imajbox®

www.imajing.eu

Portable Mobile Mapping System

Accurate
Proprietary algorithms to process sensors raw data for an accurate spatial positioning

Simple
Independant, standalone and autocalibrated

Productive
High speed survey for large scale data collection

Connected
Controlled by Wi-Fi & Connectors for external sensors integration

imajbox® is an all-in-one portable mobile mapping system sized to perform high speed data collection for transportation infrastructures asset management - railways, roadways, waterways and utilities.

Compact, standalone and ready-to-use, imajbox® can be installed on any vehicle - car, truck, locomotive cab, tramways, bike, boat - without disturbing the driver, and is controlled via Wi-Fi.

OVERVIEW

Applications

imajbox® is designed to provide infrastructures managers with geo-localized images of their network for

- GIS and mapping
- Infrastructures assessment and studies
- Linear referencing system management
- Work construction planning and budgeting

Adapted to large network, imajbox® can cover from few kilometers to hundreds of thousands and is adapted to small projects as well as nationwide projects. imajbox® gives the means to survey up-to-date data as needed.

imajbox® data can be processed and used in **imajview software suite** for GIS data production.

Description

imajbox® can be mounted and oriented to any direction.

Neither cabling nor calibration is necessary, imajbox has a 4h30 internal battery to ensure a full autonomy during the survey and can be also connected to external power supply.

imajbox® exists in 4 versions, answering different requirements levels according to user needs :

imajbox C, imajbox L, imajbox S and imajbox T.

imajbox® is composed of an aluminum housing, protected optics, and is adapted to outdoor or indoor mounting thanks to three articulated succion pads.

Technologies

imajbox® merges data from a set of sensors to ensure accurate and continuous positioning – a factory calibrated inertial measurement unit (IMU), a GNSS receiver, a barometric sensor – and operates a patented self-calibration algorithm using the image flow.

The positioning is ensured even in case of

- Complete loss of GNSS signals – e.g. tunnels, dense vegetation – imajbox® keeps geo-positioning thanks to the propagation of the last known position (dead reckoning).
- Complex environment – e.g. urban canyons – imajbox® is able to detect GNSS signal multi-path and to reject reflected satellites signals involved in positioning errors.

imajbox® can integrate an additional ground speed sensor to increase measurements integrity and reliability in tunnels and dense environment.

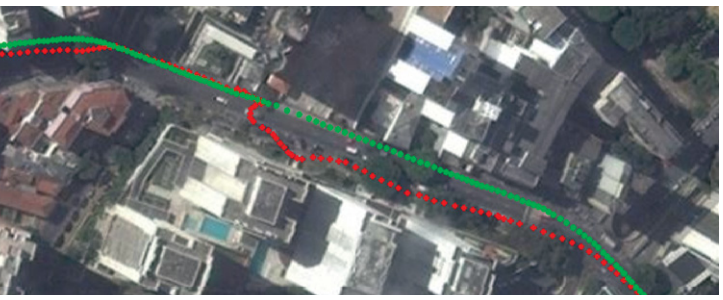
All these sources are tightly hybridized through a forward extended Kalman filter. The navigation solution is then smoothed by a backward filter.

TECHNICAL SPECIFICATIONS

GNSS receiver

imajbox® integrates a GPS+GLONASS L1 receiver to offer navigation modes for all surveying conditions:

- GPS / GPS+GLONASS standalone (2,50m CEP*)
- GPS with SBAS① corrections (1,50m CEP**)
- GPS+GLONASS with dGNSS corrections (0,50m DRMS***)



Multi-path mitigation in urban canyon: GNSS alone – red path ; imajbox® – green path

Deed depth of field and high quality images

Wi-Fi connection

imajbox® connectors

imajbox® can integrate additional receivers to work in more modes :

- GPS/GLONASS/L-band + RTK
- GPS/GLONASS/L-band + TERRASTAR②

imajing IMU

DX2 is the second generation of imajing mems IMU.

It combines accuracy, repeatability and robustness.

Its factory calibration enables a compensated temperature drift from -40°C to +70°C, a controlled drift and a regular auto-recalibration. It is combined with inhouse image flow tracking technology.

DX3 is an improved version of DX2 IMU with filtering model adapted to the specific dynamic of trains and boats.

Image processing

imajbox® has a 80° high quality optic with factory calibrated lens to remove optical distortion in photogrammetry.

imajbox® Optimaj image processing automatically renders...

- Natural colors
- Deep depth of field
- Sharp and detailed images

...in all daily conditions of light and speed.

Wi-Fi remote control

imajbox® is a Wi-Fi hotspot which can be launched from any connected device – smartphone, tablet, computer – to control images and GNSS signals in real time.

Data storage

imajbox® stores data on SSD or HDD via USB connector.

External sensors

imajbox® has serial links to integrate optional external sensors:

- Distance Measurement Instruments
  For measuring vehicle's speed
- External GNSS receiver
  For RTK or PPP (TERRASTAR corrections)

① – SBAS : Satellite based augmentation system – includes WAAS (USA), EGNOS (EUROPE), MSAS (JAPON), GAGAN (INDIA). Can be done in post-processing for EGNOS via EMS (EGNOS MESSAGE SERVER).

② – TERRASTAR requires a yearly subscription.

*Absolute planimetric accuracy values CEP in open sky conditions in standalone mode
**Absolute planimetric accuracy values CEP in open sky conditions with SBAS corrections
***Absolute planimetric accuracy values DRMS in open sky conditions with differential post-processing (dGNSS)

IMAJBOX RANGE DETAILED TECHNICAL SPECIFICATIONS

		imajbox C	imajbox L	imajbox S	imajbox T
Optic	5 mm lens	✓	✓	✓	✓
Image sensor	5MP CCD Optimaj 14 bits processing	✓	✓	✓	✓
IMU	DX2	✓	✓	✓	
	DX3				✓
GNSS positioning	GPS	✓	✓	✓	✓
	GPS + SBAS		✓	✓	✓
	GPS + GLONASS		✓	✓	✓
	dGNSS			✓	✓
Planimetric absolute accuracy	2,50m CEP*	✓	✓	✓	✓
	1,50m CEP**		✓	✓	✓
	0,50m DRMS***			✓	✓
Antenna	Patch antenna	✓	✓	✓	✓
	High-end plate antenna			✓	✓
Maximum speed survey	130 km/h - 80 mph	✓	✓	✓	
	180 km/h - 110 mph				✓
Survey type	Car, truck, bike	✓	✓	✓	✓
	Train, tramways, boat				✓
Technical details	Aluminum enclosure	✓	✓	✓	✓
	121x106x85 mm	✓	✓	✓	✓
	1500g	✓	✓	✓	✓
	4h30 battery life	✓	✓	✓	✓
	9W	✓	✓	✓	✓
	9 to 24V	✓	✓	✓	✓

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**Absolute planimetric accuracy values CEP in open sky conditions with SBAS corrections
***Absolute planimetric accuracy values DRMS in open sky conditions with differential post-processing (dGNSS)