



GMI™ 20 Installation Instructions

To obtain the best possible performance, install this marine instrument according to these instructions. If you experience difficulty during the installation, contact Garmin® Product Support, or seek the advice of a professional installer.

This instrument communicates with NMEA 2000® sensors and devices, and shows information such as speed, heading, water depth, and fuel information when connected to the appropriate sensors. The instrument can also communicate with a NMEA® 0183 device using an optional data cable.

Important Safety Information

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.

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 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.

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. 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 (professional installation recommended) from your Garmin dealer.

When selecting a mounting location, observe these considerations.

- The mounting location should be at or below eye level to provide optimal viewing as you operate your vessel.

- The mounting location should allow easy access to the keys on the device.
- The mounting surface 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 area behind the mounting surface must allow room for the routing and connection of the cables.


Mounting the Device

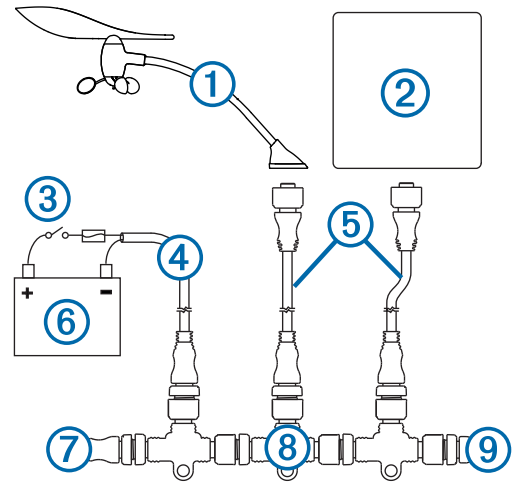
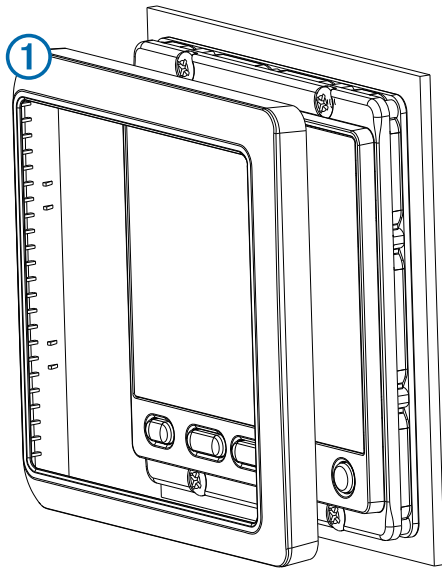
NOTICE

If you are mounting the device in fiberglass, when drilling the four pilot holes, 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.

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 flush-mount template and ensure it will fit in the location where you plan to mount the marine instrument.
The flush-mount template is included in the product box.
- 2 Remove the liner from the adhesive on the back of the template and apply it to the location where you plan to mount the marine instrument.
- 3 If you plan to cut the hole with a jigsaw instead of a 90 mm (3.5 in.) hole saw, use a 10 mm ($\frac{3}{8}$ in.) drill bit to drill a pilot hole to begin cutting the mounting surface.
- 4 Using the jigsaw or the 90 mm (3.5 in.) hole saw, cut the mounting surface along the inside of the dashed line indicated on the flush-mount template.
- 5 If necessary, use a file and sandpaper to refine the size of the hole.
- 6 Place the marine instrument into the cutout to confirm that the mounting holes on the template are in the correct locations.
- 7 If the mounting holes are not correct, mark the correct locations of the mounting holes.
- 8 Remove the marine instrument from the cutout.
- 9 Drill the 3.2 mm ($\frac{1}{8}$ in.) pilot holes.
If you are mounting the marine instrument in fiberglass, use a countersink bit as advised in the notice.
- 10 Remove the remainder of the template.
- 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.
NOTE: To prevent corrosion of the metal contacts, cover unused connectors with the attached weather caps.
- 12 Place the marine instrument into the cutout.
- 13 Securely fasten the marine instrument to the mounting surface using the supplied screws.
If you are mounting the marine instrument in fiberglass, use an anti-galling lubricant as advised in the notice.
- 14 Snap the bezel  into place.



Connection Considerations

The marine instrument connects to power and to data sources through a NMEA 2000 network. In addition, the marine instrument can connect to a NMEA 0183 data source using a data cable (not included).

NMEA 2000 Connection Considerations

NOTICE

If you have an existing NMEA 2000 network on your boat, it should already be connected to power. Do not connect the included 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 the included 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.

The marine instrument connects to a NMEA 2000 network on your boat using the port labeled NMEA 2000. The NMEA 2000 network provides power to the marine instrument and data from NMEA 2000-compatible devices such as a wind sensor. 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*. To download the reference, click the "Manuals" link on the product page for your device at www.garmin.com.

Item	Description
①	Wind sensor
②	Marine instrument
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

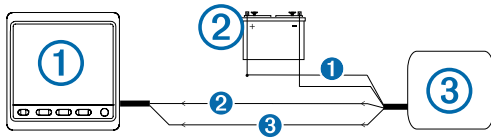
- The marine instrument can receive NMEA 0183 data from one device using a NMEA data cable (not included), but it cannot transmit data from the NMEA 0183 device to the NMEA 2000 network.
- If you are replacing a legacy Garmin marine instrument that currently uses a NMEA data cable, you do not need to purchase a new data cable, but you might need to replace the quarter-turn locking ring with a threaded locking ring. See your local Garmin dealer or www.garmin.com for more information.
- The installation instructions provided with your NMEA 0183 compatible device should contain the information you need to identify the transmitting (Tx) A (+) and B (-) wires.
- When connecting NMEA 0183 devices with two transmitting 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, the NMEA 2000 bus and the NMEA 0183 device must connect to a common ground.
- For extended runs, you should use at least 0.33 mm² (22 AWG) wire.
- You must solder and seal all connections with heat-shrink tubing.

Wire Color	Wire Function
Red	A red wire is present only on some variations of the data cable, and should not be connected.
Black	Accessory (-). This wire is used only when connecting the marine instrument to a Garmin HVS GPS antenna.
Yellow	Accessory (+). This wire is used only when connecting the marine instrument to a Garmin HVS GPS antenna.
Blue	Tx/A (+). This wire is used only when connecting the marine instrument to a Garmin HVS GPS antenna.
White	Tx/B (-). This wire is used only when connecting the marine instrument to a Garmin HVS GPS antenna.

Wire Color	Wire Function
Brown	Rx/A (+)
Green	Rx/B (-)

NMEA 0183 Connection Diagrams

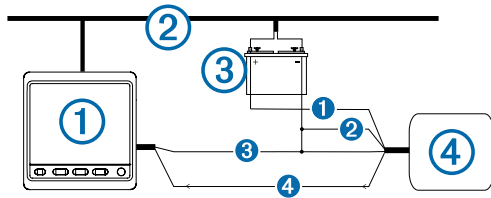
This diagram is an example of a connection to a standard NMEA 0183 device with two Tx wires.



Item	Description
①	Marine instrument with a NMEA data cable (not included)
②	12 Vdc power source
③	NMEA 0183-compliant device

Item	Garmin Wire Function	Garmin Wire Color	NMEA 0183 Device Wire Function
①	N/A	N/A	Power
②	N/A	N/A	Data ground
③	Rx/A (+)	Brown	Tx/A (+)
④	Rx/B (-)	Green	Tx/B (-)

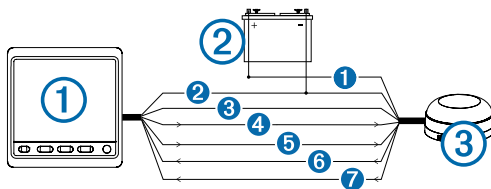
This diagram is an example of a connection to a standard NMEA 0183 device with one Tx wire.



Item	Description
①	Marine instrument with a NMEA data cable (not included)
②	NMEA 2000 network (must connect to the same ground as the NMEA data cable)
③	12 Vdc power source
④	NMEA 0183-compliant device

Item	Garmin Wire Function	Garmin Wire Color	NMEA 0183 Device Wire Function
①	N/A	N/A	Power
②	N/A	N/A	Power ground
③	Rx/B (-)	Green	Data ground
④	Rx/A (+)	Brown	Tx

This diagram is an example of a connection to a Garmin HVS GPS antenna.



Item	Description
①	Marine instrument with a NMEA data cable (not included)
②	12 Vdc power source
③	Garmin HVS GPS antenna

Item	Marine Instrument Wire Color	Antenna Wire Color
①	N/A	Red
②	Black	Black
③	Yellow	Orange
④	Blue	White
⑤	White	White/orange
⑥	Brown	Gray
⑦	Green	White/red

Specifications

Specification	Measurement
Dimensions without sun cover (H×W×D)	110 x 115 x 30 mm (4.33 x 4.53 x 1.18 in)
Dimensions with sun cover (H×W×D)	115 x 120 x 35.5 mm (4.53 x 4.72 x 1.40 in)
Weight without sun cover	247 g (8.71 oz.)
Weight with sun cover	283 g (9.98 oz.)
Temperature range	From 5° to 158°F (from -15° to 70°C)
Compass-safe distance	209 mm (8.25 in.)
Case material	Polycarbonate, waterproof to IEC 60529 IPX7 standards
Power usage	2.5 W max
Unit max. voltage	32 Vdc
NMEA 2000 input voltage	9–16 Vdc
NMEA 2000 load equivalency number (LEN)	6 (300 mA at 9 Vdc)

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 PGN list group function
	126996	Product information
	Receive	126992
127245		Rudder
127250		Vessel heading
127488		Engine parameters: Rapid update
127489		Engine parameters: Dynamic
127493		Transmission parameters: Dynamic
127498		Engine parameters: Static
127505		Fluid level
127508		Battery status
128259		Speed: Water referenced
128267		Water depth
129025		Position: Rapid update
129026		COG and SOG: Rapid update
129029		GNSS position data
129044		Datum
129283		Cross track error
129284		Navigation data
129285		Navigation route and waypoint info
129539		GNSS dilution of precision (DOP)
129540		GNSS satellites in view
130306		Wind data
130310		Environmental parameters
130311		Environmental parameters
130312		Temperature

Type	PGN	Description
	130313	Humidity
	130314	Actual pressure
	130576	Small craft status

NMEA 0183 Information

When connected to an optional NMEA 0183-compatible device, the instrument can receive these NMEA 0183 sentences.

Sentence	Description
AAN	Auto anchor data
BOD	Bearing (origin to destination)
BWC	Bearing and distance to waypoint
DBT	Depth below transducer
DTM	Datum being used
DPT	Depth
GGA	Global positioning system fix data
GLL	Geographic position (latitude and longitude)
GRMB	GPS data
GRME	GPS position error data
GSA	GNSS DOP and active satellites
GSV	GNSS satellites in view
HDG	Heading, deviation, and variation
HDM	Heading, magnetic
HDT	Heading, true
MDA	Meteorological composite
MTW	Water temperature
MWD	Wind direction and speed
MWV	Wind speed and angle
RMB	Recommended minimum navigation information
RMC	Recommended minimum specific GNSS data
THS	Heading sensor data
VHW	Water speed and heading
WPL	Waypoint location
XTE	Cross track error

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

Garmin International, Inc.
 1200 East 151st Street
 Olathe, Kansas 66062, USA

Garmin (Europe) Ltd.
 Liberty House, Hounsdown Business Park
 Southampton, Hampshire, SO40 9LR UK

Garmin Corporation
 No. 68, Zhangshu 2nd Road, Xizhi Dist.
 New Taipei City, 221, Taiwan (R.O.C.)

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