iMAR
NAVIGATION & CONTROL

STRAPDOWN GRAVIMETRY

iCORUS-02

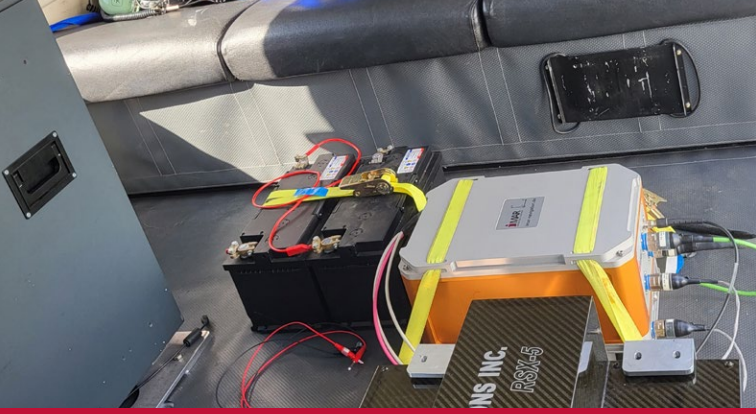
iCORUS

High-Precision Airborne Strapdown Gravimeter containing INS/GNSS for data acquisition

iCORUS Features

iCORUS provides gravimetric disturbances / gravity gradiometric measurements, gyro compassing and data for **inertial navigation** (PNT - Position, Navigation & Timing), **surveying, guidance and stabilization**. It contains dedicated, high performance gyros and accelerometers, an advanced GNSS engine and a dedicated signal acquisition and proces sing based on **iMAR's more than 30 years experience** in designing and manufacturing highly accurate inertial measurement systems for surveying, navigation and control. **iCORUS** also shows significant advantages regarding weight, power consumption, robustness and maintenance, compared to other commonly used systems.

- Reference class gyros & accelerometers
- Airborne and shipborne approved designs
- Simple and fully autonomous operation
- User access to all raw sensor data
- No recovery time required after turns
- Turbulence robustness up to 20 g
- ITAR-free



Technical Data

Performance	Value	Remark
Gravity (post-proc.)	<1.0 mGal ~ 2.0 mGal ~ 0.8 -1.0 mGAL	nominal, experienced value without bias removal after line-wise bias removal
Resolution 50...100 s	1.5 km (@ 30 m/s, 50 s)	depending on speed
Operation range	+/- 20 g	very robust also against strong turbulences

Operational Parameters	
Power Supply	16...34 V DC, 250 W • 50 ms hold up time according to DO160G • continuous over-voltage protection up to 60 V for the INS
Performance Temp. Range	+/- 15 K around initial set value
Operational Temperature	-30…+45 °C
Weight, Power Consumption	iCORUS-02 standard version: ~ 18.5 kg / typical < 50 W (initial < 250 W)
Installation	easy to mount via 4 screws

Output	
Data Output	raw data of IMS / GNSS incl. time stamps and system status • position, heading, roll, pitch, angular rate, velocity (body and nav frame) • data format can be processed directly by iPosCAL-GRAV
Time Stamping	data sampling accuracy better 1 µs • time-stamped according to PPS - jitter < 1 ms
Data Storage	128 GByte on internal non-volatile memory (raw data of > 700 flight hours)

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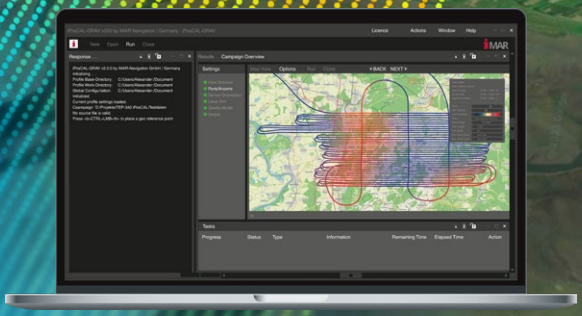
GRAVIMETRY POST-PROCESSING



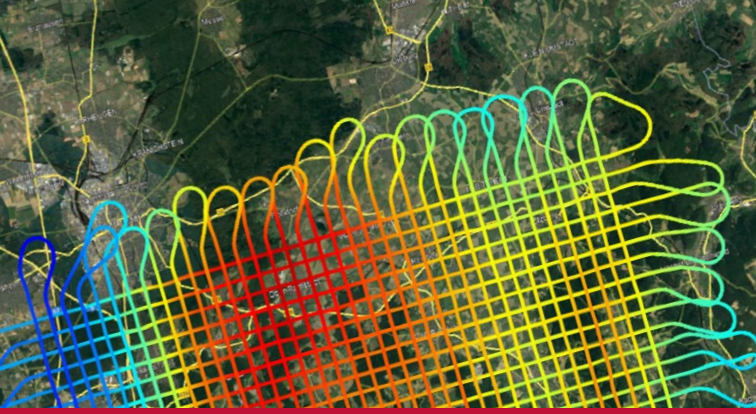
iPosCAL-GRAV

INS/GNSS Post-Processing & Calculation Software for Field Operators and Experts

iPosCAL-GRAV Features

iPosCAL-GRAV is designed for airborne or shipborne gravimetry data processing, showing its full potential **in combination with** iMAR's **iCORUS** strapdown gravimeters. On top of the basic **iPosCAL-Suite** features for **IMS/GNSS-based surveying**, like the precise determination of position, velocity and attitude over time, it offers additional functionalities:
The automated determination of survey line endings, an automated generation of cross-over statistics as well as basic cross-over network adjustment methods, the generation of gravity map images and many more.

- Determination of Gravity
- Easy to use by wizard guided setup configuration and processing
- Expert settings for experienced users
- Ultra fast processing at high accuracy - 5 sec processing per 1h measurement data
- Automated batch-processing capability
- Output: CSV, KML, NetCDF and more



Technical Data

Input Data & Formats	Value
Inertial Data	• iXCOM PostProcLog (directly generated by iCORUS and any other INS/GNSS system with iMAR`s iNAT architecture) • ASCII / .csv
Gravimetry	• iXCOM GravLog (iCORUS family) • optional terrestrial gravity tie value at port/airport to obtain absolute gravity estimates
GNSS Data	• binary files from GNSS eng. of type MOSAIC (Septentrio™) or OEM77xx (NovAtel™), generated by iCORUS • RINEX 3.x (raw GNSS observations) • Waypoint™ GravNav™ ASCII files
Output Data (excerpt)	**Remark**
Position	• latitude / longitude / ellipsoidal height & time
Velocity	• North-East-Down or body fixed • Front-Starboard-Down
Attitude	• roll / pitch / heading • 3x3 rotation matrix or quaternion
Gravity	• Gravity, Gravity Disturbances (Gravity Gradiometry)
Quick Look Data	• even available without accessible RTK correction in the field
Output File Formats	
ASCII / .csv	• customizable format
Binary	• iXCOM format and Matlab™ format *)
kml	• GoogleEarth™ format
NetCDF data	• for integration with GMT

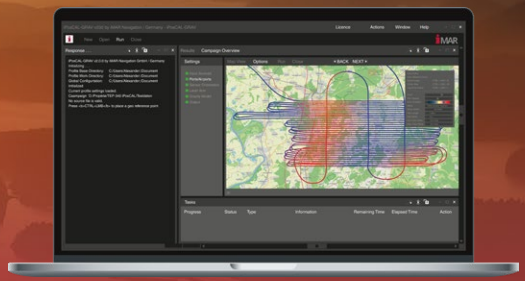
*) *scripts for Matlab™ / Python and C++ SDK available*

accuracy < 1 mGal •
20 g turbulence resistance •
wide temperature range •
light-weight, low power •
plug'n'play solution •
no scheduled maintenance •

• powerful post-processing
• gradiometry processing
• ultra fast processing
• suitable for laptop and server
• open data interface
• interface to iCORUS family

iCORUS-02

iPosCAL-GRAV



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