iXCOM-CMD

Wizard Supported Application Software / HMI

for all iNAT / iSULONA / iPRENA / iCOMBANA / iATTHEMO / iTraceRT-MVT Systems

iXCOM-CMD is a command, visualization, data storage and system configuration HMI software (Human-Machine-Interface), which is provided for operation of

The iXCOM-CMD software supports all functionnalities to operate any navigation system of classes iNAT, iSULONA, iCOMBANA, iPRENA, iTraceRT-MVT,

all systems of iMAR's iNAT family. It is available for MS WINDOWS™ as well as for LINUX and MacOS.

- iXCOM-CMD HMI features for system **configuration:**
  - screen layout selection / adaptation
  - log data selection
  - data interface configuration (data rate, I/F selection)
  - aiding sensor configuration (GNSS, odometer, magneto-meter, barometer / air data sensor)
  - alignment mode selection
  - ZUPT and motion detector parameterization
- iXCOM-CMD HMI features for **visualization:**
  - log data selection; many output formats and units available (true heading / grid north, km / nm / m / ft, km/h / knots, rad / deg / mil, WGS84/ETRS89/UTM/MGRS/UTMREF etc.)
  - real-time signal charts & numerical values of measure-ment results; integrated online map trajectory visualization (land, rail, sea, air)
  - **playback / replay capability** (post-mission) incl. simulator output feature (provides data on Ethernet in real-time on user's PC as it would be generated by a real iNAT device.
  - integrated data file converter for output in binary iXCOM format (e.g. to WayPoint / NovAtel post-proc software InertialExplorer™, csv format, GoogleEarth™, customized)
- iXCOM-CMD HMI features for system **operation:**
  - data transmission & storage activation
  - commanding alignment (if no auto mode is active)
  - magnetometer calibration (if any)
  - ZUPT activation (if manually desired)
  - data storage in INS and local computer, integrated FTP based file download.
- iXCOM-CMD available for **MS Windows, LINUX, MacOS**

iATTHEMO. The systems can be initially configured (INS setup as well as GUI layout) to adapt them to the desired application and to allow the user a most simple operation. Several setups for land, sea, air applications are available for selection (incl. subsets e.g. for automotive, railway, cruise ship, speed boat, helicopter, business jet or fighter) and can be adapted by the user on demand. The user can also define which data shall be sent via which interface on the iNAT hardware (Ethernet, UART RS422/RS232, ARINC429, CAN, HDLC, USB, Dig-I/Os) and which protocol (iXCOM, NMEA183, ARINC429, ARINC825, CAN, customized) shall be used at which data rate.

The iXCOM-CMD HMI also supports the saving of established configurations on the INS hardware and to download configurations from the INS as backup.

The iXCOM-CMD supports the real-time visualization of the acquired measurement data and data fusion results via time charts, X/Y plots on on a moving map, which can loaded / updated via Internet in real-time or which can be stored on the local computer upfront of the mission if no Internet is available during the mission. Waypoints can be defined to support specific guidance applications. Also extended palyback features incl. emulator output mode are available.

An integrated Binary File Converter allows the gene-ration of output files in several data formats (binary and text).

iNAT systems can be directly commanded and supervised by the user's application via the iXCOM protocol. To implement the interface by the user, iMAR provides a software development Kit (SDK) as well as a Python Client as an example implementation, e.g. to command the alignment, magnetometer calibration, ZUPTs or data storage. More than that the iXCOM-CMD HMI can be used to command and/or to configure the iNAT systems as well.

As the iNAT systems can be additionally used as an autonomous data recorder (they can contain up to 128 GByte memory for data storage), the iXCOM-CMD also

All data incl. all status indicators are available also in this mode and this allows a very user-friendly quick-view into collected data also without the need of additional signal visualization tools. For detailed data
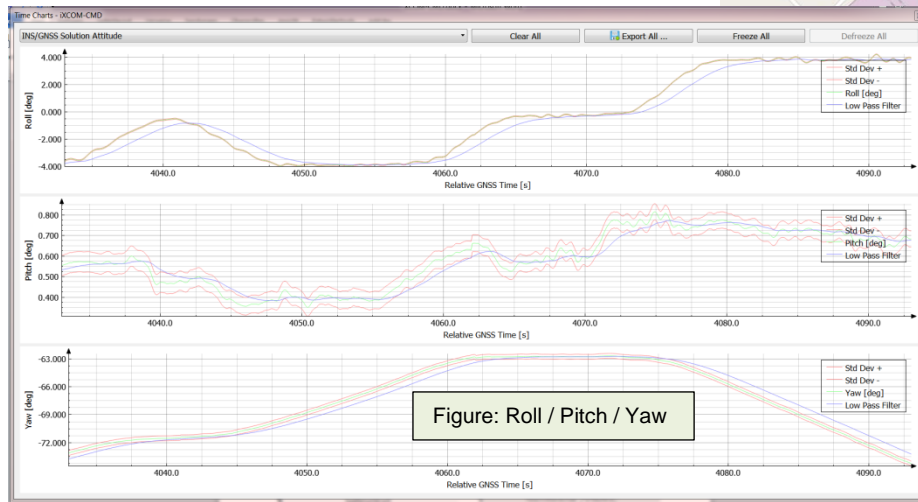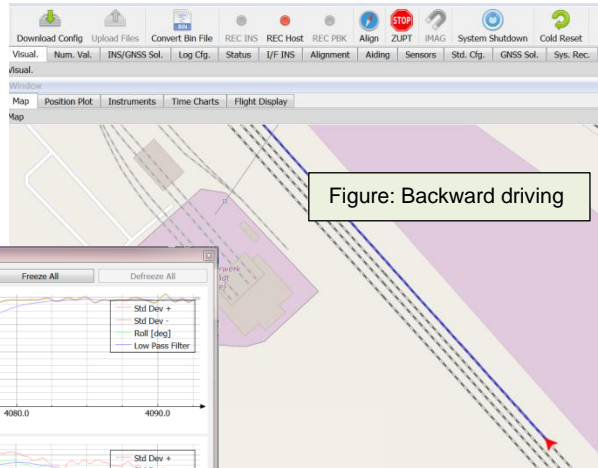

Figure: Backward driving

Figure: Roll / Pitch / Yaw

analysis iMAR can provide a MatLab™ import data script on demand.

iXCOM-CMD provides the feature to operate multiple vehicles from the same control station and to display several vehicles within the same map. This feature is called Multi-Vehicle Tracking (MVT) and is used e.g. on automotive proving grounds or on aerobatic flight testing.

contains an FTP based client to download those stored data fro the INS during or after the mission.

The iXCOM-CMD also supports a "Playback" mode – this means that the data being acquired in real-time can be displayed later again inside the same iXCOM-CMD software, where the speed of the playback as well as graphical output options can be altered during the playback on demand, e.g. to zoom into special interesting details. Additionally an output of these data via Ethernet (emulation feature) for integration support purposes is available.

iXCOM-CMD supports **barrier-free operation**, e.g. by the capability to magnify tool-tip visualization user-dependent. A mode for color blind persons is included too.

The Part Number of the iXCOM-CMD software is as follows: P/N 00028-00016-0000