

More than inertial+GNSS positioning



# xNAV

Miniature GNSS/INS for weight restricted applications

The xNAV family of inertial navigation systems from OXTS combine GNSS technology with high performance miniature inertial sensors to deliver a complete navigation solution in a lightweight package.

## >> Key features

- Low weight – from just 365 g including rugged anodised aluminium enclosure
- Dual GNSS receivers – stable heading performance in all conditions
- Survey grade GNSS – L1 only DGPS or L1/L2 RTK position
- Tactical grade IMU – 0.05° roll/pitch accuracy
- No export control – ship and operate worldwide with zero hassle
- gx/ix™ technology – tight coupling and inertial relock maintain performance in harsh GNSS environments
- Excellent value – unbeatable price/performance with antennas and software included free
- Powerful post-processing and analysis tools – free NAVsuite software gives you complete control over your data
- Model variants to fit your budget – choose options and extras to suit your application or simply upgrade later

## >> Applications

- Aerial photogrammetry
- Urban terrain mapping
- Disaster site monitoring
- LIDAR scanning
- Antenna tracking
- Camera stabilisation
- UAV/UAS navigation
- Avionics
- And more...



## >> Experts in GNSS and inertial technology

The xNAV systems use compact MEMS sensors in order to be as economical as possible, both in terms of price and power. But thanks to state-of-the-art calibration techniques and advanced algorithms in the xNAV, we are able to push the technology beyond its limits to deliver exceptional performance in a surprisingly small package. By seamlessly blending the inertial and GNSS data, the xNAV provides smooth, robust outputs even in poor GNSS environments.

## >> One box solution, no hidden extras

Combining dual GNSS receivers, an inertial measurement unit, internal storage and on-board processor all in one compact box, the xNAV delivers everything you need for a complete navigation solution. All necessary cables and antennas are included, as well as our extensive software package—NAVsuite—which features powerful post-processing and graphing software.

## >> Easy integration

Integrating the xNAV into systems like UAVs couldn't be simpler. Mounting brackets are supplied to ensure a rigid installation. Standard NMEA messages, timing sync and trigger outputs as well as event input triggers mean the xNAV can be used with an array of sensors such as LIDAR scanners, cameras, and hyperspectral sensors. OEM board set versions are available for system integrators and we offer attractive discounts on top of our already low prices for bulk purchases.

## >> Worldwide standard

OxTS inertial navigation systems are recognised as a symbol of precision and performance around the globe. And with zero export restrictions, there's nothing stopping you going global either.

## >> xNAV models

Logging only	xNAV200	xNAV250
Real-time	xNAV500	xNAV550

## >> Performance<sup>1</sup>

Positioning	GPS L1 GLONASS <sup>2</sup> L1 SBAS	GPS L1, L2 GLONASS <sup>2</sup> L1, L2 SBAS
Position accuracy (CEP) <sup>3</sup>		
SPS	2.0 m	1.6 m
SBAS	0.6m	0.6m
DGPS	0.5 m	0.4 m
RTK		0.02 m
Velocity accuracy (RMS)	0.1 km/h	0.1 km/h
Roll/pitch accuracy (1 $\sigma$ )	0.05°	0.05°
Heading accuracy (1 $\sigma$ )		
2 m antenna separation	0.15°	0.1°
4 m antenna separation	0.06°	0.05°
Dual antenna	Yes	Yes

## >> Performance during GNSS outage<sup>4</sup>

Outage duration	Position mode	Horizontal position drift (RMS)
10 s	RTK	0.37 m
10 s	PP <sup>5</sup>	0.07 m
30 s	RTK	1.29 m
30 s	PP <sup>5</sup>	0.33 m
60 s	RTK	2.79 m
60 s	PP <sup>5</sup>	0.95 m

## >> Interfaces

Ethernet	10/100 Base-T
Serial	Configurable RS232
Digital I/O	Odometer input (single or quadrature) Event input trigger 1PPS output Camera output trigger <sup>6</sup> IMU sync output <sup>6</sup>

## >> Hardware

Dimensions	132 x 77 x 36 mm (200, 500) 132 x 77 x 41 mm (250, 550)
Mass	0.365 kg (200, 500) 0.425 kg (250, 550)
Input voltage	10–31 V dc
Power consumption	7 W typical (200, 500) 9 W typical (250, 550)
Operating temperature	-40° to 70°C
Specification temperature	-10° to 70°C
Environmental protection	IP65
Output rate	100 Hz 200/250 Hz <sup>2</sup>
Vibration Operating	0.002 g <sup>2</sup> /Hz, 5–500 Hz
Shock survival	>1000 g
Internal storage	4 GB

## >> Sensors

Type	Accelerometers	Gyros
Technology	MEMS	MEMS
Range	5 g	300°/s
Bias stability	0.05 $\mu$ g	3°/hr
Linearity	0.05% $\pm$ 1 g	0.05%
Scale factor	0.05%	0.05%
Random walk	0.05 m/s/ $\sqrt$ hr	0.5°/ $\sqrt$ hr
Axis alignment error	<0.02°	<0.02°

<sup>1</sup> Valid for open sky conditions and in the temperature range of -10° to 60°C.

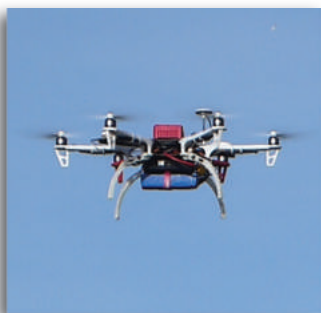
<sup>2</sup> Optional upgrade.

<sup>3</sup> Horizontal position accuracy. Vertical accuracy approx. 1.5x horizontal accuracy.

<sup>4</sup> With odometer corrections and advanced slip configured.

<sup>5</sup> RT Post-process, forwards-backwards combined.

<sup>6</sup> Real-time systems only.



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