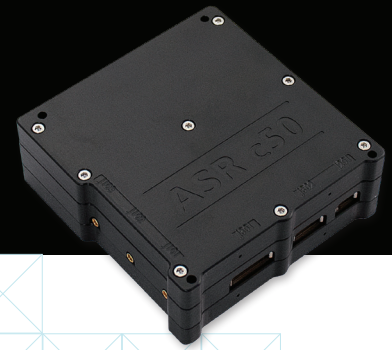
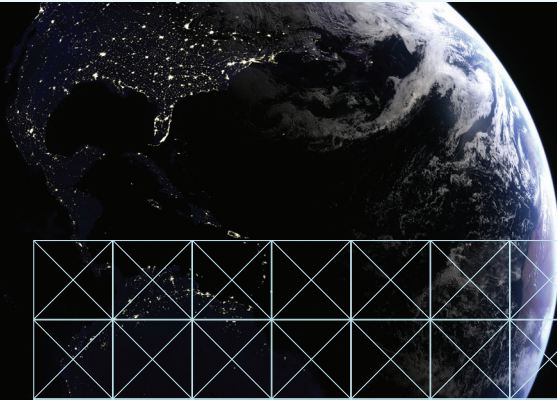


ASR c50



KONGSBERG



CUBELINE AIS SPACE RECEIVER

The CUBELINE AIS space receiver series is an innovative software-defined radio optimized for reception of AIS and ASM signals in LEO orbit. The AIS receiver is specially designed for the CubeSat segment. ASR c50 is ideal for small- and nanosat missions, where KONGSBERG's successful heritage on high quality and leading performance is maintained.

Typical applications

The ASR c50 is part of the KONGSBERG CUBELINE and is specially designed for the NewSpace segment. It is designed to fit a standard CubeSat stacking, but can also be delivered for non-CubeSat missions. The receiver is optimized for new space missions maintaining performance, but designed to fit missions with risk acceptance of 5 year lifetime and less.

Continuous innovations

The ASR c50 is unique by its excellent performance in a CubeSat housing. KONGSBERG has delivered AIS equipment for almost two decades and has more than 60 years of accumulated in-orbit LEO heritage. The CUBELINE AIS space receiver series now embeds all AIS bands available as well as reception of the new Application Specific Message (ASM) protocol. The receiver also supports a separate antenna port that can be adapted for applications in the frequency band 100 to 6000 MHz.

Space grade using latest technologies

ASR c50 is designed for use in LEO. Product assurance methods used for our extended lifetime product series are refined to reduce mission risks. The latest technologies are embedded, providing high level of on-board processing power for using KONGSBERG's renowned AIS and ASM decoding algorithms.

Flexible solutions

ASR c50 is designed to embed the function to do both on-board processing as well as digital sampling for post processing. In addition the receiver has a built-in RF spectrum analyzer. This spectrum analyzer functionality is an excellent tool during test phase of the satellite and commissioning. Noise components from platform or other payloads might be detected at an early stage using the spectrum analyzer functionality.

FEATURES

- CubeSat fit with highest performance in the market
- Low power consumption
- Supports reception of long-range AIS and ASM messages
- In-orbit reconfigurable SDR design with proven heritage
- Rad-tolerant by design
- Dual VHF antenna support
- Supports simultaneous on-board and sampling modes
- Embeds VHF RF spectrum analyzer
- Superior dynamic range



TECHNICAL SPECIFICATIONS

ASR c50

PERFORMANCE

Frequency range	156 to 163 MHz
Sensitivity	-126 dBm @ 20 % PER
Noise figure	3.5 dB (nominal)
Dynamic range	-126 dBm to -40 dBm @ 20% PER
Doppler shift	± 5 kHz

AIS

Eb/NO (non-colliding)	8 dB @ < 0.3 % PER 6 dB @ < 6 % PER 4 dB @ < 70 %
C/I (colliding)	5 dB @ < 10 % 4 dB @ < 50 % 3 dB @ < 85 %

ASM

Eb/NO (non-colliding)	2.5 dB @ < 0.3 % PER 2.3 dB @ < 10 % PER 2.0 dB @ < 70 % PER
Frequency resolution	1 Hz
AIS/ASM channels	Channel 2087, 2088, 75, 76, 2027, 2028
Memory capacity per orbit	100 min. sampling + 100 % OBP duty cycle

ELECTRICAL

Input voltage	5.5 to 13 VDC (default). Wider voltage range upon request.
Power consumption	4 W (nominal) / 5 W (max)
Communication alternatives	RS-422/RS-485 (115.2 - 921.6 kbps) CAN Bus (120 kbps) - OPTION LVDS Bus (10 Mbps) - OPTION
RF	2x 156-163 MHz antennas input 1x 0.1-6 GHz antenna input PPS input
Misc	

Connectors

Antennas Bulkhead MMCX, high-rel Nicomatic CMM.

WEIGHTS AND DIMENSIONS

Weight	340 ± 30 g
Dimensions (HxLxW)	32.7 x 90.2 x 93.9 mm
Dimensions with screws (HxLxW)	36.2 x 90.2 x 93.9 mm

ENVIRONMENTAL SPECIFICATIONS

Operational temperature range	-20°C to +60 °C
Vibration level	// 34.0 g Rms ⊥ 26.1g Rms
Shock level	300g@200Hz (X,Y) 200g@200Hz (z) 1500g@1000Hz (X,Y)1000g@1000Hz(z)

RADIATION¹

Latch-up free parts
Advanced error protection mechanisms
Total dose TID verification of 8.1krad(Si)

¹ Environmental specifications are based on LEO orbit (400 to 750 km)

Specifications subject to change without any further notice.

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