

# GARMIN®

## ONDECK™

### 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 personal injury or product damage caused by fire or overheating, the appropriate fuse must be in place as indicated in the product specifications. Connecting the power cable without the appropriate fuse in place voids the product warranty.

Failure to install this device according to these instructions could result in personal injury, damage to the vessel or device, or poor product performance.

##### **CAUTION**

To avoid possible personal injury, always wear safety goggles, ear protection, and a dust mask when drilling, cutting, or sanding.

To avoid possible personal injury or damage to the device and vessel, disconnect the vessel's power supply before beginning to install the device.

To avoid possible personal injury or damage to the device or vessel, before applying power to the device, make sure that it has been properly grounded, following the instructions in the guide.

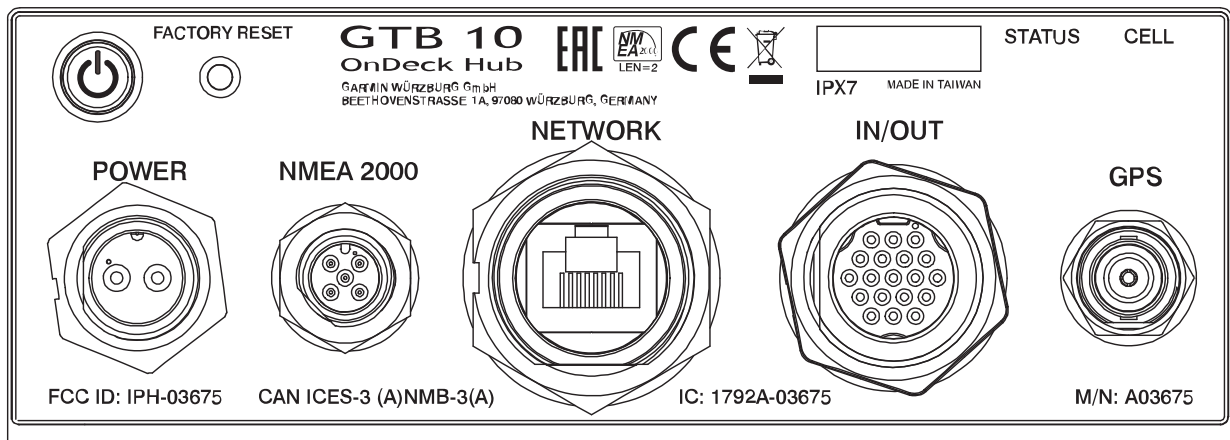
To avoid possible personal injury or damage to this device and vessel, only install this device when the vessel is on land, or when properly secured and docked in calm water conditions.


##### **NOTICE**

When drilling or cutting, always check what is on the opposite side of the surface to avoid damaging the vessel.

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

## Connector View



	Power button
FACTORY RESET	Deletes all personal data and resets default settings
STATUS	Indicates device status
CELL	Indicates cell operation
POWER	Power cable connection
NMEA 2000	NMEA 2000® network
NETWORK	Garmin Marine Network
IN/OUT	Connects relays and wired sensors, such as temperature, security, and shore power
GPS	Connects to an external GPS antenna

## Tools Needed

- Drill
- Drill bits appropriate for the surface and hardware
- Phillips screwdrivers
- Pencil
- Solderless wire-splice connector, or solder and heat-shrink tubing

## 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 (*GTB 10 Specifications, page 21*). 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.

- You must mount the device in a location where it will not be submerged.
- You must mount the device in a location with adequate ventilation where it will not be exposed to extreme temperatures.
- You must mount the device at least 102 mm (4 in.) from cables and other potential sources of interference.
- You must mount the device in a location that allows room for the routing and connection of all cables.
- You must mount the device with the connectors facing up when mounted on a horizontal surface or out when mounted on a vertical surface. Do not install with the connectors facing down or facing the mounting surface. The internal GPS antenna will not work if mounted in this orientation. See *Installing the Antennas, page 4*.
- For optimal internal GPS reception, you should mount the device in a location where it is above the water line when the vessel is in the water and if possible, has a clear view of the sky.
- If you mount the device in a vessel with a metal hull or with the internal GPS antenna blocked or oriented poorly, you must connect the device to an external GPS antenna (sold separately).
- For the best cellular signal, mount the device where it has a clear view of the sky. If it is mounted inside of a cabin, it should be close to a window so it can receive the cellular signal.

## Mounting the GTB IO Black Box Device

### NOTICE

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

**NOTE:** Screws are included with the device, but they may not be suitable for the mounting surface.

Before you mount the device, you must select a mounting location, and determine what screws and other mounting hardware are needed for the surface.

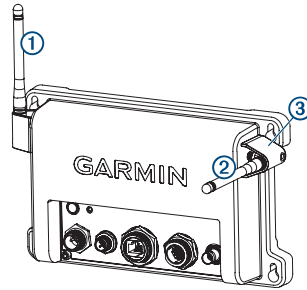
- 1 Place the black box device in the mounting location, and mark the location of the pilot holes.
- 2 Drill a pilot hole for one corner of the device.
- 3 Loosely fasten the device to the mounting surface with one corner, and examine the other three pilot-hole marks.
- 4 Mark new pilot-hole locations if necessary, and remove the device from the mounting surface.
- 5 Drill the remaining pilot holes.
- 6 Secure the device to the mounting location.

## Installing the Antennas

After mounting the device, you must orient both antennas pointing toward the sky for the best reception.

- 1 Remove the black, rubber cap from the connector.
- 2 Loosely attach the antenna to the connector.
- 3 Orient the antenna toward the sky.
  - If you are installing the device on a vertical surface, such as a bulkhead, you must install the antennas parallel to the black box ①.
  - If you are installing the device on a horizontal surface, you must install the antennas perpendicular to the black box ②.

**NOTE:** You must have the antenna oriented properly for the cover to fit.



- 4 While holding the antenna in the appropriate position, finger tighten the antenna nut.
- 5 Using the included wrench, rotate the nut another 45 degrees to fully tighten the antenna nut.  
The recommended torque applied to the nut is 0.56 N-m (5 lbf-in.), or finger tight plus 45 degrees.

### NOTICE

To ensure a water-tight connection, tighten the antenna nut to 0.56 N-m (5 lbf-in.). Over tightening the nut could cause damage to the device.

- 6 Place the cover ③ over the connector.
- 7 Secure the cover using the small screw and included #0 Phillips screwdriver.
- 8 Repeat these steps to install the second antenna.

## Connection Considerations

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

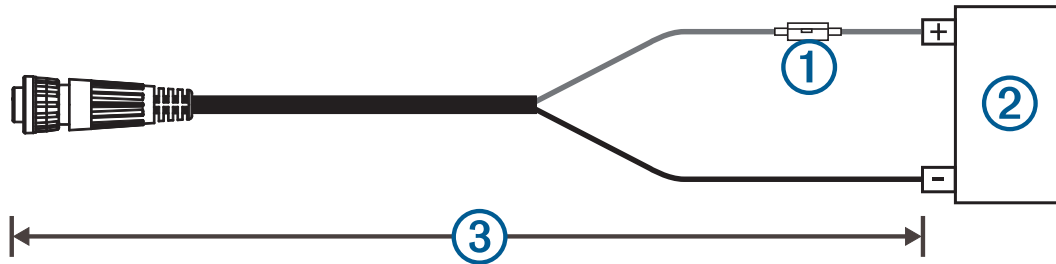
- You must check the power and ground connections to the battery to make sure they are secured and cannot become loose.
- You must make sure the locking rings are tightened so the power or data connection remains secure.
- Bare wire connections must be water tight if they will be exposed to moisture. You can use heat-shrink type butt connectors or other water-tight connections.
- To prevent corrosion of the metal contacts, you must cover unused connectors with weather caps.
- For the best connection of the GPS antenna, completely remove the weather cap from the GPS connector.
- If you need to extend the IN/OUT wires, use minimum of 24 AWG (0.08 mm<sup>2</sup>) wire.
- You should install a 1 Amp fuse on all relay controls, Boat-in-Use, Bilge 1/2, and Battery 1/2 input wires at the positive input to the power source.

## Connecting to Power

### ⚠ WARNING

When connecting the power cable, do not remove the in-line fuse holder. To prevent the possibility of personal injury or product damage caused by fire or overheating, the appropriate fuse must be in place as indicated in the product specifications. Connecting the power cable without the appropriate fuse in place voids the product warranty.

To properly monitor your vessel when the ignition is off, you should not connect the power cable to the device through the ignition.

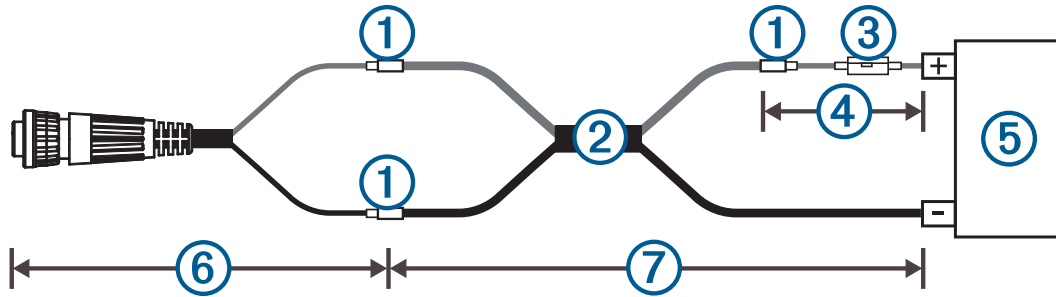


①	Fuse (7.5 A, 42 V fast-acting)
②	Battery
③	6 ft. (1.8 m) no extension

- 1 Route the power cable between the power source and the device.
- 2 Connect the red power wire to the positive (+) battery terminal.
- 3 Connect the black wire to the negative (-) battery terminal.
- 4 Connect the power cable to the device, and turn the locking ring clockwise to tighten it.

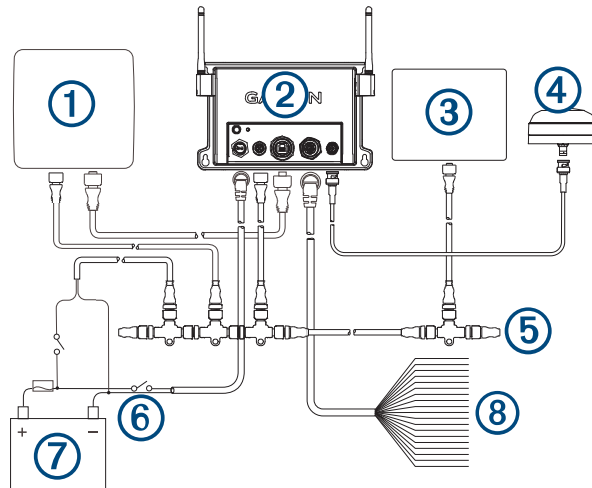
## Power Cable Extensions

If necessary, the power cable can be extended using the appropriate wire gauge for the length of the extension.



①	Splice
②	<ul style="list-style-type: none"> <li>• Up to 4.6 m (15 ft.): 10 AWG (5.26 mm<sup>2</sup>) extension wire</li> <li>• Up to 7 m (23 ft.): 8 AWG (8.36 mm<sup>2</sup>) extension wire</li> <li>• Up to 11 m (36 ft.): 6 AWG (13.29 mm<sup>2</sup>) extension wire</li> </ul>
③	Fuse (7.5 A, 42 V fast-acting)
④	20.3 cm (8 in.)
⑤	Battery
⑥	20.3 cm (8 in.)
⑦	11 m (36 ft.) maximum extension

## Connection Diagram

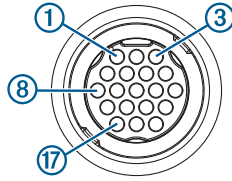


①	Garmin chartplotter connected to the Garmin Marine Network and NMEA 2000 network
②	GTB 10 black box device
③	Sensor connected through the NMEA 2000 network
④	GPS antenna with a BNC connector (sold separately and required only if the internal GPS antenna reception is poor)
⑤	NMEA 2000 network
⑥	Optional switch. Must be turned on for remote operation
⑦	Power source
⑧	OnDeck sensors and relays

## IN/OUT Cable Pinout

**⚠ WARNING**

All connections should be made using proper electrical connectors. To avoid the potential for electric shock and damage to equipment, ensure connections are watertight if they will be exposed to moisture.



Pin Number	Wire Function	Wire Color
①	Relay 1	White
②	Relay 2	White/orange
③	Relay 3	Gray
④	Relay 4	Pink
⑤	Relay 5	Brown
⑥	Relay 6 (Aux) <sup>1</sup>	White/brown
⑦	Relay 7 (NMEA 2000) <sup>2</sup>	Blue
⑧	Shore Power	White/blue
⑨	Wake (unused)	Violet
⑩	Boat-in-Use	White/violet
⑪	Bilge 1	White/black
⑫	Bilge 2	Red/white
⑬	Security	White/green
⑭	Battery 1 Pos	Red
⑮	Battery 1 Neg	Green
⑯	Battery 2 Pos	Yellow
⑰	Battery 2 Neg	Orange
⑱	Ground (shield)	Black
⑲	Temp	Light green

#### Notes

- Each relay control wire is rated for up to 1 A. External relay switches are recommended. For higher-current loads, external relay switches are required. Do **not** connect these wires to the positive side of a power source.

<sup>1</sup> This relay is automatically controlled by the GTB 10 black box device to switch power to Garmin Marine Network devices.

<sup>2</sup> This relay is automatically controlled by the GTB 10 black box device to switch power to NMEA 2000 devices.

- You should install a 1 Amp fuse on all relay controls, Boat-in-Use, Bilge 1/2, and Battery 1/2 inputs at the positive input to the power source.
- The Boat-in-Use, Bilge 1/2, and Battery 1/2 inputs require a voltage between 10 and 32 Vdc.
- If all of the batteries and DC power systems on the boat share a permanent common negative, then the Ground (black) wire from the IN/OUT wiring harness should connect directly to that permanent common negative.
- If the wiring on the boat is designed in a manner that can isolate the negative side of the power source for the GTB 10 black box from the negative side of the power source for other network/connected devices, then the Ground (black) wire from the IN/OUT wiring harness should connect to the negative side of the power source for the network/connected devices instead of the power source for the GTB 10 black box.

### Installing the Shore Power Sensor

You can connect the AC shore power sensor to the OnDeck system to be alerted when the outlet loses power. The shore power sensor also enables the device to stay in a full-power state when the boat is connected to shore power.

#### **NOTICE**

To avoid damage to the sensor, you must install this sensor in a dry location.

- 1 Select and install the proper plug type for your AC system.  
**NOTE:** Do not plug in the shore power sensor to the power outlet at this time.
- 2 Connect the white wire from the shore power sensor to the white/blue wire on the IN/OUT wiring harness.
- 3 Connect the black wire from the shore power sensor to the black wire on the IN/OUT wiring harness.
- 4 Plug in the shore power sensor to an AC outlet that is connected to the boat's shore power connection.

### Installing the Temperature Sensor

- 1 Connect one wire from the temperature sensor to the light green wire on the IN/OUT wiring harness.
- 2 Connect the other wire from the temperature sensor to the black wire on the IN/OUT wiring harness.
- 3 Use the ring on the temperature sensor to secure it, as needed.

You must set up the sensor in the ActiveCaptain® app.

### Installing the Security Sensor

You can connect up to 30 security sensors carefully installed and tested in series.

The two parts of the security sensor should not be more than 10 mm (0.4 in.) apart when the door or window is closed to engage the magnet.

- 1 Select a location on the window or door frame and the window or door that allows the two parts of the sensor to align.
- 2 Use two screws to mount the wired half of the sensor to the door or window frame.
- 3 Use two screws to mount the other half of the sensor to the door or window, ensuring that the two parts align when the door or window is closed.
- 4 Connect one wire from the sensor to the white/green wire on the IN/OUT wiring harness.
- 5 Connect the other wire to the black wire on the IN/OUT wiring harness.

You must set up the sensor in the ActiveCaptain app.

## Installing a Relay Switch

You can use an external relay switch to turn on and off an item, such as a light, on your vessel remotely, using the ActiveCaptain app. One 12 V relay is included. If you need more relays or 24 V relays, they are available separately for purchase at [garmin.com](http://garmin.com).

### NOTICE

To avoid potential damage to the relay switch, GTB 10 black box device, and device being switched, you must install this relay switch in a dry location.

- 1 Connect the correctly colored wire on the IN/OUT wiring harness to the negative control (white) wire on the relay.

See *IN/OUT Cable Pinout*, page 8.

**NOTE:** Do **not** connect these wires to the positive side of a power source.

- 2 Connect the positive control (black) wire on the relay to a 1 Amp fuse and the positive side of the same power source as the GTB 10 black box device.

**NOTE:** Even though the relay switch and the GTB 10 device have different power ratings, the inputs must be connected to the same power source.

- 3 Connect the positive wire from the power cable for the item to be controlled to the negative load (blue) wire on the relay.

- 4 Connect the positive load (yellow) wire on the relay to the positive terminal of the item's power source.

**NOTE:** The wire used in step 4 should be the same or greater gauge wire to what was used in step 3.

**NOTE:** You must follow the output power ratings listed in the specifications for the relay type being used.

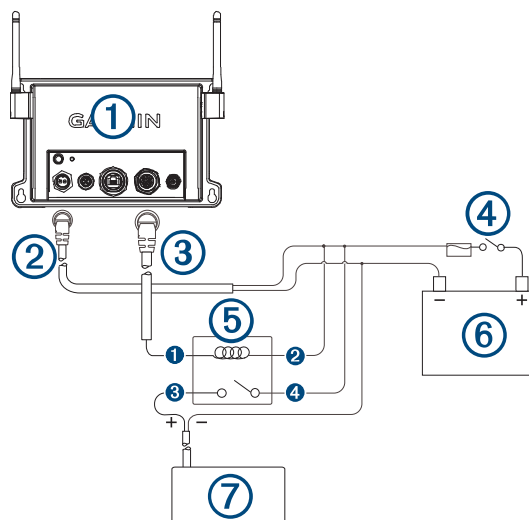
- 5 Complete the installation of the item to be controlled by connecting the negative wire from the item to the negative side of the power source.

You must set up the relay switches in the ActiveCaptain app.

## Relay Connection Diagram

### NOTICE

To avoid potential damage to the relay switch, GTB 10 black box device, and device being switched, you must install this relay switch in a dry location.



①	GTB 10 black box device
②	GTB 10 black box power cable
③	GTB 10 IN/OUT cable, corresponding relay wire
④	Optional switch for GTB 10 power (must be turned on for remote operation)
⑤	Relay (one 12 V relay included)
⑥	Power source
⑦	Device controlled by the relay, such as a light
①	Negative control wire, white
②	Positive control wire, black
③	Negative load wire, blue
④	Positive load wire, yellow

### Connecting the Boat-in-Use Input

The Boat-in-Use input enables the device to stay in a full-power state when the boat's electronics are turned on. If you need to extend the IN/OUT wires, use minimum of 24 AWG (0.08 mm<sup>2</sup>) wire.

#### NOTICE

You must connect the Boat-in-Use input so that it receives power when you turn on your Garmin marine devices, including Garmin chartplotters. If you do not connect the Boat-in-Use input, the device may not remain in a full-power state like other Garmin devices, which prevents you from connecting the device to the vessel Wi-Fi® network and updating the software from a connected Garmin chartplotter.

- 1 Connect the white/violet (Boat-in-Use) wire from the IN/OUT wiring harness to a 1 Amp fuse and the positive side of the 10 to 32 Vdc switched boat/accessories power.
- 2 Select an option to connect the black wire (Ground) from the IN/OUT wiring harness to the negative side of the source from the previous step:
  - If all of the batteries and DC power systems on the boat share a permanent common negative, connect the Ground (black) wire from the IN/OUT wiring harness directly to that permanent common negative.
  - If the wiring on the boat is designed in a manner that can isolate the negative side of the power source for the GTB 10 black box from the negative side of the power source for other network/connected devices, connect the Ground (black) wire from the IN/OUT wiring harness to the negative side of the power source for the network/connected devices instead of the power source for the GTB 10 black box.

### Connecting the Battery Inputs

If you need to extend the IN/OUT wires, use minimum of 24 AWG (0.08 mm<sup>2</sup>) wire.

- 1 Connect the Battery 1 Pos (red) or Battery 2 Pos (yellow) wire from the IN/OUT wiring harness to a 1 Amp fuse and the positive side of the boat's 10 to 32 Vdc battery.
- 2 Connect the corresponding Battery 1 Neg (green) or Battery 2 Neg (orange) wire from the IN/OUT wiring harness to the negative side of the boat's battery.

## Connecting the Bilge Pump Inputs

If you need to extend the IN/OUT wires, use minimum of 24 AWG (0.08 mm<sup>2</sup>) wire.

- 1 Connect the Bilge 1 (white/black) or Bilge 2 (red/white) wire from the IN/OUT wiring harness to a 1 Amp fuse and the switched positive side of the bilge pump's 10 to 32 Vdc power source.

**NOTE:** If you are connecting to an auto-sensing bilge pump with an optional manual connection, you may be able to connect this input to the pump's manual connection if it is energized to 10 to 32 Vdc when the pump is active.

- 2 Connect the negative side of the bilge pump's power to the negative side of the power source for the GTB 10 black box device.

### NOTICE

If the wiring on the boat is designed in a manner that can isolate the negative side of the power source for the GTB 10 black box from the negative side of the power source for other network/connected devices, make sure this connection is made to the same negative side of the power source for the GTB 10 black box and that it does not bridge across the isolation. Wiring the bilge pump across this isolation may damage other connected devices.

## Garmin Marine Network Considerations

**NOTE:** If you have a Garmin BlueNet™ chartplotter on your vessel, such as a GPSMAP® 9000 series chartplotter, as well as legacy Garmin Marine Network chartplotters and devices, you must connect the GTB 10 box to the Garmin BlueNet chartplotter. Connecting the GTB 10 box to a Garmin Marine Network chartplotter when a Garmin BlueNet chartplotter is present on the network can result in unexpected behavior ([Garmin BlueNet Network Considerations, page 15](#)).

### NOTICE

A Garmin Marine Network PoE Isolation Coupler (010-10580-10) must be used when connecting any third-party device, such as a FLIR® camera, to a Garmin Marine Network. Connecting a Power over Ethernet (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 and update the software from a connected Garmin chartplotter. When connecting Garmin Marine Network devices to this device, observe these considerations.

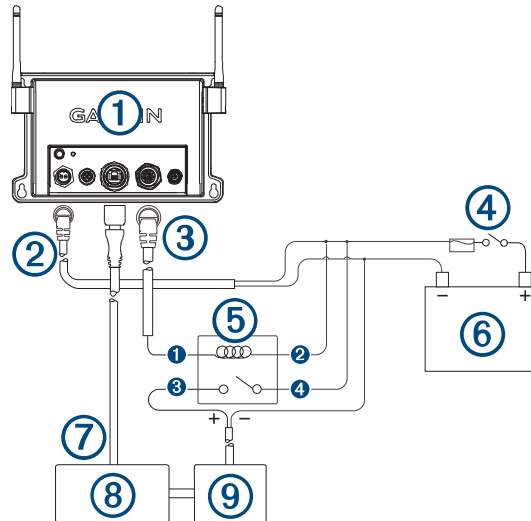
- You must use a Garmin Marine Network cable for all Garmin Marine Network connections.
- You should not use third-party CAT5 cable and RJ45 connectors for Garmin Marine Network connections.
- You can purchase additional Garmin Marine Network cables and connectors from your Garmin dealer or [garmin.com](http://garmin.com).

## Garmin Marine Network Connection Diagram with Relay

### NOTICE

To avoid potential damage to the relay switch, GTB 10 black box device, and device being switched, you must install this relay switch in a dry location.

This relay is automatically controlled by the GTB 10 black box device to switch power to Garmin Marine Network devices.



①	GTB 10 black box device
②	GTB 10 black box power cable
③	GTB 10 IN/OUT cable, Relay 6 (Aux), white/brown wire
④	Optional switch for GTB 10 power (must be turned on for remote operation)
⑤	Auxiliary relay (one 12 V relay included)
⑥	Power source
⑦	Garmin Marine Network cable
⑧	GMS 10 network port expander (requires a power connection)
⑨	Network device (for future use)
①	Negative control wire, white
②	Positive control wire, black
③	Negative load wire, blue
④	Positive load wire, yellow

## Garmin BlueNet Network Considerations

Garmin BlueNet is a standards-based network communications protocol acting as a successor to the current Garmin Marine Network technology used for communication between Garmin marine devices.

If you have a Garmin BlueNet chartplotter on your vessel, such as a GPSMAP 9000 series chartplotter, you must connect the GTB 10 box to the Garmin BlueNet chartplotter.

For more information about Garmin BlueNet technology, including best practices for properly constructing a network that contains both Garmin BlueNet devices and legacy Garmin Marine Network devices, go to [garmin.com/manuals/bluenet](http://garmin.com/manuals/bluenet).

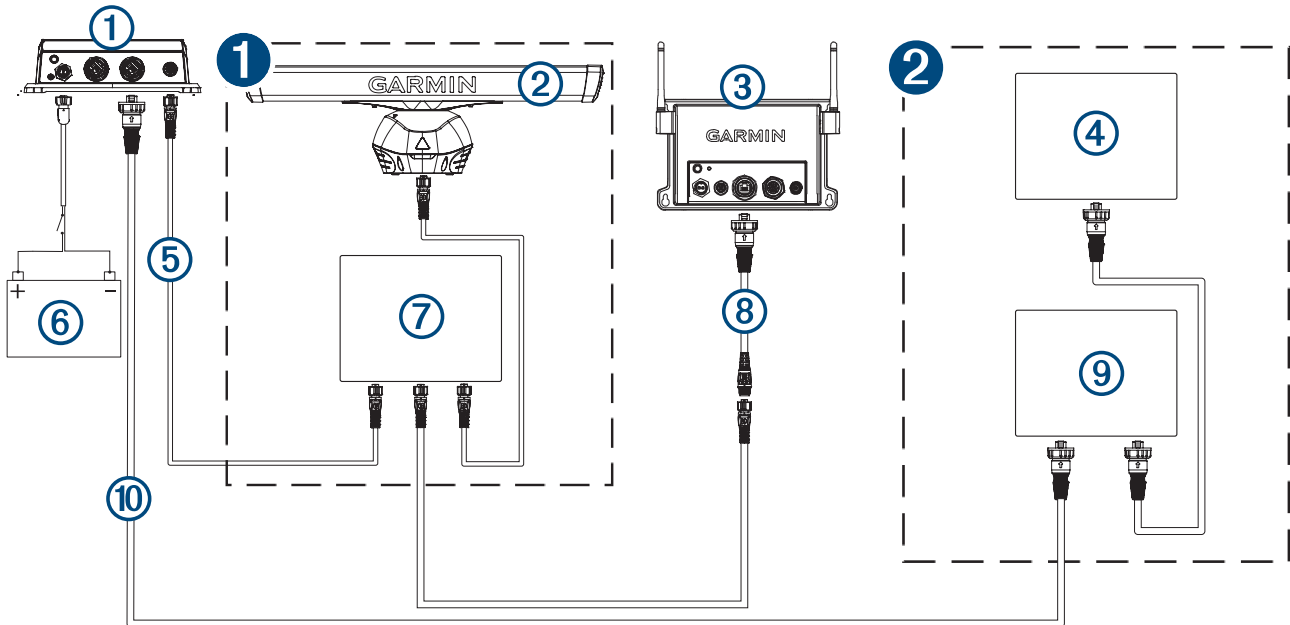
### Garmin BlueNet Network with an OnDeck GTB 10 hub and Legacy Garmin Marine Network Devices

If your Garmin BlueNet network includes an OnDeck GTB 10 hub and legacy Garmin Marine Network devices, you must connect the OnDeck GTB 10 hub directly to a Garmin BlueNet chartplotter or Garmin BlueNet 20 switch for proper functionality.

You should use the appropriate Garmin BlueNet network to RJ45 adapter cable (010-12531-01) to connect an OnDeck GTB 10 hub directly to a Garmin BlueNet chartplotter or Garmin BlueNet 20 switch.

#### NOTICE

This is a notable exception to the common requirement for connecting legacy Garmin Marine Network devices through a Garmin BlueNet 30 gateway. Connecting an OnDeck GTB 10 hub to a Garmin BlueNet network through a Garmin BlueNet 30 gateway will result in network performance issues.



Item	Description	Notes
1	Garmin BlueNet network devices	All Garmin BlueNet network devices must connect to one another or to a Garmin BlueNet 20 switch.
2	Legacy Garmin Marine Network devices	If you have more than two legacy Garmin Marine Network devices, these devices must connect to one another or to a GMS™ 10 switch. If you have only two legacy Garmin Marine Network devices, you can connect them both to the Garmin BlueNet 30 gateway without first connecting them to one another.

Item	Description	Notes
①	Garmin BlueNet 30 gateway	
②	Garmin BlueNet radar	
③	OnDeck GTB 10 hub	<p style="text-align: center;"><b>NOTICE</b></p> <p>You must connect an OnDeck GTB 10 hub directly to a Garmin BlueNet chartplotter or Garmin BlueNet 20 switch. Connecting an OnDeck GTB 10 hub through a Garmin BlueNet 30 gateway will result in poor system performance.</p>
④	Legacy Garmin Marine Network chartplotter or other device	
⑤	Garmin BlueNet network cable	
⑥	Power source	Although not illustrated in this diagram, all devices must connect to power according to the installation instructions provided with the device.
⑦	Garmin BlueNet chartplotter	
⑧	Legacy Garmin Marine Network to Garmin BlueNet adapter cable (010-12531-01)	<p style="text-align: center;"><b>NOTICE</b></p> <p>You must not use this cable to connect other legacy Garmin Marine Network devices directly to a Garmin BlueNet device. Other than the OnDeck GTB 10 hub, you must connect other compatible legacy Garmin Marine Network devices to a Garmin BlueNet network using a Garmin BlueNet 30 gateway.</p>
⑨	GMS 10 switch or legacy Garmin Marine Network chartplotter	
⑩	Legacy Garmin Marine Network cable	

## NMEA 2000 Considerations

### NOTICE

If you are connecting to an **existing** NMEA 2000 network, identify the NMEA 2000 power cable. Only one NMEA 2000 power cable is required for the NMEA 2000 network to operate properly.

A NMEA 2000 Power Isolator (010-11580-00) should be used in installations where the existing NMEA 2000 network manufacturer is unknown.

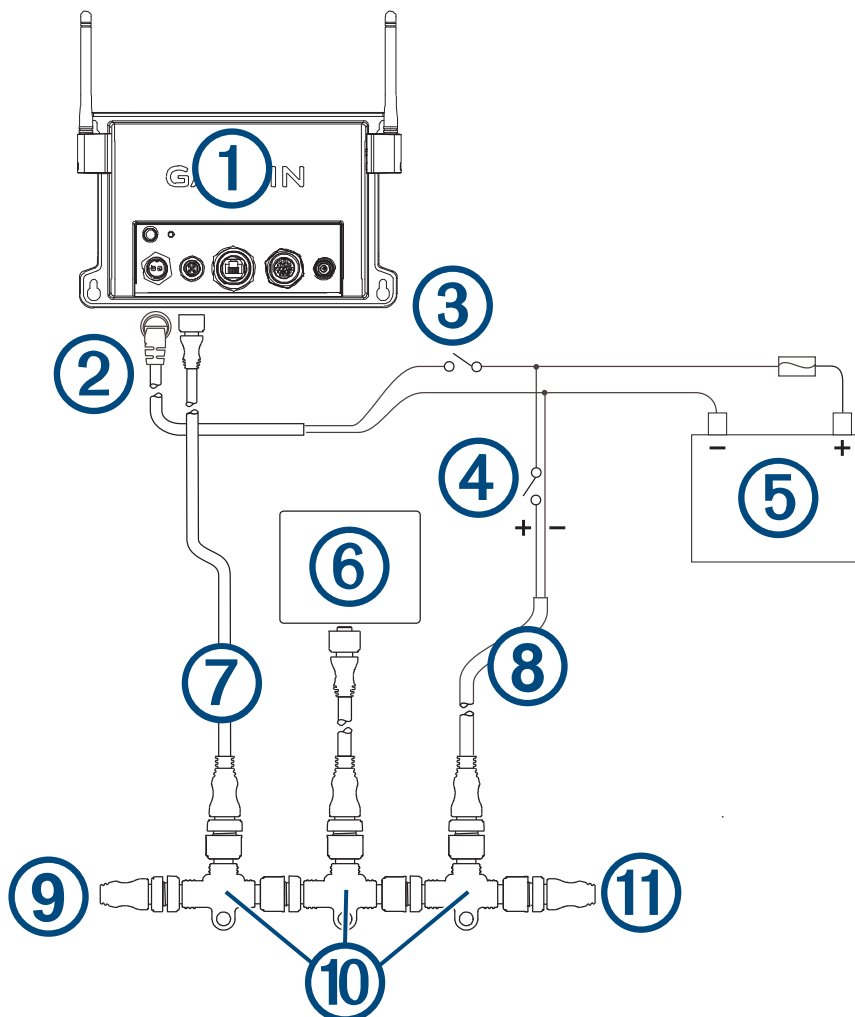
**NOTE:** If you are installing a NMEA 2000 power cable, you must connect it to a relay, the boat ignition switch, or through another in-line switch. NMEA 2000 devices will drain your battery if the NMEA 2000 power cable is connected to the battery directly.

This device can connect to a NMEA 2000 network on your boat to monitor and control compatible NMEA 2000 devices. The included NMEA 2000 cable and connector 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 NMEA 2000 network using cables and connectors available from your Garmin dealer.

If you will only be monitoring part of your NMEA 2000 network remotely with the OnDeck system, you must connect a power isolator to separate a section of the network you want to monitor ([NMEA 2000 Connection Diagram with Relay](#), page 18).

If you are unfamiliar with NMEA 2000, you should read the "NMEA 2000 Network Fundamentals" chapter of the *Technical Reference for NMEA 2000 Products* at [garmin.com/manuals/nmea\\_2000](http://garmin.com/manuals/nmea_2000).

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



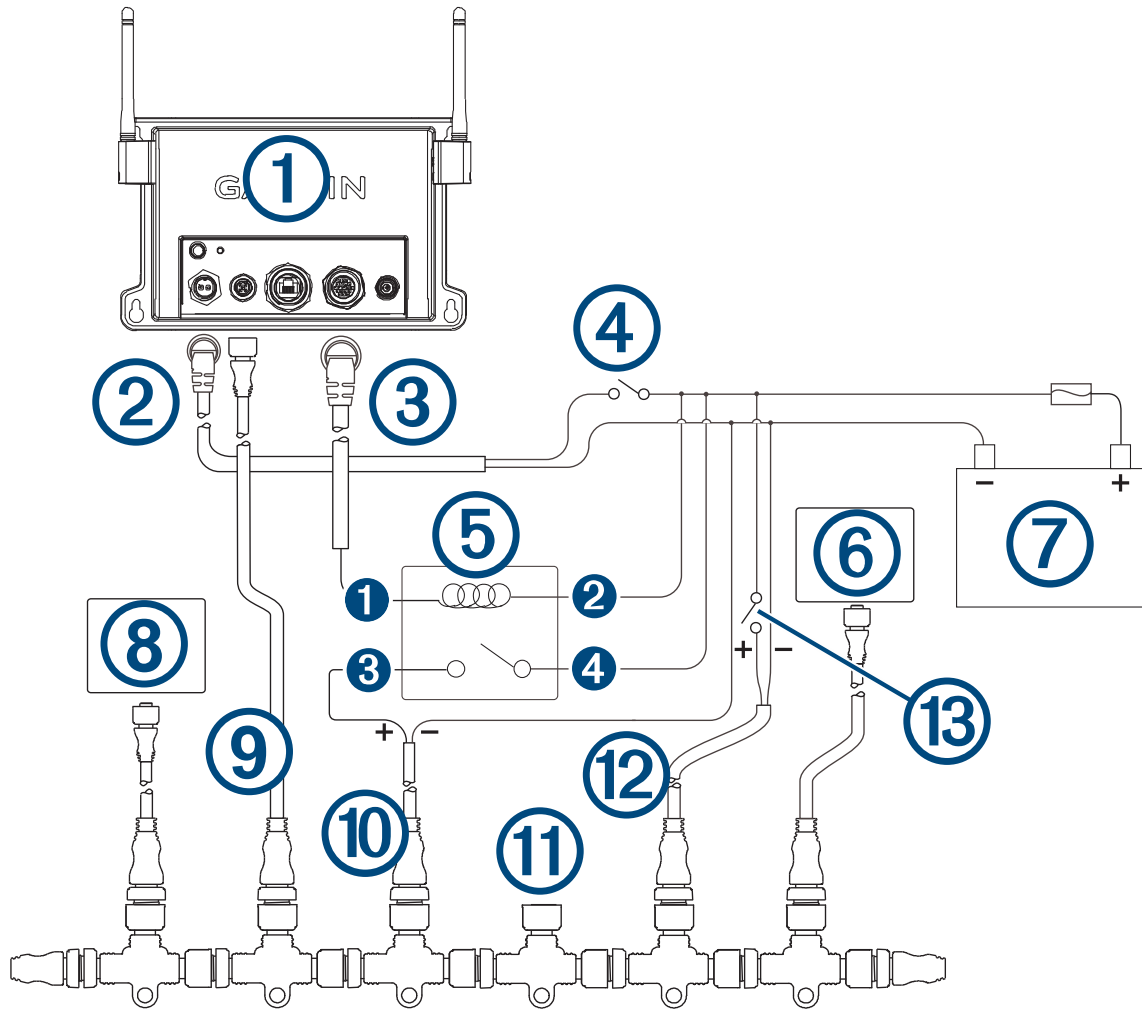
①	GTB 10 black box device
②	GTB 10 black box power cable
③	Optional switch for GTB 10 power (must be turned on for remote operation)
④	Ignition or in-line switch for the NMEA 2000 network
⑤	Power source
⑥	NMEA 2000 compatible Garmin device
⑦	NMEA 2000 drop cable
⑧	NMEA 2000 power cable
⑨	NMEA 2000 male terminator or backbone cable extension
⑩	NMEA 2000 T-connector
⑪	NMEA 2000 female terminator or backbone cable extension

### NMEA 2000 Connection Diagram with Relay

#### NOTICE

To avoid potential damage to the relay switch, GTB 10 black box device, and device being switched, you must install this relay switch in a dry location.

This relay is automatically controlled by the GTB 10 black box device to switch power to NMEA 2000 devices on a dedicated section of the NMEA 2000 network. This configuration requires two NMEA 2000 power cables and a NMEA 2000 power isolator.



①	GTB 10 black box device
②	GTB 10 black box power cable
③	GTB 10 IN/OUT cable, Relay 7 (NMEA 2000), blue wire
④	Optional switch for GTB 10 power (must be turned on for remote operation)
⑤	NMEA 2000 power relay (one 12 V relay included)
⑥	NMEA 2000 device, connected to the section of the NMEA 2000 network unaffected by the relay
⑦	Power source
⑧	NMEA 2000 device, connected to the section of the NMEA 2000 network affected by the relay
⑨	NMEA 2000 drop cable, connecting the GTB 10 device to the section of the NMEA 2000 network affected by the relay
⑩	NMEA 2000 power cable, connected through the relay
⑪	NMEA 2000 power isolator. Allows power to be toggled on one section of the NMEA 2000 network while not affecting power on the other section.
⑫	NMEA 2000 power cable, connected to the section of the NMEA 2000 network unaffected by the relay
⑬	Ignition or in-line switch (required) for the section of the NMEA 2000 network unaffected by the relay
①	Negative control wire, white
②	Positive control wire, black
③	Negative load wire, blue
④	Positive load wire, yellow

## GTB IO Specifications

Weight	0.64 kg (1.4 lb.)
Compass-safe distance	102 mm (4 in.)
Operating temperature range	From -15° to 55°C (from 5° to 131°F)
Internal battery charging temperature range	From 0° to 45°C (from 32° to 113°F)
Material	Polycarbonate plastic
Water rating	IEC 60529 IPX7 <sup>3</sup>
Fuse	7.5 A, 42 V fast-acting
Input voltage	From 10 to 32 Vdc
Max. power usage @ 10 Vdc	20 W
Typical current draw @ 13.2 Vdc	40 mA avg. (cycling standby/full-power state) 210 mA avg. (full-power state)
Typical current draw in off state	Up to 7 mA avg.
Max. current draw @ 13.2 Vdc	1.5 A
NMEA 2000 LEN @ 9 Vdc	2
NMEA 2000 draw	75 mA max.
Backup battery life	48 hours (typical use)

## Shore Power Sensor Specifications

Operating temperature range	From -15° to 55°C (from 5° to 131°F)
Storage temperature range	From -20° to 60°C (from -4° to 140°F)
Input voltage	100 to 240 Vac
Output	5 Vdc
Installation location	Max. 85% humidity, non-condensing environments

## Temperature Sensor Specifications

Operating temperature range	From -50° to 105°C (from -58° to 221°F)
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## Security Sensor Specifications

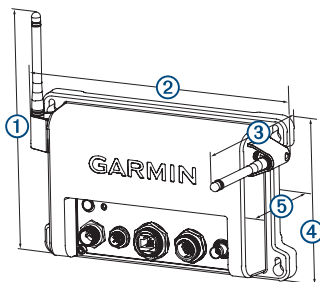
Operating temperature range	From -15° to 80°C (from 5° to 176°F)
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<sup>3</sup> The device withstands incidental exposure to water of up to 1 m for up to 30 min. For more information, go to [www.garmin.com/waterrating](http://www.garmin.com/waterrating).

## 12 V Relay Switch Specifications

Operating temperature range	From -15° to 85°C (from 5° to 185°F)
Storage temperature range	From -40° to 155°C (from -40° to 311°F)
Control voltage (coil)	7.8 to 15.6 Vdc
Load power min. (contacts)	0.1 A
Load power max. (contacts)	Up to 15 A at 10 to 16 Vdc Up to 9 A at 20 to 32 Vdc

## Device Dimensions




① Antennas parallel to the mounting surface	215.226 mm (8.47 in.)
② Antenna cover to antenna cover	230.72 mm (9.08 in.)
③ Antennas perpendicular to the mounting surface	132.15 mm (5.20 in.)
④ Device only, not including antennas	141.54 mm (5.57 in.)
⑤ Device only, not including antennas	48.89 mm (1.92 in.)

## Wireless Protocols and Frequencies

Protocol	Frequency range	Typical power
UMTS low	824 to 915 Mhz	-6.4 dBm
UMTS mid	1710 to 1980 Mhz	20.8 dBm
LTE FDD low 1	699 to 787 Mhz	21.8 dBm
LTE FDD low 2	814 to 862 Mhz	24.1 dBm
LTE FDD low 3	880 to 915 Mhz	20.4 dBm
LTE FDD mid 1	1710 to 1785 Mhz	25.1 dBm
LTE FDD mid 2	1850 to 1980 Mhz	22.9 dBm
LTE FDD high	2500 to 2570 Mhz	18.2 dBm
LTE FDD high 1	1880 to 2400 Mhz	20.4 dBm
LTE FDD high 2	2555 to 2655 Mhz	25.5 dBm
ANT®/Wi-Fi	2400 to 2480 Mhz	16.8 dBm

## STATUS LED

LED Activity	Status
Solid red	The device is turning on.
Flashing green	The device is on and operating normally.
Flashing orange	The device software is being updated.
Flashing red	The device has encountered an error and must be reset by holding the  button.
Off	The device is off or in standby mode.

## NMEA 2000 PGN Information

### Transmit and Receive

PGN	Description
059392	ISO acknowledgment
059904	ISO request
060160	ISO transport protocol: Data transfer
060416	ISO transport protocol: Connection management
060928	ISO address claim
126208	Request group function
126993	Heartbeat
126996	Product information

### Transmit

PGN	Description
126464	Transmit and receive PGN list group function
126998	Configuration information

### Receive

PGN	Description
126992	System time
127250	Vessel heading
127488	Engine parameters: Rapid update
127489	Engine parameters: Dynamic
127493	Transmission parameters: Dynamic
127498	Engine parameters: Static
127501	Binary switch bank status
127502	Switch bank control
127505	Fluid level
127508	Battery status
128259	Water speed
128267	Water depth
129025	Position: Rapid update
129026	COG and SOG: Rapid update
129029	GNSS position data
129539	GNSS DOPs

PGN	Description
129540	GNSS satellites in view
130306	Wind data
130310	Environmental parameters (obsolete)
130311	Environmental parameters (obsolete)
130312	Temperature (obsolete)
130316	Temperature: Extended range
130578	Vessel speed components

### Radio Frequency Radiation Exposure

This device is a mobile transmitter and receiver that uses internal and/or external antenna(s) to send and receive low levels of radio frequency (RF) energy for data communications. The device emits RF energy below the published exposure limits when operating in its maximum output power mode and when used with Garmin authorized accessories. To comply with RF exposure compliance requirements, the device should be installed and operated with a minimum of 20 cm (7.87 in.) between the device and your body. The device should not be used in other configurations. This device must not be co-located or operated in conjunction with any other transmitter or antenna.

### Innovation, Science and Economic Development Canada Radio Transmitter Compliance

This radio transmitter, 1792A-03675, has been approved by Innovation, Science and Economic Development Canada to operate only with the antennas provided by Garmin, which have an impedance of 50 ohms and a maximum gain of 3.1 dBi. Other antennas may have a gain greater than the maximum gain of the approved antennas, and are strictly prohibited for use with this device.

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