



# GPSMAP® 8000 Series 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.

When connecting the power cable, do not remove the in-line fuse holder. To prevent the possibility of injury or product damage caused by fire or overheating, the appropriate fuse must be in place as indicated in the product specifications. In addition, connecting the power cable without the appropriate fuse in place will void the product warranty.

### CAUTION

Always wear safety goggles, ear protection, and a dust mask when drilling, cutting, or sanding.

### NOTICE

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

## Registering Your Device

Help us better support you by completing our online registration today.

- Go to <http://my.garmin.com>.
- Keep the original sales receipt, or a photocopy, in a safe place.

## Contacting Garmin Product Support

- Go to [www.garmin.com/support](http://www.garmin.com/support) and click **Contact Support** for in-country support information.
- In the USA, call (913) 397.8200 or (800) 800.1020.
- In the UK, call 0808 2380000.
- In Europe, call +44 (0) 870.8501241.

## Updating the Device Software

Before you can update the software, you must obtain a software-update memory card or load the latest software onto a memory card.

- 1 Turn on the chartplotter.
- 2 After the home screen appears, insert the memory card into the card slot.

**NOTE:** In order for the software update instructions to appear, the device must be fully booted before the card is inserted.

- 3 Follow the on-screen instructions.
- 4 Wait several minutes while the software update process completes.  
The device returns to normal operation after the software update process is complete.

- 5 Remove the memory card.  
**NOTE:** If the memory card is removed before the device restarts fully, the software update is not complete.

## Tools Needed

- Drill and drill bits
- #2 Phillips screwdriver
- Jigsaw or rotary tool
- File and sandpaper
- Marine sealant (optional)

## Mounting the Components

### Mounting Considerations

#### NOTICE

This device should be mounted in a 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.

Using the included hardware and template, you can mount the device using one of two methods. You can use the included bracket and hardware to bail mount the device, or you can use the included template and hardware to flush mount the device in the dashboard. If you want to mount the device using an alternative method where it appears flat with the front of the dashboard, you must purchase a flat-mount kit (sold separately, with professional installation recommended) from your Garmin® dealer.

When selecting a mounting location, observe these considerations.

**NOTE:** Not all mounting methods are available for all device models. See the specific mounting-type section for more details about your model.

- The location should provide optimal viewing as you operate your boat.
- The location should allow for easy access to all device interfaces, such as the keypad, touchscreen, and card reader, if applicable.
- The location must be strong enough to support the weight of the device and protect it from excessive vibration or shock.
- To avoid interference with a magnetic compass, the device should not be installed closer to a compass than the compass-safe distance value listed in the product specifications.
- The location must allow room for the routing and connection of all cables.

### Bail Mounting the Device

#### NOTICE

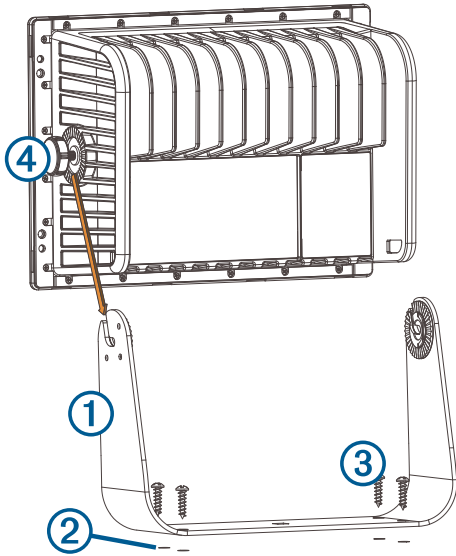
If you are mounting the bracket on fiberglass with screws, it is recommended to use a countersink bit to drill a clearance counterbore through only the top gel-coat layer. This will help to avoid any cracking in the gel-coat layer when the screws are tightened.

The bail-mounting hardware (screws and washers or nuts, washers, and bolts) is not included. The holes on the bail-mount bracket are  $\frac{5}{16}$  in. (7.9 mm) in diameter. Before you can bail mount the device, you must choose mounting hardware that fits the holes in the bail-mount bracket and securely attaches it to your specific mounting surface. The size of the pilot hole required depends on the mounting hardware you choose.



You can bail mount only the eight-inch and 12-inch models. Due to the size of the 15-inch models, you must install them using the flush-mount or flat-mount method.

- 1 Using the included bail-mount bracket ① as a template, mark the location of the four pilot holes ②.

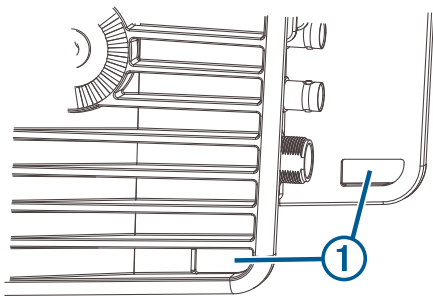


- 2 Using a drill bit appropriate for your mounting hardware, drill the pilot holes.
- 3 Secure the bail-mount bracket to the surface using your mounting hardware ③.
- 4 Install the bail-mount knobs ④ on the sides of the device.
- 5 Place the device in the bail-mount bracket, and tighten the bail-mount knobs.

### Securing the Device

You can lock the device to the structure of your boat for added security (optional).

- 1 Bail-mount the device ([Bail Mounting the Device](#), page 1).
- 2 Using a coated braided-steel cable (not included) and a lock (not included), secure the back of the case ① to the structure of the boat.



### Flush Mounting the Device

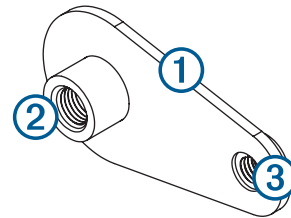
#### NOTICE

Be careful when cutting the hole to flush mount the device. There is only a small amount of clearance between the case and the mounting holes, and cutting the hole too large could compromise the stability of the device after it is mounted.

The included template and hardware can be used to flush mount the device in your dashboard. To mount the device so the screen is flat with the dashboard, you must purchase a flat-mount kit from your Garmin dealer.

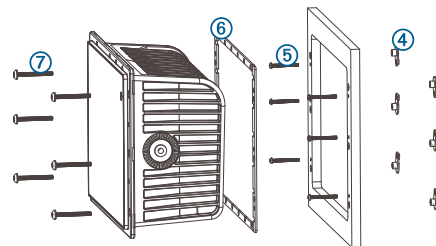
- 1 Trim the template and make sure it fits in the location where you want to mount the device.

- 2 Remove the protective liner from the back of the template and adhere it to the location where you want to mount the device.
- 3 Using a 13 mm (½ in.) drill bit, drill one or more of the holes inside the corners of the solid line on the template to prepare the mounting surface for cutting.
- 4 Using a jigsaw, cut the mounting surface along the inside of the solid line indicated on the template.
- 5 Place the device in the cutout to test the fit.
- 6 If necessary, use a file and sandpaper to refine the size of the cutout.
- 7 After the device fits correctly in the cutout, ensure the mounting holes on the device line up with the larger 7.2 mm (9/32 in.) holes on the template.
- 8 If the mounting holes on the device do not line up, mark the new hole locations.
- 9 Using a 7.2 mm (9/32 in.) drill bit, drill the larger holes.
- 10 Starting in one corner of the template, place a nut plate ① over the larger hole ② drilled in step 9.



The smaller 3.5 mm (9/64 in.) hole ③ on the nut plate should line up with the smaller hole on the template.

- 11 If the smaller 3.5 mm (9/64 in.) hole on the nut plate does not line up with the smaller hole on the template, mark the new hole location.
- 12 Repeat steps 10–11 to verify placement of the remaining nut plates and holes on the template.
- 13 Using a 3.5 mm (9/64 in.) drill bit, drill the smaller holes.
- 14 Remove the template from the mounting surface.
- 15 Starting in one corner of the mounting location, place a nut plate ④ on the back of the mounting surface, lining up the large and small holes. The raised portion of the nut plate should fit into the larger hole.



- 16 Secure the nut plate to the mounting surface by fastening an included M3 screw ⑤ through the smaller 3.5 mm (9/64 in.) hole.
- 17 Repeat steps 15–16 to secure the remaining nut plates to the mounting surface.
- 18 Install the rubber gasket ⑥ on the back of the device. The pieces of the rubber gasket have adhesive on the back. Make sure you remove the protective liner before installing them on the device.
- 19 If you will not have access to the back of the device after you mount it, connect all necessary cables to the device before placing it into the cutout.

**NOTE:** To prevent corrosion of the metal contacts, cover unused connectors with the attached weather caps.

- 20 Place the device into the cutout.
- 21 Secure the device to the mounting surface using the included M4 screws ⑦.
- 22 Insert the included plugs over each of the M4 screw heads.
- 23 Install the decorative bezel by snapping it in place around the edges of the device.

### Card Reader Mounting Considerations

#### NOTICE

This device should be mounted in a 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.

The card reader can be flush mounted in the dashboard using the included hardware. When selecting a mounting location, observe these considerations.

- The card reader should be mounted in an accessible location. You must be able to access the card reader when necessary to insert and remove memory cards containing additional mapping and device updates, and to transfer user data.
- To avoid interference with a magnetic compass, the device should not be installed closer to a compass than the compass-safe distance value listed in the product specifications.
- The location must allow room for the routing and connection of the cables.

### Mounting the Card Reader

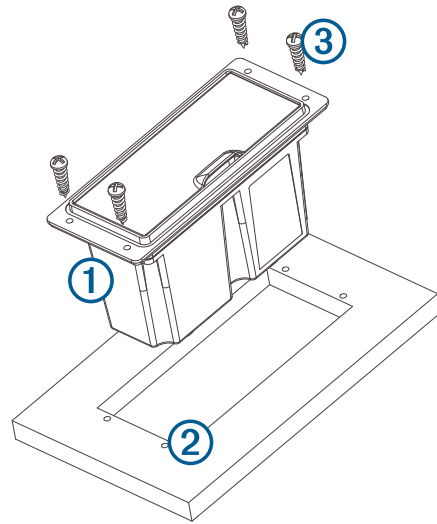
#### NOTICE

Be careful when cutting the hole to flush mount the device. There is only a small amount of clearance between the case and the mounting holes, and cutting the hole too large could compromise the stability of the device after it is mounted.

If you are mounting the bracket on fiberglass with screws, it is recommended to use a countersink bit to drill a clearance counterbore through only the top gel-coat layer. This will help to avoid any cracking in the gel-coat layer when the screws are tightened.

The included template and hardware can be used to flush mount the device at the selected location.

- 1 Trim the flush-mount template and make sure it fits in the location where you want to mount the device.
- 2 Remove the protective liner from the back of the template and adhere it to the location where you want to mount the device.
- 3 Using a 6 mm (¼ in.) drill bit, drill one or more of the holes inside the corners of the solid line on the template to prepare the mounting surface for cutting.
- 4 Using a jigsaw, cut the mounting surface along the inside of the solid line indicated on the template.
- 5 Place the device in the cutout to test the fit.
- 6 If necessary, use a file and sandpaper to refine the size of the cutout.
- 7 After the device ① fits correctly in the cutout, make sure the mounting holes on the device line up with the pilot holes ② on the template.

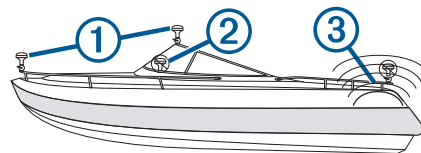


- 8 If the mounting holes on the device do not line up, mark the new pilot-hole locations.
- 9 Using a center punch, indent the pilot holes and drill the clearance counterbore through the gel-coat layer as advised in the notice.
- 10 Remove the template from the mounting surface.
- 11 If you will not have access to the back of the device after you mount it, connect all necessary cables to the device before placing it into the cutout.
- 12 Place the device into the cutout.
- 13 Secure the device to the mounting surface using the included screws ③.
- 14 Install the decorative bezel by snapping it in place around the edges of the device.

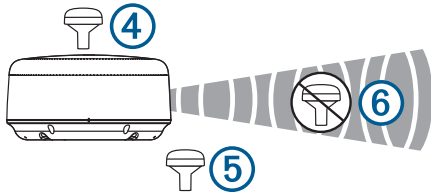
### Antenna Mounting Considerations

You can mount the antenna on a flat surface, install it under fiberglass, or attach it to a standard 1 in. OD, 14 threads per inch, pipe-threaded pole (not included). You can route the cable outside of the pole or through the pole. For best performance, consider these guidelines when selecting the antenna mounting location.

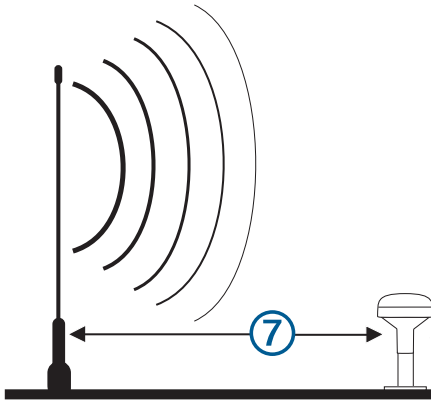
- To ensure the best reception, the antenna should be mounted in a location that has a clear, unobstructed view of the sky in all directions ①.



- The antenna should not be mounted where it is shaded by the superstructure of the boat ②, a radome antenna, or the mast.
- The antenna should not be mounted near the engine or other sources of Electromagnetic Interference (EMI) ③.
- If a radar is present, the antenna should be mounted above the path of the radar ④. If necessary, the antenna may be mounted below the path of the radar ⑤.



- The antenna should not be mounted directly in the path of the radar ⑥.
- The antenna should be mounted at least 1 m (3 ft.) away from (preferably above) the path of a radar beam or a VHF radio antenna ⑦.



#### Testing the Mounting Location

- 1 Temporarily secure the antenna in the preferred mounting location and test it for correct operation.
- 2 If you experience interference with other electronics, move the antenna to a different location, and test it again.
- 3 Repeat steps 1–2 until you observe full or acceptable signal strength.
- 4 Permanently mount the antenna.

#### Surface Mounting the Antenna

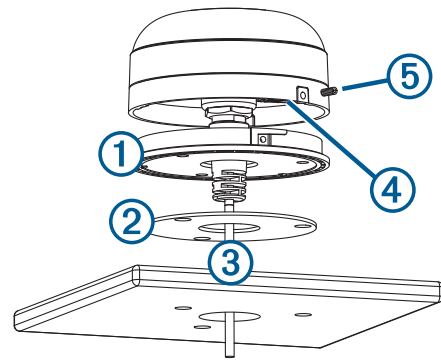
##### NOTICE

If you are mounting the bracket on fiberglass with screws, it is recommended to use a countersink bit to drill a clearance counterbore through only the top gel-coat layer. This will help to avoid any cracking in the gel-coat layer when the screws are tightened.

Stainless-steel screws may bind when screwed into fiberglass and overtightened. Garmin recommends applying an anti-seize lubricant to the screws before installing them.

Before you permanently mount the antenna, you must test the mounting location for correct operation ([Antenna Mounting Considerations, page 3](#)).

- 1 Using the surface-mount bracket ① as your mounting template, mark the three pilot-hole locations and trace the cable-hole in the center of the bracket.

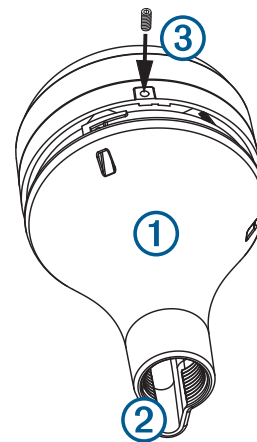


- 2 Set the surface-mount bracket aside.  
Do not drill through the bracket.
- 3 Drill the three 3.2 mm (1/8 in.) pilot holes.
- 4 Use a 25 mm (1 in.) hole saw to cut the cable hole in the center.
- 5 Place the seal pad ② on the bottom of the surface-mount bracket, aligning the screw holes.
- 6 Use the included M4 screws to secure the surface-mount bracket to the mounting surface.
- 7 Route the cable ③ through the 25 mm (1 in.) hole and connect it to the antenna.
- 8 Verify the large gasket ④ is in place on the bottom of the antenna, place the antenna on the surface-mount bracket, and twist it clockwise to lock it in place.
- 9 Secure the antenna to the mounting bracket with the included M3 set screw ⑤.
- 10 Route the cable away from sources of electronic interference.

#### Mounting the Antenna with the Cable Routed Outside the Pole

Before you permanently mount the antenna, you must test the mounting location for correct operation ([Antenna Mounting Considerations, page 3](#)).

- 1 Route the cable through the pole-mount adapter ①, and place the cable in the vertical slot ② along the base of the pole-mount adapter.



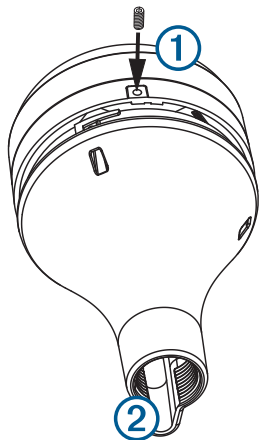
- 2 Screw the pole-mount adapter onto a standard 1 in. OD, 14 threads per inch, pipe-threaded pole (not included).  
Do not overtighten the adapter on the pole.
- 3 Connect the cable to the antenna.
- 4 Place the antenna on the pole-mount adapter and twist it clockwise to lock it in place.
- 5 Secure the antenna to the adapter with the included M3 set screw ③.

- 6 With the antenna installed on the pole mount, fill the remaining gap in the vertical cable slot with a marine sealant (optional).
- 7 Attach the pole to the boat if it is not already attached.
- 8 Route the cable away from sources of electronic interference.

#### Mounting the Antenna with the Cable Routed Through the Pole

Before you permanently mount the antenna, you must test the mounting location for correct operation ([Antenna Mounting Considerations](#), page 3).

- 1 Position a standard 1 in. OD, 14 threads per inch, pipe-threaded pole (not included) in the selected location, and mark the approximate center of the pole.
- 2 Drill a hole using a 19 mm ( $\frac{3}{4}$  in.) drill bit for the cable to pass through.
- 3 Fasten the pole to the boat.
- 4 Thread the pole-mount adapter onto the pole.  
Do not overtighten the adapter.
- 5 Route the cable through the pole and connect it to the antenna.
- 6 Place the antenna on the pole-mount adapter and twist it clockwise to lock it in place.
- 7 Secure the antenna to the adapter with the included M3 set screw ①.



- 8 With the antenna installed on the pole mount, fill the vertical cable slot ② with a marine sealant (optional).
- 9 Route the cable away from sources of electronic interference.

#### Mounting the Antenna Under the Deck

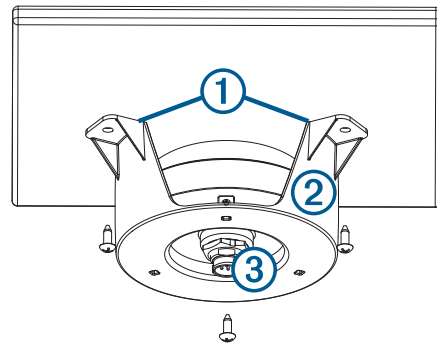
##### NOTICE

Before attaching the under-deck mounting bracket to the surface, verify the included screws will not penetrate the surface. If the included screws are too long, you must purchase surface-appropriate screws to complete the installation.

Before you permanently mount the antenna, you must test the mounting location for correct operation ([Antenna Mounting Considerations](#), page 3).

Because the antenna cannot acquire signals through metal, it must be mounted under a fiberglass surface only.

- 1 Place the adhesive pads ① on the under-deck mounting bracket ②.



- 2 Place the antenna in the under-deck mounting bracket.
- 3 Adhere the under-deck mounting bracket to the mounting surface.
- 4 Secure the under-deck mounting bracket to the mounting surface with screws.
- 5 Connect the cable to the antenna ③.
- 6 Route the cable away from sources of electronic interference.

## Cable and Connection Considerations

### NOTICE

A blue rubber seal is included for each DVI port on the device. This seal must be installed between each DVI port and DVI-cable connector to avoid damage to the connectors.

- For easier cable routing, the power, NMEA® 0183, and Garmin Marine Network cables are packaged without the locking rings installed. You should route the cables before you install the locking rings.
- After connecting a locking ring to a cable, make sure the ring is securely connected and the o-ring is in place so the power or data connection remains secure.
- The device should be connected to the same power source as the card reader. If this is not possible, the devices must be connected to the same ground.

### Station Connection Considerations

This device can be set up in conjunction with other compatible Garmin devices to work together as a station. When planning stations on your boat, observe these considerations.

- Devices earlier than the GPSMAP 8000 series and GPSMAP 8500 series cannot be used in a station.
- Although it is not necessary, it is recommended that you install all of the devices you plan to use in one station near each other.
- No special connections are necessary to create a station, as long as all of the devices are connected to the Garmin Marine Network ([Garmin Marine Network Considerations](#), page 6).
- Stations are created and modified using the device software. See the owner's manual provided with the device for more information.

### Connecting to Power

#### ⚠ WARNING

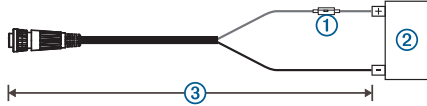
When connecting the power cable, do not remove the in-line fuse holder. To prevent the possibility of injury or product damage caused by fire or overheating, the appropriate fuse must be in place as indicated in the product specifications. In addition, connecting the power cable without the appropriate fuse in place will void the product warranty.

- 1 Route the power cable to the power source and to the device.
- 2 Connect the red wire to the positive (+) battery terminal, and connect the black wire to the negative (-) battery terminal.

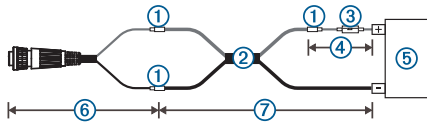
- 3 Install the locking ring and o-ring on the end of the power cable.
- 4 Connect the power cable to the device by turning the locking ring clockwise.

### Power Cable Extensions

If necessary, the power cable can be extended using the appropriate wire gauge for the length of the extension.



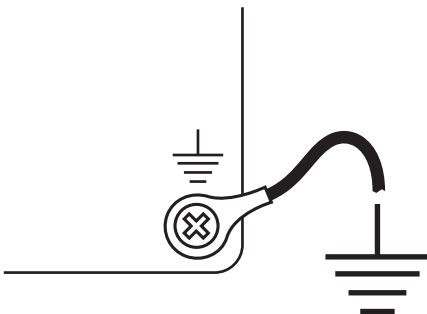
Item	Description
①	Fuse
②	Battery
③	1.8 m (6 ft.) without extension



Item	Description
①	Splice
②	<ul style="list-style-type: none"> <li>• 12 AWG (3.31 mm<sup>2</sup>) extension wire, up to 4.6 m (15 ft.)</li> <li>• 10 AWG (5.26 mm<sup>2</sup>) extension wire, up to 7 m (23 ft.)</li> <li>• 8 AWG (8.36 mm<sup>2</sup>) extension wire, up to 11 m (36 ft.)</li> </ul>
③	Fuse
④	20.3 cm (8 in.)
⑤	Battery
⑥	20.3 cm (8 in.)
⑦	11 m (36 ft.) maximum extension

### Additional Grounding Considerations

This device should not need any additional chassis grounding in most installation situations. If interference is experienced, the grounding screw on the housing can be used to connect the device to the water ground of the boat to help avoid the interference.



### Garmin Marine Network Considerations

This device can connect to additional Garmin Marine Network devices to share data such as radar, sonar, and detailed mapping. When connecting Garmin Marine Network devices to this device, observe these considerations.

- A Garmin Marine Network cable must be used for all Garmin Marine Network connections.
  - Third-party CAT5 cable and RJ45 connectors must not be used for Garmin Marine Network connections.
  - Additional Garmin Marine Network cables and connectors are available from your Garmin dealer.

- There are four NETWORK ports on the device that each act as a network switch. Any compatible device can be connected to any NETWORK port to share data with all devices on the boat connected by a Garmin Marine Network cable.

### NMEA 2000® Considerations

#### NOTICE

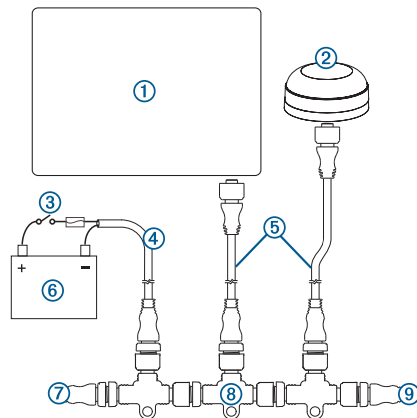
If you have an existing NMEA 2000 network on your boat, it should already be connected to power. Do not connect the NMEA 2000 power cable to an existing NMEA 2000 network, because only one power source should be connected to a NMEA 2000 network.

If you are installing a NMEA 2000 power cable, you must connect it to the boat ignition switch or through another in-line switch. NMEA 2000 devices will drain your battery if the NMEA 2000 power cable is connected to the battery directly.

This device can connect to a NMEA 2000 network on your boat to share data from NMEA 2000 compatible devices such as a GPS antenna or a VHF radio. The included NMEA 2000 cables and connectors allow you to either connect the device to your existing NMEA 2000 network or create a basic NMEA 2000 network if needed.

If you are unfamiliar with NMEA 2000, you should read the “NMEA 2000 Network Fundamentals” chapter of the *Technical Reference for NMEA 2000 Products*. You can find this document using the “Manuals” link on the product page for your device at [www.garmin.com](http://www.garmin.com).

The port labeled NMEA 2000 is used to connect the device to a standard NMEA 2000 network. The ports labeled ENGINE and HOUSE are reserved for future use and should not be connected to a standard NMEA 2000 network.



Item	Description
①	NMEA 2000 compatible Garmin device
②	GPS antenna
③	Ignition or in-line switch
④	NMEA 2000 power cable
⑤	NMEA 2000 drop cable
⑥	12 Vdc power source
⑦	NMEA 2000 terminator or backbone cable
⑧	NMEA 2000 T-connector
⑨	NMEA 2000 terminator or backbone cable

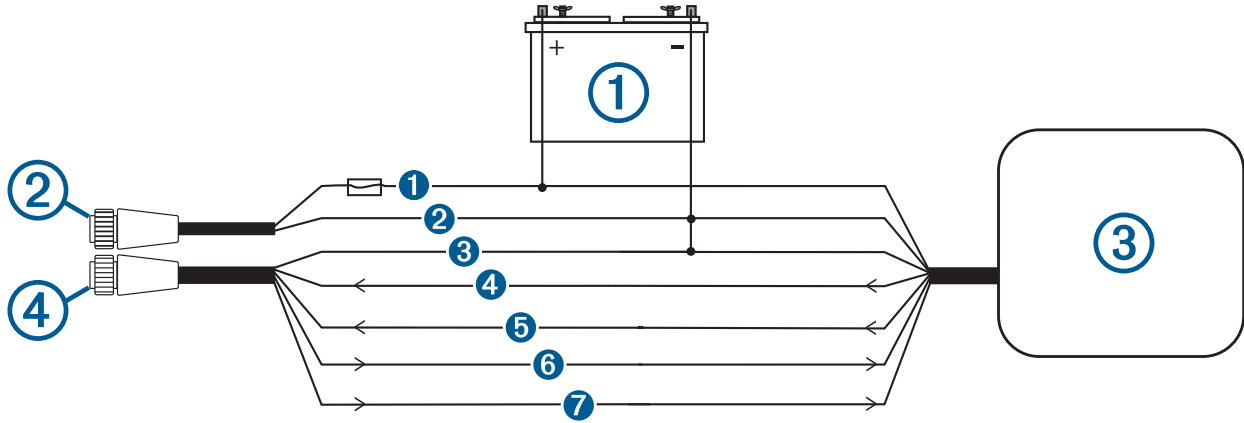
### NMEA 0183 Connection Considerations

- The installation instructions provided with your NMEA 0183 compatible device should contain the information you need to identify the transmitting (Tx) and receiving (Rx) A (+) and B (-) wires.

- When connecting NMEA 0183 devices with two transmitting and two receiving wires, it is not necessary for the NMEA 2000 bus and the NMEA 0183 device to connect to a common ground.
- When connecting a NMEA 0183 device with only one transmitting (Tx) wire or with only one receiving (Rx) wire, the NMEA 2000 bus and the NMEA 0183 device must be connected to a common ground.

**Basic NMEA 0183 Connections**

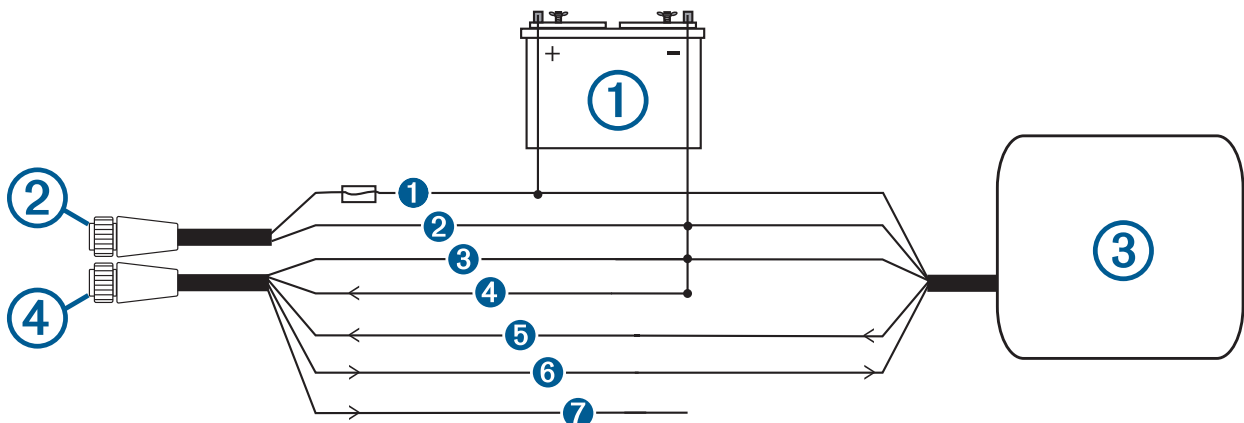
These diagrams illustrate basic NMEA 0183 wiring used to connect your device to NMEA 0183-compliant devices. For more information on the NMEA 0183 capabilities of the device, see *Advanced NMEA 0183 Connections*, page 8.



**Standard NMEA 0183-Compliant Device**

Item	Description
①	12 Vdc power source
②	Power cable
③	NMEA 0183-compliant device
④	NMEA 0183 cable

Item	Garmin Wire Function	Garmin Wire Color	NMEA 0183 Device Wire Function
①	Power	Red	Power
②	Power ground	Black	Power ground
③	Data ground	Black	Data ground
④	Receive A (+)	White	Transmit A (+)
⑤	Receive B (-)	Orange/white	Transmit B (-)
⑥	Transmit A (+)	Gray	Receive A (+)
⑦	Transmit B (-)	Pink	Receive B (-)



**Single-Ended NMEA 0183-Compliant Device**

Item	Description
①	12 Vdc power source
②	Power cable

Item	Description
③	NMEA 0183-compliant device
④	NMEA 0183 cable

Item	Garmin Wire Function	Garmin Wire Color	NMEA 0183 Device Wire Function
①	Power	Red	Power
②	Power ground	Black	Power ground
③	Data ground	Black	Data ground
④	Receive B (-)	Orange/white	N/A
⑤	Receive A (+)	White	Transmit
⑥	Transmit A (+)	Gray	Receive
⑦	Transmit B (-)	Pink	N/A

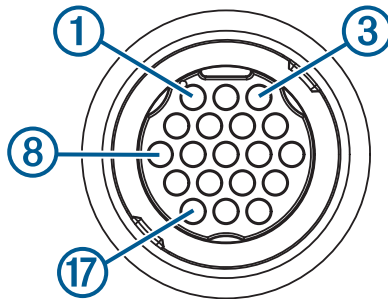
- If the NMEA 0183-compliant device has only one input (RX) wire (no A, B, +, or -), leave the pink wire unconnected.
- If the NMEA 0183-compliant device has only one output (TX) wire (no A, B, +, or -), connect the orange/white wire to ground.
- Consult the installation instructions of your NMEA 0183-compliant device to identify the output A(+) and B(-) wires and input A(+) and B(-) wires.
- Use 28 AWG, shielded, twisted-pair wiring for extended runs of wire.
- Solder all connections and seal them with heat-shrink tubing.

### Advanced NMEA 0183 Connections

There are four internal NMEA 0183 input ports (RX ports), and two internal NMEA 0183 output (TX ports) on the included NMEA 0183 data cable. You can connect one NMEA 0183 device per internal RX port to input data to your Garmin device, and you can connect up to three NMEA 0183 devices in parallel to each internal TX port to receive data output by your Garmin device. Each internal RX and TX port has 2 wires, labeled A (+) and B (-) according to the NMEA 0183 convention. The corresponding A (+) and B (-) wires of each internal port should be connected to the A (+) and B (-) wires of your NMEA 0183-compliant device. Refer to the table and wiring diagrams when connecting the data cable to NMEA 0183 devices.

Consult the installation instructions for your NMEA 0183-compliant device to identify the output (TX) A (+) and B (-) wires and input (RX) A (+) and B (-) wires. Use 28 AWG, shielded, twisted-pair wiring for extended runs of wire. Solder all connections and seal them with heat-shrink tubing.

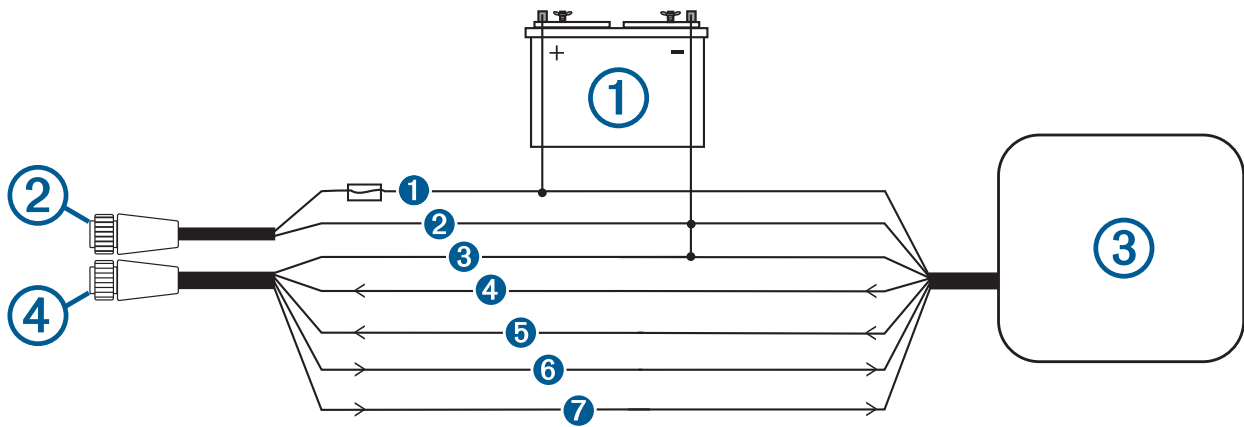
- For two-way communication with a NMEA 0183 device, the internal ports on the NMEA 0183 data cable are not linked. For example, if the input of the NMEA-compliant device is connected to the internal output port 1 on the data cable, you can connect the output port of your NMEA 0183-compliant device to any of the internal input ports (port 1, port 2, port 3, or port 4) on the wiring harness.
- The ground wires on the NMEA 0183 data cable and your NMEA 0183-compliant device must both be connected to ground.
- See [Specifications, page 13](#) for a list of the approved NMEA 0183 sentences output by and input to your device.
- The internal NMEA 0183 ports and communication protocols are configured on the connected Garmin device. See the NMEA 0183 section or communication configuration section of the owner's manual provided with your Garmin device for more information.



Port	Wire Function	Wire Color	Pin Number
Input port 1	RX/A (+)	White	①
	RX/B (-)	Orange/white	②
Input port 2	RX/A (+)	Brown	⑤
	RX/B (-)	Brown/white	⑥
Input port 3	RX/A (+)	Violet	⑨
	RX/B (-)	Violet/white	⑩



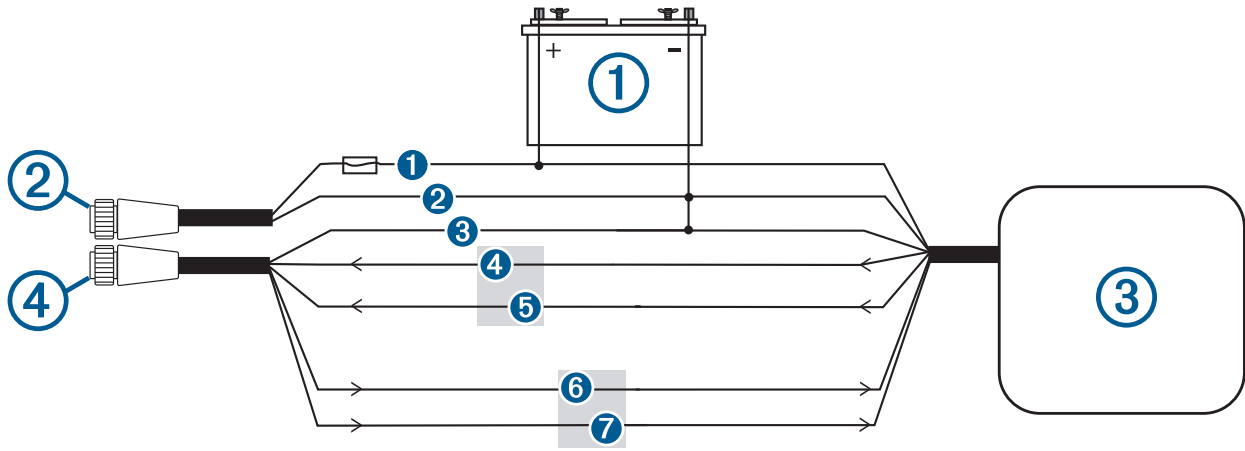
Port	Wire Function	Wire Color	Pin Number
Input port 4	RX/A (+)	Black/white	⑪
	RX/B (-)	Red/white	⑫
Output port 1	TX/A (+)	Gray	③
	TX/B (-)	Pink	④
Output port 2	TX/A (+)	Blue	⑦
	TX/B (-)	Blue/white	⑧
N/A	Garmin GPS in (unused)	White/Green	⑬
N/A	Garmin GPS out (unused)	Green	⑭
N/A	Alarm	Yellow	⑯
N/A	Accessory on	Orange	⑰
N/A	Ground (shield)	Black	⑱
N/A	Spare	N/A	⑮
N/A	Spare	N/A	⑲



**Standard NMEA 0183-Compliant Device Connected for Two-Way Communication**

Item	Description
①	12 Vdc power source
②	Power cable
③	NMEA 0183-compliant device
④	NMEA 0183 cable

Item	Garmin Wire Function	Garmin Wire Color	NMEA 0183 Device Wire Function
①	Power	Red	Power
②	Power ground	Black	Power ground
③	Data ground	Black	Data ground
④	RxA (+)	White	TxA (+)
⑤	RxB (-)	Orange/white	TxB (-)
⑥	TxA (+)	Gray	RxA (+)
⑦	TxB (-)	Pink	RxB (-)

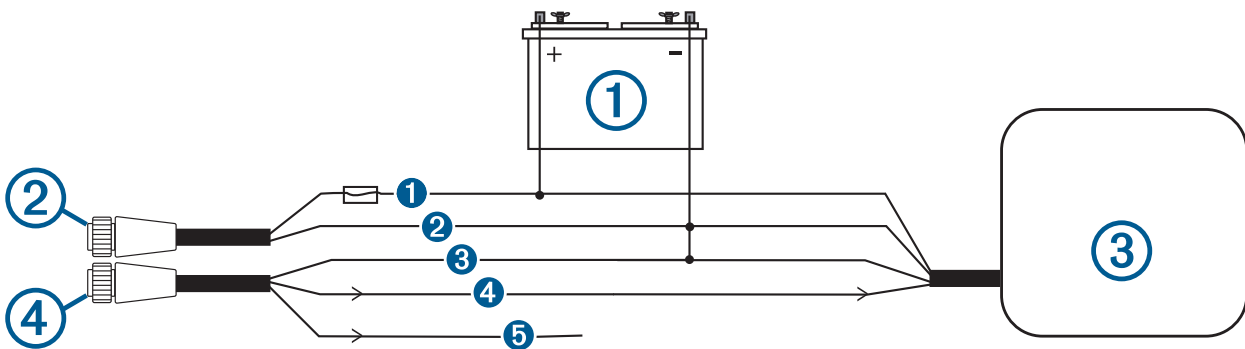


**Standard NMEA 0183-Compliant Device Connected for One-Way Communication**

**NOTE:** This diagram illustrates both sending and receiving connections. Refer to items 1, 2, 3, 4, and 5 when connecting the Garmin device to receive information from a NMEA 0183-compatible device, and refer to items 1, 2, 3, 6, and 7 when connecting the Garmin device to transmit information to a NMEA 0183-compatible device.

Item	Description
1	12 Vdc power source
2	Power cable
3	NMEA 0183-compliant device
4	NMEA 0183 cable

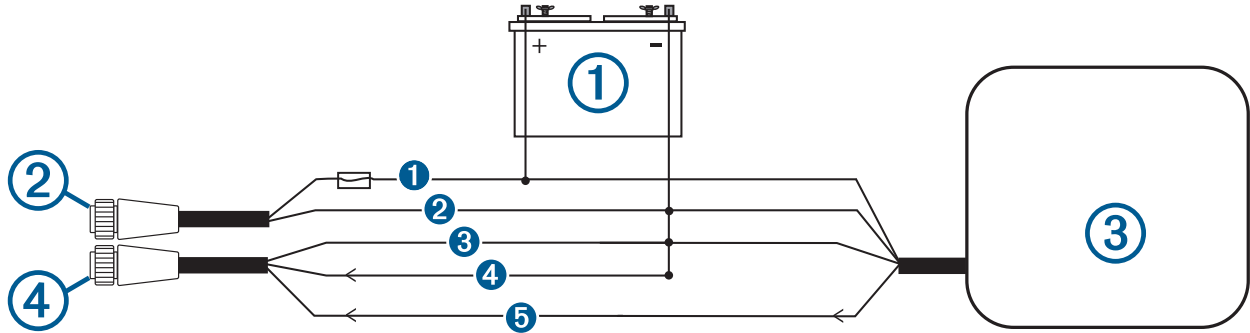
Item	Garmin Wire Function	Garmin Wire Color	NMEA 0183 Device Wire Function
1	Power	Red	Power
2	Power ground	Black	Power ground
3	Data ground	Black	Data ground
4	RxA (+)	White	TxA (+)
5	RxB (-)	Orange/white	TxB (-)
6	TxA (+)	Gray	RxA (+)
7	TxB (-)	Pink	RxB (-)



**NMEA 0183-Compliant Device With a Single Receiving Wire Connected to Receive Data**

Item	Description
1	12 Vdc power source
2	Power cable
3	NMEA 0183-compliant device
4	NMEA 0183 cable

Item	Garmin Wire Function	Garmin Wire Color	NMEA 0183 Device Wire Function
①	Power	Red	Power
②	Power ground	Black	Power ground
③	Data ground	Black	Data ground
④	TxA (+)	Gray	RxA
⑤	TxB (-)	Pink	N/A



**NMEA 0183-Compliant Device With a Single Transmitting Wire Connected to Send Data**

Item	Description
①	12 Vdc power source
②	Power cable
③	NMEA 0183-compliant device
④	NMEA 0183 cable

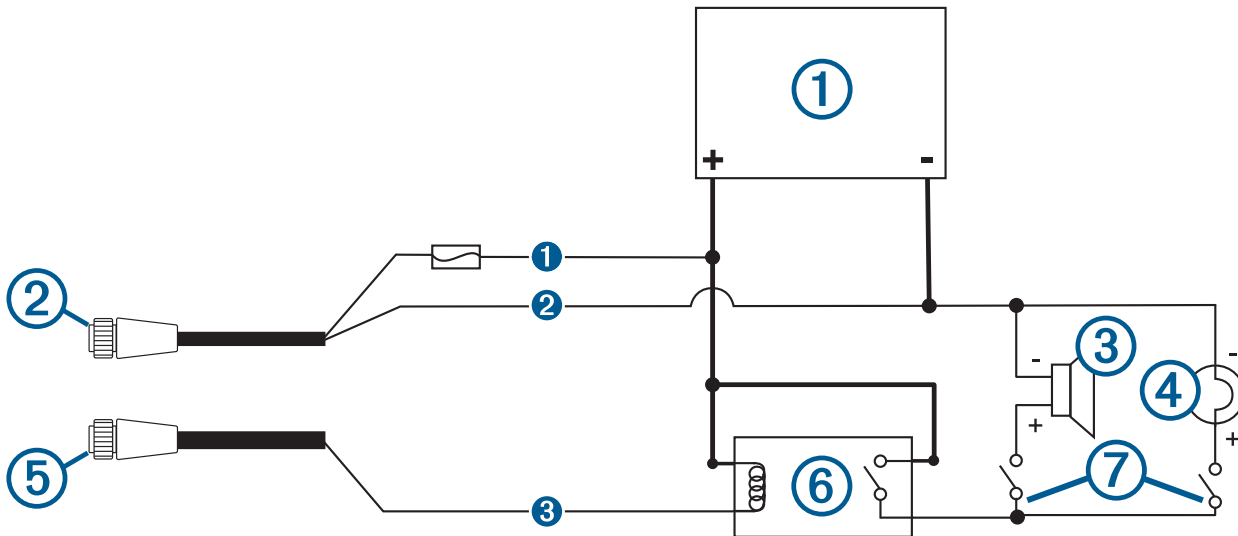
Item	Garmin Wire Function	Garmin Wire Color	NMEA 0183 Device Wire Function
①	Power	Red	Power
②	Power ground	Black	Power ground
③	Data ground	Black	Data ground
④	RxB (-)	Orange/white	N/A
⑤	RxA (+)	White	TxA (+)

### Lamp or Horn Connections

The device can be used with a lamp, a horn, or both, to sound or flash an alert when the chartplotter displays a message. This is optional, and the alarm wire is not necessary for the device to function normally. When connecting the device to a lamp or horn, observe these considerations.

- The alarm circuit switches to a low-voltage state when the alarm sounds.

- The maximum current is 100 mA, and a relay is needed to limit the current from the chartplotter to 100 mA.
- To toggle visual and audible alerts manually, you can install single-pole, single-throw switches.



Item	Description
①	10–35 Vdc power source
②	Power cable
③	Horn
④	Lamp
⑤	NMEA 0183 cable
⑥	Relay (100 mA coil current)
⑦	Toggle switches to enable and disable lamp or horn alerts

Item	Wire Color	Wire Function
①	Red	Power
②	Black	Ground
③	Yellow	Alarm

### Video Input and Output Considerations

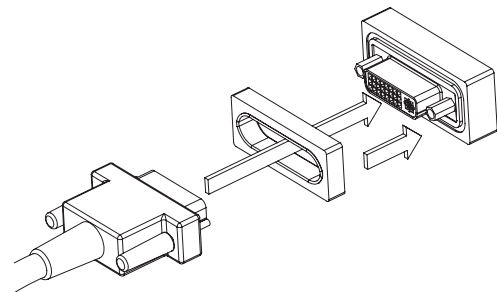
This device allows video input from composite, component, and digital video sources, depending on the model, and video output to a monitor. When connecting video input and output sources, observe these considerations.

- The eight- and twelve-inch models have two composite-video ports labeled CVBS 1 IN, and CVBS 2 IN. The fifteen-inch models have four composite-video ports labeled CVBS 1 IN, CVBS 2 IN, CVBS 3 IN, and CVBS 4 IN.
- The fifteen-inch models have one component-video port labeled COMPONENT IN (480i/576i).
  - The composite- and component-video ports use BNC connectors. You can use a BNC to RCA adapter to connect a composite-video source with RCA connectors to these ports.
  - The video from sources connected to these ports is available only for display on the device or additional monitor connected to the device. Composite or component video is not shared across the Garmin Marine Network or NMEA 2000 network.
- The fifteen-inch models have one video port labeled DVI-I VIDEO IN that accepts video from digital or analog sources using a DVI-D or DVI-I cable.
  - If needed, you can use an HDMI to DVI-D converter to connect an HDMI-compatible source to this device.
  - If needed, you can use a VGA to DVI-I adapter to connect a VGA source to this port.

- You can connect a display to the DVI-I VIDEO OUT port to view a mirror image of the screen on a computer monitor or HD TV using a DVI-D or DVI-I cable.
  - If needed, you can use a DVI-D to HDMI adapter to connect to an HD TV or other HDMI-compatible display.
  - If needed, you can use a DVI-I to VGA adapter to connect to a computer monitor or other VGA-compatible display.
- Although it is recommended to use DVI cables sold by Garmin, high-quality third-party DVI cables may be used. You should test the DVI cable by connecting the devices before routing the cable.

### Video Connector Gasket Considerations

Rubber gaskets are included for all DVI and VGA connections on the device. These gaskets must be installed between each DVI or VGA port and cable connector to avoid damage to the connectors. When making DVI or VGA connections, observe these considerations.



- Blue gaskets are included for use with DVI connections.
- Gray gaskets are included for use with VGA connections.
- When installing the gasket between a VGA cable connector and port, the arrow on the side of the seal must point toward the device.

### Card Reader Connections

#### Connecting to Power

#### **⚠ WARNING**

When connecting the power cable, do not remove the in-line fuse holder. To prevent the possibility of injury or product damage caused by fire or overheating, the appropriate fuse must be in place as indicated in the product specifications. In addition, connecting the power cable without the appropriate fuse in place will void the product warranty.

- 1 Route the power cable to the power source and to the device.
- 2 Connect the red wire to the positive (+) battery terminal, and connect the black wire to the negative (-) battery terminal.
- 3 Install the locking ring and o-ring on the end of the power cable.
- 4 Connect the power cable to the device by turning the locking ring clockwise.

## Connecting the Card Reader to the Garmin Marine Network

The card reader is not compatible with Garmin chartplotters prior to the GPSMAP 8000 Series and GPSMAP 8500.

Connect the card reader to a Garmin device on the Garmin Marine Network using a Garmin Marine Network cable.

Data from cards inserted in the card reader is shared with all compatible devices on the Garmin Marine Network.

## Specifications

### Physical Specifications

#### Eight-Inch Models

Specification	Measurement
Dimensions (W×H×D)	10 <sup>7</sup> / <sub>16</sub> × 7 <sup>31</sup> / <sub>64</sub> × 4 <sup>17</sup> / <sub>32</sub> in. (265 × 190 × 115 mm)
Display size (W×H)	6 <sup>47</sup> / <sub>64</sub> in. × 5 <sup>1</sup> / <sub>8</sub> in. (171 × 130 mm)
Weight	7.12 lbs (3.23 kg)

#### Twelve-Inch Models

Specification	Measurement
Dimensions (W×H×D)	13 <sup>7</sup> / <sub>64</sub> × 9 <sup>23</sup> / <sub>32</sub> × 3 <sup>13</sup> / <sub>36</sub> in. (333 × 247 × 97 mm)
Display size (W×H)	9 <sup>21</sup> / <sub>32</sub> in. × 7 <sup>1</sup> / <sub>4</sub> in. (245 × 184 mm)
Weight	10.91 lbs (4.95 kg)

#### Fifteen-Inch Models

Specification	Measurement
Dimensions (W×H×D)	15 <sup>7</sup> / <sub>8</sub> × 12 <sup>3</sup> / <sub>64</sub> × 3 <sup>45</sup> / <sub>64</sub> in. (403 × 306 × 94 mm)
Display size (W×H)	11 <sup>31</sup> / <sub>32</sub> in. × 8 <sup>63</sup> / <sub>64</sub> in. (304 × 228 mm)
Weight	16.76 lbs (7.6 kg)

#### All Models

Specification	Measurement
Temperature range	From 5° to 131°F (from -15° to 55°C)
Material	Die-cast aluminum and polycarbonate plastic

## Specifications

#### Eight-Inch Models

Specification	Measurement
Dimensions (W×H×D)	265 × 190 × 115 mm (10 <sup>7</sup> / <sub>16</sub> × 7 <sup>31</sup> / <sub>64</sub> × 4 <sup>17</sup> / <sub>32</sub> in.)
Display size (W×H)	171 × 130 mm (6 <sup>47</sup> / <sub>64</sub> × 5 <sup>1</sup> / <sub>8</sub> in.)
Weight	3.23 kg (7.12 lb.)
Max. power usage at 10 Vdc	28 W
Typical current draw at 12 Vdc	1.3 A
Max. current draw at 12 Vdc	2.8 A
Compass-safe distance	310 mm (12.2 in.)

#### Twelve-Inch Models

Specification	Measurement
Dimensions (W×H×D)	333 × 247 × 97 mm (13 <sup>7</sup> / <sub>64</sub> × 9 <sup>23</sup> / <sub>32</sub> × 3 <sup>13</sup> / <sub>36</sub> in.)
Display size (W×H)	245 × 184 mm (9 <sup>21</sup> / <sub>32</sub> × 7 <sup>1</sup> / <sub>4</sub> in.)
Weight	4.95 kg (10.91 lb.)
Max. power usage at 10 Vdc	35 W

Specification	Measurement
Typical current draw at 12 Vdc	1.6 A
Max. current draw at 12 Vdc	3.5 A
Compass-safe distance	460 mm (18.11 in.)

#### Fifteen-Inch Models

Specification	Measurement
Dimensions (W×H×D)	403 × 306 × 94 mm (15 <sup>7</sup> / <sub>8</sub> × 12 <sup>3</sup> / <sub>64</sub> × 3 <sup>45</sup> / <sub>64</sub> in.)
Display size (W×H)	(304 × 228 mm (11 <sup>31</sup> / <sub>32</sub> × 8 <sup>63</sup> / <sub>64</sub> in.)
Weight	7.6 kg (16.76 lb.)
Max. power usage at 10 Vdc	47 W
Typical current draw at 12 Vdc	2.5 A
Max. current draw at 12 Vdc	4.7 A
Compass-safe distance	460 mm (18.11 in.)

#### All Models

Specification	Measurement
Temperature range	From 5° to 131°F (from -15° to 55°C)
Material	Die-cast aluminum and polycarbonate plastic
Input power	10 to 35 Vdc
Fuse	7.5 A, 42 V fast-acting
NMEA 2000 LEN @ 9 VDC	2
NMEA 2000 Draw	75 mA max.

## GPS 19x Antenna Specifications

Measurement	Specification
Dimensions (diameter x height)	3 <sup>19</sup> / <sub>32</sub> in. × 1 <sup>15</sup> / <sub>16</sub> in. (91.6 × 49.5 mm)
Weight	7.1 oz (201 g)
Temperature range	-22° to 176°F (-30° to 80°C)
Case material	Fully gasketed, high-impact plastic alloy, waterproof to IEC 60529 IPX7 standards.
Compass-safe distance	150 mm (5.91 in.)
Power input source	9–16 Vdc
Input current	40 mA at 12 Vdc
NMEA 2000 LEN	2
NMEA 2000 draw	100 mA max

## NMEA 2000 PGN Information

### Transmit and Receive

PGN	Description
059392	ISO acknowledgment
059904	ISO request
060160	ISO transport protocol: Data transfer
060416	ISO transport protocol: Connection management
060928	ISO address claimed
065210	Commanded address
126208	Request group function
126996	Product information
126998	Configuration information
127250	Vessel heading
127258	Magnetic variance
127505	Fluid level
127508	Battery status

## Transmit

PGN	Description
126464	Transmit and receive PGN list group function

## Receive

PGN	Description
065030	Generator average basic AC quantities (GAAC)
126992	System time
127251	Rate of turn
127257	Attitude
127498	Engine parameters: Static
127503	AC input status (obsolete)
127504	AC output status (obsolete)
127506	DC detailed status
127507	Charger status
127509	Inverter status
128275	Distance log
129038	AIS class A position report
129039	AIS class B position report
129040	AIS class B extended position report
129044	Datum
129285	Navigation: Route, waypoint information
129794	AIS class A static and voyage related data
129798	AIS SAR aircraft position report
129799	Radio frequency/mode/power
129802	AIS safety-related broadcast message
129808	DSC call Information
129809	AIS class B "CS" static data report, part A
129810	AIS class B "CS" static data report, part B
130313	Humidity
130314	Actual pressure
130316	Temperature: Extended range
130576	Trim tab status
130577	Direction data

## NMEA 0183 Information

### Transmit

Sentence	Description
GPAPB	APB: Heading or track controller (autopilot) sentence "B"
GPBOD	BOD: Bearing (origin to destination)
GPBWC	BWC: Bearing and distance to waypoint
GPGGA	GGA: Global positioning system fix data
GPGLL	GLL: Geographic position (latitude and longitude)
GPGSA	GSA: GNSS DOP and active satellites
GPGSV	GSV: GNSS satellites in view
GPRMB	RMB: Recommended minimum navigation information
GPRMC	RMC: Recommended minimum specific GNSS data
GPRTE	RTE: Routes
GPVTG	VTG: Course over ground and ground speed
GPWPL	WPL: Waypoint location
GPXTE	XTE: Cross track error
PGRME	E: Estimated error
PGRMM	M: Map datum
PGRMZ	Z: Altitude
SDDBT	DBT: Depth below transducer
SDDPT	DPT: Depth
SDMTW	MTW: Water temperature
SDVHW	VHW: Water speed and heading

## Receive

Sentence	Description
DPT	Depth
DBT	Depth below transducer
MTW	Water temperature
VHW	Water speed and heading
WPL	Waypoint location
DSC	Digital selective calling information
DSE	Expanded digital selective calling
HDG	Heading, deviation, and variation
HDM	Heading, magnetic
MWD	Wind direction and speed
MDA	Meteorological composite
MWV	Wind speed and angle
VDM	AIS VHF data-link message

You can purchase complete information about National Marine Electronics Association (NMEA) format and sentences from: NMEA, Seven Riggs Avenue, Severna Park, MD 21146 USA ([www.nmea.org](http://www.nmea.org))

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