GARMIN

GC™ 245 MARINE CAMERA 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.

⚠ 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.

NOTICE

For the best possible performance, the device must be installed according to these instructions.

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

You must use the cables and connectors provided by Garmin® when installing the system. Using any cables or connectors other than those supplied by Garmin will void your warranty.

You must not cut, terminate, or splice the coaxial cable. Modifying the coaxial cable may cause the system to malfunction. Failures caused by an extended coaxial cable are not covered under warranty.

The camera comes with mounting screws, but they may not be appropriate for your hull material. You must use the appropriate screws for your hull material to avoid damaging the hull.

You must tighten the SMA connectors on the cameras and the GVAM 10 black box to the specified torque measurement in these instructions. Failures caused by improperly tightened connectors are not covered under warranty.

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

Installation Support Videos

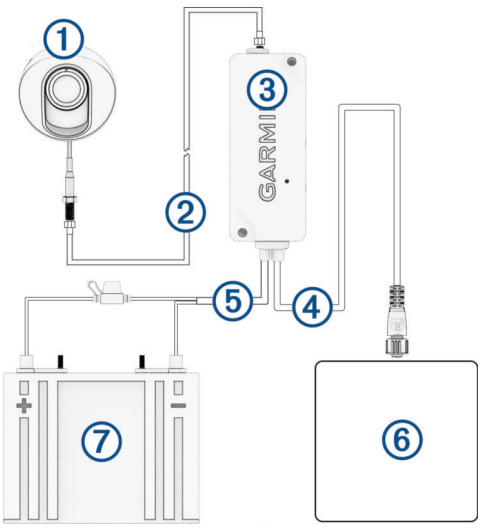
You can view videos online for assistance when installing this device.

You can access the videos by going to garmin.com/videos/gc245 in your web browser or by scanning this QR code with your smartphone.

Tools Needed

- 2.8 mm ($^{7}/_{64}$ in.) drill bit suitable for the camera mounting surface
- 4.5 mm ($^{3}/_{16}$ in.) drill bit suitable for the black box mounting surface
- 9.5 mm ($^{3}/_{8}$ in.) drill bit suitable for drilling through the camera mounting surface to route the camera cable internally (optional)
- 8 mm ($^{5}/_{16}$ in.) SMA connector torque wrench suitable for tightening to 9 kgf-cm (8 lbf-in.)
  Recommended: KCR Products KCR-3125S-8 SMA ($^{5}/_{16}$) Torque Wrench
- 8 mm ($^{5}/_{16}$ in.) wrench (to hold the SMA connector on one coaxial cable when tightening the other connector)
- #2 Philips screwdriver or bit
- 3M™ Marine Adhesive Sealant 5200 or equivalent

Overview

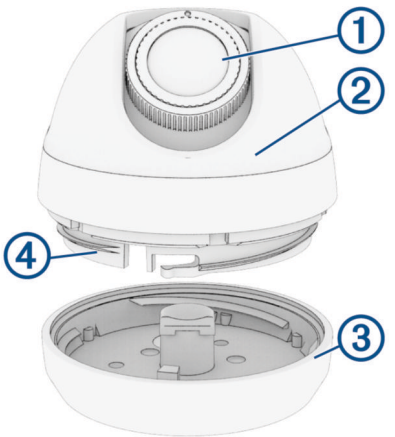


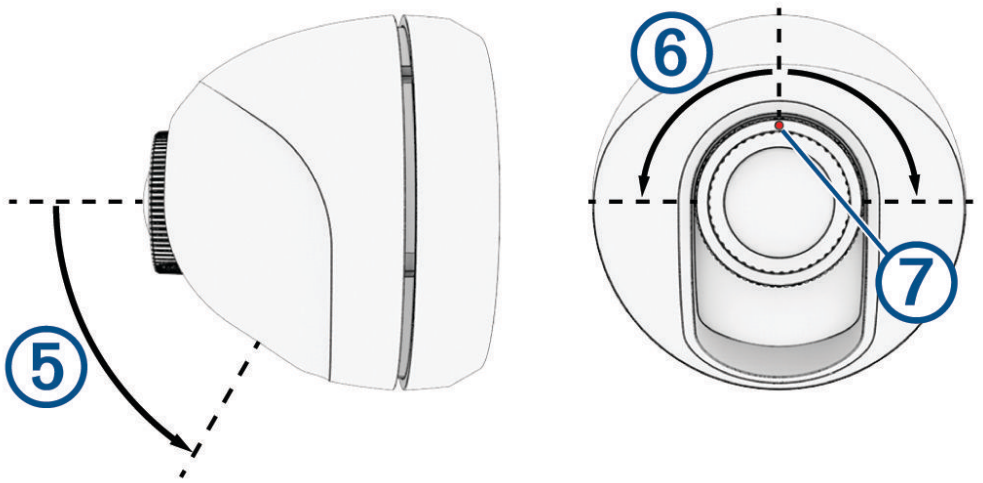
①	GC 245 marine camera
②	8 m (26.25 ft.) coaxial cable (included)
③	GVAM 10 black box (included)
④	2 m (6.56 ft.) Garmin BlueNet™ cable (built into the GVAM 10 black box)
⑤	2 m (6.56 ft.) power cable (built into the GVAM 10 black box)
⑥	GPSMAP® chartplotter (not included)
⑦	Power supply

Camera Overview

The GC 245 uses an adjustable lens module ① inside an enclosure ② mounted to a base plate ③. The enclosure is secured to the base plate by a locking ring ④ that rotates independently. This configuration allows you to mount the camera on almost any surface on your vessel.

After attaching the enclosure to the base plate, you can rotate it clockwise or counterclockwise by up to 80 degrees. Separately, the adjustable lens module can tilt down by up to 62 degrees ⑤ and roll clockwise or counterclockwise by up to 90 degrees ⑥. A red dot ⑦ marks the top of the lens.



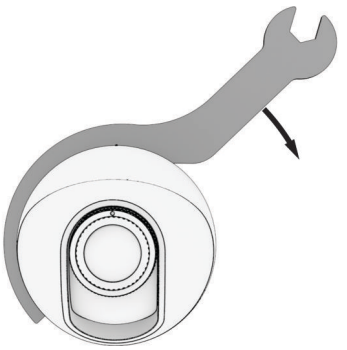


NOTICE

If you rotate the lens module more than 90 degrees, you will not be able to lock it into position and the camera will not hold its orientation. When the camera is installed correctly, the red dot on the lens module must point away from the Garmin logo on the enclosure. Is some cases, you must install the camera with the red dot pointing down and rotate the camera image on the chartplotter.

Once you have verified the field of view on the chartplotter screen, you must lock the camera into its configuration by tightening the locking ring using the included spanner wrench.

We recommend installing the camera with the lens pointing down at approximately 35 degrees relative to the waterline, to ensure an adequate view of objects close to your vessel.



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 (*Specifications*, page 11). 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.

Before selecting the mounting location for the GC 245 camera and GVAM 10 black box, observe these considerations.

- You must mount the camera above the waterline.
- If you are mounting the black box more than 2 m (6.56 ft.) away from your GPSMAP chartplotter or network switch, you must extend the Garmin BlueNet network cable. See the *Technical Reference for Garmin BlueNet Network Technology* at garmin.com/manuals/BlueNet for more information.
- If you are mounting the black box more than 2 m (6.56 ft.) away from your power supply, you must extend the power cable (*Power Cable Extensions*, page 9).
- If you are mounting the camera more than 8 m (26.25 ft.) away from its black box, you must use a longer coaxial cable[1].

NOTICE

We do not recommend modifying the supplied coaxial cable. Failures caused by cutting or splicing the supplied coaxial cables, or by using a third party coaxial cable are not covered under the warranty.

- You must mount the black box in a location where it will not be submerged.
- You must mount the black box in a location with adequate ventilation so it does not trap heat.
- You must mount the black box and route its built-in network cable at least 71 cm (28 in.) away from noisy electrical sources such as spark plug wires and other sensitive electronics.
- You must mount the black box in a location that allows room for the routing and connection of all cables.

[1] You can purchase a 25 m (82 ft.) coaxial cable (part number 010-13026-02) from your Garmin dealer or on garmin.com.

Networking Considerations

This device uses Garmin BlueNet networking technology, and is compatible with both Garmin BlueNet devices and Garmin Marine Network devices. Before connecting this device to the network, observe these considerations.

- If your boat is equipped with a Garmin BlueNet chartplotter, you should connect the built-in Garmin BlueNet cable on the GVAM 10 black box to an open network port on your Garmin BlueNet chartplotter or on a Garmin BlueNet 20 switch.
- If your boat is equipped with a Garmin BlueNet chartplotter and uses a Garmin BlueNet 30 gateway to connect Garmin Marine Network devices, you should connect the built-in Garmin BlueNet cable on the GVAM 10 black box to the Garmin BlueNet side of the network, if possible, for the best performance and to best support future updates. If you must connect the GVAM 10 black box to the Garmin Marine Network side of your network, you must also have a Garmin Marine Network chartplotter that is compatible with the GC 245 device.
- If your boat is equipped with only Garmin Marine Network devices, you must use the Garmin Marine Network adapter cable to connect the GVAM 10 black box to your network[2].

For more information about Garmin BlueNet technology, including best practices for constructing a network including both Garmin BlueNet devices and Garmin Marine Network devices, go to garmin.com/manuals/BlueNet.

Installing the Camera

1. Mount the black box (*Mounting the GVAM 10 Black Box*, page 5).
2. Select an option:
   - Connect to a Garmin BlueNet network device (*Connecting to a Garmin BlueNet Network*, page 6).
   - Connect to a Garmin Marine Network device (*Connecting to a Garmin Marine Network*, page 6).
3. Prepare the camera mounting surface (*Preparing the Camera Mounting Surface*, page 6).
4. Detach the camera module from the base plate (*Detaching the Camera from the Base Plate*, page 6).
5. Select an option:
   - Mount the camera with the cable routed through the mounting surface (*Mounting the Camera with the Cable Routed through the Mounting Surface*, page 7).
   - Mount the camera with the cable routed on the mounting surface (*Mounting the Camera with the Cable Routed on the Mounting Surface*, page 7).
6. Connect the black box to power (*Connecting to Power*, page 8).
7. Fine-tune the camera orientation (*Fine-tuning the Camera Orientation*, page 10.

Mounting the GVAM 10 Black Box

NOTICE

Make sure the included screws are appropriate for the mounting surface material, and use a different set of screws if necessary.

1. Place the black box mounting template in the mounting location, and mark pilot holes on the mounting surface.
2. Place the GVAM 10 black box in the mounting location and verify the location of the pilot hole marks, correcting as necessary.
3. Using the appropriate bit for the mounting screws and the mounting surface material, drill the pilot holes.
4. Secure the black box to the mounting surface using the appropriate screws.

[2] If a Garmin Marine Network adapter cable is not supplied in the product box, you can purchase one from your local Garmin dealer (part number 010-12531-01) or go to garmin.com/accessories/GMNAdapterCable.

Connecting to the Network

Connecting to a Garmin BlueNet Network

1. Route the built-in Garmin BlueNet cable from the GVAM 10 black box to your Garmin BlueNet chartplotter or the Garmin BlueNet 20 switch.

   If need to extend the built-in Garmin BlueNet cable, you can purchase an additional Garmin BlueNet cable and a Garmin BlueNet coupler from your Garmin dealer or go to garmin.com.
2. Connect the Garmin BlueNet cable to an open network port on the chartplotter or switch.
3. Tighten the locking ring on the connector.

Connecting to a Garmin Marine Network

1. Route the built-in Garmin BlueNet cable from the GVAM 10 black box to your Garmin Marine Network chartplotter or the GMS™ 10 port expander.

   If need to extend the built-in Garmin BlueNet cable, you can purchase an additional Garmin BlueNet cable and a Garmin BlueNet coupler from your Garmin dealer or go to garmin.com.
2. Connect the Garmin BlueNet cable to the Garmin Marine Network adapter cable[3].
3. Connect the other end of the Garmin Marine Network adapter cable to an open network port on the chartplotter or port expander.
4. Tighten the locking rings on the connectors.

Preparing the Camera Mounting Surface

You can route the 8-ft. coaxial cable through the hull, or externally along the mounting surface.

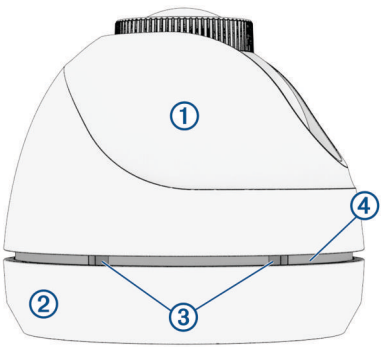
1. Place the included mounting template on the mounting surface with the illustration of the camera in the same orientation you plan to install the camera in.
2. Mark the locations of the three pilot holes.
3. Mark the location of the cable pass-through hole.

   NOTE: You should mark or note the location of the cable pass-through hole even if you won't route the cable through the hull, so you can ensure the base plate is mounted in the correct orientation later.
4. Set the mounting template aside.
5. Using the appropriate bit for the mounting screws and the hull material, drill the three pilot holes.
6. If you plan to route the coaxial cable through the hull, drill the cable pass-through hole using a 10 mm ($^3/_8$ in.) drill bit.

Detaching the Camera from the Base Plate

The GC 245 camera is packaged with the camera enclosure attached to the base plate. Before proceeding with the installation, you must separate them.

1. Holding the camera in one hand, grip both the camera enclosure ① and the base plate ②.
2. Place the included spanner wrench between the camera enclosure and the base plate, so the hook on the end of the wrench engages one of the notches ③ in the locking ring ④.
3. Turn the wrench counterclockwise until the camera module detaches from the base plate.



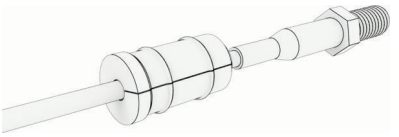
TIP: Before proceeding, we recommend spending a few minutes getting comfortable with the method of attaching the camera module to the base plate (*Attaching the Camera to the Base Plate*, page 8).

[3] If a Garmin Marine Network adapter cable is not supplied in the product box, you can purchase one from your local Garmin dealer (part number 010-12531-01) or go to garmin.com/accessories/GMNAdapterCable.

Mounting the Camera

Mounting the Camera with the Cable Routed through the Mounting Surface

1. Apply marine sealant around the back of the base plate.
2. Apply marine sealant to the mounting screws.
3. Secure the base plate to the mounting surface, making sure the cable pass-through hole on the base plate lines up with the hole you drilled through the mounting surface.
4. Install the included plug around the coaxial cable on the camera.



5. Connect the camera (*Connecting the Camera*, page 7).
6. Apply marine sealant around the plug and between the plug and the cable.
7. Push the plug into the cable routing hole.
8. Remove excess marine sealant while leaving a small bead of sealant between the plug and the base plate.
9. Attach the camera to the base plate (*Attaching the Camera to the Base Plate*, page 8).

Mounting the Camera with the Cable Routed on the Mounting Surface

1. Apply marine sealant to the mounting screws.
2. Feed the camera coaxial cable through the hole on the base plate.
3. Hold the coaxial cable in the groove on the back of the base plate.

   NOTE: You should leave some slack on the cable inside the enclosure to avoid restricting the adjustment of the lens module. As you fine-tune the camera orientation, the cable may need to rotate slightly.
4. Secure the base plate to the mounting surface, making sure the cable pass-through hole on the base plate is in the correct location and orientation you marked or noted while drilling the pilot holes.

   NOTE: If you install the base plate in a different orientation than planned, it may not be possible to obtain the intended field of view.
5. Attach the camera to the base plate (*Attaching the Camera to the Base Plate*, page 8).
6. Connect the camera (*Connecting the Camera*, page 7).

Connecting the Camera

1. Route the included coaxial cable between the GVAM 10 black box and the camera mounting location.

NOTICE

You should not cut or splice the included coaxial cable. Failures caused by a modified coaxial cable are not covered under warranty.

2. Connect the coaxial cable to the black box using an 8 mm ($^{5}/_{16}$ in.) wrench.
3. Connect the other end of the coaxial cable to the camera's coaxial cable using the same size wrench.
4. Tighten both connectors to 9 kgf-cm (8 lbf-in.), ± 1 kgf-cm (± 1 lbf-in.) of torque.

   TIP: When tightening the connector to the camera cable, you should use an additional 8 mm ($^{5}/_{16}$ in.) wrench to hold the camera cable steady while you apply torque.

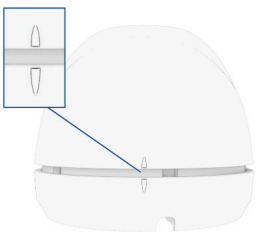
Attaching the Camera to the Base Plate

1 Place the camera housing over the base plate and rotate it counterclockwise until it fits evenly over the base plate.

NOTICE

Avoid cross-threading the locking ring into the base plate to prevent damaging the enclosure.

2 Rotate the camera enclosure clockwise until the mark on the base plate aligns with the mark on the camera enclosure.



3 Holding the enclosure with one hand, turn the locking ring clockwise using the included spanner wrench, until you feel a click.

The camera is attached to the base plate and you can continue to make adjustments to the enclosure and the lens module.

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.

You should connect the red wire to the power source through the ignition or another manual switch to turn the device on and off.

1 Route the power cable to the power source.

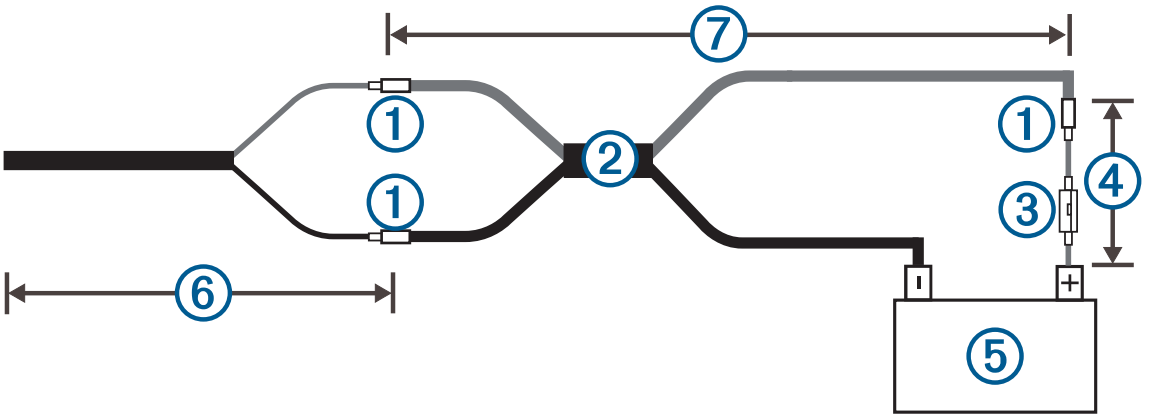
If necessary, you can extend the power cable (*Power Cable Extensions*, page 9).

2 Connect the red power wire to the ignition or another manual switch, and connect the switch to the positive (+) battery terminal if necessary.

3 Connect the black wire to the negative (−) battery terminal or to ground.

Power Cable Extensions

If necessary, the power cable can be extended using the appropriate wire gauge for the length of the extension. Use only wire with an insulation rating of 105° C or higher.



①	Splice
②	• Up to 18 m (60 ft.): 20 AWG (0.51 mm^2) extension wire • Up to 29 m (96 ft.): 18 AWG (0.81 mm^2) extension wire • Up to 47 m (155 ft.): 16 AWG (1.32 mm^2) extension wire
③	Fuse (2 A)
④	20.3 cm (8 in.)
⑤	Battery
⑥	1.7 m (67 in.)
⑦	47 m (155 ft.) maximum extension

Fine-tuning the Camera Orientation

The adjustable lens module locks in position using friction inside the enclosure. You can partially tighten the locking ring to allow for fine adjustment, and then tighten it fully when the lens module is in the intended position.

1 On a connected chartplotter, select > **Vessel** > **Video**.

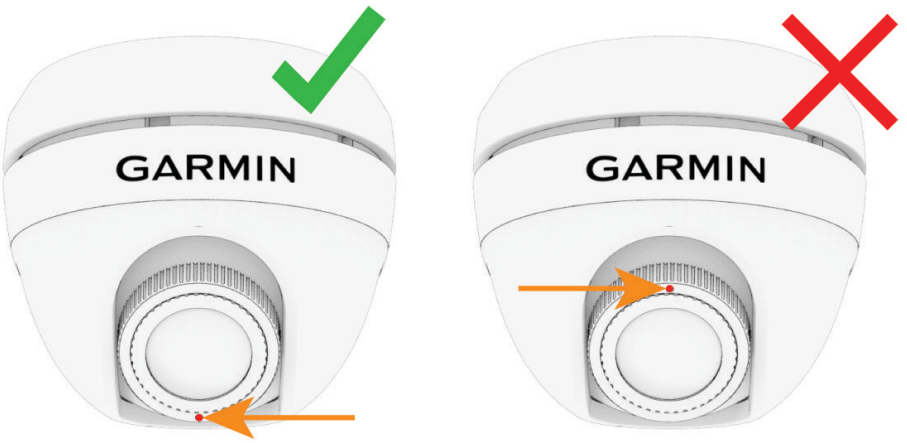
NOTE: It may take several seconds for the camera feed to appear after powering on.

2 If you have more than one camera on your network, select **Options** > **Source**, and select the appropriate camera.

3 While watching the video feed on the chartplotter screen, manually adjust the enclosure and the lens module until you achieve the intended field of view.

NOTICE

You must not rotate the enclosure more than 80 degrees, and you must not roll the adjustable lens module more than 90 degrees so you can lock the adjustable lens module into the intended orientation. When the camera is installed correctly, the red dot on the lens module must point away from the Garmin logo on the enclosure. Is some cases, you must install the camera with the red dot pointing down and rotate the camera image on the chartplotter (*Rotating or Mirroring the Camera Image*, page 11).



TIP: You can use the ActiveCaptain® app to view the chartplotter screen on your mobile device while adjusting the camera. See the chartplotter *Owner's Manual* for details.

4 Hold the lens module and the enclosure in position and, using the included wrench, tighten the locking ring about $^{1}/_{8}$ of a full turn.

NOTE: This will tighten the locking ring enough to hold the camera module in position but still allow for fine adjustment.

5 While watching the chartplotter screen, make any additional adjustments to set the field of view.

6 Using the included wrench, tighten the locking ring until the lens module and the enclosure are locked in position.

NOTICE

Do not overtighten the locking ring, to avoid damaging the enclosure.

Configuring the Camera

Rotating or Mirroring the Camera Image

1. Select > **Vessel** > **Video** > **Options**.
2. If you have more than one camera on your network, select **Source**, and select a camera.
3. Select an option:
   - To mirror the image, select **Video Setup** > **Mirror**.
   - To rotate the image by 180 degrees, select **Installation** > **Inverted Install**.

Configuring Guidance Lines

The guidance lines feature is intended primarily for rear-facing cameras that are used while docking your vessel.

⚠ CAUTION

Guidance lines are user-configured and intended for visual reference only. They may not prevent collisions in all circumstances and should not be relied upon for estimating exact distances. It is your obligation to ensure safe operation of your vessel and to remain aware of your surroundings while operating your vessel.

You can access a step-by-step video tutorial on garmin.com/videos/gc245.

1. Select > **Vessel** > **Video** > **Options**.
2. If you have more than one camera connected to your network, select **Source**, and select a camera to configure.
3. Select **Video Setup** > **Adjust Guidance Lines**.
4. Select **Up**, **Down**, **Left** and **Right** to adjust the first reference point.
5. After you've set the first reference point, select **Next** to adjust the next point.
6. Repeat this process to set the other three points.

   We recommend setting reference points so that the vertical lines align with the edge of a dock next to your vessel, and so that the red horizontal line is positioned just off the stern of your vessel.
7. After you've adjusted all of the reference points and have finished configuring the guidance lines, select **Back** to exit.

TIP: You can select Save as Default to save this configuration and recall it later by selecting Reset to Default.

Specifications

GC 245 Camera Specifications

Weight	90 g (3.2 oz)
Temperature range	From −20 to 55° C (From −4 to 131° F)
Resolution	2 megapixels, 1080p
Digital zoom	1× to 4×
Field of View	Horizontal: 160 degrees Vertical: 90 degrees
Compass safe distance	2.54 cm (1 in.)

GVAM IO Black Box Specifications

Dimensions (W×H×D)	151.31 × 64.3 × 30.25 mm (5.957 × 2.532 × 1.191 in.)
Weight	325 g (11.5 oz)
Temperature range	From -20 to 55°C (From -4 to 131°F)
Power source	10 to 32 Vdc
Average input current	0.31 A at 12 Vdc in
Peak input current	0.42 A
Average input power	4.1 W
Peak input power	4.5 W
Compass-safe distance	2.54 cm (1 in.)
Fuse	2 A

GVAM IO Status LED Codes

The color and flashing sequence of the status LED on the GVAM 10 black box indicates the system status.

LED Color	LED State	Status
Red	Solid	The system is powering up.
Green	Solid	The system is booting.
Green	Flashing	The system is operating normally.

Open-Source Software License

To view the open-source software license(s) used in this product, go to developer.garmin.com/open-source/linux/.

物質宣言

部件名称	有毒有害物质或元素									
	铅	汞	镉	六价铬	多溴联苯	多溴二苯醚	邻苯二甲酸二(2-乙基己)酯	邻苯二甲酸丁苄酯	邻苯二甲酸二丁酯	邻苯二甲酸二异丁酯
印刷电路板组件	X	O	O	O	O	O	O	O	O	O
金属零件	X	O	O	O	O	O	O	O	O	O
电缆 电缆组件 连接器	X	O	O	O	O	O	O	O	O	O
塑料和橡胶零件	O	O	O	O	O	O	O	O	O	O

本表格依据 SJ/T11364 的规定编制。

O: 代表此种部件的所有均质材料中所含的该种有害物质均低于 (GB/T26572) 规定的限量

X: 代表此种部件所用的均质材料中, 至少有一类材料其所含的有害物质高于 (GB/T26572) 规定的限量

* 该产品说明书应提供在环保使用期限和特殊标记的部分详细讲解产品的担保使用条件。

产品

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