



Precision-9 Installation Guide

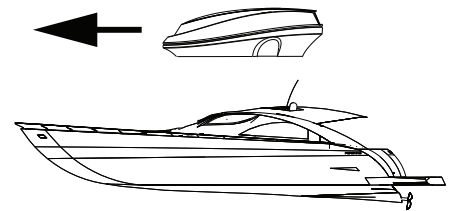
General

The Precision-9 compass is designed to output magnetic heading for sail and power boats. It connects to the boat's NMEA 2000 network, which will allow setup and control from units on the network. The Precision-9 compass outputs magnetic heading data suitable for autopilot steering, and also rate of turn, pitch, roll and heave.

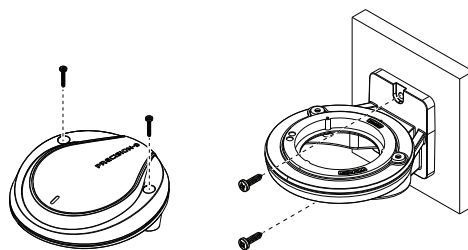
Installation

The Precision-9 compass can be mounted on a flat surface or bulkhead, athwart ship or along ship. Select a location that provides a solid mounting place free from vibration (as much as possible), and as close to the vessel's centre of roll and pitch as possible, i.e. close to the water line. It should be as far as possible away from disturbing magnetic interferences e.g. engines (min. 2 meters), ignition cables, other large metal objects and particularly the autopilot drive unit. On steel hull boats, it can be mounted 75-100 cm above the wheel house on a non-magnetic stand, if no other options are available.

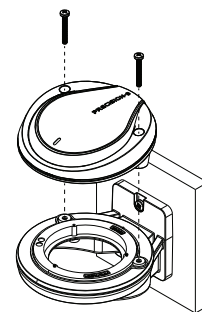
→ **Note:** Never mount the compass upside down!
Level the sensor as close to horizontal as possible.



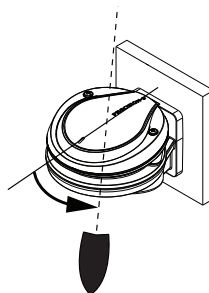
Use the supplied mounting kit, inclusive the mounting template, and drill holes through the centre of the slots.



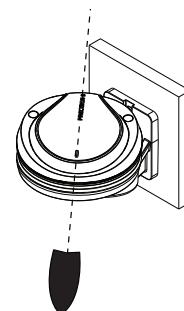
1. The compass can be mounted directly to a flat surface, or using a wall bracket.



2. When the compass is in place, the mounting screws should at first only be tightened loosely (half way).



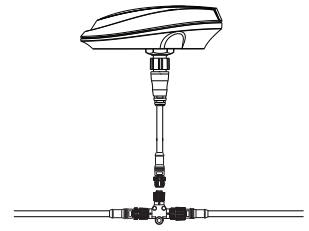
3. Mechanically adjust compass orientation to be parallel to boat's centerline.



4. Finish the tightening of the mounting screws to secure compass.

Wiring

The Precision-9 compass is connected to the NMEA 2000 backbone (Network) via the supplied T-connector.

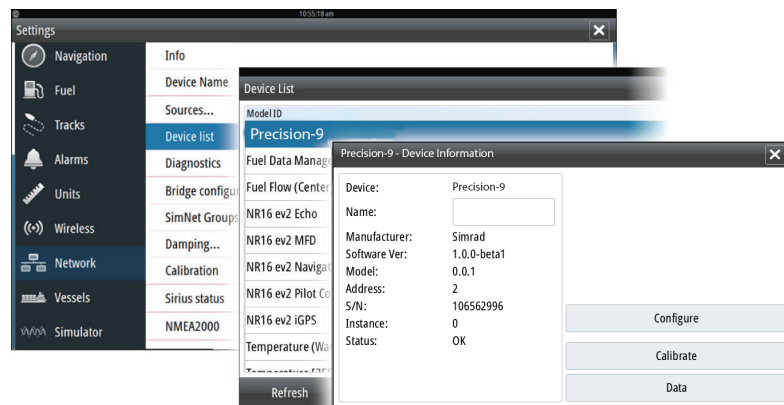


Setup and calibration of Precision-9

The Precision-9 compass can be set up with a compatible display unit on the network.

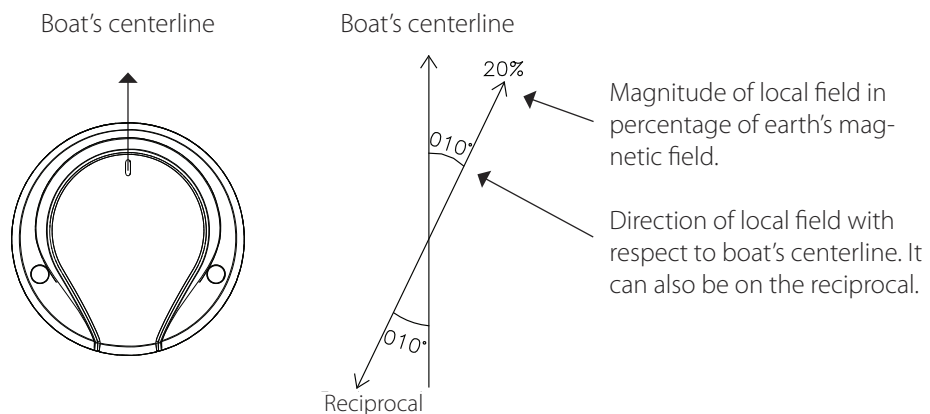
→ Notes:

- A software update may be required on the unit used to configure Precision-9. Check with your local dealer or brand website for upgrades.
- If your unit's software does not support configuration of the Precision-9 compass, you can still initiate calibration by performing the manual turn maneuver described next page.



Calibration

The compass calibrates itself automatically while the boat is turning in a circle. However, the automatic calibration process must be triggered by user action. During the calibration, the compass will measure the magnitude and direction of the local magnetic field. If the local magnetic field is stronger than the earth's magnetic field (the local field is reading more than 100%), the compass calibration will fail. If the local field is reading more than 30%, you should look for any interfering magnetic objects and remove them, or you should move the compass to a different location. The local field angle will guide you to the local interfering magnetic object. See illustration below.



- **Note:** In certain areas and at high latitudes the local magnetic interference becomes more significant and heading errors exceeding $\pm 2^\circ$ may have to be accepted.

Compass calibration procedure:

1. Mechanically adjust Precision-9 parallel to the boat's centerline.
2. Check that Precision-9 is selected as heading source on your display unit.
3. Make sure there is enough open water around the vessel to make a full turn.
4. Perform the compass calibration maneuver using one of the two methods explained below. (With display unit or by running three consecutive circles).
5. Adjust minor heading offsets in device configuration menu, if necessary.

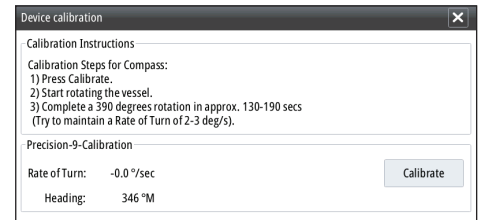
→ **Notes:**

- *It is important to follow these steps in the correct order.*
- *The calibration and offset data will be stored internally in the Precision-9 and retained between power cycles.*
- *The calibration should be performed in calm sea conditions and with minimal wind to obtain good results.*
- *For optimal performance, new calibration may be required if the boat has traveled very far, to a location where the earth's magnetic field is significantly different from the location it was calibrated. This is because the strength of the magnetic field varies in different locations.*

Calibrate

Performing calibration with a display unit

Select the Calibrate button (refer to page 2) to open the Device calibration dialog:
To calibrate the Precision-9 compass, follow the Calibration Instructions step-by-step as shown in the Device calibration dialog. Automatic calibration is completed when the information window disappears from the display.

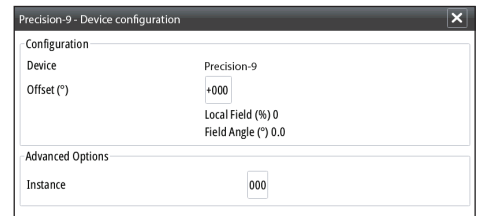


Configure

Heading offset

To adjust minor heading offset, select the Configure button (refer to page 2) to open the Device configuration dialog:

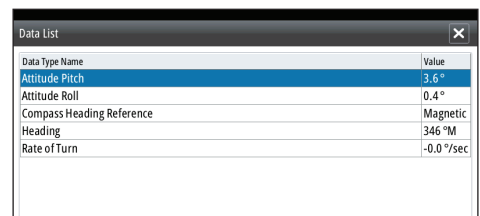
- If required, enter offset in degrees.
- Instance - the Instance is determined by the configuration process and should not require user adjustment.



Data

Data

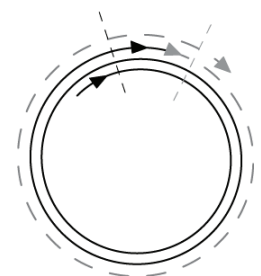
Select the Data button (refer to page 2) to display the data the compass is providing to the NMEA 2000 network.



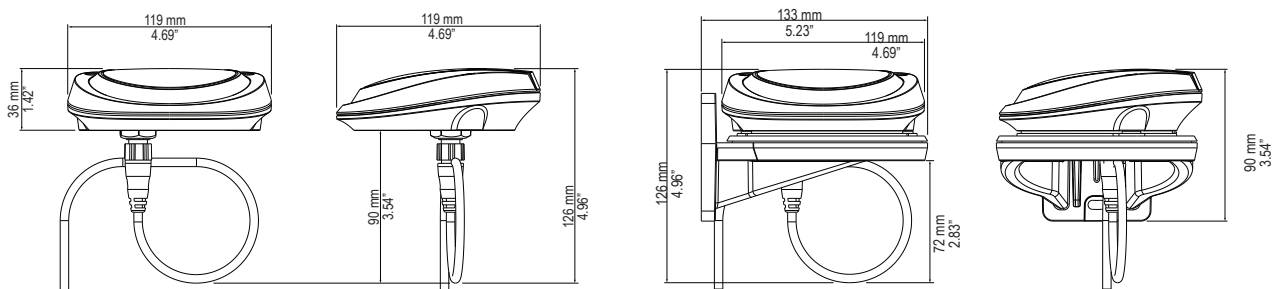
Performing calibration through manual maneuvering

If connected to an older Navico display unit or a non-Navico unit that does not support setup and calibration of this compass, use the following procedure:

1. Make 2 consecutive turns of 360° within 5 minutes after power is applied to the compass.
- The calibration procedure will now start automatically.
2. Continue with a third 360° turn to complete the calibration.



Dimensions



Technical specifications

Dimensions:	H: 36 mm (1.42\"), W & D: 119 mm (4.69\")	
Weight:		
- module:	165 g (5.8 oz)	
- bracket:	130 g (4.6 oz)	
Supply and interface:	8-16 V via NMEA 2000	
Power consumption:	0.4 W	
- NMEA 2000 Load Equivalence No. (LEN):	1	
- NMEA 2000 ports (input/output):	1	
Calibration:	Automatic	
Repeatability:	$\pm 1.0^\circ$ (or better)	
Roll/Pitch range:	$\pm 45^\circ$	
Heading accuracy:	$\pm 2^\circ$ after calibration	
Dynamic performance:		
- with random excitation of $\pm 10^\circ$ at max 1 Hz:	Heading error $< 2^\circ$	
- with heading step input of 90° at a rate of $10^\circ/\text{s}$:	Heading error 10 sec. after turn $< 2^\circ$	
Environmental protection:	IPx7	
Compass safe distance:	0.5 m (1.7')	
Temperature range:		
- operation:	-25 to $+65^\circ\text{C}$ (-13 to $+149^\circ\text{F}$)	
- storage:	-30 to $+70^\circ\text{C}$ (-22 to $+158^\circ\text{F}$)	
Cable supplied:	4.5 m (15') incl. connector	
Mounting:	Bulkhead or flat surface	
Material:	Plastic	
Output on NMEA 2000 format		
<ul style="list-style-type: none"> • Messages: PGN127250, 127251, 127257, 130824 • Data output: Magnetic heading (20 Hz), rate of turn (20 Hz), pitch/roll (10 Hz), heave (10 Hz) • Status information 		
Compliance statement		
Navico Precision-9 Compass		
<ul style="list-style-type: none"> • Comply with CE under EMC directive 2004/108/EC • Comply with the requirements of level 2 devices of the Radio communications (Electromagnetic Compatibility) standard 2008 		
The relevant Declaration of Conformity is available on the following websites:		
www.bandg.com / www.lowrance.com / www.simrad-yachting.com		

