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GPSMAP® 700 Series Installation Instructions

⚠ **WARNING**

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

⚠ **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 avoid damaging your boat.

The GPSMAP 700 series chartplotter must be properly installed according to the following instructions. You need the appropriate fasteners, tools, and mounts listed in each section. These items are available at most marine dealers.

Contact Garmin® Product Support if you have any questions while installing your GPSMAP 700 series chartplotter. In the USA, go to www.garmin.com/support, or contact Garmin USA by phone at (913) 397.8200 or (800) 800.1020. In the UK, contact Garmin (Europe) Ltd. by phone at 0808 2380000. In Europe, go to www.garmin.com/support and click **Contact Support** for in-country support information, or contact Garmin (Europe) Ltd. by phone at +44 (0) 870.8501241.

Before installing your GPSMAP 700 series chartplotter, confirm that the package contains the items listed on the box. If any parts are missing, contact your Garmin dealer immediately.

Product Registration

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.

For future reference, write the serial number assigned to your GPSMAP 700 series chartplotter in the space provided. The serial number is located on a sticker on the back of the device.

Chartplotter serial number: _____

To install the GPSMAP 700 series chartplotter, you must:
1. Mount the GPSMAP 700 series chartplotter.
2. Connect the chartplotter to power (page 5).
3. Ensure that the chartplotter software is up-to-date (page 7).

The following additional installation options are not necessary in order to use the GPSMAP 700 series chartplotter. They have been included for your convenience:
- Connecting the chartplotter to a NMEA 2000 network (page 6)
- Connecting the chartplotter to a GA 30 remote GPS antenna (page 6).
- Connecting the chartplotter to a Garmin marine radar (page 6).
- Connecting the chartplotter to other NMEA 0183-compatible devices such as a VHF radio with DSC (page 5).
- Connecting the chartplotter to a sonar transducer ("s" models only) (page 6).

Mounting the Chartplotter

You can mount the GPSMAP 700 series chartplotters using one of two methods. You can use the included bracket and hardware to bail mount the chartplotter, or you can use the included template and hardware to flush mount the chartplotter.

Mount the GPSMAP 700 series chartplotter in a location that provides a clear, glare-free view of the display and easy operation of the power key and the touch screen.

Bail Mounting the Chartplotter

Use the included bracket to bail mount the GPSMAP 700 series chartplotter. You can route cables from under the mounting surface through the included bail-mount bracket, though it is not necessary. See page 3 for instructions on installing the bail-mount bracket without routing cables through the bracket.

Hardware (included):
- Bail-mount bracket
- Cable-organization bracket
- Bail-mount template
- Four 35 mm M 4.2 × 1.4 screws (to secure the bail-mount bracket)
- Two 20 mm M 3.5 × 1.3 screws (to secure the cable-organization bracket)

Tools required (not included):
- Jigsaw
- Drill and drill bits—1 $\frac{1}{4}$ in. (32 mm), and $\frac{1}{8}$ in. (3 mm)
- Number 2 Phillips screwdriver

To install the bail-mount bracket with the cables routed through the bracket:

1. Using the included bail-mount bracket template, determine the best place to install the bracket. Be sure to leave adequate clearance behind the chartplotter for the wiring.

   NOTE: To avoid interference, mount the GPSMAP 700 series chartplotter at least 32 in. (813 mm) from a magnetic compass.

2. The bail-mount bracket template has adhesive on the back. Remove the protective liner and apply the template to the location at which you want to install the bail-mount bracket.

3. Use a 1 $\frac{1}{4}$ in. (32 mm) drill bit to drill the pass-through hole in the center of the template.

4. Use a use a $\frac{1}{8}$ in. (3 mm) drill bit to drill the six pilot holes marked on the bail-mount template.

   NOTE: If you are mounting the chartplotter in fiberglass, it is recommended to use a countersink bit to drill a clearance-counter bore through only the top gel-coat layer. This will help to avoid any cracking in the gel-coat layer when the screws are tightened.

5. Remove the bail-mount bracket template from the mounting surface.

6. Route the cables pertinent to your installation through the hole you drilled in step 3, from under the mounting surface.

   If you plan to use all four cables, route them in the following order to ensure that they will all fit correctly:
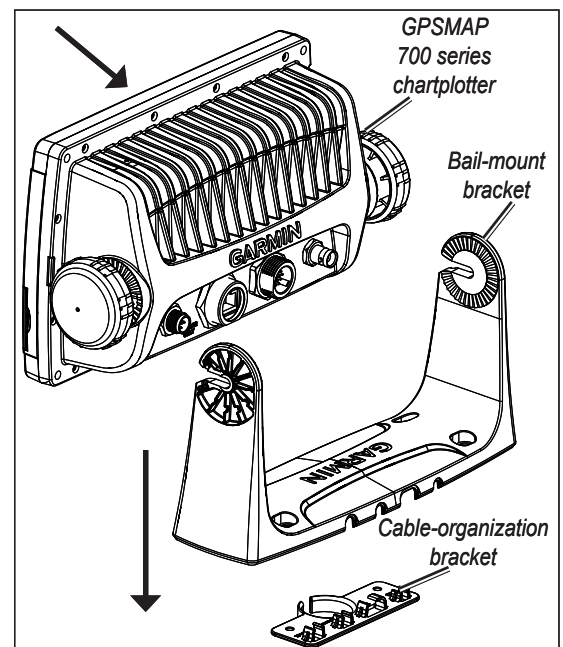   - Radar cable
   - Power/data wiring cable
   - GA 30 GPS antenna cable
   - NMEA 2000 cable

   NOTE: Do not install the locking ring (page 4) on the power/data or radar cable until after you route it through the mounting surface.
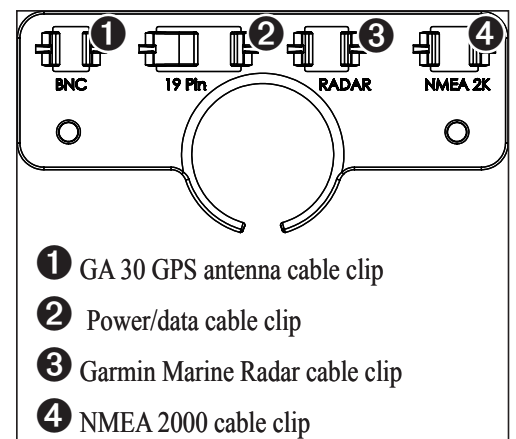
7. Place the cable-organization bracket around the cables and into the 1 $\frac{1}{4}$ in. (32 mm) hole you drilled in step 3.

8. Use the two included 20 mm M 3.5 × 1.3 screws to secure the cable-organization bracket to the mounting surface.

   NOTE: Stainless-steel screws may bind when screwed into fiberglass and overtightened. Garmin recommends applying an anti-galling, stainless anti-seize lubricant to the screw before using.

9. Extend 6–7 in. (152–178 mm) of cable slack through the cable organization bracket, and secure each cable to the correct clips. Refer to the cable-organization bracket diagram for the clip assignments.

10. Place the bail-mount bracket over the cable-organization bracket and route the cables through the back of the bail-mount bracket.

11. Secure the bail mount to the surface using the four included 35 mm M 4.2 × 1.4 screws.

12. Follow the steps on page 3 to install the GPSMAP 700 series chartplotter on the bail mount bracket. Test the slack-length of the cables routed through the bracket.

13. Make cable slack-length adjustments if necessary. Apply marine sealant (optional).

Bail-Mounting the GPSMAP 700 Series Chartplotter

❶ GA 30 GPS antenna cable clip

❷ Power/data cable clip

❸ Garmin Marine Radar cable clip

❹ NMEA 2000 cable clip

Cable-Organization-Bracket Clip Identification

To install the bail-mount bracket without the cables routed through the bracket:
1. Using the included bail-mount bracket template, determine the best place to install the bracket. Be sure to leave adequate clearance behind the chartplotter for the wiring.

   NOTE: To avoid interference, mount the GPSMAP 700 series chartplotter at least 32 in. (813 mm) from a magnetic compass.
2. The bail-mount bracket template has adhesive on the back. Remove the protective liner and apply the template to the location at which you want to install the bail-mount bracket.
3. Use a $^1/_8$ in. (3 mm) drill bit to drill the four outer pilot holes marked on the template. Do not drill the two pilot holes marked on the cable-organization bracket.

   NOTE: If you are mounting the chartplotter in fiberglass, it is recommended to use a countersink bit to drill a clearance-counter bore through only the top gel-coat layer. This will help to avoid any cracking in the gel-coat layer when the screws are tightened.
4. Remove the bail-mount bracket template from the mounting surface.
5. Secure the bail mount to the surface using the four included 35 mm M 4.2 × 1.4 screws.

   NOTE: Stainless-steel screws may bind when screwed into fiberglass and overtightened. Garmin recommends applying an anti-galling, stainless anti-seize lubricant to the screw before using.

To install the GPSMAP 700 series chartplotter on the bail-mount bracket:
1. Loosely attach the mounting knobs to the GPSMAP 700 series chartplotter.
2. Slide the chartplotter onto the bail mount, and tighten the mounting knobs.

Flush Mounting the Chartplotter

Hardware (included):
- Flush-mount template
- Four 35 mm M 4.2 × 1.4 screws

Tools required (not included):
- Jigsaw
- Drill and drill bits—$^3/_8$ in. (9.5 mm) and $^1/_8$ in. (3 mm)
- Number 2 Phillips screwdriver
- Center punch and hammer
- File and sandpaper

To flush mount a GPSMAP 700 series chartplotter:
1. The flush-mount template is included in the product box. Trim the template and ensure it will fit in the location where you want to flush mount the chartplotter.

   NOTES:
   - Make sure the surface on which you mount the chartplotter has adequate open space behind it to fit the chartplotter and the connected cables, and make sure to leave approximately $^1/_2$ in. (13 mm) of space on the right side of the chartplotter to access the SD card door and sun cover.
   - To avoid interference, mount a GPSMAP 700 series chartplotter at least 32 in. (813 mm) from a magnetic compass.
2. The flush-mount template has adhesive on the back. Remove the protective liner and apply the template to the location at which you want to mount the chartplotter.
3. Using a $^3/_8$ in. (9.5 mm) drill bit, drill a pilot hole inside the corner of the template to begin cutting the mounting surface.
4. Using the jigsaw, cut the mounting surface along the inside of the solid line indicated on the flush-mount template. Use a file and sandpaper to refine the size of the hole.
5. If the top and bottom mounting covers are attached to the front of the chartplotter, remove them by unsnapping the covers from the sides.
6. Place the chartplotter in the hole, and make sure that the mounting holes on the chartplotter line up with the pilot holes on the flush-mount template after cutting, sanding, and filing the hole. If they do not line up, mark the locations where the pilot holes need to be.
7. Using the center punch, indent the center of each of the mounting-hole locations.
8. Using a $^1/_8$ in. (3 mm) drill bit, drill the pilot holes.

   NOTE: If you are mounting the chartplotter in fiberglass, it is recommended to use a countersink bit to drill a clearance-counter bore through only the top gel-coat layer. This will help to avoid any cracking in the gel-coat layer when the screws are tightened.
9. Place the chartplotter into the cutout.
10. Securely tighten the four included 35 mm M 4.2 × 1.4 mounting screws through the chartplotter into the pilot holes.

    NOTE: Stainless-steel screws may bind when screwed into fiberglass and overtightened. Garmin recommends applying an anti-galling, stainless anti-seize lubricant to the screw before using.
11. Install the top and bottom mounting covers by snapping them into place.
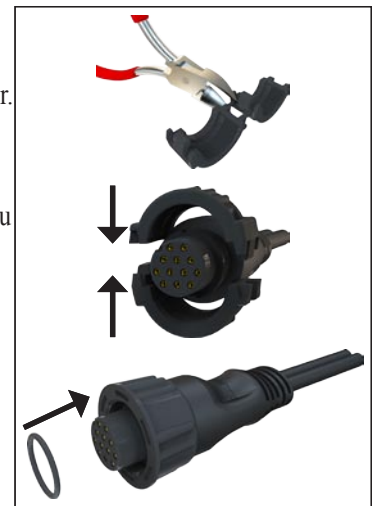
Installing the Power/Data Cable

The chartplotter comes with a power/data cable that connects the chartplotter to power and to optional NMEA 0183 devices. If applicable, the power/data cable also connects the chartplotter to a sonar transducer. The power/data cable does not connect the chartplotter to a NMEA 2000 network. For instructions on connecting the chartplotter to a NMEA 2000 network, see page 6.
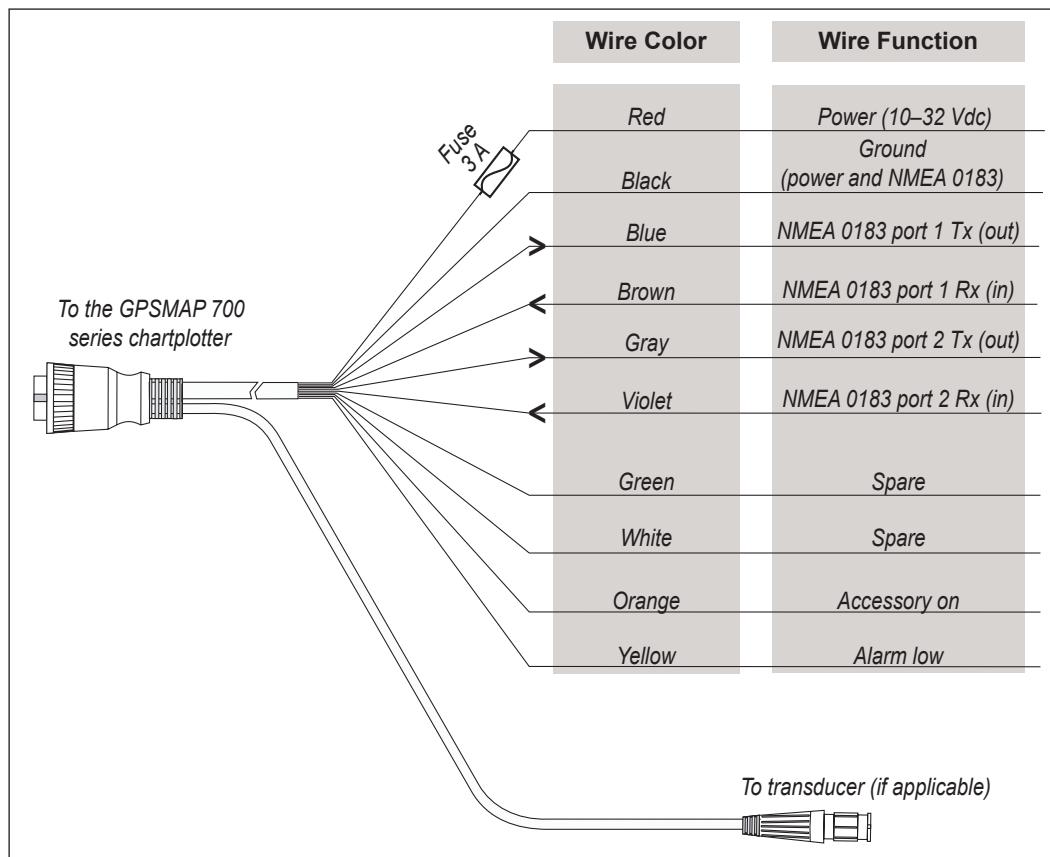
To help make the cable-routing process easier, the locking ring is packaged separately from the cable. If you install the power/data cable through the bail mount, do not install the locking ring until after all the cables are routed.

Installing a locking ring on the cable:

1. Route the cable away from sources of electronic interference so that the cable connector is at the mounting location of the chartplotter.

2. Separate the two halves of the locking ring.

3. Align the two halves of the locking ring over the cable and snap them together.

4. Insert the O-ring into the end of the connector.

Installing the Locking Ring

Wire Color	Wire Function
Red	Power (10–32 Vdc)
Black	Ground (power and NMEA 0183)
Blue	NMEA 0183 port 1 Tx (out)
Brown	NMEA 0183 port 1 Rx (in)
Gray	NMEA 0183 port 2 Tx (out)
Violet	NMEA 0183 port 2 Rx (in)
Green	Spare
White	Spare
Orange	Accessory on
Yellow	Alarm low

Fuse 3 A

To the GPSMAP 700 series chartplotter

To transducer (if applicable)

GPSMAP 700 Series Power/Data Cable

Notes:

- Use an AGC/ 3AG - 3 Amp replacement fuse.

- If it is necessary to extend the power and ground wires, use 16 AWG wire.

- You can wire the cable directly to the battery, or if your boat has an electrical system, you might be able to wire the cable to an unused holder on the fuse block. If you use the boat fuse block, remove the in-line fuse holder on the power wire of the cable.

- Do not cut the transducer cable, because this voids your warranty.

NOTICE

The maximum input voltage is 32 Vdc. Do not exceed this voltage because this can damage the chartplotter and void the warranty.

NOTE: If you are not connecting the chartplotter to NMEA 0183 devices, use only the red and black wires. The other wires do not have to be connected for normal operation of the chartplotter. For information on connecting to a NMEA 0183-compatible device, see page 5.
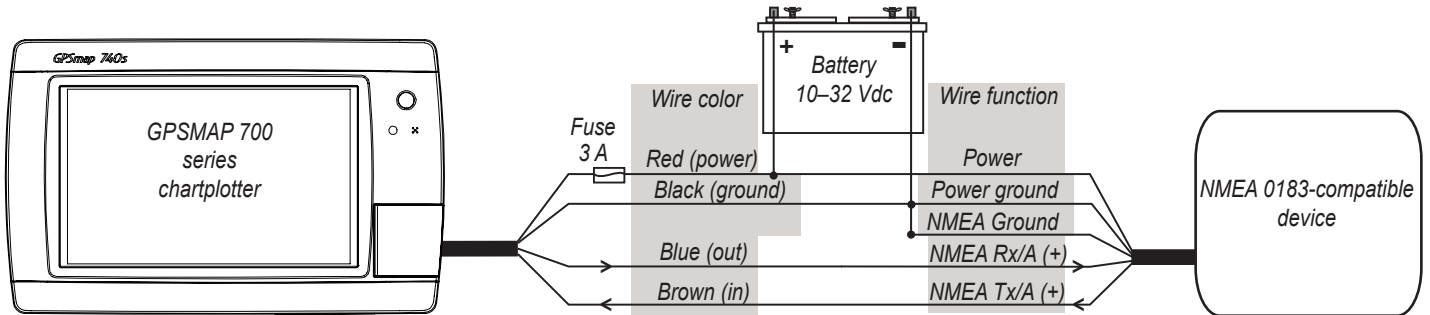
Connecting the Power/Data Cable to Power

1. Use a test light or a voltmeter to determine the polarity of the voltage source.

2. Connect the red (+ or positive) wire to the positive voltage terminal. (If you use the fuse block on the boat, route the positive connection through the fuse, as shown on the diagram.)

3. Connect the black (- or ground) wire to the negative voltage terminal.

4. Install or check the 3 A fuse (in the in-line fuse holder, or on the fuse block of the boat).
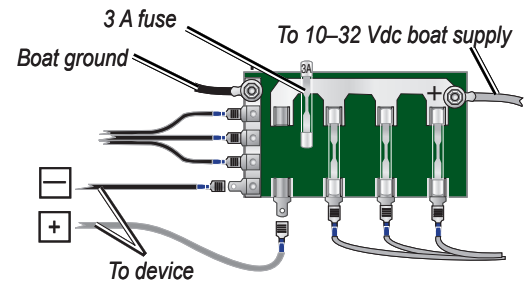
Fuse Block Example

Connecting the Power/Data cable to a NMEA 0183 Device (Optional)

You can connect the GPSMAP 700 series chartplotter to other NMEA 0183-compatible equipment, such as a DSC or AIS device. Refer to the wiring diagram for connecting the chartplotter to NMEA 0183-compatible devices.
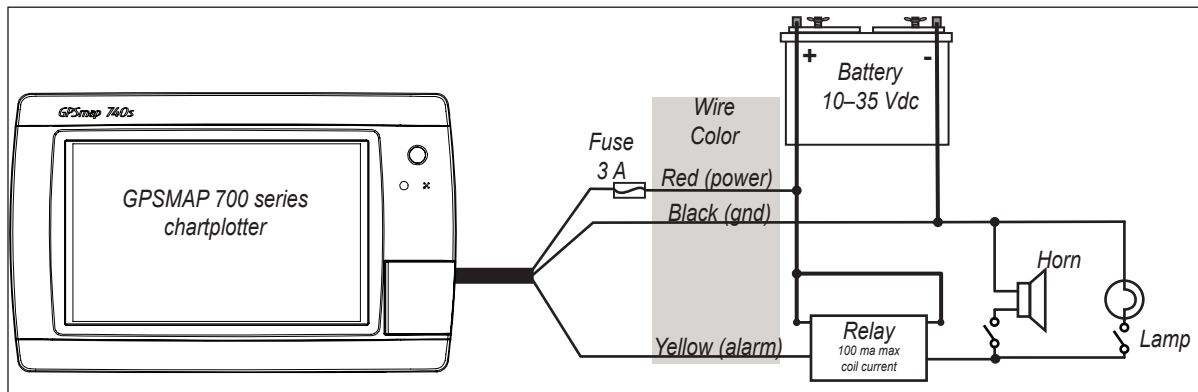

Wiring a GPSMAP 700 Series Chartplotter to a Standard NMEA 0183 Device

To connect the power/data cable to a NMEA 0183 device:

1. For Garmin devices, the ground (black) wires serve as NMEA 0183 ground and must be attached together or on the same terminal as the NMEA 0183 ground on your NMEA 0183 device. Refer to the wiring diagram of your NMEA 0183 device for wire identification.

2. Connect the blue (NMEA 0183 port 1 out) wire from the GPSMAP 700 power/data cable to the NMEA 0183 in (or Rx/A +) wire from the NMEA 0183 device, and the brown (NMEA 0183 port 1 in) wire to the NMEA out (or Tx/A +) wire from the NMEA 0183 device.

3. Repeat step 2 using the gray (NMEA 0183 port 2 out) and violet (NMEA 0183 port 2 in) wires for an additional NMEA 0183 device.

4. Set the serial port (or ports) on the chartplotter to use NMEA 0183 data (standard or high-speed). See the *GPSMAP 700 Series Owner's Manual* for more information.

Connecting the Power/Data Cable to a Lamp or to a Horn (Optional)

The GPSMAP 700 series chartplotter can be used with a lamp, a horn, or both, to sound or flash an alert when the chartplotter displays a message. The alarm does not need to be wired for the chartplotter to function. 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 manually toggle visual and audible alerts, install single-pole, single-throw switches.

Wiring to a Lamp, a Horn, or Both

Connecting the Chartplotter to a NMEA 2000 Network (Optional)

You can connect the GPSMAP 700 series chartplotter to your existing NMEA 2000 network. You will need the appropriate NMEA 2000 cables and connectors, either to connect the chartplotter to your existing NMEA 2000 network or to build a NMEA 2000 network if you do not have one installed on your boat. Contact your local Garmin dealer.

If you are unfamiliar with NMEA 2000, read the "NMEA 2000 Network Fundamentals" chapter of the *Technical Reference for Garmin NMEA 2000 Products.* The document is located on the included CD and on the NMEA 2000 section of the Garmin Web site at http://www.garmin.com/garmin/cms/us/onthewater/nmea2000.

Connecting the Chartplotter to a Garmin Marine Radar (Optional)

You can connect the GPSMAP 700 series chartplotter to a Garmin marine radar such as a GMR™ 18 HD (not included).

To connect the chartplotter to a Garmin marine radar:
1. Install the radar according to the installation instructions provided with the radar.
2. Route the Garmin marine network cable to the chartplotter, and connect it to the radar port.

   NOTE: The GPSMAP 700 series chartplotter is compatible with a Garmin marine radar, but it is not compatible with the Garmin marine network. Do not connect other Garmin marine network devices to the radar port on the GPSMAP 700 series chartplotter.
3. Update the chartplotter software (page 7).

Connecting the Chartplotter to a GA 30 Remote GPS Antenna (Optional)

The GPSMAP 700 series chartplotter has an internal GPS receiver, but some installations, such as a flush-mount-installation, may not allow a view of the sky that the device needs to calculate your GPS position. You can install a GA 30 remote GPS antenna (not included) in an appropriate location and connect it to the chartplotter to provide GPS information.

To connect the chartplotter to a GA 30 antenna:
1. Install the GA 30 antenna according to the instructions provided with the antenna.
2. Route the GA 30 cable to the chartplotter, and connect it to the external GPS antenna connector.

Connecting the Chartplotter to a Transducer

If you have a sonar-cable GPSMAP 700 series chartplotter (indicated by an "s" in the product name), you can connect a Garmin transducer to use sonar-specific features.

To connect the chartplotter to a transducer:
1. Install the transducer according to the instructions provided with the transducer.
2. Route the transducer cable to the chartplotter and connect it to the power/data cable.

Identifying the Rear-Panel Connectors

After the power/data cable is wired to the boat (and after any optional Garmin radar, NMEA 0183, NMEA 2000, or external GPS devices are installed) connect the cables to the GPSMAP 700 series chartplotter.

NOTE: You must install the locking rings before connecting the power/data cable or a Garmin radar cable to the chartplotter (page 4).

To connect a cable to the back of a GPSMAP 700 series chartplotter:
1. Carefully press the cable into the correct port on the back of the chartplotter until it is firmly seated. **Do not force the cable, because this may damage the pins**.
2. After the cable is seated, turn the locking ring clockwise until it is tight. Be careful not to overtighten the locking ring.
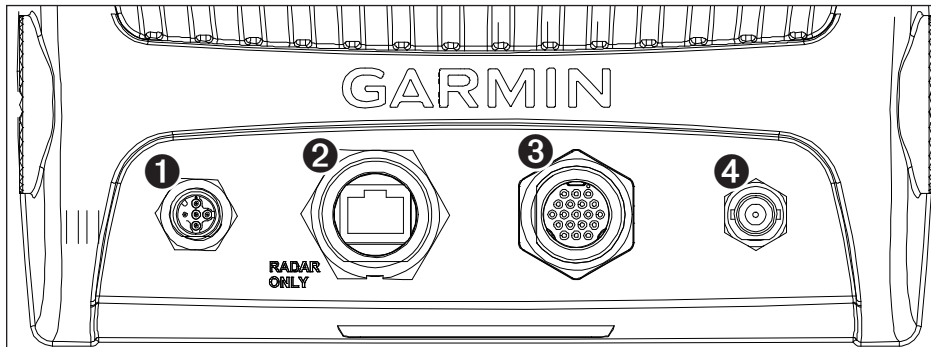
GPSMAP 700 Series Connectors

➊ NMEA 2000 connector

➋ Radar port

➌ Power/data connector

➍ External GPS antenna connector

Updating the Chartplotter Software

The GPSMAP 700 series chartplotter may contain a software update SD card. If so, follow the instructions provided with the card.

If a software update SD card is not included, visit www.garmin.com to make sure your chartplotter software is up-to-date. To identify the version of software on your chartplotter, select or touch **Configure** > **System** > **System Information.**

Appendix

Specifications

Physical Specifications

Specification	Measurement
Size	W × H × D: 8 $\frac{29}{32}$ × 5 $\frac{19}{32}$ × 3 $\frac{1}{8}$ in. (226 × 142 × 80 mm)
Weight	2.48 lb. (1.125 kg)
Display	W × H: 6 × 3 $\frac{19}{32}$ in. (152 × 91 mm)
Case	Fully Gasketed, high-impact plastic and aluminum alloy, waterproof to IEC 60529 IPX-7
Temp. Range	From 5°F to 131°F (from -15°C to 55°C)
Compass Safe Distance	32 in. (813 mm)

GPS Performance

Specification	Parameter	Measurement
Receiver		High-sensitivity 12 parallel channel, WAAS-capable receiver
Acquisition Time	Warm	Approximately 1 sec. (The device is at or near the last location at which you recently acquired satellites.)
	Cold	Approximately 38 sec. (The device has moved more than about 500 mi. [800 km] since it was turned off.)
	Reacquisition	< 1 sec.
Update Rate		1/sec., continuous
Accuracy	GPS	<33 ft. (10 m) 95% typical
	DGPS	10–16 ft. (3–5 m) 95% typical (WAAS/EGNOS accuracy)
Velocity		0.05 m/sec. steady state

Power

Specification	Measurement
Source	10–32 Vdc
Usage	8.56 W max. at 13.8 Vdc
Fuse	3 A
NMEA 2000 Load Equivalency Number (LEN)	2
NMEA 2000 Draw	100 mA maximum

Sonar

Power	1 kW Transducer, 1,000 W (RMS), 8,000 W (peak to peak); Dual Frequency, 500 W (RMS), 4,000 W (peak to peak); Dual Beam, 400 W (RMS), 3,200 W (peak to peak)
Frequency	50/200 kHz (dual frequency and 1 kW), 80/200 kHz (dual beam)
Depth	2,500 ft. (762 m) (1 kW), 1,500 ft (457 m) (dual frequency), 900 ft (274 m) (dual beam) - Depth capacity is dependent on water salinity, bottom type, and other water conditions.

NMEA 2000 PGN Information

Receive		Transmit	
059392	ISO Acknowledgment	059392	ISO Acknowledgment
059904	ISO Request	059904	ISO Request
060928	ISO Address Claim	060928	ISO Address Claim
126208	NMEA - Command/Request/Acknowledge Group Function	126208	NMEA - Command/Request/Acknowledge Group Function
126464	Transmit/Receive PGN List Group Function	126464	Transmit/Receive PGN List Group Function
126996	Product Information	126996	Product Information
127245	Rudder	127250	Vessel Heading
127250	Vessel Heading	127258	Magnetic Variance
127488	Engine Parameters - Rapid Update	128259	Speed - Water Referenced
127489	Engine Parameters - Dynamic	128267	Water Depth
127493	Transmission Parameters - Dynamic	129025	Position, Rapid Update
127498	Engine Parameters - Static	129026	COG/SOG Rapid Update
127505	Fluid Level	129029	GNSS - Position Data

Receive		Transmit	
128259	Speed - Water Referenced	129283	Cross Track Error
128267	Water Depth	129284	Navigation Data
129038	AIS Class A Position Report	129285	Navigation - Route/WP information
129039	AIS Class B Position Report	129539	GNSS DOPs
129040	AIS Class B Extended Position Report	129540	GNSS Sats in View
129794	AIS Class A Static and Voyage Related Data	130306	Wind Data
129798	AIS SAR Aircraft position report		
129799	Radio Frequency/Mode/Power		
129802	AIS Safety Related Broadcast Message		
129808	DSC Call Information		
130306	Wind Data		
130576	Small Craft Status		
130310	Environmental Parameters		
130311	Environmental Parameters (Obsolete)		
130312	Temperature		
130313	Humidity		
130314	Actual Pressure		

GPSMAP 700 series chartplotters are NMEA 2000 certified.

NMEA 0183 Information

NMEA 0183, Version 3.01 Sentences:

Receive		Transmit	
DPT	Depth	GPAPB	APB - Heading/Track Controller (Autopilot) Sentence "B"
DBT	Depth Below Transducer	GPBOD	BOD - Bearing - Origin to Destination
MTW	Water Temperature	GPBWC	BWC - Bearing & Distance to Waypoint
VHW	Water Speed and Heading	GPGGA	GGA - Global Positioning System Fix Data
WPL	Waypoint Location	GPGLL	GLL - Geographic Position - Latitude/Longitude
VDM	AIS VHF Data-Link Message	GPGSA	GSA - GNSS DOP and Active Satellites
DSC	Digital Selective Calling Information	GPGSV	GSV - GNSS Satellites in View
DSE	Expanded Digital Selective Calling	GPRMB	RMB - Recommended Minimum Navigation Information
HDG	Heading, Deviation & Variation	GPRMC	RMC - Recommended Minimum Specific GNSS Data
HDM	Heading, Magnetic	GPRTE	RTE - Routes
MWD	Wind Direction & Speed	GPVTG	VTG - Course Over Ground and Ground Speed
MDA	Meteorological Composite	GPWPL	WPL - Waypoint Location
MWV	Wind Speed and Angle	GPXTE	XTE - Cross Track Error
VDM	AIS VHF Data-Link Message	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

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

For the latest free software updates (excluding map data) throughout the life of your Garmin products, visit the Garmin Web site at www.garmin.com.

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