Instructions

RC42N Rate Compass

GENERAL

The RC42N compass is designed for connection to any NMEA2000 network with Micro-C connector backbone. It is equipped with 5.5 m (18 feet) of cable with connector. The compass has a NMEA0183 HDG output option (See rewiring instruction in this document). When used in an autopilot system the compass transmits the heading even if the autopilot is switched off.

INSTALLATION

The compass can be mounted on a flat surface or bulkhead, athwart ship or along ship. Some of the products connected to the Micro-C/NMEA2000 may have a heading offset feature. This will compensate for the mechanical offsets resulting from the selected location and orientation of the compass.

If the connected products have no offset feature, the compass must be mounted athwart ship with the cable gland pointing aft.

Select a location that provides a solid mounting place free from vibration, 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 from disturbing magnetic interference e.g. engines (min. 2 meters), ignition cables, other large metal objects and particularly the autopilot drive unit. On steel hull boats it should be mounted 0.75-1 m above the wheel house on a non-magnetic stand.

The compass face plate is the TOP. Never mount it upside down! Level the sensor as close to horizontal as possible.

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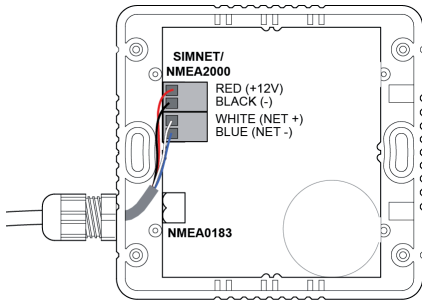

FWD

DECK MOUNT

BULKHEAD MOUNT
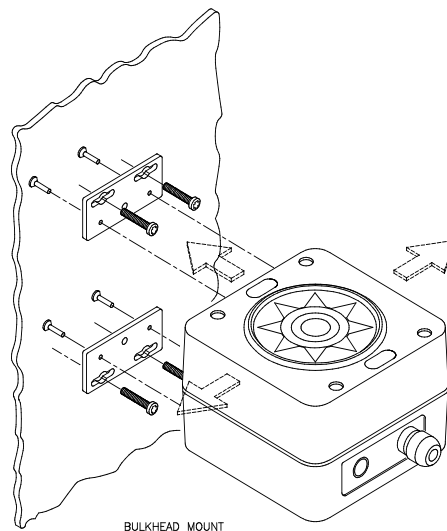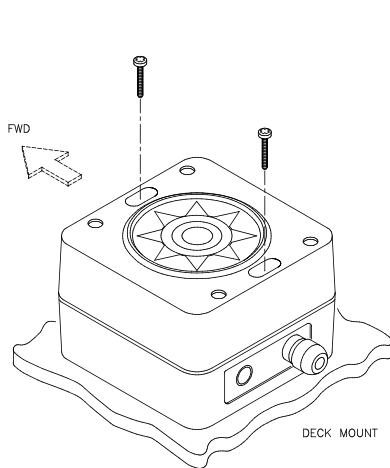
ELECTRICAL CONNECTION

NMEA2000 output

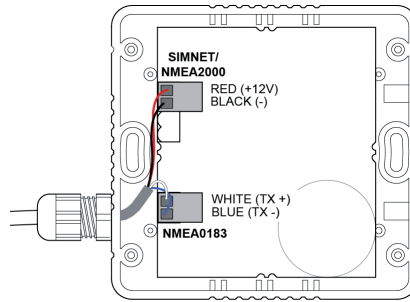This is default connection from factory.

Connect the Micro-C connector to an available socket in the NMEA2000 backbone.

NMEA0183 output only

When used as stand-alone with only NMEA0183 output, the cable is connected as shown on the illustration.
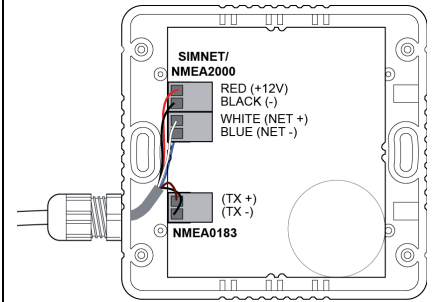
Prepare the other end of the cable for hard wiring by cutting off the NMEA2000 connector and stripping the cable.

NMEA2000 and NMEA0183 output

If both NMEA2000 and NMEA0183 outputs are required, an additional 2-wire cable must be used (not included). Alternatively a 6 wire cable can be used.

Connect the cable as illustrated.

## COMPASS CALIBRATION AND OFFSET ADJUSTMENT

NOTE: This procedure only needs to be followed upon initial system installation. Any adjustment afterwards should be minimal or not required at all.

If connected to NMEA2000, the calibration and offset are carried out using the autopilot or instrument calibration menu. Refer to the autopilot or instrument manual.

Calibration data is stored in the compass and is presented on the autopilot and instrument display.

If connected for NMEA0183 output only, use the following procedure:

1. Make 2 consecutive turns of 360° within 5 minutes after power is applied

   - The calibration procedure will now start automatically

2. Continue with a third 360° turn to complete the calibration
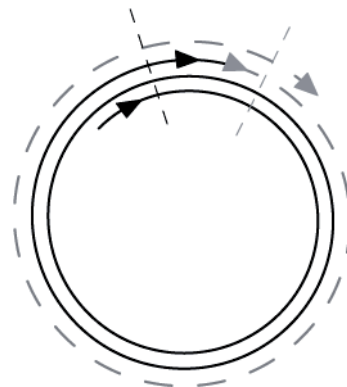
TECHNICAL SPECIFICATIONS

Dimensions: ....See figure.
Weight: ....0.4 kg (0.9 lbs)
Supply and interface: ....8-16V via NMEA2000
Power consumption ....1.4 W
Calibration: ....Automatic
Repeatability: ....± 1.5 degrees
Roll/Pitch: ....± 35 degrees
Accuracy: ....± 3 degrees after calibration
NMEA2000 Load Equivalence Number (LEN): 3
NMEA2000 ports (input/output): 1
Dynamic performance:

   With random excitation of ±10° at max. 1 Hz:
   Heading error <2°

   With heading step input of 90° at a rate of 10°/s:
   Heading error 10 sec after turn <2°

Environmental Protection: IP56
Compass safe distance: 0.5 m (1.7')
Temperature range:

    Operation: ....0 to +55°C (+32 to + 130°F)
    Storage: ....−30 to +70°C (−22 to +158°F)
Cable supplied: ....5.5 m (18') cable with connector
Mounting: ....Bulkhead or flat surface
Material: ....Off white ABS
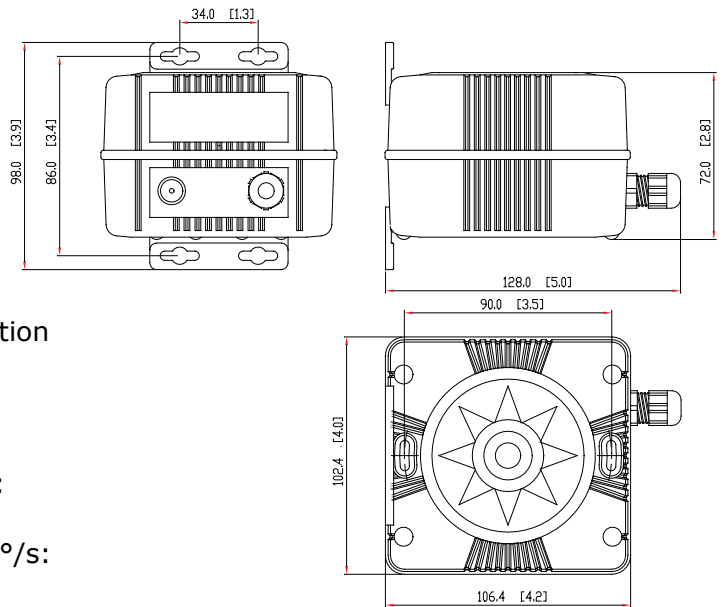
Output on NMEA2000 format

- Messages:.... PGN127250, 127251
- Calibrated heading, transmission rate of 20 Hz when selected as heading source on NMEA2000, otherwise 10 Hz with a refresh rate of 100 ms
- Magnetic field data
- Error messages and status information

Input from NMEA2000

- Heading offset
- Calibration start
- Software upload

Interface on NMEA0183 format

- Output: $HCHDG,x.x,,,,*hh<CR><LF> (x.x = heading, hh = checksum). Variation and deviation are null fields because unknown
- Supply: 9-16V DV

SPARE PARTS

22081442   Installation accessories
             Consisting of:
             20104972   Mounting plate (2)
             44140762   Screw 3.5x25 (2)
             44140770   Screw 30x9 (4)
             22081376   Plug (2)