

AHRS for Naval and Marine Applications incl. Gyro Compass & Motion Reference Unit & GNSS

Three marine functionalities unified in a single maintenance-free device



The iATTHEMO-TRIDENT unifies the most important Marine Navigation functionalities (*ATTitude*, *HEading*, *MOtion*) in a single device. It comprises a maintenance-free 6-axis gyro compass and optionally comes with an integrated GNSS. Its superior performance, low life-time costs and reliable construction make it *perfectly suited for all navigational, control, stabilization and surveying functions*.

CAPABILITIES & FEATURES of iATTHEMO-TRIDENT-F

- Very fast settling time even in rough seas for gyro compassing (< 20 minutes)
- Maintenance-free: FOG technology providing high MTBF (> 50,000h)
- Type-approval can be achieved regarding to marine directives (IMO + IMO-HSC) on request
- Real-time output with low latency and jitter on true heading, roll, pitch, surge, sway, acceleration, rate of turn, which all are available also in GNSS denied environment
- Position and SOG available with GNSS (GPS / GLONASS / GALILEO / Beidou etc.)
- iATTHEMO-TRIDENT-F is not subject on any ITAR regulations
- Perfectly suited for any newbuilds & retrofits, especially also with iMAR & Kwant Controls Tightly Integrated System for Mono-hulls & High-Speed Craft

ACCESSORIES

- Multiple repeater types available (digital, bearing, dial)
- Other accessories available (data distribution box, converters to naval interfaces like synchro)

light weight – easy to integrate – easy to operate – maintenance-free

Technical Data iATTHEMO-TRIDENT-F

Maintenance-free gyro compass & motion reference unit (MRU) & GNSS (optional)

- all data are RMS values, if not otherwise stated -

Performance: *

Heading Accuracy:	0.28° sec lat	(gyro compassing)
Settling Time:	< 20 minutes	
Dynamic Roll & Pitch Accuracy	< 0.05°	
Position Accuracy:	~ 0.2 % distance travelled [CEP]	(during GNSS outages with LOG aiding **)
	< 2 m [RMS]	(with GNSS aiding, S/A off)
Velocity Accuracy:	0.04 kn / 0.02 m/sec	(with GNSS)
	0.8 kn	(free inertial, short term)
Angular Rate Range:	±450 °/s	
Acceleration Range:	±15 g	(others as option)
Heading / Roll / Pitch Range:	0...360° / ±180° / ±90°	(no limitations)
Data Output Rate / Bandwidth:	integer divisor of 500 Hz / internal 1'000 Hz	

Outputs:

Serial Data:	3 x UART RS422 or RS232 (NMEA 0183)
Ethernet:	1 x TCP/IP or UDP (sensor data and alert)
CAN Bus:	2 x standard protocol or NMEA2000 (sensor data and alert)
Time Synchronization (Pulse Port):	PPS Output (RS422 level, ext. converter to TTL level as option)
Synchro (fine/course):	as option via data distribution unit (DDU)
Status / Alarm:	
System Failure:	1 x potential-free relay contact (< 30 V / 200 mA)
Alert Communication (ALR/ACK):	RS422 (IEC 61162-1 conformity)

Inputs:

GNSS (GPS/GLONASS/BEIDOU/GALILEO):	Active GNSS antenna via TNC connector
LOG:	Speed input via NMEA183 (UART RS422 or RS232)
Latitude:	via NMEA183 (if iATTHEMO operated w/o internal GNSS eng.)
Time Synchronization Pulse:	PPS Input (only in case of usage of an external GNSS engine)

Physical / Operating / Environmental Parameters:

Power Supply Voltage:	24 V DC (10...35 V DC)
Power Consumption:	< 25 W (incl. integrated GNSS engine)
Dimensions:	187 x 130 x 261 mm (w/o connectors)
Weight:	5.8 kg
Operating / Storage Temperature; Humid.:	-40...+65 °C / -55...+85 °C; 8...100 % rel. humidity
Housing / Protection Category:	fully sealed aluminium enclosure / IP 67

Accessories:

Included:	- Graphical User Interface (Windows / Linux) - operator handbook (usage & maintenance)
Optional:	- internal GNSS receiver (all constellation / all frequency GPS / GLONASS / GALILEO / BEIDOU) incl. SBAS (EGNOS/WAAS/QZSS) - additional dual-antenna GNSS setup for instantaneous heading determination - various repeaters and accessories

Standards:

MIL-STD 810, MIL-STD 704, MIL-STD 461 (other on request)

Other iATTHEMO-Versions:

iATTHEMO-/TLx:	MEMS based INS/GNSS Motion Reference Unit for vessel control, fast ferry control (ride control, motion compensation etc.), autonomous vessel guidance & control
iATTHEMO-TRIDENT-Rx:	Ringlaser gyro based high performance solution for marine and naval vessel applications

