



## INS-GNSS INTEGRATED SOLUTION FOR MARITIME NAVIGATION

THD-100D is the GEM ELETTRONICA dual GPS and MEMS based INS\GNSS integrated system specifically developed for maritime navigation.

With the GEM ELETTRONICA innovative sensor fusion algorithms, THD-100D combines the potential of a GNSS satellite compass with the continuity, robustness and frequency update that only a 9DOF IMU based navigation system can provide. With multiple sensor integrated in the unit and the possibility to be integrated with an external speedlog, THD-100D is specially designed for fast manoeuvring vessels, provides a **100 Hz** output update rate guaranteeing tens of minutes of navigation continuity even in case of GNSS outage due to spoofing or service discontinuity.

Mounting two GPS antennas that can be flexibly displaced on the boat, THD-100D provides a significant advantage in terms of reliability of the attitude and position if compared to a standard GNSS satellite compass solution.



## FEATURES

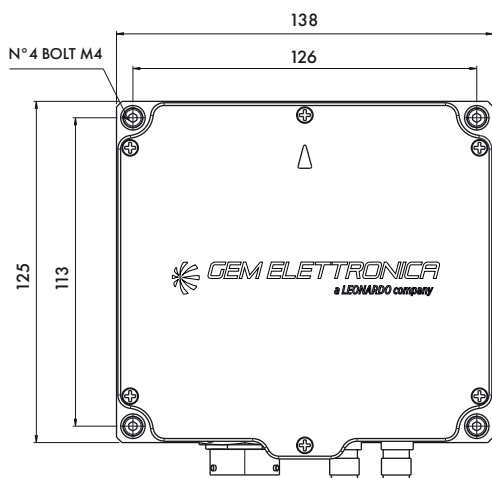
- Compact Inertial Navigation System
- High stability MEMS architecture
- Advanced GNSS receiver integrated
- High reliability and continuity guaranteed during GNSS outages
- Fully ITAR free system
- Fast real-time navigation data in highly dynamic environments
- Extended navigation filter based on advanced data fusion



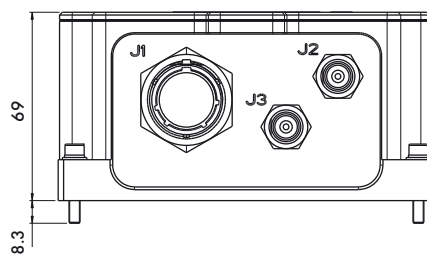
# THD-100D

Performances (1 $\sigma$ )	With GPS	No GPS (5 min outage)
Heading static accuracy	< 0.75°	< 1.5° for 5 min outage
Heading dynamic accuracy	< 1°	< 1.5° for 5 min outage
Pitch & Roll static accuracy	< 0.2°	< 0.5°
Pitch & Roll dynamic accuracy	< 0.4°	< 1.0°
Position accuracy (CEP)	< 2.5 m < 2 m (SBAS)	150 m (with SpeedLog)
Velocity accuracy	< 0.1 m/s	< 0.5 m/s (with SpeedLog)

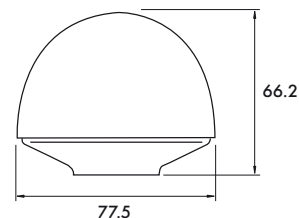
Features	Description
Time to first positioning fix	25 s (Cold start), 1 s (hot start)
Time to first heading fix	30 s (Coarse magnetic alignment), 240 s (Fine alignment) from GPS fix
Dynamic Range	Acceleration: $\pm 10$ g, Rotation rate: $\pm 300^\circ$ /sec
I/O Ports	2 serial ports RS422 available at DB9 connector (4800, 9600, 19200, 38400, 57600, 115200, 230400, 460800 baud selectable) - 2 input TNC for GPS antennas
Power supply	9-36 Vdc
NMEA output sentences	Heading: \$HDG, \$HDT, \$HDM; Roll & Pitch: \$XDR; Speed: \$VTG, \$VNE, \$VHD; Position: \$GGA, \$GLL, \$RMC. Programmable on two serial ports as output sentences
Update rate	Up to 100 Hz (Attitude), 10 Hz (Position)
NMEA Input sentences	Compatible LOG: \$VBW, \$VHW
Operative temperature	- 10° C ÷ 55° C
EMI and RFI immunity	CE certified



dimensions in mm



Estimated Weight: 1.35 Kg



Weight: 200 grams

