

WAYPOINT

PRODUCTS GROUP



Inertial Explorer

Features

Error models for popular IMUs

User defined IMU error models available

Rauch-Tung-Striebel smoother for forward, reverse and combined processing

Configurable data export at user defined intervals or specific event times

Benefits

Single interface for GNSS and IMU processing

Improvement on real time GNSS/INS accuracy

Improved quality control for an optimal solution

Inertial Explorer is a powerful post-processing software applied to GNSS, IMU and wheel sensor data to improve accuracy and integrity compared to real time solutions.

Improved Accuracy

Inertial Explorer post-processing delivers more accurate and reliable solutions compared to real time solutions for several reasons. First, the base of the solution is the Forward and Reverse processing of GNSS data to optimize the recorded trajectory and provide superior aiding to combine with IMU processing. Secondly, the Rauch-Tung-Striebel smoother reduces Inertial error growth during GNSS data gaps by a significant amount. Finally, Inertial Explorer permits the user to adjust settings for multiple solutions on the same data set for optimal accuracy.

Independent GNSS and IMU Processing

Inertial Explorer has a user configurable data converter to import many popular IMU data formats. SPAN Technology data is automatically converted with GPS data extraction. Moreover, Inertial Explorer supports 28 GPS data formats for compatibility with most GPS manufacturers.

Quality Control

Forward and Reverse data processing provides two solutions with position, velocity, and attitude values. Comparison of these solutions provides a simple yet effective Quality Control tool for visual inspection of solution accuracy. For advanced users, the Forward and Reverse trajectory feature may be employed to create new IMU models or refine existing models. Inertial Explorer produces 13 specific IMU plots to evaluate the solution integrity.



Precise thinking

Inertial Explorer

Inertial Explorer Interface

- GNSS and IMU processing under one common interface
- Simultaneous forward and reverse processing for both GNSS and IMU data
- Numerous GNSS and IMU specific quality control plots
- Shows GNSS and IMU data coverage and gaps
- Interpolates to external event times
- Flexible export tool permits reproduction of most ASCII formats
- Outputs specialized variables such as IMU rates and accelerations
- Position and velocity can be translated to another location on vehicle or craft
- Attitude can be corrected for orientation difference between IMU and another sensor
- Outputs w-p-k angles for photogrammetry
- Solves for camera-IMU orientation difference given w-p-k angles from an external source^{1,2}
- Saves processing settings and results synopsis on every run to process history

Upgrade/Support

Any versions available within one year from purchasing will be made available at no charge. Technical support by phone, fax and email is also free for one year after date of purchase.

IMU Processing

- Robust IMU processing kernel
- Forward and Reverse Processing
- Coarse, fine and kinematic alignments
- Pre-loaded with error models for most IMU types
- Users can also create their own error models
- Supports IMU only processing
- Extensive control over GNSS update measurements
- GNSS-IMU lever arms can be entered or solved for
- Supports zero velocity updates
- Supports coordinate updates¹
- Utilizes DMI/odometer measurements¹
- Includes built-in RTS back-smoother
- Permits utilization of external trajectories if in proper format
- Support for non-standard orientation installation
- Loosely coupled

GNSS Processing

- Supports up to 8 base stations using proprietary MB processing
- Reliable centimeter level kinematic ambiguity resolution (KAR)
- Long range dual frequency ionospheric processing
- Processed in forward and reverse direction which can be automatically combined
- Supports GPS+GLONASS
- Support for an extensive number of datums and map projections. Users can also easily add their own if not included
- User's settings and results snap shots are saved every time program is run
- Full geoid support for the US, Canada, Japan, Australia, Mexico, France, UK, Ireland and the world with EGM-96. Other geoids can easily be imported

Additional Features

Utilities

- IMU and DMI raw data conversion
- IGS, CORS, IGN, GSI, AusLig, CDDIS, OLG and ASI GPS data services can be downloaded and resampled from the internet
- Raw GNSS data can be resampled, concatenated and spliced
- Raw data can be converted to RINEX
- Local datums and coordinate systems can be solved for

Supported IMU Formats³

- Honeywell HG1700
- iMAR FMS/FSAS/RQH
- Inertial Science DMARS/ISIS
- Litton LN-200
- Motion Pack
- NovAtel SPAN (all IMUs)
- Tamagawa

Supported GPS Formats

- Conexant Jupiter
- CSI DGPS Max
- Javad GRIL/OEM
- Leica MX/SR/System 500/System 1200/MC1000
- Magellan CAR/MOB
- NAVCOM OEM
- NovAtel OEM2/OEM3/OEM4/OEMV/CMC
- RINEX 2.0/2.1
- Septentrio SBF
- Sirf Star II
- Thales RT/B-File/DSNP
- Trimble DAT/RT/TSIP/TIPY
- U-Blox Antaris

¹ Version 7.61 only.

² Requires separate Photogrammetric adjustment package to determine camera exterior orientation angles.

³ Please contact the Waypoint Products Group if support for another IMU type is desired.



Precise thinking



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