

## ADMA-Micro

*Our smallest GNSS-aided inertial navigation system with maximum performance level.*

The **ADMA-Micro** is our smallest GNSS-aided inertial measurement unit (IMU). It measures the 3D position in real-time within an accuracy of 0.01 m ( $1\sigma$ )<sup>\*2</sup>. Based on accelerations and rotation rates, which are also measured, velocities, position angles and heading can be determined. The use of MEMS gyros and accelerometers makes it possible to create a highly accurate, compact and lightweight device. Different structural shape allows choosing the right design for a variety of applications, including vehicles and VRUs (Vulnerable Road Users), construction machines, UGVs (Unmanned Ground Vehicles) and robotics.



**ADMA-Micro OEM**



**ADMA-Micro Lemo**

Thanks to almost 30 years of GeneSys experience in inertial navigation systems, the ADMA-Micro is a fully-fledged GNSS-aided INS system combined with an advanced Kalman filter. High flexibility and an embedded webinterface provide quick and individual workflows. A wide range of free software solutions, such as the Data Reader Library for decoding the ADMA-net data stream or the ROS driver, allow an easy toolchain integration.

**0.01 m**

Position accuracy ( $1\sigma$ )<sup>\*2</sup>

**0.06 km/h**

Velocity accuracy (RMS)<sup>\*3</sup>

**< 1 ms**

Data latency

**100 Hz / 200 Hz**

Data output rate

## KEY FEATURES

- Our smallest GNSS/INS system
- Advanced Kalman filter for sensor fusion
- Centimeter-level positional accuracy RTK
- Real-time 3D position, velocity and attitude measurement up to 200Hz
- Data latency <1 msec
- Dual antenna support for highly accurate heading in static and low dynamic conditions
- Multi GNSS capability for a high position reliability
- Fully compatible with existing ADMA systems
- Embedded webinterface for easy configuration

## APPLICATIONS

The ADMA-Micro achieves highly accurate measurements of position, velocity, angles, rotation rates or accelerations of a moving object. The system is small, rugged and low powered, making it ideal for a range of applications including:

- Autonomous vehicle (AV) operation
- ADAS Evaluation e.g., ACC, FCW, AEB (VRU, Car2Car), LSS (LDW, LKA)
- Simultaneous Localization And Mapping (SLAM)
- Validation of predictive vehicle safety functions with e.g., Camera, Radar, Lidar sensors
- Vulnerable Road Users (VRU) Tracking
- Comprehensive vehicle safety functions with connected sensor systems and V2X

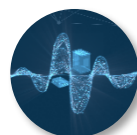
## ADMA ADD-ONS AND OPTIONS

**Meet new measurement and testing requirements with Add-Ons and Options.**

The new generation of ADMA 3.5 devices now allows our customers to meet their new and changing needs. Our focus is on straight-forward use and increased productivity. The Add-Ons and Options can be activated quickly and conveniently by entering a license key. This is possible at any time without modifications to the hardware. A high degree of flexibility is thus ensured.



**Add-On Smoothing**  
Define maximum step size for the GNSS signal



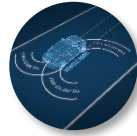
**Add-On FILTER**  
Option for online signal filtering



**Add-On PTP**  
Time synchronization with generalized Precision Time Protocol (gPTP)



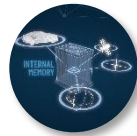
**Option Dual-Ant**  
Two GNSS antenna option



**Option Vehicle Model**  
2D vehicle model predicts vehicle behavior, supports IMU & adapts to conditions

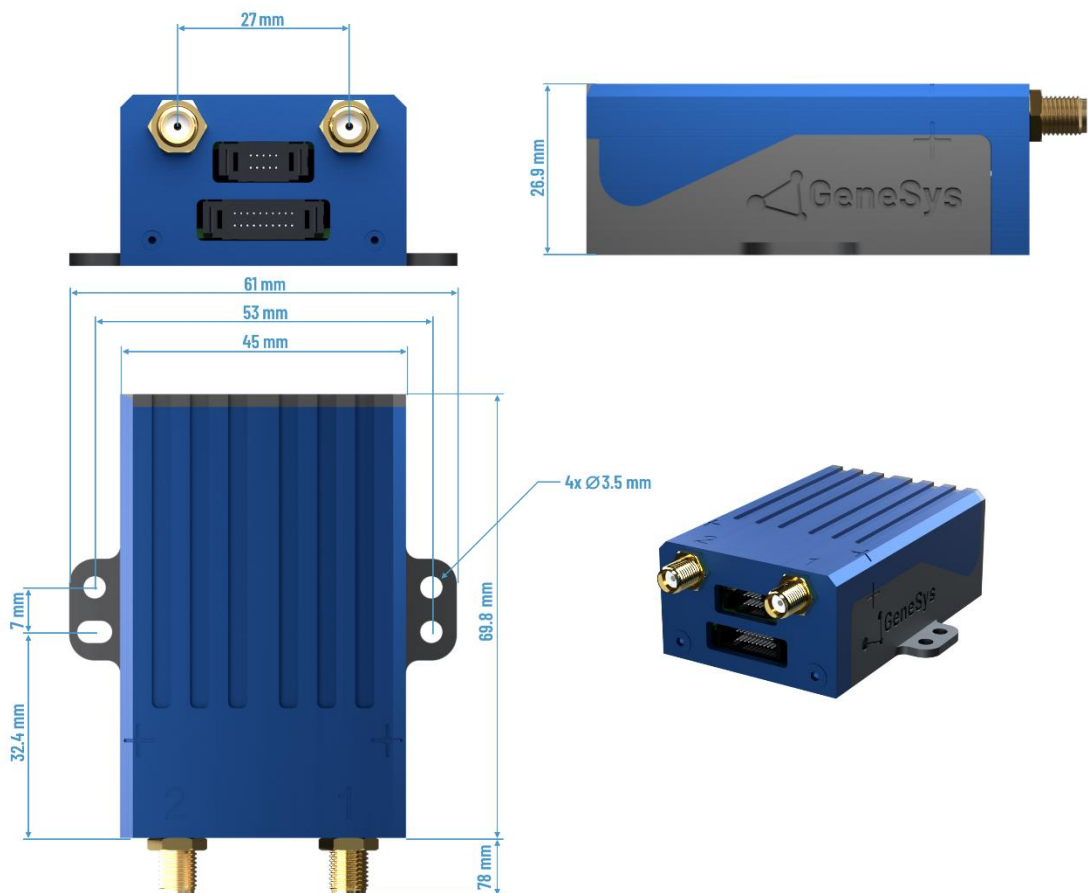


**Option DGNSS Correction Data**  
Correction data reception via Ethernet



**Option Internal Memory**  
Storing ADMA measurement data in internal memory

## DIMENSIONS – MIRO-OEM



## DIMENSIONS - MIRO-LEMO



## TECHNICAL DATA

<b>Complete system</b>	
GNSS constellations	GPS L1, L2 GLONASS L1, L2 BeiDou B1, B2 Galileo E1, E5
Dual antenna	Optional
Position accuracy ( $1\sigma$ ) <sup>2</sup>	0.01 / 0.20 / 0.60 / 1.20 / 1.50 m
Angle measurement range roll / pitch / yaw	60 ° / 60 ° / $\pm 180$ °
Velocity accuracy (RMS) <sup>3</sup>	0.06 km/h RMS
Data update rate	100 Hz / 200 Hz
Calculation latency	1 msec

<b>Sensors - Gyros</b>	
Sensor Technology	3 MEMS gyros
Measurement range <sup>4</sup>	$\pm 450$ °/sec
Data output resolution	0.0001 °/s
Bias repeatability typ. ( $1\sigma$ )	0.14 °/sec y-axis and z-axis 1.4 °/sec x-axis
In-run-bias typ.	2.7 °/h x-axis 2.2 °/h y-axis 1.6 °/h z-axis
Noise (random walk) typ.	0.15 °/ $\sqrt{h}$ x-axis and y-axis 0.2 °/ $\sqrt{h}$ z-axis
Sensor bandwidth	480 Hz x-axis and y-axis 590 Hz z-axis

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**Sensors - Accelerometers**

Sensor Technology	3 MEMS accelerometers
Measurement range	± 15 g
Data output resolution	0.0001 g
Bias repeatability typ.	15 mg
In-run-bias typically (1 $\sigma$ )	12.75 $\mu$ g x-axis and y-axis 13.66 $\mu$ g z-axis
Noise (random walk) typ.	90 $\mu$ g / $\sqrt$ Hz x-axis and y-axis 75 $\mu$ g / $\sqrt$ Hz z-axis
Sensor bandwidth	750 Hz

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**Interfaces**

Ethernet	1x 1 Gbit Data input/output, configuration and firmware update, driving robot data output, optional for relative data calculation and DGNSS routing.
CAN	1x CAN 2b, 1 Mbit Data output, input*1
Serial	1x RS232 GNSS Receiver / DGNSS correction data input, IPS (Indoor Positioning System)
Digital/Analog Input	2x Digital / Analog (16 bit) e.g. Frequency, Brake trigger, ...
Digital Output	2x Signal Out e.g. PPS, Frequency, PPD Pulse per distance, ...
Connector type	Samtec; Lemo
GNSS	2x SMA GNSS Antenna connectors

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**Hardware / Miscellaneous**


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	OEM-Version	Lemo-Version
Dimension (W x L x H)	78.0 x 61.0 x 26.9 mm	93.0x 71.5 x 32.5 mm
Internal Memory	up to 64 GB	
Weight	0.116 kg	0,229 kg
Power supply	5 VDC typ. 7.5 W	9 to 32 VDC typ. 7.5 W
Operating temperature	-20 °C to +75 °C	
Protection class	IP 20	IP 67

\*1 Optional

\*2 Depending on GNSS conditions, correction data and license model

\*3 Typical values according to internal test standards with settled Kalman filter.

\*4 Calibration range 0 °/sec to 200 °/sec

**For any further questions:** [support@genesys-offenburg.de](mailto:support@genesys-offenburg.de)