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GFL™ 10 Installation and Configuration Instructions

Use the Garmin® GFL 10 adapter to adapt analog information provided by a fluid-level sensor on your boat to your NMEA 2000® network. The GFL 10 adapter allows you to observe fluid-level information on compatible Garmin display devices connected to your NMEA 2000 network. For a list of compatible Garmin chartplotters and devices, visit www.garmin.com.

Compare the contents of this package with the packing list on the box. If any pieces 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.

Contact Garmin

Contact Garmin Product Support if you have any questions while using your GFL 10 adapter. 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.

> ⚠ See the *Important Safety and Product Information* guide in the compatible Garmin display device 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 the opposite side of the drilling or cutting surface.

Needed Tools and Supplies

- Heat-shrink tubing and a heat gun
- Cable ties
- Additional NMEA 2000 cabling and connectors (optional)

Determining an Installation Location

When you are selecting a location to install the GFL 10 adapter, consider the following:

- During installation, you connect the GFL 10 adapter to the analog gauge (or directly to the fluid-level sensor), and to the NMEA 2000 network. Therefore:
  - Choose a location that is within 173 in. (4.4 m) of the analog gauge (or the fluid-level sensor) to avoid splicing bare wires.
  - Choose a location between the NMEA 2000 backbone and the analog gauge (or the fluid-level sensor).
  - If you cannot connect the adapter directly to the NMEA 2000 network, add a drop cable. See page 3 for more information.
- The adapter is IEC 60529 IPX7 waterproof, and can be submerged up to 30 minutes at 1 meter. Do not install the adapter in a location where it will be submerged regularly, though the location can be subject to wash-down.
- You can use cable ties (not included) to secure the adapter to an existing structure on your boat.
- You can use mounted-head cable ties (not included) and screws (not included) to secure the adapter to a bulkhead or other suitable surface on your boat.
- Install the adapter at least 2 in. (5 cm) from a magnetic compass to prevent electromagnetic interference, which can cause inaccurate compass readings.

Wiring the GFL 10 Adapter

Connect the GFL 10 adapter either to an analog gauge or to the sender directly using the bare wires on the wiring harness.

Wiring the GFL 10 Adapter to an Analog Gauge

If your boat has an analog gauge representing the fluid level, you can wire the GFL 10 adapter directly to the gauge. Consult the owner's manual provided by your boat or sensor manufacturer to determine the ground, sensor, and power (ignition) connections on the gauge. Typically, the power (ignition) connector is labeled with a "+", a "+12V", an "I", or an "IGN" marking. The ground connector is typically labeled with a "-", a "⊥", or a "G" marking, and the sensor connector is typically labeled with an "S" or a "G" marking. Do not remove any wires from the back of the gauge, and wire the GFL 10 adapter to the gauge according to the following table.

Wiring the GFL 10 Adapter Directly to a Fluid-Level Sensor

If your boat does not have an analog gauge representing the fluid level, you can wire the adapter directly to the fluid-level sensor. Consult the owner's manual provided by your boat or sensor manufacturer to determine the sending and ground terminals on the sensor. Typically, the sending terminal is labeled with an "S" marking for sensor or a "G" marking for gauge, and the ground terminal is typically labeled with a negative sign (-). Wire the GFL 10 adapter to the sensor according to the following table.

Connection Type	Wire Color	Gauge or Sensor Terminal
Analog Gauge	Blue	Sensor (S, G)
	White	Gauge power (+, +12V, I, IGN)
	Yellow	Unused
	Black	Ground (-, $\perp$, G)
	Red	Unused
Resistive Sensor	Blue	Sensor (S, G)
	White	Unused
	Yellow	Unused
	Black	Ground (-, $\perp$, G)
	Red	Unused

WARNING: When connecting the GFL 10 adapter directly to the sensor on a fuel tank, make the connection to the sender on the tank before connecting the adapter to the NMEA 2000 network. This will reduce the risk of sparks near the fuel tank.

NOTICE: After connecting the adapter to the gauge or sensor, cover any exposed wires with heat-shrink tubing.

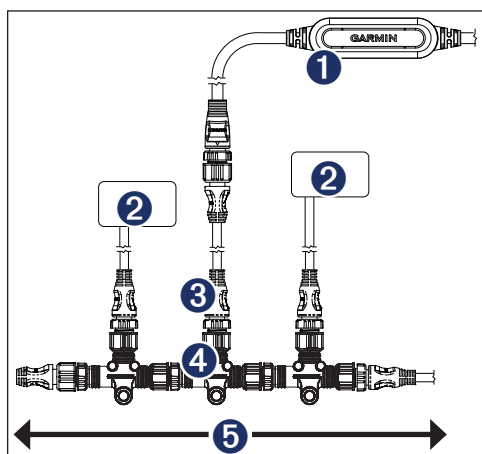## Connecting the GFL 10 Adapter to a NMEA 2000 Network

After you have connected the GFL 10 adapter to the analog gauge or to the sender, connect it to the existing NMEA 2000 network on your boat. If you do not have a NMEA 2000 network on your boat, you must build one. For more information on NMEA 2000 and to purchase additional connectors and cables, go to www.garmin.com.

To connect the GFL 10 adapter to your existing NMEA 2000 network:
1. Determine where to connect the GFL 10 adapter to your existing NMEA 2000 backbone.
2. Disconnect one side of a NMEA 2000 T-connector from the backbone. To extend the NMEA 2000 backbone, connect a NMEA 2000 backbone extension cable to the side of the disconnected T-connector.
3. Add the included T-connector for the GFL 10 adapter to the NMEA 2000 backbone by connecting it to the side of the disconnected T-connector.
4. Connect the NMEA 2000 connector on the GFL 10 adapter to the T-connector added in step 3.
5. (Optional) If the GFL 10 adapter cannot connect directly to the NMEA 2000 backbone, route a NMEA 2000 drop cable (not included) to the bottom of the T-connector added in step 3. Use a drop cable with a length up to 20 ft. (6 m). Connect the drop cable to the T-connector and to the NMEA 2000 connector on the GFL 10 adapter.

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

❶ *GFL 10 adapter*
❷ *NMEA 2000 device (not included)*
❸ *Drop cable (optional - not included)*
❹ *T-connector (one included)*
❺ *Existing NMEA 2000 network*

**Connecting the GFL 10 Adapter to an
Existing NMEA 2000 Network**

Configuring the GFL 10 Adapter

NOTICE: This section provides specific configuration information for the GFL 10 adapter using your compatible Garmin display device. To access the NMEA 2000 configuration menu on your display device, consult the documentation provided with your display device.

Configuring the NMEA 2000 Fluid Type

You can indicate the type of fluid that is in the tank with which each GFL 10 adapter is associated.

1. From the NMEA 2000 Devices list, select the GFL 10 device.
2. Select an option:
    - For most Garmin chartplotters, select **Review** > **N2K Fluid Type**.
    - For other Garmin marine devices, select **Config** > **N2K Fluid Type**.
3. Select a fluid type.
4. Select **OK**.

Configuring the Tank Number

If your boat has multiple fluid tanks, you can indicate which tank each GFL 10 adapter is associated with.

1. From the NMEA 2000 Devices list, select the GFL 10 device.
2. Select an option:
    - For most Garmin chartplotters, select **Review** > **Tank Number**.
    - For other Garmin marine devices, select **Config** > **Tank Number**.
3. Select a tank number.
4. Select **OK**.

Configuring the NMEA 2000 Tank Capacity

You can indicate the capacity of the fluid tank that the GFL 10 adapter is associated with.

1. From the NMEA 2000 Devices list, select the GFL 10 device.
2. Select an option:
   - For most Garmin chartplotters, select **Review** > **N2K Tank Capacity**.
   - For other Garmin marine devices, select **Config** > **N2K Tank Capacity**.
3. Select the tank capacity.
4. Select **Done**.

Calibrating the Fluid Level

To use the GFL 10 adapter, you must calibrate the fluid level of the tank that the adapter is associated with, using a minimum of two calibration points. The greater the number of fluid calibration points, the greater the accuracy of the reading on the fluid-level gauge.

1. Turn the boat ignition key to the On position (not Start).
2. From the NMEA 2000 Devices list, select the GFL 10 device.
3. Select an option:
   - For most Garmin chartplotters, select **Review** > **Level Calibration** > **Add Calibration Point**.
   - For other Garmin marine devices, select **Config** > **Level Calibration** > **Add Calibration Point**.
4. Select the percentage of fluid currently in the tank, based on the total tank capacity.
5. Select **Done**.
6. Change the level of the fluid in the tank.
7. Select **Add Calibration Point**.
8. Select the percentage of fluid currently in the tank, based on the total tank capacity.
9. Select **Done**.
10. Repeat steps 6 through 9 to add additional, optional fluid-level calibration points.

Troubleshooting the Tank Number

If multiple GFL 10 adapters are assigned to the same NMEA 2000 fluid type, each adapter is assigned a unique tank number automatically. If the "Invalid NMEA 2000 tank configuration" error message appears, you must assign a unique tank number to each adapter.

For example, if two adapters are assigned the NMEA 2000 fluid type value of Live Well and the error message appears, you must assign each adapter a unique tank number.

1. From the NMEA 2000 Devices list, select the GFL 10 device.
2. Select an option:
   - For most Garmin chartplotters, select **Review** > **Tank Number**.
   - For other Garmin marine devices, select **Config** > **Tank Number**.
3. Select a tank number.
4. Select **OK**.

Troubleshooting the Gauge Type

When connected to a gauge, the GFL 10 adapter gauge type is set to **Auto Detect** by default, and the adapter automatically detects the type of gauge it is connected to. If the fluid-level reading on a connected Garmin chartplotter or marine instrument changes with the engine RPM, the adapter may be detecting the wrong type of gauge.

NOTE: The fuel level changes when the boat is moving. Test the gauge-type setting when the boat is not moving.

To test the gauge-type setting:
1. When the boat is not moving, put the engine in neutral.
2. Use the throttle to increase the engine RPM. If the fluid-level reading changes with the engine RPM, change the gauge type.

To change the gauge type:
1. From the NMEA 2000 Devices list, select the GFL 10 device.
2. Select an option:
    • For most Garmin chartplotters, select **Review** > **Gauge Type**.
    • For other Garmin marine devices, select **Config** > **Gauge Type**.
3. Select an option:
    • To automatically detect the gauge type, select **Auto Detect**.
    • To indicate a one-coil gauge, select **1 Coil**.
    • To indicate a two-coil gauge, select **2 Coil**.
4. Perform the gauge-type setting test.

Resetting the Fluid Level Calibration

You can reset the fluid-level calibration of the tank that the GFL 10 adapter is associated with.
1. From the NMEA 2000 Devices list, select the GFL 10 device.
2. Select an option:
    • For most Garmin chartplotters, select **Review** > **Level Calibration**.
    • For other Garmin marine devices, select **Config** > **Level Calibration**.
3. Select **Reset Calibration**.
4. Select **Yes**.
5. Calibrate the fluid level.

Configuring the GFL 10 Adapter if the Tank Number and Fluid Type Selections Are Not Displayed

Depending on the version of software loaded on your Garmin marine instrument, the specific configuration options may not be displayed on the configuration screens.

To configure the tank number if the menu option is not displayed:

If your boat has multiple fluid tanks, you can indicate which tank each GFL 10 adapter is associated with.

1. From the NMEA 2000 Devices list, select the GFL 10 device.
2. Select an option:
   - For most Garmin chartplotters, select **Review** > **Generic Config**.
   - For other Garmin marine devices, select **Config** >**Generic Configuration**.
2. Enter the following command: **"INSTANCE="**
3. After the command, enter a whole number between **1** and **16**, which indicates the tank number, followed by **Done**.

   For example, **INSTANCE=2Done** indicates that the adapter is associated with tank number 2.

To configure the fluid type if the menu option is not displayed:

You can indicate the type of fluid that is in the tank that each GFL 10 adapter is associated with.

1. From the NMEA 2000 Devices list, select the GFL 10 device.
2. Select an option:
   - For most Garmin chartplotters, select **Review** > **Generic Config**.
   - For other Garmin marine devices, select **Config** >**Generic Configuration**.
3. Enter the following command: **"FLUIDTYPE="**
4. After the command, enter a number between 0 and 5 to indicate the fluid type as defined in the following table, followed by **Done**.

   For example, **FLUIDTYPE=1Done** indicates that the tank contains fresh water.

Fluid Type	FLUIDTYPE Value	Fluid Type	FLUIDTYPE Value
Fuel	0	Live well	3
Fresh water	1	Oil	4
Waste water	2	Black water (sewage)	5

Restoring Factory Default Settings

When you restore factory default settings, you will lose all custom configuration settings except fluid-level calibration.

1. From the NMEA 2000 Devices list, select the GFL 10 device.

2. Select an option:

    *   For most Garmin chartplotters, select **Review** > **Factory Defaults**.
    *   For other Garmin marine devices, select **Config** > **Factory Defaults**.

3. Select **Yes**.

Specifications

Physical

Weight: 12.85 oz. (365 g)

Size: (W × H × L) $^{31}/_{32}$ × $^{43}/_{64}$ × 3 $^{3}/_{32}$ in. (24.7 × 17.0 × 78.6 mm)

Total Cable Length: 16 ft. (4.9 m)

Case Material: Thermoplastic rubber (PCB overmold); PVC jacket (cable); PVC overmold (connectors/strain reliefs). Waterproof to IEC 529 IPX7 standards.

Temperature Range: From 5°F to 158°F (from -15°C to 70°C)

Compass Safe Distance: 2 in. (5 cm)

Electrical

Power Input Source: 9–16 Vdc from the NMEA 2000 bus

NMEA 2000 Power Usage: 1 W max

NMEA 2000 Load Equivalency Number (LEN): 2 (100 mA)

Communications

Use the following table to determine the approved NMEA 2000 PGN information that is received and transmitted by a GFL 10 adapter when communicating with a NMEA 2000-compliant device.

Transmit		Receive	
059392	ISO Acknowledgment	059392	ISO Acknowledgment
060928	ISO Address Claim	059904	ISO Request
126208	NMEA - Command/Request/ Acknowledge Group Function	060928	ISO Address Claim
126464	Transmit/Receive PGN List Group Function	126208	NMEA - Command/Request/ Acknowledge Group Function
126996	Product Information		
127505	Fluid Level		

 The GFL 10 is NMEA 2000 certified

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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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