

POWER

NAVIGATE



Installation & Operating description (1-6)

Monterings & Bruksanvisning (7-12)

Installation & Bedienungsanweisung (13-18)

Installation et utilisation (19-24)

POWER NAVIGATE

Contents

1. General
2. How to use POWER NAVIGATE
 - 2.1. Choice of functions
 - 2.2. Repeater functions
 - 2.2.1. POSITION (latitude/longitude)
 - 2.2.2. COG/SOG (course over ground/speed over ground)
 - 2.2.3. CTW/DTW (course to next waypoint/ distance to next waypoint)
 - 2.2.4. XTE/ETA (cross track error/estimated time to next waypoint)
 - 2.2.5. SET/DRIFT (water current direction and speed)
 - 2.2.6. Illumination (Lit)
3. Calibration/Demo mode
4. Parts specification
5. Installing the instrument
6. Connection diagram/contacts
7. Fault finding
8. Options
9. Data
10. Warranty

1. General

POWER NAVIGATE is a repeater for navigators with NMEA 0183 output. The instrument is completely independent from the other instruments in the POWER system (even if the design and choice of functions are identical). POWER NAVIGATE is intended both for motor- and sailing boats and is connected to the boats navigator and placed in a suitable location of the boat.

2. How to use POWER NAVIGATE

2.1. Choice of functions.

POWER NAVIGATE has the following repeater functions:

- Latitude and longitude = **POSITION**
- Course over ground and speed over ground = **COG /SOG**
- Course to next waypoint and distance to next waypoint = **CTW/DTW**
- Cross track error and estimated time to next waypoint = **XTE/ETA**
- Water current direction and speed = **SET/DRIFT**



The chosen repeater function is indicated by the arrow at the upper edge of the display. The arrow is moved either to the right or the left by pressing the buttons (to the right use the right button, to the left use left button). Secondary functions (see chapter 2.2. repeater functions) are obtained by pressing both buttons simultaneously when the arrow is in the selected position.

2.2. Repeater functions

The navigator sends data with a certain time interval. This means that data may take a few seconds before appearing on the display. Information not transmitted or not available is shown as --

2.2.1. Position (longitude and latitude)

The actual position is shown, first Latitude in degrees, minutes and 1/100 then Longitude in degrees, minutes and 1/100 th.

After the information has come to an end the display is blank for a short while. Every time the function **POSITION** is chosen the display starts with **LAT** (latitude).

Example:

LAT --> -59 (degrees) --> 17' --> .55 (minus sign indicates southern latitude)

Lon --> 17 (degrees) --> 34' --> .89 (minus sign indicates western longitude)

LAT etc.

2.2.2. COG/SOG (course over ground and speed over ground)

Example:



The display shows true course.

Press both buttons simultaneously.



The display shows true speed 0,00 - 99,9 knots.

To revert to **COG** press both buttons simultaneously.

2.2.3. CTW/DTW (course to next waypoint and distance to next waypoint)

Example:



The display shows course to next waypoint (true course).

Press both buttons simultaneously.

Example:



The display shows distance to next waypoint from 0,00 - 9,99 Nm then 10,0 - 99,9 Nm.

To revert to **CTW** press both buttons simultaneously.

2.2.4. XTE/ETA (cross track error and estimated time to next waypoint)

Example:



The display shows estimated cross track error, i.e. the distance in Nautical miles to the desired track and also a steering indication symbol.

0,00 - ,99 (1/100 Nm accuracy)
1,0 - 9,9 (1/10 Nm accuracy)
10 - 99 (1 Nm accuracy)

(Example: steer to starboard 0,05 Nm = 0,05)
(Example: steer to port 1,3 Nm = 1,3)

If there is radio interference or synchronizing error the O.K. flag "A" will not be displayed. The display then shows FLA (flag "A" is missing) until flag A comes back.

Press both buttons simultaneously.

The display shows estimated time of arrival to the next waypoint. First hours 0h - 99h are shown for 1 sec, then minutes 00' - 59'.

To revert to **XTE** press both buttons simultaneously.

2.2.5. SET/DRIFT (water current direction and speed)

The display shows **SET** (the direction of the current in degrees).

Press both buttons simultaneously.

The display now shows **DRIFT** (the speed of the current).

DRIFT is displayed in knots 0,00 - 9,99 then 10,0 - 99,9 knots.

To revert to **SET** press both buttons simultaneously.

2.2.6. Illumination (Lit)

Press the right of the left button until "Lit" appears on the display.

Press both buttons simultaneously to switch on/off.

3. Calibration/Demo mode

The instrument does not need to be calibrated.

A demonstration mode is however available through "Lit"

To use it:

Press the left or right button until "Lit" appears on the display, then press and hold both buttons simultaneously until the text "OFF" appears (OFF = navigator disconnected).

To connect the navigator, press both buttons until "ON" appears (the navigator is on-line).

When the navigator is disconnected the instrument will show:

POSITION: Latitude 59:26' 18 Longitude 17:55' 65
(The position of SILVA Sweden AB, Sollertuna).

COG/SOG: 260 degrees/20,5 knots.

CTW/DTW: 270 degrees/30,5 Nm.

XTE/ETA: 4,05/3h och 17 minutes.

SET/DRIFT: 280 degrees/4,50 knots.

Note! Only fixed values will appear.

After about 30 seconds the text "OFF" will be shown during 2 seconds. This is to safeguard from using the demo/mode for navigating.

4. Parts specification

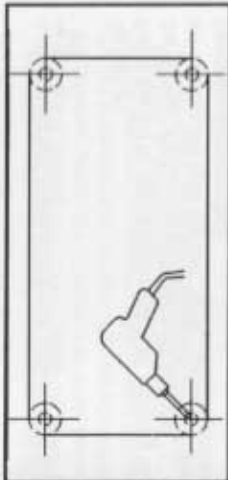
The SILVA POWER NAVIGATE instrument comes with all necessary fitting and attachments for most installations. Check each part prior to installation.

- 1 Operating Manual
- 1 Instrument
- 1 Gasket
- 1 Connection cable for navigator 8 m (26.2 ft) with one open end.
- 1 Template
- 4 Nuts (M5)
- 1 Backplate
- 1 Cover plug
- 4 Nutcovers

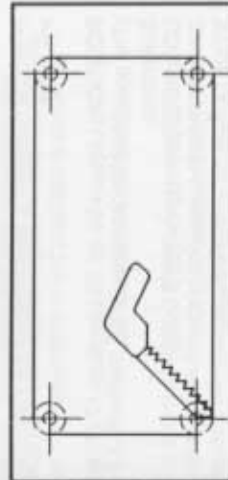
5. Installing the instrument

The instrument must be mounted on a smooth surface.

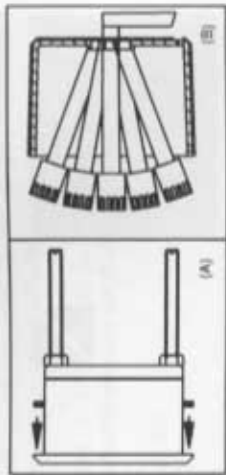
1. Use the template supplied with the operating manual. Attach it to the desired location, use a 4 mm (5/32") drill and then a 10 mm (3/8") drill.



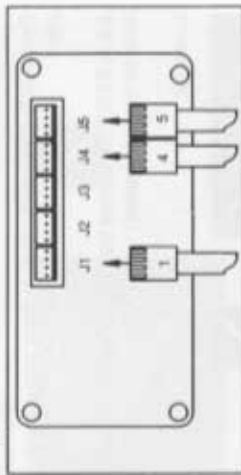
2. Saw along the dotted line (use blade for fibre-glass/porcelain/ceramics of type AEG k 50 fine). Note! Do not saw outside the dotted line!



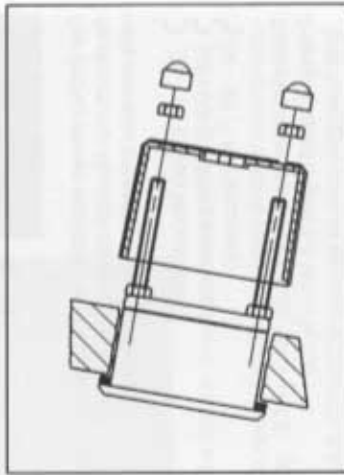
3. Mount the gasket over the instrument. (A) Pass the cables through the backplate. (B)



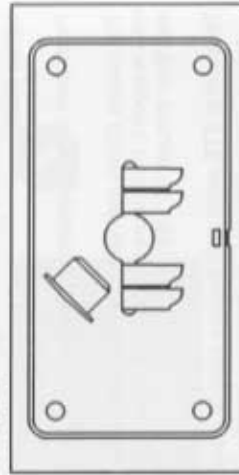
4. Connect the cables to the instrument according to chapter 6.



5. Mount the instrument and fix the backplate with the nuts supplied (be sure that the slots in the backplate are downwards). Press on the nut caps.

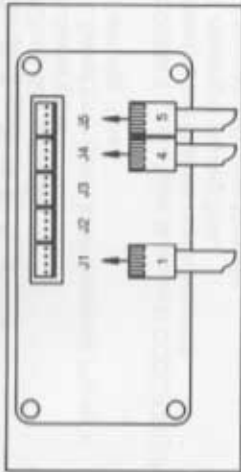


6. Move the cables aside and press on the red cover plug.



6. Connection diagram/contacts.

The instrument has 5 contacts marked J1 - J5. Each contact has 4 connectors.



J1 = Remote Control (optional, see separate diagram)

- Connector 1 Green +12 V (not used)
- Connector 2 Yellow Remote Control Downwards/Left
- Connector 3 White Remote Control Upwards/Right
- Connector 4 Brown 0V

J2 = Not in use.

J3 = Not in use.

J4 = NMEA 0183 input (from navigators, see connection diagram navigator)

Connector 1 Green +12V

Connector 2 Yellow Log pulse

Connector 3 White NMEA input

Connector 4 Brown 0V

J5 = NMEA 0183 output (to additional POWER NAVIGATE instrument, RADAR, AUTO PILOTS etc.)

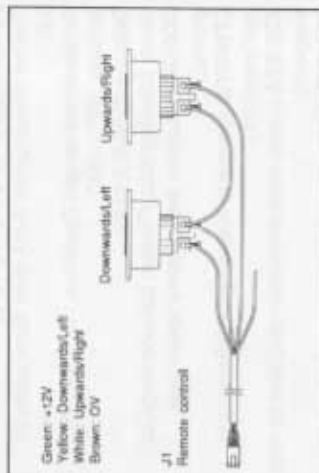
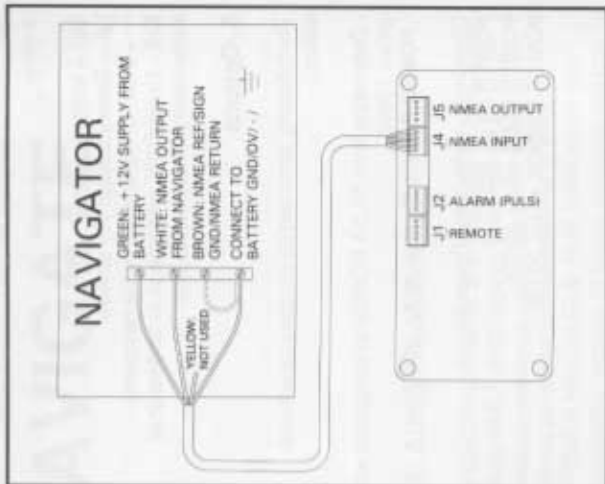
Connector 1 Green +12V

Connector 2 Yellow Log pulse

Connector 3 White NMEA output

Connector 4 Brown 0V

Connection diagram



7. Fault finding

In most cases the reason for faults in electronic instruments is a faulty connection. So, first check the connections according to the diagram.

Also check:

- Sufficient battery voltage
- Cables for damage
- Faulty contact in connectors
- The fuse is not blown and is of the right type.

Automatic fault finding is indicated each time the instrument is switched on and is shown on the display.

E02 = Memory error

Lo = Battery voltage 10v or lower

-- = Data not transmitted by the navigator.

Erd = Unreadable, erroneous or no data at all transmitted within about 25 sec.

8. Options

The following items can be supplied as optional extras:

- **Data cable** from SILVA POWER to navigators etc art.no. 19962.

- **POWER Remote Control** art.no. 20266.

Other instruments in the Power Series:

POWER art.no. 20107

POWER PLUS art.no. 20108

POWER BRIDGE art.no. 20110

9. Technical data

Power supply: 12 V DC (10-18 V).

Current consumption: 8 mA (with illumination 25 mA).

Temperature range: Operation, -10° - +70°C.
Storage, -30° - +80°C.

Data input: NMEA 0183

Reads following data: Position (latitude/longitude).

COG/SOG (course over ground/ speed over ground).

CTW/DTW (course to next waypoint/distance to next waypoint).

XTE/ETA (cross track error/estimated time to next waypoint).

SET/DRIFT (direction of current/speed of current).

Dimensions: 62,5 x 125 m. (2½" x 5").

Instrument cable: 8m. (26,2 ft).

NMEA 0183 record

Data input NMEA 0183 8 data bits (D07=0), no parity 2 stop bits

Reads following data:

\$DEGLL,xxxx.xx,N,xxxxx.xx,W

Present position:

1. Latitude: Deg-Min-Hundredths. (N=North

S=South)

2. Longitude: Deg-Min-Hundredths. (W=West

E=East)

\$DEVTG,xxx,T,xxx,M,xx.x,N,xx.x,K,(CR)(LF)

Track (COG Course Over Ground) Speed (SOG Speed Over Ground)

1.Track deg. True

2.Track deg. Magnetic

3.Speed knots

4. Speed Km/h (Km/h is not displayed). Priority is Track deg. True.

\$DEBWR,,,,,xxx,T,xxx,M,xxx.xx,N,CCCC,(CR)(LF)

Heading and distance to next waypoint

1.Heading to Wp deg.True.

2. Heading to Wp deg.Magnetic.

3.Distance to Wp.

4.Waypoint number (not displayed).

Priority Heading to Wp in deg.True.

\$DEXTE,A,A,xxx,L,N,(CR)(LF)

Cross track error

1. **A** = Traffic light is green or yellow. **V** = Traffic light is red.

2. **A** = Synchronization is achieved. **V** = Synchronization is not achieved.

3.Cross Track Error.L = steer left. R = steer right

\$DEZTG,xxxxxx,xxxxxx,xxx,(CR)(LF)

1.Univ.Coord.Time hhmmss (not received)

2.Estimated time to go to next WP- hhmmss

3.Waypoint number (not received)

\$DEZDL,xxx,T,xxx,M,xx.xx,N,(CR)(LF)

1.Set deg.True - Set deg Magnetic (received data is priority True)

2.Drift in knots

10. Warranty

SILVA Sweden AB gives a two year warranty against manufacturing faults or faulty components. A purchasing receipt must be shown if a warranty claim is made. The warranty does not apply to damage caused by careless handling, faulty installation or for damage caused by not fusing the instrument according to the instructions. The warranty does not apply to secondary damage caused by faults in instruments or transducers. The right to change the specification is reserved by the manufacturer.