

MEMS GNSS/INS SPATIAL DUAL

Spatial Dual is a ruggedised miniature GPS aided inertial navigation system and AHRS that provides accurate position, velocity, acceleration and orientation under the most demanding conditions. It combines temperature calibrated accelerometers, gyroscopes, magnetometers and a pressure sensor with a dual antenna RTK GNSS receiver. These are coupled in a sophisticated fusion algorithm to deliver accurate and reliable navigation and orientation.



PERFORMANCE

- 0.1 ° Roll and Pitch
- 0.1 ° Heading
- 8 mm RTK Positioning
- 3 °/hr MEMS Gyroscope
- 1000 Hz Update Rate
- 2000 g Shock Limit

KEY FEATURES

- Dual Antenna Heading
- Multi-Constellation RTK
- Hot Start Time : 500 ms

APPLICATIONS



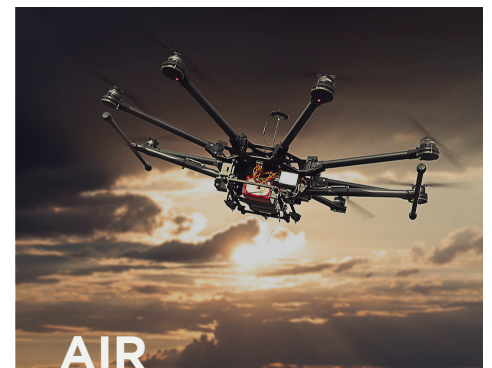
SEA

- Hydrography
- Marine Navigation



LAND

- Ground Vehicle Navigation
- Georeferencing
- Antenna Targeting



AIR

- UAV Navigation
- Georeferencing
- Camera Pointing

SPECIFICATIONS

NAVIGATION

Horizontal Position Accuracy	1.2 m
Vertical Position Accuracy	2.0 m
Horizontal Position Accuracy (with SBAS)	0.5 m
Vertical Position Accuracy (with SBAS)	0.8 m
Horizontal Position Accuracy (with RTK or Kinematic PPK)	0.008 m
Vertical Position Accuracy (with RTK or Kinematic PPK)	0.015 m
Velocity Accuracy	0.007 m/s
Roll & Pitch Accuracy	0.1 °
Heading Accuracy (1m Antenna Separation)	0.1 °
Roll & Pitch Accuracy (Kinematic post processing)	0.03 °
Heading Accuracy (Kinematic post processing)	0.06 °
Slip Accuracy	0.1 °
Heave Accuracy (whichever is greater)	5 % or 0.05 m
Range	Unlimited
Hot Start Time	500 ms
Internal Filter Rate	1000 Hz
Output Data Rate	Up to 1000Hz

HARDWARE

Operating Voltage	9 to 36 V
Input Protection	-40 to 100 V
Power Consumption (typical)	2.64 W
Hot Start Battery Capacity	> 48 hrs
Hot Start Battery Charge Time	30 mins
Hot Start Battery Endurance	> 10 years
Operating Temperature	-40 °C to 85 °C
Environmental Protection	IP67 MIL-STD-810G
MTBF	> 50,000 hrs
Shock Limit	75 g
Dimensions	90 x 127 x 33 mm
Weight	285 grams

SENSORS

SENSOR	ACCELEROMETERS	GYROSCOPES	MAGNETOMETERS	PRESSURE
Range (dynamic)	± 2 g ± 4 g ± 16 g	± 250 °/s ± 500 °/s ± 2000 °/s	± 2 G ± 4 G ± 8 G	10 to 120 KPa
Bias Instability	20 µg	3 °/hr	-	10 Pa
Initial Bias	< 5 mg	< 0.2 °/s	-	< 100 Pa
Initial Scaling Error	< 0.06 %	< 0.04 %	< 0.07 %	-
Scale Factor Stability	< 0.06 %	< 0.05 %	< 0.09 %	-
Non-linearity	< 0.05 %	< 0.05 %	< 0.08 %	-
Cross-axis Alignment Error	< 0.05 °	< 0.05 °	< 0.05 °	-
Noise Density	100 µg/√Hz	0.004 °/s/√Hz	210 µG/√Hz	0.56 Pa/√Hz
Bandwidth	400 Hz	400 Hz	110 Hz	50 Hz

GNSS

Model	Trimble BD982
Supported Navigation Systems	GPS L1, L2, L5 GLONASS L1, L2 GALILEO E1, E5 BeiDou B1, B2
Supported SBAS Systems	WAAS EGNOS MSAS GAGAN QZSS Omnistar HP/XP/G2 Trimble RTX
Update Rate	20 Hz
Hot Start First Fix	3 s
Cold Start First Fix	30 s
Horizontal Position Accuracy	1.2 m
Horizontal Position Accuracy (with SBAS)	0.5 m
Horizontal Position Accuracy (with RTK)	0.008 m
Velocity Accuracy	0.007 m/s
Timing Accuracy	20 ns
Acceleration Limit	11 g

COMMUNICATION

Interface	RS232 or RS422
Speed	4800 to 2M baud
Protocol	AN Packet Protocol or NMEA
Peripheral Interface	2x GPIO and 1x Auxiliary RS232
GPIO Level	5 V or RS232
GPIO Functions	IPPS Odometer Stationary Pitot Tube NMEA input/output Novatel GNSS input Trimble GNSS input AN Packet Protocol input/output Packet Trigger Input Event Input