AntaRx-S3

Ultra-rugged, multi constellation GNSS smart antenna

septentrio

Construction

Mining

Precision Agriculture

Logistics & Port Operations

Automation

Multi-frequency, multi-constellation GNSS smart antenna, including wired and wireless communications in a rugged, IP69k-rated housing for robust operation in the harshest environments. Keep your GNSS installation simple with this all-in-one solution which combines receiver and antenna in a single enclosure.

KEY FEATURES

- **Full-constellation, triple-frequency satellite tracking**
- **Heading & pitch or heading & roll capability**
- **Centimetre-level RTK positioning**
- **Septentrio GNSS+ algorithms for reliable performance**
- **Integrated cellular modem**

BENEFITS

Consistently accurate positioning and heading

AntaRx-S3 is a state-of-the-art GNSS receiver designed to provide robust and reliable positioning and heading in the most challenging environments. While a single antenna allows a lean configuration, adding an auxiliary GNSS antenna enables heading and pitch or heading and roll measurements without the need for movement.

Centimetre accuracy

Septentrio's knowledge and experience in the GNSS industry ensures that AntaRx-S3 offers you the highest possible accuracy, down to a centimetre. Septentrio LOCK+ technology maintains tracking during heavy vibrations and IONO+ ensures position accuracy even under periods of elevated ionospheric activity. The AntaRx-S3 offers the very latest in special interference mitigation technology which filters out ambient intentional and unintentional RF interference.

Any device, any platform

Use any device with a web browser to operate the AntaRx-S3 without any special configuration software via the Web UI accessible over Ethernet or USB connections.

AntaRx-S3

FEATURES

GNSS technology

544 Hardware channels for simultaneous tracking of most visible signals:

- GPS: L1 C/A, L1C[1], L2C, L2 P(Y), L5
- GLONASS: L1 C/A, L2 C/A, L3, L2P
- BeiDou: B1I, B1C, B2a, B2I, B3I
- Galileo: E1, E5a, E5b, E5 AltBOC
- QZSS: L1 C/A, L1 C/B[1], L1C[1], L2C, L5
- NavIC: L5
- SBAS: EGNOS, WAAS, GAGAN, MSAS, SDCM

Septentrio's patented GNSS+ technologies

- **AIM+** unique mitigation and monitoring system against narrow and wideband interference with spectrum analyser
- **IONO+** advanced scintillation mitigation
- **APME+** a posteriori multipath estimator for code and phase multipath mitigation
- **LOCK+** superior tracking robustness under heavy mechanical shocks or vibrations
- **RAIM+** Receiver Autonomous Integrity Monitoring

RTK (base and rover)
Integrated 4-channel L-band receiver
GNSS heading & pitch or heading & roll
16 GB internal memory

Formats

Septentrio Binary Format (SBF), fully documented with sample parsing tools
RTCM v2x and 3x (MSM included)
CMR 2.0 and CMR+ (CMR+ input only)
NMEA 0183, v3.01, v4.0
NMEA 2000

Connectivity

2 Hi-speed serial ports (RS232/RS422)
Ethernet port (TCP/IP and UDP)
CAN port
High-speed USB
2 Event markers
xPPS output (max. 100 Hz)
Integrated Cellular Modem (EDGE, 2G, 3G, 3.5G, 4G) - optional

PERFORMANCE

Position accuracy [3,4]

	Horizontal	Vertical
Standalone	1.2 m	1.9 m
SBAS	0.6 m	0.8 m
DGNSS	0.4 m	0.7 m

RTK performance [3,4,5,6]

Horizontal accuracy	0.6 cm + 0.5 ppm
Vertical accuracy	1 cm + 1 ppm
Initialisation	7 s

GNSS attitude accuracy [3,4]

Antenna separation	Heading	Pitch/Roll
1 m	0.15°	0.25°
5 m	0.03°	0.05°

Velocity accuracy [3,4]

0.03 m/s

Maximum update rate

Position	100 Hz
Position and attitude	50 Hz
Measurements	100 Hz
Latency [7]	<20 ms

Time accuracy

xPPS out[8]	10 ns
Event accuracy	< 20 ns

Time to first fix

Cold start[9]	< 45 s
Warm start[10]	< 20 s
Re-acquisition	avg. 1 s

Tracking performance (C/N0 threshold)[9]

Tracking	20 dB-Hz
Acquisition	33 dB-Hz

PHYSICAL AND ENVIRONMENTAL

Size	158 x 166 x 83mm
Weight	1.1 kg
Input voltage	9-48 VDC
Power consumption	8 W typical
Operating temperature	-30° C to +70° C
Solar radiation	cycle A1 (MIL-STD-810H)
Storage temperature	-40° C to +75° C
Humidity	up to 100% RH (IEC 60068-2-38)
Ingress Protection	IP69K (ISO 20655)
Shock	50g (ISO 16750-3)
Vibration	6g RMS (ISO 16750-3)

Connectors

Auxiliary antenna	TNC female
Power & I/O	23 pin Souriau UTS type

Certification

RoHS, WEEE, CE, FCC

[1] Hardware ready
[2] Optional feature
[3] Open sky conditions
[4] RMS levels
[5] RTK fixed ambiguities
[6] Baseline < 40 Km
[7] 99.9%
[8] Including software compensation of sawtooth effect
[9] No information available (no almanac, no approximate position)
[10] Ephemeris and approximate position known

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