Quick Installation Guide

LT-1000 Navigation Reference Unit

Congratulations on your purchase of the LT-1000 Navigational Reference Unit (NRU)!

The LT-1000 NRU is a small, compact and very advanced unit with 12 precision sensors: Magnetometers, Gyros, Accelerometers, Barometer, Thermometer, and GNSS receiver.

NOTE: Refer to the 95-100178 LT-1000 User and Installation Manual for detailed information on installation requirements and guidance.

Unpacking

Unpack the LT-1000 NRU and check that the following items are present:

- LT-1000 NRU (incl. pole mount and cable plug)
- LT-1000 NRU Roof Mount (incl. screws for installation)
- 10m Cable Multi 8-pin Simple-Cut (M)
- Screw-in Conn. NMEA 2000 Micro-C (M)
- Quick Installation Guide
- Safety Instructions Sheet
- Unit Test Sheet

WARNING

Refer to the 95-100178 LT-1000 User & Installation Manual for Safety Instructions.

Installation

The LT-1000 NRU DIP-switch is configured to 4.800 baud (NMEA 0183) and 'Open' (NMEA 2000) from the factory. Alternative DIP-switch settings are 38.400 baud (NMEA 0183) and 'Terminated' (NMEA 2000).

Mounting considerations:

- Mount the unit on a rigid structure with a minimum of exposure to vibration and shock
- Mount the unit in an area with an ambient temperature between -40°C to +55°C (-40°F to +131°F)
- Mount the unit as far as possible from magnetic interference and power cables
- Mount the unit so that direct spray from seawater is avoided
- Mount the unit so that ventilation through the pole mount is possible

IMPORTANT: The pinot screw used for fastening the pole mount shall not exceed 0.8 NM (0.6 lbs/ft).

Connecting cables:

The LT-1000 NRU 8-pin female connector and the multi cable (simple-cut) interconnect details are listed in Table 1 and Figure 1.

LT-1000 NRU Interconnect Details		
Pin No.	**Wire Color**	**Wire Designation**
1	Brown	TxD-
2	Yellow	TxD+
3	Black	GND
4	White	CAN_H
5	Blue	CAN_L
6	Orange	RxD+
7	Green	RxD-
8	Red	Vsupply

TABLE 1: LT-1000 NRU MULTI CABLE WIRE COLOR AND DESIGNATION.

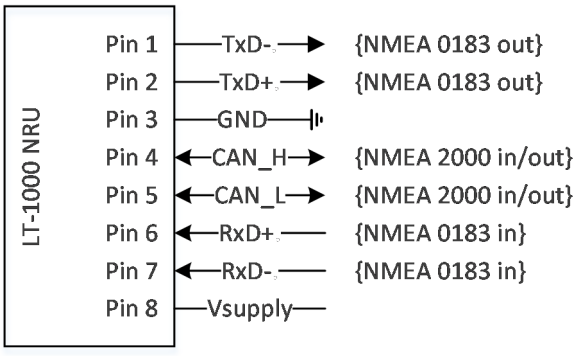

FIGURE 1: LT-1000 NRU TRANSMIT AND RECEIVE DIRECTIONS.

Deviation calibration

After completed installation, and before configurating the LT-1000 NRU heading offset, it is required to perform a deviation calibration. The calibration must be performed in open and calm waters, and will determine the ship's influence on the magnetic sensors.

The LT-1000 NRU will indicate absence of a valid calibration by outputting heading (true and magnetic) with a 5 degrees resolution. When a calibration has been successful, the heading will be output with full resolution.

The LT-1000 NRU will automatically perform a calibration when it detects the vessel is sailing a specific pattern. To trigger a calibration, guide the vessel through the following pattern. The best result is achieved at low speed (SOG), low rate of turn (ROT) and in calm waters.

Step 1
Keep a steady course (± 5°) for min. 10 s.
SOG: 2–12 knots

Step 2
Make a full circle (360-450°) clockwise or counterclockwise
ROT: 2-6°/s (1 -3 min.)
SOG: 2-12 knots

Step 3
Make a full circle (360-450°) in opposite direction
ROT: 2-6°/s (1 -3 min.)
SOG: 2-12 knots

Step 4
Keep a steady course (± 5°) for min. 10 s.
SOG: 2–12 knots

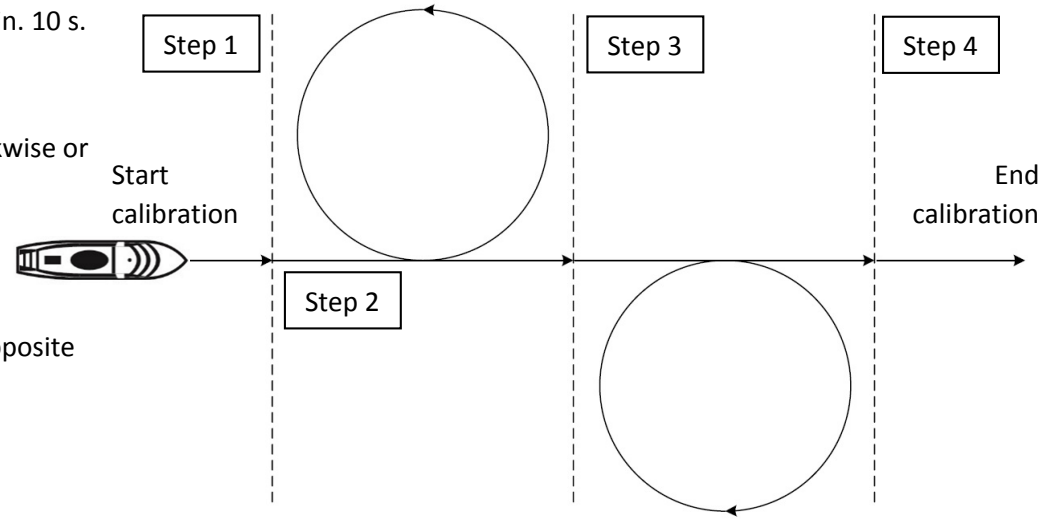

FIGURE 2: DEVIATION CALIBRATION PATTERN FOR THE LT-1000 NRU.

IMPORTANT: If the LT-1000 NRU is physically moved or rotated, it is required to perform a new calibration. Refer to the LT-1000 User & Installation Manual on how to use the LT-Service Tool to verify a subsequent calibration.

Configuration (optional)

Use the LT-Service Tool for optional configuration and offset adjustment of the LT-1000 NRU. The LT-Service Tool is a PC program, which may run on any Windows PC. The LT-Service Tool is connected to the LT-1000 NRU via the NMEA 0183 interface, see Figure 3.

LT-Service Tool functionality:

- Configuration of Heading offset
- Configuration of Pitch and Roll offset
- Configuration of Height Above Sea
- Configuration of GNSS receiver (GPS, SBAS, QZSS, GLONASS and BeiDou)
- Status of unit (POST, CM, general status)
- Monitoring of NMEA 0183 sentences
- Live Navigation data
- Generation of a Diagnostic Report
- Upload of new Application Software

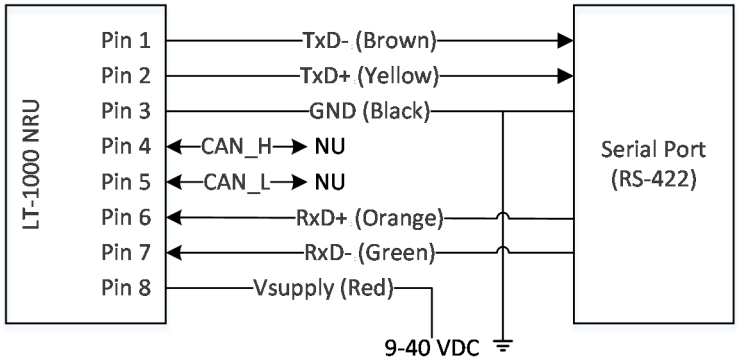

FIGURE 3: WIRING OF THE LT-1000 NRU TO A SERIAL PORT (RS-422).