iATTHEMO-M

True North Finding Stabilization Reference Sensor for Guidance & Control in Marine and Naval Applications

iATTHEMO-M is a miniaturized dual-antenna GNSS compass for marine and naval applications with an integrated MEMS based inertial measurement system, which provides true heading as well as attitude, velocity, position, angular rates and acceleration at high performance. It is a small size unit and easy to use.

- True Heading with up to 500 Hz data rate, Dual Antenna multi-frequencies / multi-cnstellations GNSS
- Accurate roll, pitch, WGS84 position & velocity, rates, acceleration and standard deviations for ride control and vessel guidance & control
- Integrated propellor interface (option)
- CAN / UART RS232 & RS422 / Ehernet TCP/IP and UDP and NMEA183 interfaces
- Supports iDMN Dynamic Mesh Communic. Network
- Supports Multi Vehicle Tracking applications (MVT)
- Real-world proven also on high speed crafts
- PPS and NTP output for synchronization

Due to its advanced architecture, iATTHEMO-M provides true north related heading, even under such motion conditions, where other GNSS/MEMS based systems fail (e.g. at standstill or motion with strong side slip angle). While standard GNSS based systems provide data only with low data rate, iATTHEMO-M provides all data with up to 500 Hz, and from standstill up to very high dynamic conditions.

So, the iATTHEMO-M is a most suitable sensor, coming in a robust enclosure including strong EMI / EMC filtering, to provide **ATT**itude, **He**ading and **MO**tion measurements for manned and unmanned naval and marine applications. As an option, the system is also available as single antenna version (iNAT-M300/TLE).

Beside of iATTHEMO-M, with iNAT iMAR offers also other, even higher accurate dual-antenna based systems on MEMS, FOG, HRG and RLG basis. Last but not least, our iATTHEMO-TRIDENT might be of interest as well: A Gyro Compass & Motion Reference Unit, including GNSS which provides 3 marine functionalities in a single, maintenance-free device.

Technical Data of iATTHEMO-M/TLC-STAB-DA (rms):

	Gyro Performance	Accelerometer Performance
Sensor Range:	± 100 °/s	± 8 g
Bias Stability (Allan Var.):	< 1.8 °/hr	0.004 mg
ARW / Noise:	0.09 °/√h	0.016 mg/√Hz
Bandwidth:	0...200 Hz	0...200 Hz
Scale Factor Accuracy:	0.1 %	0.1 %

Attitude / Heading Range:	± 180 ° Roll, ±90 ° Pitch, ±180 ° true heading (Yaw)
Attitude Accuracy:	< 0.1 ° rms roll/pitch under sufficient motion with GNSS aiding [1]
Heading:	< 0.1 ° rms true heading with 2 m antenna baseline and GNSS available [1] < 0.05 ° rms true heading with 4 m antenna baseline and GNSS available [1] < 0.1 ° rms under sufficient motion and sufficient GNSS availability (for signle antenna operation) [1]
Attitude/Heading Resol. / Drift:	< 0.01 °; < 0.01 °/s drift on heading during short GNSS outages
Position/Velocity:	using all-frequency / all-constellation GNSS and RTK: 2 cm CEP , up to 500 Hz data rate; performance: approx. 1.5 m RMS (S/A off, no RTK. no SBAS)
Digital Output:	angular rate and acceleration, position e.g. in WGS84, velocity, roll, pitch, heading; BIT, status, std.dev.
Integrated Features:	INS/GNSS data fusion; Dual-Antenna L1L2Lx GPS+GALILEO+GLONASS+BEIDOU; optional support: external 3D magnetometer, depth sensor, DVL; heave output
Digital Interface:	CAN (up to 1 MBit/s), UART RS422 / RS232 (up to 921.6 kBd), USB, Ethernet (TCP/IP, UDP), dig. I/O
Output Data Rate, Connector:	integer divisor of 500 Hz via CAN / RS422/ ETH; MIL-C-38999 III 37 pin; 2 x SMA for GNSS antennas
Temperature; MTBF:	-40...+71 °C (case temperature); storage: -55…+85 °C; > 35'000 hrs (estimated, surveying applications)
Power:	10...34 V DC, approx. 8 W
Size:	approx. W x L x H = 102 x 122 x 65 (metal case, IP65);
Weight, Shock, Vibration:	approx. 850 grams; 60 g, 11 ms ; 20...2'000 Hz 5 g (rms) endurance
Software:	iXCOM-CMD (under Windows and Linux available) for configuration and data storing
Part Number:	iATTHEMO-M/TLC-STAB-DA: 00193-050B2-0527
Options:	- integrated vehicle stabilization & control algorithms (e.g. for fast ferry ride control) - versions availabe with higher rate rage (500 deg/s), higher g range (40 g), lower angular random walk (0.03 deg/sqrt(hr) or other sensor technologies (FOG, HRG, RLG)

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[1] under sufficient motion dynamics and with suitable GNSS aiding