

CERTUS EVO

MEMS GNSS/INS



Certus Evo is a MEMS GNSS-aided INS that provides accurate position, velocity, acceleration and orientation under the most demanding conditions.

It offers high-performance accuracy combined with the reliability and affordability of MEMS sensors. Certus Evo is available in both OEM and rugged packages.

The X20P variant additionally includes all band GNSS receivers, while the MX5 variant adds internal jamming and spoofing resilient GNSS receivers.



PERFORMANCE

-  0.03 ° Roll and Pitch
-  0.05 ° Heading
-  10 mm RTK Positioning
-  0.2 °/hr MEMS Gyroscope
-  1000 Hz Update Rate

APPLICATIONS



AIR

- UAV Geopointing
- UAV Lidar
- Stabilisation & Pointing



LAND

- Gimbal Stabilisation
- Structural Monitoring
- Vehicle Navigation



OEM AVAILABLE



SEA

- AUV Navigation
- ROV Navigation
- Hydrography

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 Kinematica PPK)	0.01 m
Vertical Position Accuracy (with RTK or Kinematica PPK)	0.015 m
Velocity Accuracy	0.05 m/s
Roll & Pitch Accuracy	0.03 °
Heading Accuracy (1m Antenna Separation)	0.05 °
Roll & Pitch Accuracy (Kinematica post processing)	0.01 °
Heading Accuracy (Kinematica post processing)	0.01 °
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 1000 Hz

HARDWARE

Operating Voltage (Rugged)	9 to 36 V
Operating Voltage (OEM)	9 to 30 V (or 5 V)
Input Protection (Rugged only)	-40 to 100 V
Power Consumption (typical)	2.9 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 (Rugged only)	IP67 MIL-STD-810G
MTBF	140,000 hrs
Shock Limit (IEC 60068-2-27)	150 g, 6 ms
Shock Limit (MIL-STD-810H 516.8)	40 g, 11 ms
Vibration Limit	8 g
Dimensions (Rugged)	78 x 115 x 44 mm
Dimensions (OEM)	75 x 101.5 x 40.2 mm
Weight (Rugged)	300 grams
Weight (OEM)	125 grams

SENSORS

SENSOR	ACCELEROMETERS	GYROSCOPES	MAGNETOMETERS
Range	± 10 g	± 475 °/s	± 8 G
Bias Instability	8 µg	0.2 °/hr	-
Initial Bias	< 0.45 mg	< 3 °/Hr	-
Initial Scaling Error	< 0.03 %	< 0.02 %	< 0.07 %
Scale Factor Stability	< 0.04 %	< 0.03 %	< 0.09 %
Non-linearity	< 0.05 %	< 0.03 %	< 0.08 %
Cross-axis Alignment Error	< 0.05 °	< 0.05 °	< 0.05 %
Noise Density	2 ug/√Hz	6 °/hr/√Hz	210 uG/√Hz
Bandwidth	250 Hz	200 Hz	110 Hz

GNSS

Model*	X20P	MX5
Supported Navigation Systems	GPS L1C/A, L2C, L5 Galileo E1-B/C, E5a, E6 BeiDou B1I, B1C, B2a, B3I QZSS L1 C/A, L2C, L5 NavIC (IRNSS) L5-SPS GLONASS L1, L2	GPS L1C/A, L1PY, L2C, L2P(Y), L5 Galileo E1, E5a, E5b, E5 AltBoc, E6 BeiDou B1I, B1C, B2a, B2I, B2b, B3I QZSS L1C/A, L1 C/B, L2C, L5 NavIC (IRNSS) L5 GLONASS L1CA, L2CA, L2P, L3 CDMA
Supported SBAS Systems	EGNOS, WAAS, GAGAN, MSAS, QZSS	EGNOS, WAAS, GAGAN, MSAS, QZSS, SDCM
Max Update Rate	25 Hz	100 Hz
Signal Re-aquisition First Fix	2 s	1 s
Cold Start First Fix	25 s	< 45 s
Horizontal Position Accuracy	1.2 m	1.2 m
Horizontal Position Accuracy (with SBAS)	0.6 m	0.6 m
Horizontal Position Accuracy (with RTK)	0.006 m + 1 ppm	0.006 m + 0.5 ppm
Velocity Accuracy	0.05 m/s	0.03 m/s
Timing Accuracy	20 ns	< 20 ns
Acceleration Limit	≤ 4 g	-
Reference Inputs	RTCM v3.x	RTCM v2.x, v3.x

*Please check the manual for other variants.

COMMUNICATION

Interface (Rugged)	Ethernet, RS232 / RS422, CAN
Interface (OEM)	Ethernet, UART, CAN
Speed	100Mbit 4800 to 4M baud serial
Protocol	AN Packet Protocol or NMEA 0183
Peripheral Interface	2x GPIO 1x Auxiliary RS232
GPIO Level	5 V or RS232
GPIO Functions	1PPS input / output Odometer Stationary Air data input NMEA input / output Novatel GNSS input Trimble GNSS input AN Packet Protocol CAN / CANopen Event trigger

