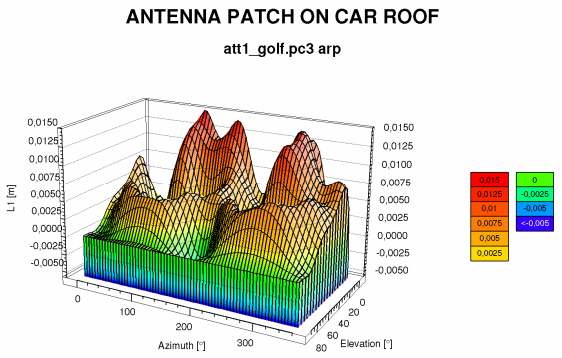
GESELLSCHAFT FUER INERTIALE MESS-,
AUTOMATISIERUNGS- UND REGELSYSTEME MBH
WWW.IMAR-NAVIGATION.DE

iSMARTpos-3D

3D GPS based True Heading and Positioning System

GPS can be used in many applications as a position or attitude reference system in industrial applications. Standard GPS receiver today provide 15 m position accuracy but other output data like true heading or position accuracy on

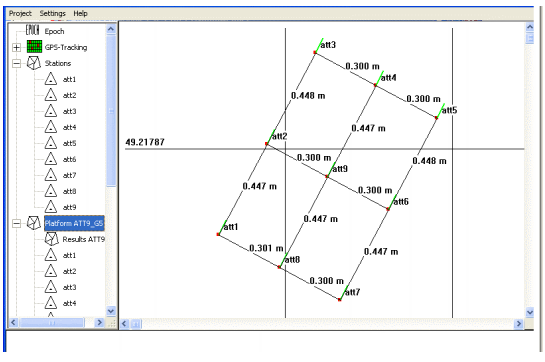
the centimeter or millimeter level are not available or those systems were very expensive in the past.



Now, due to development and implementation of advanced real-time algorithms on raw data basis, iMAR provides the most accurate solution of providing true heading in real-time with an accuracy of < 0.1 degree / meter for a eight-antenna-system (i.e. if the baseline of the outer antennas is 1 m, the performance is 0.1[1] deg in true heading). Due to the advanced ionoshere error modellation which is possible with a multi antenna system, the global position error is bounded to approx. 1.5 m or less (without reference station!). Together with a DGPS reference station the position accuracy is in the centimeter to millimeter range (depends on L1 or L1/L2 receiver and calibrated multi antennas).

iSMARTpos-3D deliveres 10 Hz data (option 100 Hz). It can be combined with INS to obtain data with higher bandwidth and even there where the sky is temporarily covered.. It can be used e.g. for the following applications:

Agriculture	• Automatic Steering • Relative Positioning • Absolute Positioning
Automotive testing	• Brake testing • Driver assistance • Suspension testing • Tyre testing • True Heading Support for Inertial Meas. Syst. • Side Slip Measuring
Construction aereas	• Vehicle tracking • Collision avoidance
Drones, UAVs, UCAVs	• Attitude / heading support • Positioning aiding
Robots, AGVs	• Track control • Automatic driving • Driving robots • Mine sweeping
Structural monitoring	• Buildings • Ships • Large structure dynamics analysis
Telematics	• Antenna orientation • Antenna steering



[1] the results assume an uncovered open view to the sky (satellites). GPS outages lead to data and performance loss

GESELLSCHAFT FUER INERTIALE MESS-,
AUTOMATISIERUNGS- UND REGELSYSTEME MBH
WWW.IMAR-NAVIGATION.DE

Technical Data of iSMARTpos-3D:

Data Output:	True Heading, Roll, Pitch, Velocity, Position, Track over Ground, Side Slip Angle [1]
True Heading:	< 0.1 deg @ 0.6 x 0.9 m² antenna array
Side Slip Angle:	0.1 deg @ 10 m/s
Attitude Accuracy:	< 0.25 deg @ 0.6 x 0.9 m² antenna array[2]
Position Accuracy:	+/- 1.5 m absolute (condition: S/A off, PDOP < 4, at least 5 satellites) +/- 0.1 m short time accuracy +/- 2 cm + 10 ppm (with RTK ref. station)
Velocity Accuracy:	< 0.1 m/s < 0.05 m/s in combination with iNAV-FMS
Update Rate:	10 Hz (GPS only; option: 100 Hz) 400 Hz together with inertial measuring system iNAV-FMS and 200 Hz with iVRU-FC
Output (options):	RS232, Ethernet, PPS
Synchronization:	Output for pulse-per-second [PPS]
Power:	10...18 V DC (or 18...34 V or tbd)
Temperature:	-20...+50 °C (operating) -40...+85 °C (not operating)
Rel. Humidity:	IP41 (other on request)
MTBF:	> 30,000 hrs (estimated)
Shock:	25 g, 11 ms ; 60 g, 5 ms
Size:	approx. 150 x 135 x 165 mm
Weight:	approx. 3,600 grams

Versions Available:

iSMARTpos-3D-AHRS-9A	AHRS sensor with 9 mounted antennas
iSMARTpos-3D-REF-9A	Ref. station with 9 antennas
iREF-RTK	Standard reference station

iMAR has extended longtime experience in the manufacturing and development of inertial navigation, guidance, surveying and stabilisation systems for all application areas including GNSS systems. All systems manufactured by iMAR are maintained at iMAR in Europe / Germany.

Please do not hesitate to contact us for further information or for a demonstration.

iMAR GmbH • Im Reihersbruch 3 • D-66386 St. Ingbert / Germany
Phone: +49-(0)-6894-9657-0 • Fax: +49-(0)-6894-9657-22
www.imar-navigation.de • sales@imar-navigation.de

[1] the results assume an uncovered open view to the sky (satellites). GPS outages lead to data and performance loss
[2] the accuracy increases with a larger antenna array: 2 x 2 m² leads to 0.05 deg true heading and 0.1 deg roll/pitch