NEW!

ADMA-Slim

Miniaturized GNSS/Inertial System

messtec+sensor masters award 2018 winner

If size and weight matters

Range of applications

- Motion Tracking for applications with size and weight restrictions, e.g.:
  - Vulnerable road users (VRU) e.g. pedestrians, bikers
  - Over-runnable platforms (e.g. VRUs and GSTs)
  - Motorbikes
  - Sports cars, Jet-Skis, Snow mobiles
  - ATVs (All Terrain Vehicles)
- Vehicle dynamics testing with MEMS performance
- ADAS testing with MEMS performance

About ADMA-Slim

ADMA-Slim is a fullfledged GNSS/Inertial System based on MEMS gyroscopes and accelerometers and a high performance geodetic GNSS receiver. Performance-wise it is comparable to our ADMA-G-EntryLevel or ADMA-Speed models. The ADMA-Slim has been designed for applications with space or weight restrictions, e.g. to be integrated in over-runnable platforms for GSTs (Guided Soft Targets) or VRU (Vulnerable Road User) dummies. The miniaturised GNSS/inertial system is compatible with all established overunnable platforms and therefore also with the GST from ABD, the UFO from Humanetics or the 4activeFB from 4a.

Ordering Variants

ADMA-Slim is available in three different versions:

- Standard version with 7 LEMO connectors in a waterproof aluminium housing
- Single connector version with MIL connector in a waterproof aluminium housing
- OEM version: housing optional

ADMA-Slim is available either with an L1 GNSS receiver with SBAS and DGNSS correction data reception capability or with an L1/L2 GNSS receiver with RTK2 correction data reception capability, allowing for position accuracy down to the centimeter.

Options

In addition, the following options are available for ADMA-Slim:

- **OPT-GLONASS / -BEIDOU / -GALILEO**
  Improvement of satellite visibility due to GLONASS-, BeiDou or GALILEO reception capability
- **OPT-10g**
  Accelerometers ± 10g
  Measuring range ± 5g
- **OPT-15g**
  Accelerometers ± 15g
  Measuring range ± 5g
- **OPT-DUAL-ANT:**
  2 antenna version for course angle without initialization (e.g. low speed applications)
- **OPT-1KHZ**:
  1 kHz data output rate via Ethernet, as opposed to standard 400 Hz
- **OPT-DELTA** *
- **OPT-BRAKING** *
- **OPT-DGPS** *
- **OPT-LATDEV** *
- **OPT-GPS-RAW** *

* Refer to page 6 and 7 for more details

Scope of Delivery

- ADMA-Slim module
- GPS / GLONASS / Galileo / BeiDou patch antenna *
- Power cable *
- GNSS antenna cable *
- CAN cable *
- Ethernet cable *
- GNSS receiver configuration cable *
- Documentation, including test protocol and calibration report
- Software package for configuration and data recording *
- Transport case *

* not included in OEM version package


Standard Version


OEM Version


Single Connector Version

Technical Data

COMPLETE SYSTEM	
Angle Measurement range heading / roll / pitch	± 180 / 60 / 60 °
Angle Measurement accuracy roll & pitch / heading / sideslip*	0.02 (1 σ) / 0.05 (1 σ) / 0.15 ° RMS
Angle resolution	0.005 °
Velocity accuracy*	0.04 km/h RMS
Lateral velocity*	0.2 % RMS
GNSS outage position error*	after 10 / 30 / 60 sec: 0.4 / 5.0 / 40.0 m RMS
GNSS outage velocity error*	after 10 / 30 / 60 sec: 0.06 / 0.5 / 1.8 m/sec RMS
GNSS outage pitch / roll angle error*	after 10 / 30 / 60 sec: 0.05 / 0.15 / 0.35 ° RMS
GNSS outage heading angle error*	after 10 / 30 / 60 sec: 0.1 / 0.3 / 0.5 ° RMS
Axis misalignment	± 0.05 °
Initial heading alignment	with internal GNSS receiver or by manual input
Data update rate / calculation latency	50 – 400 HZ (1000 Hz optional) / 1ms
INTERFACES	
Ethernet	1 x Gbit, for data output, configuration and firmware update, driving robot data output, optional for relative data calculation (e.g. range) and DGPS routing, input/output
CAN	1 x CAN 2b, 1 Mbit, for data output
COM	1 x RS232
Signal inputs	up to 4 x TTL, isolated (e.g. for light barrier or brake trigger)
Signal outputs	up to 4 x TTL, isolated (e.g. for synchronization and error indication)
DGNSS correction data input	1 for NTRIP-/ RF Modem
Connector type for digital signals and power	7 x LEMO-connector (standard version)
	1 x MIL-connector (single connector version)
GNSS antenna input	1 x SMA (2 x SMA optional)
MISCELLANEOUS	
Power supply	12 VDC nominal (9-32 VDC), 14 Watt typ.
Dimensions (W x L x H)	130 x 177 x 47 mm (housed version)
	125 x 100 x 30 mm (unhoused OEM version)
Weight	1.50 kg (housed version)
	0,3 / 0,645 kg without/with mounting frame
Protection class	IP 67 (housed version)
Temperature range	-20 to +60 °C (housed version)

* typical values according to internal test standards with settled Kalman filter, without use of RTK

Technical Data

GYROS	
Quantity / Type	3 MEMS gyros
Measurement range	± 450 °/s
Resolution roll / pitch / yaw	3 x 10^{-7} °/s
Bias variation over temperature range typically	± 0.0025 °/s / °C (1 σ)
In-run-bias typically	6 °/h (1 σ)
Gyro noise typically	0.3 °/√h
Scale factor	± 1 %
Sensor bandwidth	330 Hz
ACCELEROMETERS	
Quantity / Type	3 MEMS accelerometers
Measurement range	± 5 g, optional ± 10 g, optional 18 g
Measurement accuracy (without Kalman filter corrections)	better than 5 mg
In-run-bias typically	32 µg (1 σ)
Scale factor	± 0.5 %
Digitized measurement resolution	12.2 ng
Sensor bandwidth	330 Hz
GPS-Receiver	
Position accuracy	0.01 / 0.2 / 0.4 / 0.6 / 1.2 / 1.5 m (depending on license model and DGPS corrections)
Data update rate	up to 50 msec (internally interpolated from 20 to 2.5 msec, optionally 1 msec)
WAAS/EGNOS-DGNSS corrections	via satellite
DGNSS corrections	via NTRIP-/ RF Modem or Ethernet (optional)
RTK2-DGNSS	via NTRIP-/ RF Modem or Ethernet (optional)
Satellite tracking	GNSS single antenna (standard)
GLONASS / Galileo / BeiDou / L-Band	optional
Dual antenna version	optional

Auxiliary Accessories

- Signal-In cable (for brake/light barrier trigger)
- Signal-Out cable (for synchronization and error signals)
- NTRIP-DGPS-Box 4 with accessories for RTK network connection
- RF modem set with accessories for DGNSS correction data reception from local GPS Base Station
- WiFi Kit for remote access
- Mounting kit with 4 high power magnets

▲ All options of ADMA (refer to page 6-7) are also available for ADMA-Slim

ADMA-options – extending capabilities

With ADMA3 product family we are proud to have established new functions, driven by the customer's requirements.

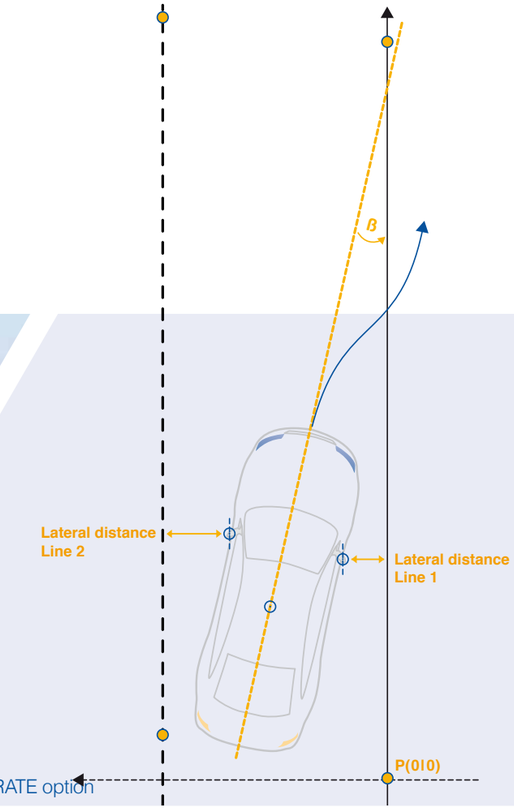
The goal is to improve the usability and to increase the productivity.

We have created firmware options, called ADMA Add-Ons. The options are activated by upload of a license code to the ADMA.

The license upload can be done at any instant giving the highest degree of flexibility.

DELTA option

LATDEV option



ACCELERATE option

Overview

▲ DELTA option

Relative data calculation (e.g., distance) via WiFi in real-time for multi-vehicle operation

The "DELTA" option enables the direct output of relative data between two vehicles, for example distance, velocity and angle. Other than a WiFi connection between the two ADMAs, no additional hardware is required. Data is provided in real time with minimum latency. This option is widely used for ADAS tests, especially AEB, FCW and ACC. Our customers rely on the ADMA option both when establishing a precise distance reference and for distance control of steering robots.

DELTA option is available for all ADMA models.

▲ BRAKING option

Real-time calculation of brake performance data according to international regulations

The "Braking" option is the sophisticated solution for brake performance measurement. Enabling brake pedal triggered as well as velocity threshold triggered measurement, all relevant parameters, including mean deceleration, brake distance and trigger speed are provided. Both full brake and fading test are supported.

BRAKING option is available for all ADMA models.
For ADMA-Speed it is included, even in the basic version.

BRAKING option Ethernet Logger software

The **GeneSys Ethernet Logger software** includes acoustic driver guidance features and is provided free of charge. Running on a Laptop or Tablet PC, it allows for real time monitoring of measured parameters. All braking results can be stored both as a result chart and a full data stream.

NEW!

▲ DGPS option

Correction data via Ethernet

The "DGPS" option provides the capability to receive DGNSS correction data forwarded from several ADMAs via WiFi. This is the preferred option for multi-vehicle applications, e.g., LSS, ACC, AEB and FCW testing.
This option is used in place of radio modems, increasing the availability of DGNSS correction data, especially on public roads.

DGPS option is available for all ADMA models.

▲ GPS-RAW option

Output of GPS raw data via Ethernet interface

The "GPS-RAW" option provides raw GNSS data via Ethernet connection. GNSS raw data is required to improve GNSS accuracy in post processing, for instance with our ADMA-PP post processing engine. We provide Ethernet logger software free of charge which can be used to record the data.

GPS-RAW option is available for all ADMA models.

▲ LATDEV option

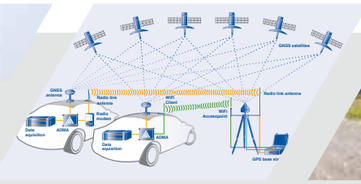
Real-time calculation of lateral deviation.

The Addon LATDEV is used to test and validate lane departure warning systems (LDW/LSS systems).
It calculates the distance to two predefined straight lines, a fixed object, angle to the straight lines, the lateral speed and acceleration in real time, related to three user defined POIs (Point of Interests).

LATDEV option is available for all ADMA models.

Brake test

DGPS correction on public roads



GNSS RAW data logging for precise positioning

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