iCORUS

iMAR NAVIGATION & CONTROL

iCORUS for Gravity Measurements

lightweight – highly accurate – easy to operate

iCORUS-02

iCORUS optimally responds to today's requirements in airborne and shipborne gravity measurements. It allows an unsupervised operation, with reliable and highly accurate measurements. All raw sensor data is stored on the integrated 128 GByte non-volatile memory. Being based on the well-known iNAT navigation & timing system family, it also provides motion data (position, velocity, attitude, heading, angular rates and acceleration) in real-time, useful for vehicle guidance.

Data processing and analysis fully remains under the customer's control, supported by iMAR's consulting and support. The iCORUS is part of the IMS product family of systems with gyro compassing capability for inertial navigation, surveying, guidance and stabilization with high resolution gyros and accelerometers. It is lightweight, highly accurate and easy to operate.

CAPABILITIES & FEATURES

- Best suitable gyro & accelerometer technology for gravity measurements, incl. temperature stabilization
- Designed for airborne and shipborne gravimetry
- Simple and fully autonomous operation: no operator is required during the flights; iXCOM-CMD wizard for setup.
- Post-processing-software "iPosCAL-GRAV" for determination of gravimetric disturbances
- User access to all raw sensor data
- No recovery time required after turn flight (as known from conventional airborne gravimeters)
- Internal non-volatile data memory → storage of all mission data for subsequent evaluation and processing; raw data acquisition and storage with up to 500 Hz to cover *all* carrier vehicle motion even under dynamic conditions
- A version with even lower weight & space consumption is available on request (e.g. for UAV applications).
- Maintenance-free
- Measurement range covers even disturbances up to 2 g (2,000,000 mGal) – very high robustness against turbulence
- Training and support by iMAR according to customer's request
- iCORUS (ITAR-free).

lightweight – highly accurate – easy to operate – best price/performance ratio

Technical Data iCORUS

- any performance indicators given as RMS values, unless stated otherwise -

Performance (example: iCORUS-02):

Gravity (post-proc.)	< 1.2 mGal	Experienced gravity performance over the past years:
		• without bias removal: ~ 2.0 mGal
		• after line-wise bias removal: ~ 0.8 – 1.0 mGal
Resolution:	50…100 s	(Spatial resolution depending on speed, e.g. 30 m/s * 50 s = 1.5 km)
Operation range:	+/- 2,000,000 mGal; very robust also against strong turbulences	

Variants:

iCORUS-02:	RLG-based strap-down gravimeter (ITAR free) - PN: 00215-00202-0306
iCORUS-02-P:	Light-weight edition with reduced performance parameters

Output:

Data Output:	Heading, Roll, Pitch, Angular Rate, Velocity (Body and Nav frame), Position, Raw Data of IMS / GNSS incl. timestamps and system status; From post-processing: Gravity and Gravity Disturbances.
Time Stamping:	data sampling accuracy better 1 µs, time-stamped acc. to PPS; jitter < 1 ms
Data Storage:	128 GByte on internal non-volatile memory (> 14 days of flight data)

Physical / Operating / Environmental Parameters:

Power Supply:	16...34 V DC, iCORUS with active temperature stabilization: < 250 W 16...34 V DC, iCORUS without active temperature stabilization: < 35 W 50 ms hold up time acc. to DO160G; continuous overvoltage protection up to 60 V for the INS
Temperature Range:	Temperature Stabilization Range: Ambient temperature ± 15 K Ambient Temperature: -30…+45 °C (other as option)
Interfaces:	interfaces to external sensors (LiDAR, DL, …) on request
Weight, Power:	Example: iCORUS-02 standard version < 18.5 kg / < 250 W; customized UAV adopted versions with weight reduced to less than 10 kg possible on request
Installation:	Installation possible in any orientation, mounting flange downside preferred

Gravity disturbances near Darmstadt (03/2018)

80% of cross-points < 1mGal

Accessories:

Included:	- **iXCOM-CMD** GUI software with Gravimetry Data Acquisition PlugIn, available for MS Windows and Linux - iXCOM communication protocol with C++ **SDK** and Python driver for integration in user applications - integrated real-time Kalmanfilter based data fusion (42+ states)
Options:	- **iPosCAL-GRAV**: gravimetry post-proc software