GARMIN®

GPSMAP® 8400/8600 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 voids 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.

To obtain the best performance and to avoid damage to your boat, install the device according to these instructions.

Read all installation instructions before proceeding with the installation. If you experience difficulty during the installation, contact Garmin® Product Support.

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 for in-country support information.
- In the USA, call 913-397-8200 or 1-800-800-1020.
- In the UK, call 0808 238 0000.
- In Europe, call +44 (0) 870 850 1241.

Software Update

You may need to update the device software when you install the device or add an accessory to the device.

Before you can update the software, you need a separate card reader, such as a Garmin card reader or another Garmin chartplotter with a card slot, connected to the Garmin Marine Network.

Loading the New Software on a Memory Card

1 Insert a memory card into the card slot on the computer.
2 Go to www.garmin.com/support/software/marine.html.
3 Select **Download** next to **GPSMAP Series with SD Card**.
4 Read and agree to the terms.
5 Select **Download**.
6 Select **Run**.
7 Select the drive associated with the memory card, and select **Next** > **Finish**.

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.
5 When prompted, leave the memory card in place and restart the chartplotter manually.
6 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
  - 13 mm ($1/2$ in.) drill bit
  - 7.2 mm ($5/16$ in.) drill bit
  - 3.5 mm ($1/8$ in.) drill bit
- #2 Phillips screwdriver
- Jigsaw or rotary tool
- File and sandpaper
- Marine sealant (recommended)

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 flush mount the device in the dashboard.

When selecting a mounting location, observe these considerations.

- 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.

Mounting the Device

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.

NOTE: To avoid potential damage to the powder coating, use only the included screws to mount the device. Using screws other than the ones included will void your warranty.
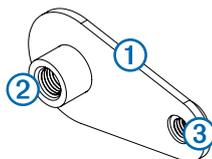
To avoid potential damage to the device during installation, leave the protective blue bumper on the device during the installation.

The included template and hardware can be used to flush mount the device in your dashboard. There are three options for hardware based on the mounting surface material.

- You can drill holes and use the included nut plates and machine screws. The nut plates can add stability to a thinner surface.
- You can punch holes, tap them to M4, and use the included machine screws.
- You can drill pilot holes and use the included wood screws.

1 Trim the template and make sure it fits in the location where you want to mount the device.
2 Secure the template to the selected location.
3 Using a 3.6 mm ($^9/_{64}$ 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 or rotary tool, 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 Based on your mounting surface, drill or punch and tap the larger holes:
   - Drill 7.2 mm ($^9/_{32}$ in.) holes for the included nut plate and machine screws.
   - Drill pilot holes for the included wood screws, and skip to step 19.
   - Punch and tap M4 holes for the included machine screws, and skip to step 19.
10 If using the nut plates, 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 location.
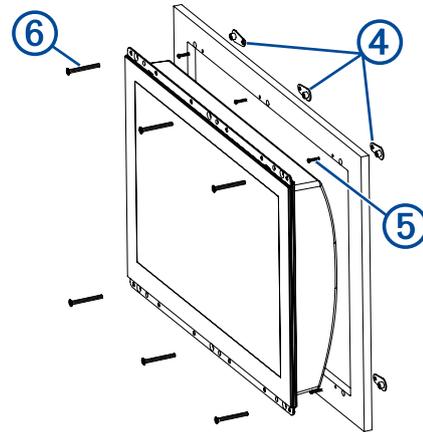12 Repeat steps 10 and 11 for each nut plate.
13 Using a 3.5 mm ($^9/_{64}$ in.) drill bit, drill the smaller holes.
14 Remove the template from the mounting surface.
15 Starting in one corner of the mounting location, place a nut plate ④ on the back of the mounting surface, lining up the large and small 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 and 16 for each of the nut plates along the top and bottom of the device.
18 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.

19 Place the device into the cutout.
20 Secure the device to the mounting surface using the included M4 screws ⑥.
21 Carefully remove the rubber protective bumper.
22 Install the decorative bezel by snapping it in place around the edges of the device.

Connection Considerations

When connecting this device to power and to other Garmin devices, you should observe these considerations.

- The power and ground connections to the battery must be checked to make sure they are secured and cannot become loose.
- For easier routing, the cables may be packaged without the locking rings installed. The cables should be routed before the locking rings are installed.
- After installing a locking ring on a cable, you should make sure the ring is securely connected and the o-ring is in place so the power or data connection remains secure.
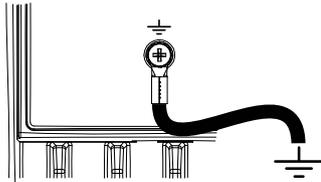
Connecting to Power

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 voids 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.
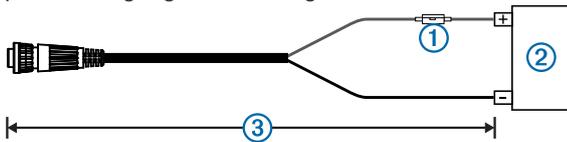
Additional Grounding Consideration

This device should not need additional chassis grounding in most installation situations. If you experience interference, you can use the grounding screw on the housing to connect the device to the water ground of the boat to help avoid the interference.
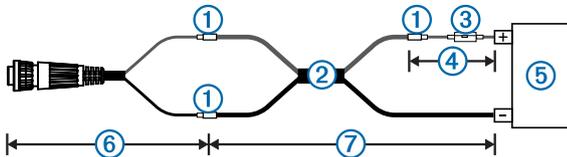

Power Cable Extensions

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	6 ft. (1.8 m) no extension

Item	Description
①	Splice
②	• 10 AWG (5.26 mm²) extension wire, up to 15 ft. (4.6 m) • 8 AWG (8.36 mm²) extension wire, up to 23 ft. (7 m) • 6 AWG (13.29 mm²) extension wire, up to 36 ft. (11 m)
③	Fuse
④	8 in. (20.3 cm)
⑤	Battery
⑥	8 in. (20.3 cm)
⑦	36 ft. (11 m) maximum extension

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 3*).
- Stations are created and modified using the device software. See the owner's manual provided with the device for more information.

Garmin Marine Network Considerations

> **NOTICE**
> A Garmin Power over Ethernet (PoE) Isolation Coupler (P/N 010-10580-10) must be used when connecting any third-party device, such as a FLIR® camera, to a Garmin Marine Network. Connecting a PoE device directly to a Garmin Marine Network chartplotter damages the Garmin chartplotter and may damage the PoE device. Connecting any third-party device directly to a Garmin Marine Network chartplotter will cause abnormal behavior on the Garmin devices, including the devices not properly turning off or the software becoming inoperable.

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.

- All devices connected to the Garmin Marine Network must be connected to the same ground.
- 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.
- The NETWORK ports on the device 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.
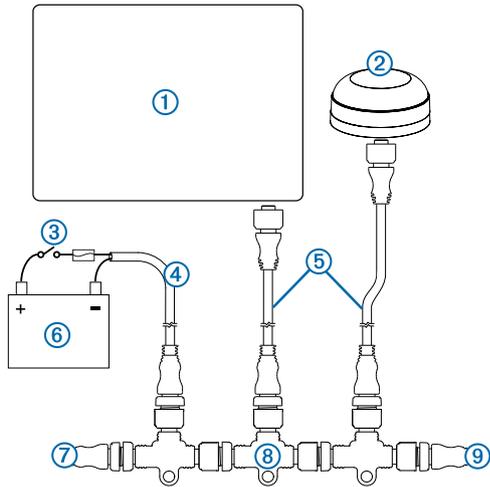
NMEA 2000® Considerations

> **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 connect the device to your existing NMEA 2000 network. If you do not have an existing NMEA 2000 network you can create a basic one using cables from Garmin.

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.

The port labeled NMEA 2000 is used to connect the device to a standard NMEA 2000 network.

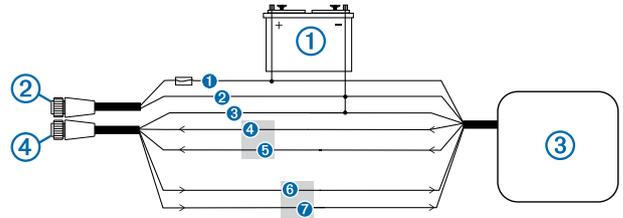| Item	Description
①	NMEA 2000 compatible Garmin device
②	GPS antenna
③	Ignition or in-line switch
④	NMEA 2000 power cable
⑤	NMEA 2000 drop cable
⑥	12 Vdc power source
⑦	NMEA 2000 terminator or backbone cable
⑧	NMEA 2000 T-connector
⑨	NMEA 2000 terminator or backbone cable

NMEA® 0183 Connection Considerations

- See the installation instructions for the NMEA 0183 device to identify the transmit (Tx) A (+) and B (-) wires and receive (Rx) A (+) and B (-) wires.
- 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 the NMEA 0183 device. See the table and wiring diagrams when connecting the data cable to NMEA 0183 devices.
- You must use 28 AWG, shielded, twisted-pair wiring for extended runs of wire. Solder all connections and seal them with heat-shrink tubing.
- See *NMEA 0183 Information*, page 8 for a list of the approved NMEA 0183 sentences that are 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 of the chartplotter owner's manual for more information.
- The ground wires on the NMEA 0183 data cable and your NMEA 0183 device must both be connected to ground.
- When connecting NMEA 0183 devices with two transmitting and two receiving wires, it is not necessary for the NMEA 0183 devices 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 0183 devices must be connected to a common ground.
- 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 0183 device is connected to the internal output port 1 on the data cable, you can connect the output port of your NMEA 0183 device to any of the internal input ports (port 1, port 2, port 3, or port 4) on the wiring harness.

- 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.
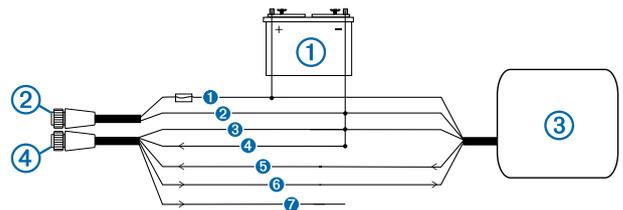
NMEA 0183 Device Connections

This diagram illustrates two-way connections for both sending and receiving data. You can also use this diagram for one-way communication. To receive information from a NMEA 0183 device, refer to items ❶, ❷, ❸, ❹, and ❺ when connecting the Garmin device. To transmit information to a NMEA 0183 device, refer to items ❶, ❷, ❸, ❻, and ❼ when connecting the Garmin device.

Item	Description
①	Power source
②	Power cable
③	NMEA 0183 device
④	NMEA 0183 cable

Item	Garmin Wire Function	Garmin Wire Color	NMEA 0183 Device Wire Function
❶	Power	Red	Power
❷	Power ground	Black	Power ground
❸	Data ground	Black	Data ground
❹	RxA (+)	White	TxA (+)
❺	RxB (-)	Orange/white	TxB (-)
❻	TxA (+)	Gray	RxA (+)
❼	TxB (-)	Pink	RxB (-)

Single-Ended NMEA 0183 Device Connections

Item	Description
①	Power source
②	Power cable
③	NMEA 0183 device
④	NMEA 0183 cable

Item	Garmin Wire Function	Garmin Wire Color	NMEA 0183 Device Wire Function
❶	Power	Red	Power
❷	Power ground	Black	Power ground
❸	Data ground	Black	Data ground
❹	RxB (-)	Orange/white	N/A
❺	RxA (+)	White	Tx

Item	Garmin Wire Function	Garmin Wire Color	NMEA 0183 Device Wire Function
❻	TxA (+)	Gray	Rx
❼	TxB (-)	Pink	N/A

- If the NMEA 0183 device has only one input (receive, Rx) wire (no A, B, +, or -), you must leave the pink wire unconnected.
- If the NMEA 0183 device has only one output (transmit, Tx) wire (no A, B, +, or -), you must connect the orange/white wire to ground.

NMEA 0183 Device Connected with a Single Receive Wire
In this example, the NMEA 0183 device is receiving data from the chartplotter.

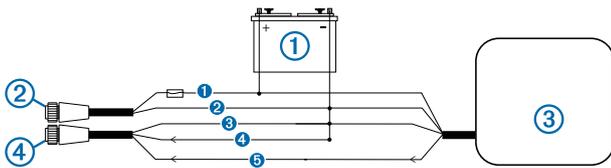| Item	Description
①	Power source
②	Power cable
③	NMEA 0183 device
④	NMEA 0183 cable

Item	Garmin Wire Function	Garmin Wire Color	NMEA 0183 Device Wire Function
❶	Power	Red	Power
❷	Power ground	Black	Power ground
❸	Data ground	Black	Data ground
❹	TxA (+)	Gray	RxA
❺	TxB (-)	Pink	N/A

NMEA 0183 Device Connected with a Single Transmit Wire
In this example, the NMEA 0183 device is sending data to the chartplotter.

Item	Description
①	Power source
②	Power cable
③	NMEA 0183 device
④	NMEA 0183 cable

Item	Garmin Wire Function	Garmin Wire Color	NMEA 0183 Device Wire Function
❶	Power	Red	Power
❷	Power ground	Black	Power ground
❸	Data ground	Black	Data ground
❹	RxB (-)	Orange/white	N/A
❺	RxA (+)	White	TxA (+)

NMEA 0183 Pinout

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
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

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	Power source
②	Power cable
③	Horn

Item	Description	
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
❶	Red	Power
❷	Black	Ground
❸	Yellow	Alarm

J1939 Network Connection Considerations
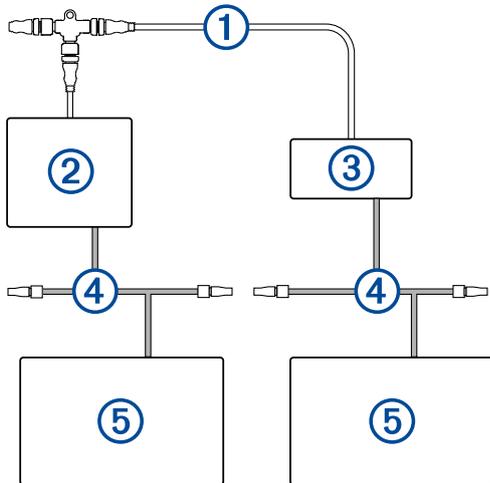
You must use a Garmin GPSMAP J1939 accessory cable when connecting the chartplotter to the J1939 network to prevent corrosion due to moisture. Using a different cable voids your warranty.

This chartplotter can connect to a J1939 network on your boat to read data from compatible devices such as certain engines and generators. Like the NMEA 2000 network, the J1939 network follows a standard and uses proprietary messages.

You should connect only one chartplotter to one J1939 network. Connecting more than one chartplotter to one J1939 network can result is unexpected behavior and errors.

The port labeled ENGINE/J1939 is used to connect the device to the existing J1939 network. You must route the cable 6 m (20 ft.) away from the J1939 backbone.

Item	Description
①	NMEA 2000 network
②	GPSMAP 8400/8600 chartplotter
③	J1939 to NMEA 2000 gateway device
④	J1939 network
⑤	J1939 engine

HDMI® Video Considerations

To prevent corrosion due to moisture, you must use Garmin GPSMAP accessory cables when connecting the chartplotter to the video source or display. Do not connect a media player stick directly into the back of the chartplotter. Using different cables or connecting a media player stick into the back of the chartplotter voids your warranty.
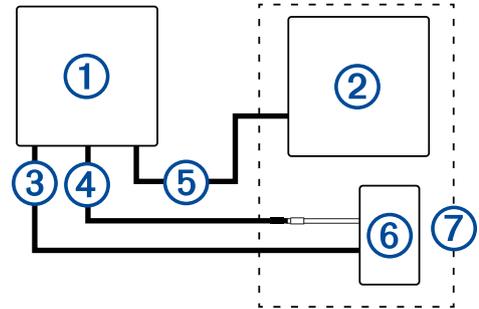
This chartplotter allows video input from HDMI video sources, such as a Chromecast™ device or a Blu-Ray™ player. You can view protected HDMI content (HDCP content) on the chartplotter screen. HDMI video is shared across the Garmin Marine Network, but it is not shared across the NMEA 2000 network. HDCP content is not shared across the NMEA 2000 network.

Through the HDMI OUT port, you can duplicate the chartplotter screen on another device, such as a television or monitor. You cannot view HDCP content on the duplicated screen.

The Garmin GPSMAP HDMI accessory cable is 4.5 m (15 ft) long. If you need a longer cable, you should use an active HDMI cable only. You need an HDMI coupler to connect the two HDMI cables. You need a Garmin GPSMAP USB OTG adapter cable to connect a media player stick. You must make all cable connections in a dry environment.

The USB port can supply up to 2.5 W to power a media player stick.

Item	Description
①	GPSMAP 8400/8600 chartplotter
②	Display with an HDMI In port, such as a computer or television
③	GPSMAP HDMI cable (HDMI IN)
④	GPSMAP USB cable to power the HDMI source, if possible A GPSMAP USB OTG adapter cable may be necessary to connect to the media player stick
⑤	GPSMAP HDMI cable (HDMI OUT)
⑥	HDMI source, such as a Blu-Ray player or Chromecast device
⑦	Dry environment, protected from moisture

Composite Video Considerations

This chartplotter allows video input from composite video sources using the port labeled CVBS IN. When connecting composite video, you should observe these considerations.

- The CVBS IN port uses a BNC connector. You can use a BNC to RCA adapter to connect a composite-video source with RCA connectors to the CVBS IN port.
- Video is shared across the Garmin Marine Network, but it is not shared across the NMEA 2000 network.
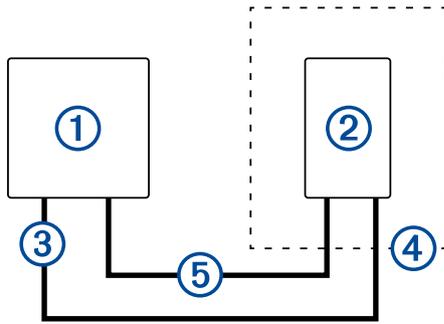
Touchscreen Controls for a Connected Computer

To prevent corrosion due to moisture, you must use Garmin GPSMAP accessory cables when connecting the chartplotter to the computer. Using different cables voids your warranty.

You can connect the chartplotter to a computer to see the computer screen and to control the computer using the chartplotter touchscreen. To see the computer screen, you must connect the computer to the HDMI IN port. To control the computer using the chartplotter touchscreen, you must connect the computer to the USB port.

The Garmin GPSMAP HDMI accessory cable is 4.5 m (15 ft) long. If you need a longer cable, you should use an active HDMI cable only. You need an HDMI coupler to connect the two HDMI cables. You must make all cable connections in a dry environment.

The Garmin GPSMAP USB accessory cable is 4.5 m (15 ft) long. If you need a longer cable, you should use a USB hub or

USB repeater extension cable only. You should make all cable connections in a dry environment.

Item	Description
①	GPSMAP 8400/8600 chartplotter
②	Computer
③	GPSMAP USB cable
④	Dry environment, protected from moisture
⑤	GPSMAP HDMI cable (HDMI IN)

Specifications

Physical Specifications

Device	Specification	Measurement
All models	Material	Die-cast aluminum and polycarbonate plastic
	Water rating*	IEC 60529 IPX7
8417/8617	Dimensions (W × H × D)	419.3 × 307.7 × 69.2 mm (16 $^1/_2$ × 12 $^1/_8$ × 2 $^3/_4$ in.)
	Display size (W × H)	366.8 × 229.6 mm (14 $^7/_{16}$ × 9 $^1/_{16}$ in.)
	Weight	5.2 kg (11.48 lbs)
	Temperature range	From -15° to 55°C (5° to 131°F)
8422/8622	Dimensions (W × H × D)	528.9 × 349.9 × 69.2 mm (20 $^{13}/_{16}$ × 13 $^3/_4$ × 2 $^3/_4$ in.)
	Display size (W × H)	476.2 × 268.3 mm (18 $^3/_4$ × 10 $^9/_{16}$ in.)
	Weight	7.1 kg (15.63 lbs)
	Temperature range	From -15° to 55°C (5° to 131°F)
8424/8624	Dimensions (W × H × D)	578.9 × 408.9 × 69.2 mm (22 $^{13}/_{16}$ × 16 $^1/_8$ × 2 $^3/_4$ in.)
	Display size (W × H)	519.4 × 325.0 mm (20 $^7/_{16}$ × 12 $^{13}/_{16}$ in.)
	Weight	8.6 kg (18.95 lbs)
	Temperature range	From -10° to 55°C (14° to 131°F)

*The device withstands incidental exposure to water of up to 1 m for up to 30 min. For more information, go to www.garmin.com/waterrating.

Electrical Specifications

Device	Specification	Measurement
All models	Input power	From 10 to 32 Vdc
	NMEA 2000 LEN	2
	NMEA 2000 Draw	75 mA max.
8417/8617	Max. power usage	35 W
	Typical current draw at 12 Vdc	2.8 A
	Typical current draw at 24 Vdc	1.4 A
	Max. current draw	4 A
	Fuse	15 A
	Compass-safe distance	76.2 cm (30 in.)

Device	Specification	Measurement
8422/8622	Max. power usage	49 W
	Typical current draw at 12 Vdc	3.9 A
	Typical current draw at 24 Vdc	1.8 A
	Max. current draw	6 A
	Fuse	15 A
	Compass-safe distance	86.36 cm (34 in.)
8424/8624	Max. power usage	76 W
	Typical current draw at 12 Vdc	6.1 A
	Typical current draw at 24 Vdc	2.8 A
	Max. current draw	9 A
	Fuse	15 A
	Compass-safe distance	66.04 cm (26 in.)

NMEA 2000 PGN Information

Type	PGN	Description
Transmit and receive	059392	ISO acknowledgment
	059904	ISO request
	060928	ISO address claim
	126208	NMEA: Command, request, and acknowledge group function
	126464	Transmit and receive PGN list group function
	126996	Product information
	129026	COG and SOG: Rapid update
	129029	GNSS position data
	129540	GNSS satellites in view
	130306	Wind data
	130312	Temperature
Transmit	127250	Vessel heading
	127258	Magnetic variance
	128259	Speed: Water referenced
	128267	Water depth
	129025	Position: Rapid update
	129283	Cross track error
	129284	Navigation data
	129285	Navigation route and waypoint info
Receive	065030	Generator average basic AC quantities (GAAC)
	126992	System time
	127250	Vessel heading
	127489	Engine parameters: Dynamic
	127488	Engine parameters: Rapid update
	127493	Transmission parameters: Dynamic
	127504	AC output status
	127505	Fluid level
	127508	Battery status
	128259	Speed: Water referenced
	128267	Water depth
	129025	Position: Rapid update
	129038	AIS class A position report
	129039	AIS class B position report
	129040	AIS class B extended position report
	129539	GNSS DOPs
	129794	AIS class A static and voyage related data
	129809	AIS class B "CS" static data report, part A
	129810	AIS class B "CS" static data report, part B

Type	PGN	Description
	130310	Environmental parameters
	130311	Environmental parameters (obsolete)
	130313	Humidity
	130314	Actual pressure

NMEA 0183 Information

Type	Sentence	Description
Transmit	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	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)

J1939 PGN Information

The chartplotter can receive J1939 PGN sentences. The chartplotter cannot transmit over the J1939 network.

Sentence	Description
61443	Electronic engine controller 2
61444	Electronic engine controller 1
65031	Exhaust temperature
65172	Engine auxiliary coolant
65252	Shutdown
65253	Engine hours and revolutions
65262	Engine temperature 1
65263	Engine fluid level or pressure 1
65270	Inlet or exhaust conditions 1
65271	Vehicle electrical power
65279	Water in fuel indicator
65272	Transmission fluids 1
65248	Vehicle distance
65266	Fuel economy (liquid)
65276	Dash display
65226	Active diagnostic trouble codes