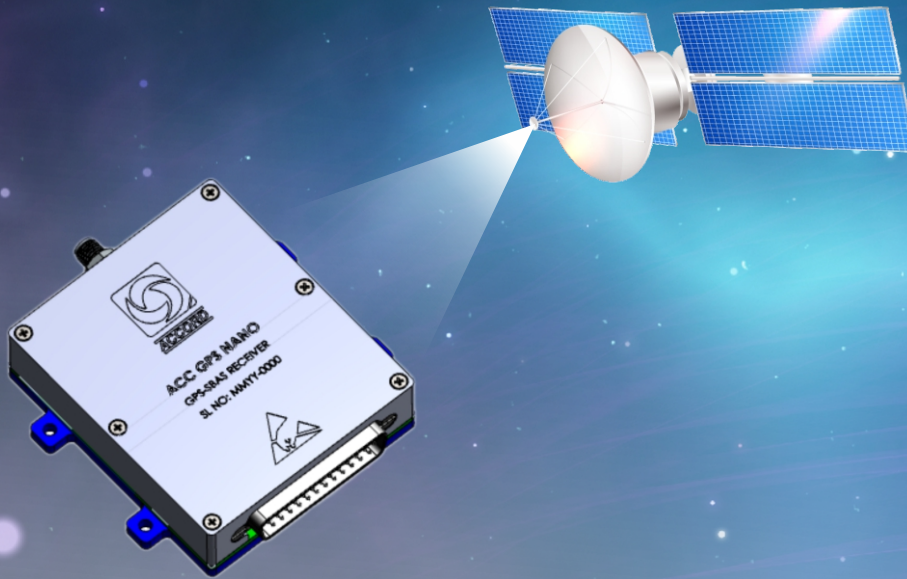# ACC-GPS-NANO-DR

Dual Redundant GPS-SBAS Receiver

Description

The Dual Redundant GPS-SBAS receiver consists of a pair of 32 Channel High Performance GPS-SBAS receivers to provide unmatched performance in the Space. The two GPS-SBAS receivers are completely independent of each other with a common antenna interface and a power divider to split the GPS signals.

Features

◆ Dual-redundant GPS receiver packaged in a metallic enclosure
◆ Each path
   o Supports 16 Acquisition and 16 Tracking channels
   o Provides precise 1PPS pulse output
   o Supports 10 Km/s velocity profile
   o Works out of a single 3.3 V input supply
   o Consumes less than 500 mW
   o Supports on-board LNA for interface with a common patch antenna
   o Supports RS-232 serial interface with custom binary message output
◆ 25-pin D-sub connector to bring out the power and signal interface
◆ Radiation Tolerant COTS

Utility

◆ Accurate Determination of Orbital Position and Time
◆ Position or/and Time Stamping of Payload Data
◆ Designed for satellites that are operating in the LEO Orbits considering the altitude and velocity of the satellite
◆ Redundancy is an added advantage for applications that need continuity of operation over the lifespan of the satellite in space

Specifications

System Specifications

Channels per path	32 Channels (GPS, GAGAN) - 16 acquisition and 16 tracking
Cold Start TTFF (without almanac, time or position)	120 s, open sky
Reacquisition	10 s
Position Accuracy (horizontal)	10m, 1σ
Velocity Accuracy	0.2 m/s, 1σ
Update rate	1 Hz
Dynamics	Velocity: 10000 m/s Acceleration: 2 g
Sensitivity (acquisition)	-136 dBm
Sensitivity (tracking)	-150 dBm
Reference Oscillator stability	0.5 ppm

1PPS

1PPS Jitter	100 ns
1PPS pulse width	5 ms

Host Communication over UART

Configuration	TX, RX
Baud Rate	4800-115200 bps; default:9600 bps
Message Formats	8 data bits, 1 start bit, 1 stop bit

Antenna (Desirable Specifications)

Frequency	GPS L1 band (1575.42 MHz)
Bandwidth	20MHz
Gain	26dB
Noise Figure	<2dB
RF connector	SMA male connector

Input Messages

Proprietary ASCII	Reset, Communication port setting, Message configuration,Version query

Output Messages

NMEA Ver 4.10 (ON by default)	$GPGGA, $GPGLL, $GPGSA, $GPGSV, $GPRMC, $GPVTG, $GPZDA
Proprietary binary (OFF by default)	As defined in the ICD (contains position, speed, date & time,fix type, satellites in view, satellite elevation, satellite azimuth, satellite signal strength, range of satellite to receiver antenna)

Environmental

Operating Temperature	-10^0C to $+50^0$C
Storage temperature	-40^0 C to $+85^0$ C
Vibration	$14g_{RMS}$ (random)
Altitude	2000 Km
Radiation (TID)	20 krad

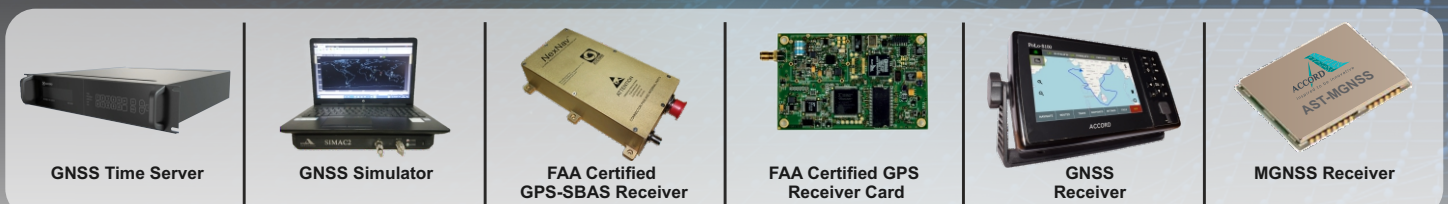## Mechanical

Dimensions (without considering connectors and mounting fins)	65mm x 75mm x 20mm +/- 1mm
Weight	<45 gms
Board-to-Board Interface	25 pin D-sub male connector
RF connector	SMA female connector

Electrical

Power Consumption per Path (@ 3.3 V)	< 0.5 W

*Antenna is not part of the standard accessory
*Specifications other than what is mentioned in this document can be examined for feasibility

Few other products realized by ACCORD

GNSS Time Server | GNSS Simulator | FAA Certified GPS-SBAS Receiver | FAA Certified GPS Receiver Card | GNSS Receiver | MGNSS Receiver