

# iCOMBANA-III-DA

Low-cost, high efficient

## Combat Navigation System



with

Dual-Antenna GNSS

supported

True Heading

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# iCOMBANA-III-DA

iCOMBANA-III is part of the IMS product family of inertial systems for navigation, geo locationing, guidance & control, stabilization and GNSS based true heading determination with tactical grade fiber optical gyros, that covers applications, which require accuracy, reliability, easy integration & operation and an open interface to the user.

- integrated dual-antenna based all-constellation / multi-frequency true north referencing GNSS receiver
- inertial navigation & surveying system for ground, airborne, naval and other applications
- FOG technology with high angular resolution
- Integrated VMS / odometer interface (ground)
- high data rate, low latency
- Interfaces: Ethernet TCP/IP - UDP, CAN, UART RS422, NMEA 0183, ARINC429, HDLC, USB, ext. GNSS corrections (option)

iCOMBANA-III-DA consists of three closed-loop fiber optical gyroscopes with low random walk and high gyro angular resolution, three servo accelerometers, a powerful strapdown processor and an open and flexible interface, which can be customized on request.

All data like attitude, heading, position, velocity, rates and acceleration are sent with up to 500 Hz via Ethernet or RS422 (UART) or CAN or ARINC429 or HDLC with time stamp related to GPS time / PPS.

The GNSS data can be transmitted via the same or an alternate interface as the results of the INS/GNSS sensor data fusion.



The dual-antenna capability allows the system to determine true heading also at standstill conditions, where other systems of this class cannot provide stable heading. Furthermore the system is designed for "plug & play" operation and e.g. estimates the wheel sensor's scale factor and misalignment automatically.

The system is delivered with an internal power conditioning according to MIL-STD 461 G and transient protection according to MIL-STD 704F.

With iXCOM-CMD an operation and maintenance software, operable under Linux and MS Windows, incl. moving map, waypoint navigation etc. is available. The system is manufactured in Germany and is **neither covered by export control nor by ITAR regulations.**

## Technical Data iCOMBANA-III-DA

True Heading:	< 2 mils (0.1°) [RMS] with 4 m baseline between the two GNSS antennas <sup>1</sup> (within ~60 sec) < 4 mils (0.2°) [RMS] with 1 m baseline between the two GNSS antennas <sup>1</sup> (within ~60 sec) ~ 1 mils (0.05°) [RMS] with GPS aiding on the move (also with only 1 m antenna baseline) <sup>2</sup> Heading drift during short GNSS outages under motion (typical): 0.02 mils / sec
Position accuracy:	< 2 m / < 0.1 m [CEP50] GNSS, S/A off / RTK GNSS < 0.15 % DT [CEP50] during short-term loss of GNSS, odometer aided (ground)
Altitude:	< 3 m / 0.06 m [PE50] GNSS, S/A off / RTK GNSS < 0.2 % DT [PE50] during short-term loss of GNSS, odometer aided (ground)
Attitude Accuracy:	< 1 mils [RMS] with sufficient GNSS coverage; < 2 mils [RMS] w/o longer time without GNSS aiding
Angular Rate / Accel. Range:	± 450 °/sec , ±5 g (option: +/- 20 g)
GNSS Aiding:	integrated all-frequency / all constellation GNSS single antenna receiver; option: dual-antenna GNSS receiver or SAASM / M-Code receiver
Alignment Time:	< 2 min. GNSS cold start, < 1 min. GNSS warm start; < 30 sec with stored heading
Data Output Rate, Latency:	integer divisor of 500 Hz, internal bandwidth 500 Hz; < 3 ms latency; NTP output via Ethernet
Temperature range:	-40 to +71°C operating, -46 to +85°C storage
MTBF / MTTR / Installation:	35,000 hrs (estimated) / < 30 minutes / installation in all arbitrary orientations allowed
Shock, Vibration:	25 g, 11 ms; 60 g, 5 ms and 20...2'000 Hz, 3 g rms (operating); 6.8 g rms endurance
Qualification:	MIL-STD-810G, MIL-STD-461G, MILSTD-704F; designed partially to meet DO160G
Power; Start-up-Time:	10...34 V DC, < 22 W, overvoltage protection up to 60 V ; < 15 sec
Weight / Size / Connector:	approx. 4.6 kg / approx. 187 x 128 x 196 mm <sup>3</sup> (without connectors) / MIL-C-38999 III, TNC
Software:	QNX based, internal online 42+ state Kalman filter sensor data fusion, iXCOM-CMD interface software
Part-Numbers:	iCOMBANA-III/T: 00190-04102-0507 (usable as single and dual antenna system)

<sup>1</sup> under suitable GNSS conditions

<sup>2</sup> under sufficient GNSS conditions, motion dynamics and trajectory

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