

AiRx2™

TSO-CERTIFIABLE OEM GNSS AVIATION RECEIVER

AiRx2™ is a unique GNSS+SBAS Beta-3 OEM receiver board developed specifically for precision aviation applications such as ADS-B, LPV approach or RNP-RNAV applications. Built around the special multi-system aviation ASIC AReCo™, AiRx2 is certifiable according to relevant RTCA/FAA MOPS and TSO's. The receiver module is compact and low power, and is perfectly suited for applications where size constraints, weight and minimal power consumption are critical, such as in helicopter cockpits or for UAV applications. AiRx2 also provides code and carrier data for ground reference station applications (GBAS). Moreover, AiRx2 is hardware-ready for in-the-field upgrade to incorporate L5 or Galileo signals.

GPS+SBAS Aviation Receiver Module

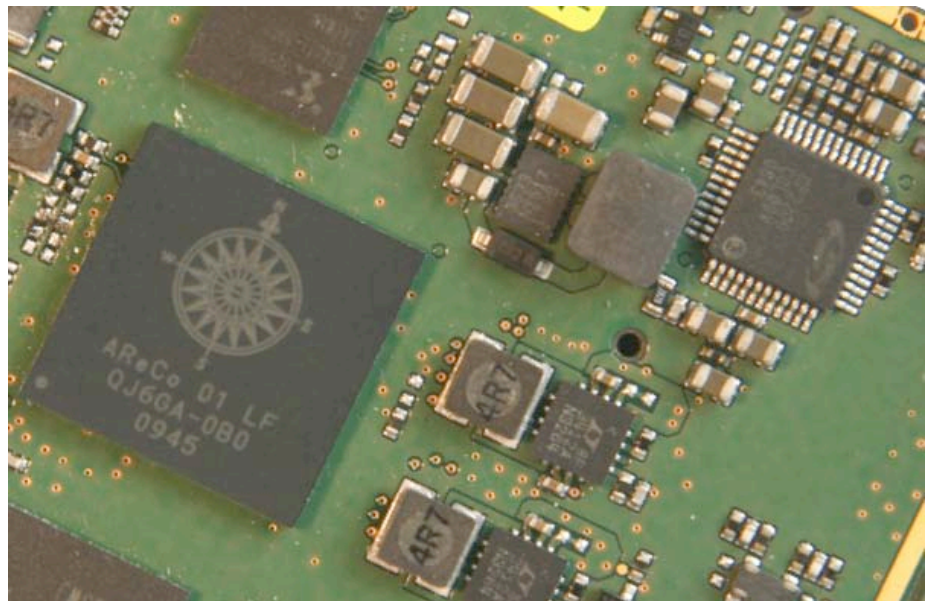
AiRx2 is a certifiable GNSS Receiver Module for incorporation in all Avionics applications. It is built around the custom-ASIC AReCo™, a 64 parallel-channel multi-system ASIC designed according to DO254 Level A (Design Assurance Guidance for Airborne Electronic Hardware), and powered by software designed according to DO178B Level B (Software Considerations in Airborne Systems and Equipment Certification).

Functionally, the hardware and software have been designed to meet all requirements for en-route, approach and terminal operation, according to RTCA DO-229D (MOPS for GPS/WAAS Airborne Equipment), and certifiable against FAA TSO-145 (Airborne Navigation Sensors Using GPS Augmented by WAAS).

AiRx2 provides both stand-alone and differential position data (SBAS-based differential corrections). AiRx2 also provides code and carrier phase data as required for ground reference stations such as used in GBAS deployments.

Easy to Integrate

A unique design with embedded but fully independent Health Processor significantly increases the integrity of



the receiver module without requiring special measures from the integrator.

Full Fault Detection and Exclusion (FDE) and Integrity Monitoring is provided, including Predictive Receiver Autonomous Integrity Monitoring (P-RAIM).

Comprehensive end-to-end Built-In-Test (BIT) is provided.

To facilitate integration in a variety of products, a variety of interface formats is supported.

L5 and Galileo-ready

AiRx2 builds on Septentrio's unique multi-GNSS and Galileo experience. The receiver module is hardware-ready for in-the-field upgrade to dual-frequency (L1/L5) and dual constellation (GPS/Galileo) operation. Thus, AiRx2 provides an easy growth path to avionics of the future, with early availability for in-flight demonstrations and test-beds.



AIRX2 TECHNICAL SPECIFICATIONS

FEATURES

- 16 channels GPS L1 C/A code/carrier
- 4 channels L1 SBAS
- Hardware ready for GPS L5 and Galileo
- Raw data output (code, carrier, navigation data, SBAS)
- Independent embedded health processor
- RAIM and predictive RAIM (PRAIM) - FD and FDE (Fault Detection/Exclusion)
- Continuous and initiated BIT (95% detection)
- Maintenance mode for in-the-field upgrade without removal from host
- 1 Hz Time mark
- Various output formats, incl Septentrio Binary Format (SBF), and NMEA (optional)
- Variety of discrete signals incl. health status, DO-229 compliancy and various diagnostics

CONFORMITY

RTCA DO160E
 DO178B, level B
 DO254, level A
 DO229D
 FAA TSO 145 BETA3

PERFORMANCE

Position accuracy	
Autonomous	5 m (95%)
SBAS	3 m (95%)
Velocity Accuracy	
Standalone	0.05m/s (95%)
Timing Accuracy	
	< 50 ns (95%)
Maximum Update rate	
	20 Hz
Latency	
	< 50 msec
Time to first fix	
Cold start	<75 sec (95%)
Signal interruption < 10s	< 3 sec
Signal interruption < 60s	< 5 sec
Dynamics	
Speed	< 514 m/s
Altitude	< 18000 m

PHYSICAL AND ENVIRONMENTAL

Size	61 x 100 x 13.5 mm
Weight	< 100 gr
Input voltage	3 - 5.5 VDC
Power consumption	3W Max
Communications	
	4x serial, incl. LVTTTL and 2xRS232/RS422 bidirectional
	19.2 kbps - 115.2 kbps
	AFDX (optional)
	ARINC 429 (optional)
Antenna LNA Power Output	
Output voltage	3 - 13.5 VDC
Maximum current	1000 mA
Antenna	Active, TSO-C190
Input	16 - 40 dB
Dynamics	Per DO229D for all modes
	Special high acceleration mode (10g)
DO160F ¹	
Operating temperature	-40° - +85°C
Storage temperature	-55° - +95°C
Humidity	5% to 95% (non condensing)
Temperature cycle	Cat. B
Shock	20 g
Vibration	Cat. S,U
¹ if properly mounted in enclosure	
MTBF	> 60 000 hrs