GARMIN®

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. Keep the original sales receipt, or a photocopy, in a safe place.

1 Go to my.garmin.com/registration.
2 Sign in to your Garmin account.

Contacting Garmin Support

- Go to support.garmin.com for help and information, such as product manuals, frequently asked questions, videos, and customer support.
- 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.

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 mounting surface must be flat to avoid damaging the device when it is mounted.

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 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 cracking in the gel-coat layer when the screws are tightened.

> Stainless-steel screws may bind when screwed into fiberglass and overtightened. It is recommended to apply an anti-seize lubricant on 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 ($^3/_8$ 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 2.8 mm ($^7/_{64}$ 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 Place the included gasket on the back of the device and apply marine sealant around the gasket to prevent leakage behind the dashboard.

12 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.

13 Place the marine instrument into the cutout.

14 Securely fasten the marine instrument to the mounting surface using the supplied screws.

   If you are mounting the marine instrument in fiberglass, use a anti-galling lubricant as advised in the notice.

15 Snap the bezel ① into place.
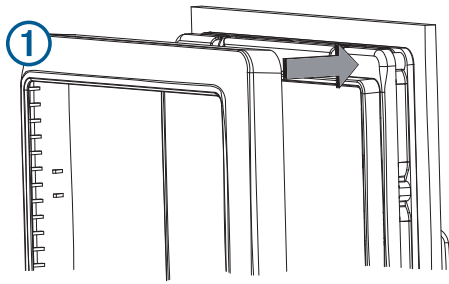
Connection Considerations

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 are connecting this device to an existing NMEA 2000 network, the NMEA 2000 network 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 connecting this device to an existing NMEA 2000 network or engine network by another manufacturer, you should install a NMEA 2000 Power Isolator (010-11580-00) between the existing network and the Garmin devices.

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.

The marine instrument connects to a NMEA 2000 network on your boat. The NMEA 2000 network provides power to the marine instrument and data from NMEA 2000 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, go to www.garmin.com/manuals.
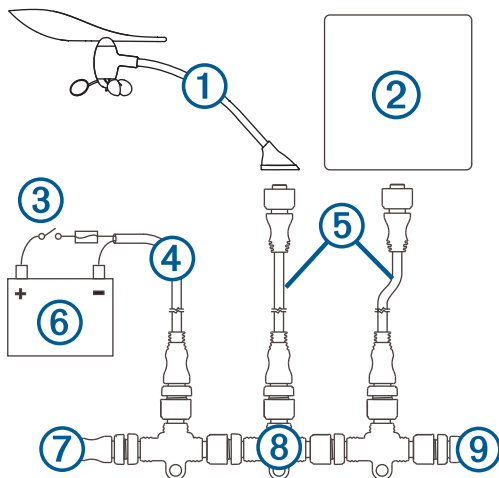
Item	Description
①	Wind sensor
②	Marine instrument
③	Ignition or in-line switch
④	NMEA 2000 power cable

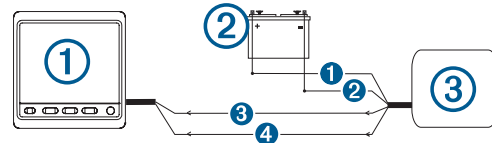| Item	Description
⑤	NMEA 2000 drop cable
⑥	12 Vdc power source
⑦	NMEA 2000 terminator or backbone cable
⑧	NMEA 2000 T-connector
⑨	NMEA 2000 terminator or backbone cable

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 mm^2 (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.
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.
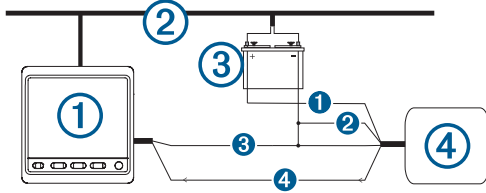

Item	Description
①	Marine instrument with a NMEA data cable (not included)
②	12 Vdc power source
③	NMEA 0183-compliant device

Item	Garmin Wire Function	Garmin Wire Color	NMEA 0183 Device Wire Function
❶	N/A	N/A	Power
❷	N/A	N/A	Data ground

| Item	Garmin Wire Function	Garmin Wire Color	NMEA 0183 Device Wire Function
➌	Rx/A (+)	Brown	Tx/A (+)
➍	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
➊	N/A	N/A	Power
➋	N/A	N/A	Power ground
➌	Rx/B (-)	Green	Data ground
➍	Rx/A (+)	Brown	Tx

This diagram is an example of a connection to a Garmin HVS GPS antenna.
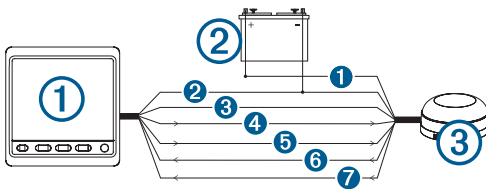
Item	Description
①	Marine instrument with a NMEA data cable (not included)
②	12 Vdc power source
③	Garmin HVS GPS antenna

Item	Marine Instrument Wire Color	Antenna Wire Color
➊	N/A	Red
➋	Black	Black
➌	Yellow	Orange
➍	Blue	White
➎	White	White/orange
➏	Brown	Gray
➐	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.)

Specification	Measurement
Material	Case: fully-gasketed polycarbonate, waterproof to IEC 60529 IPX7 standards Lens: glass with an anti-glare finish
Brightness	1200 cd/m^2 (NIT)
Power usage	3 W max
Unit max. voltage	32 Vdc
NMEA 2000 input voltage	9 to 16 Vdc
NMEA 2000 load equivalency number (LEN)	7 (350 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	System time
	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
	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

Sentence	Description
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)