to send the DSP settings to the devices.</p> |

## LED Is Orange

| Potential Cause                           | Potential Resolution  |
|---|---|
| Power supply under- or over-voltage issue | Check the input power to make sure it is within the 10.8 to 16 Vdc operational range for the amplifier.   |
| Power wire gauge issue                    | Check the wire gauge used to connect the amplifier to power, and make sure it is appropriate for the length of the wire run.  |
| Over-temperature issue                    | Check the temperature of the amplifier and make sure it is under 50°C (122°F). If the amplifier is hotter than the operational temperature rating, add ventilation to the installation location or mount the amplifier in a different location. |

**NOTE:** The amplifier automatically attempts to recover from a recoverable fault (orange LED). If multiple attempts at recovery are not successful, the amplifier transitions to a critical fault status (red LED). You disconnect the amplifier from the power source for one minute, and then reconnect it or toggle the AMPLIFIER ON signal to reset the critical fault.

## LED Is Red

| Potential Cause                           | Potential Resolution   |
|---|--|
| Power wire gauge issue                    | Check the wire gauge used to connect the amplifier to power, and make sure it is appropriate for the length of the wire run. If you are using high-power full-range speakers or subwoofers, you should consider increasing the power cable gauge (smaller number).   |
| Power supply under- or over-voltage issue | Check the input power to make sure it is within the specified voltage operating range for the amplifier.<br>If the amplifier experiences a number of under-voltage faults (orange LED) in a short period of time, it considers the issue a critical fault and changes the LED color to red. A series of orange indicators followed by a red indicator may indicate an under-voltage issue. |
| Prolonged over-temperature issue          | Check the temperature of the amplifier and make sure it is under 50°C (122°F). If the amplifier is hotter than the operational temperature rating, add ventilation to the installation location or mount the amplifier in a different location.  |
| DSP setting or volume issue               | Check the DSP settings in the Fusion-Link app and make sure the correct amplifier, speakers, and/or subwoofers are selected.<br><b>NOTE:</b> After you configure the settings, you must select the option in the app to send the DSP settings to the stereo.   |
| Speaker fault                             | Check all of the connected speaker wires. <ul style="list-style-type: none"><li>• Make sure the speaker wires are connected to the speaker terminal blocks and to the speakers properly.</li><li>• Make sure there are no shorts in the speaker wires, and there are no cuts in the speaker-wire jackets that may result in a short.</li></ul>   |
| Internal amplifier or power supply fault  | Disconnect the amplifier from the power source for one minute, and then reconnect it and test for proper operation. If the LED continues to show a red fault, contact Garmin Support ( <a href="https://support.garmin.com">support.garmin.com</a> ).  |

## 物質宣言

| 部件名称 | 有毒有害物质或元素 |   |   |     |      |       |
|------|-----------|---|---|-----|------|-------|
|      | 铅         | 汞 | 镉 | 六价铬 | 多溴联苯 | 多溴二苯醚 |
| 电路板  | ○         | ○ | ○ | ○   | ○    | ○     |
| 箱体   | ○         | ○ | ○ | ○   | ○    | ○     |
| 附件   | ○         | ○ | ○ | ○   | ○    | ○     |

本表格依据 SJ/T11364 的规定编制。

○: 代表此种部件的所有均质材料中所含的该种有害物质均低于 (GB/T26572) 规定的限量

✘: 代表此种部件所用的均质材料中, 至少有一类材料其所含的有害物质高于 (GB/T26572) 规定的限量

\* 该产品说明书应提供在环保使用期限和特殊标记的部分详细讲解产品的担保使用条件。



产品

© 2023 Garmin Ltd. or its subsidiaries

Garmin®, the Garmin logo, Fusion®, Fusion-Link™, and the Fusion logo are trademarks of Garmin Ltd. or its subsidiaries, registered in the USA and other countries. These trademarks may not be used without the express permission of Garmin.

M/N: A03843 / A03888 / A03889