

## 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 via any connected device & Connectors for external sensors integration

**imajbox®** is an all-in-one portable mobile mapping system designed to perform high speed data collection for linear infrastructure asset management.

Compact, standalone and ready-to-use, **imajbox®** can be installed on any vehicle – car, truck, bike, train or boat – and controlled via Wi-Fi.



## OVERVIEW

### Applications

**imajbox®** is designed to provide organizations with linear infrastructures corridor images – roadways, railways, waterways, utilities – for

- GIS and mapping
- Infrastructures assessment and studies
- Work control and monitoring

Adapted to large network, **imajbox®** can cover from few kilometers to hundreds of thousands. Doing so, **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 easily mounted either inside or outside any vehicle, and oriented in any direction. Neither cabling nor calibration is necessary, imajbox has an internal battery to ensure a full autonomy during the survey and can be also connected to external power supply.

**imajbox®** exists in 4 versions, available in function of the user needs :  
imajbox C, imajbox L, imajbox S and imajbox T.

For each version, imajbox has 2 options

- Compact option – plastic enclosure, external optics, 1h30 internal battery, indoor mounting
- Ruggedized option – aluminum housing, protected optics, 4h30 internal battery, outdoor mounting

### 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.

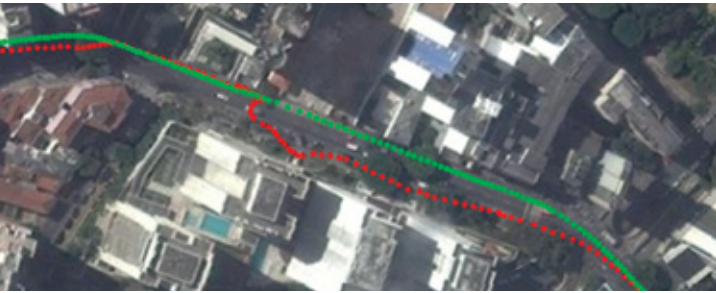
**imajbox®** can integrate an additional ground speed sensor to increase measurements integrity and reliability in tunnels and dense environment.

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

## GNSS receiver

imajbox® integrates a GPS L1 or GPS+GLONASS L1 receiver to work in different modes :

- GPS standalone : imajbox C, L, S, T
- GPS + GLONASS : imajbox L, S, T
- GPS + SBAS<sup>①</sup>(or EMS) : imajbox L, S, T
- dGPS (single or double difference) : imajbox S, T – uses a differential correction source in RINEX format



Multi-path mitigations in urban canyon, GNSS alone – red path ; GNSS + IMU – green path



Deed depth of field and high quality images



Wi-Fi connection



imajbox® connectors

imajbox® can offer an additional receiver to work in more modes :

- GPS/GLONASS/L-band + RTK : 1cm + 1ppm of the distance to the ground reference station
- GPS/GLONASS/L-band + TERRASTAR<sup>②</sup> : 10cm absolute planimetric accuracy, worldwide (satellite correction system)

## 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, boats and helicopters.

## Imagery processing

imajbox® has a 82° high quality optic with factory calibrate lens to remove optical distortion in photogrammetry.

imajbox® Optimaj image processing automatically renders...

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

...in almost all 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.

imajbox® can be delivered with Imajtrack\* software, simplifying surveying planning by controlling on a map roads which are being surveyed.

## Additional sensors and data storage

imajbox® has serial links to record additional external sources, such as a doppler radar\* for ground speed measurement or an external receiver\*.

imajbox® has trigger-in and out connectors to synchronize images acquisition with other imajbox or sensors. This acquisition can be then optimized by storing data with Multiview\* mini-PC.

imajbox® stores data directly on USB, SSD or HDD pendrive.

\*for more information about options, please contact us.

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.

## IMAJBOX RANGE DETAILED TECHNICAL SPECIFICATIONS

|                                |                                       | imajbox C | imajbox L | imajbox S | imajbox T |
|--------------------------------|---------------------------------------|-----------|-----------|-----------|-----------|
| Optic                          | 5 mm lens                             | ✓         | ✓         | ✓         | ✓         |
| Image sensor                   | 5MP CCD<br>Optimaj 14 bits processing | ✓         | ✓         | ✓         | ✓         |
| IMU                            | DX2                                   | ✓         | ✓         | ✓         |           |
|                                | DX3                                   |           |           |           | ✓         |
| GNSS positioning               | GPS                                   | ✓         | ✓         | ✓         | ✓         |
|                                | GPS + SBAS                            |           | ✓         | ✓         | ✓         |
|                                | GPS + GLONASS                         |           | ✓         | ✓         | ✓         |
|                                | dGPS                                  |           |           | ✓         | ✓         |
| 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, boat                           |           |           |           | ✓         |
| Enclosure option               | Plastic                               | ✓         | ✓         | ✓         | ✓         |
|                                | Aluminum                              | ✓         | ✓         | ✓         | ✓         |

\* Conditions : open sky

|                   | Plastic enclosure | Aluminum enclosure |
|-------------------|-------------------|--------------------|
| Size              | 111x88x59 mm      | 121x106x85 mm      |
| Weight            | 600g              | 1500g              |
| Battery life      | 1h30              | 4h30               |
| Power consumption | 9W                | 9W                 |
| Power tension     | 9 to 24V          | 9 to 24V           |

