Multi Constellation Rugged GNSS Receiver

Rigel-A110

Advantages

- Flexible receiver architecture
- Easy installation
- Customizable as per user requirements
- Flexible communication ports
- Rugged design
- Optional display interface
- Extended online technical support
- Rugged multiband GNSS antenna
- High performance positioning globally

Technology

Accord's Rigel-A110 is an indigenously designed and developed multi constellation rugged Global Navigation Satellite System (GNSS) receiver capable of taking all current & future GNSS signals including GPS, GLONASS, GALILEO, BEIDOU, NavIC, QZSS and SBAS. Rigel-A110 accompanies with a rugged All-In-View GNSS antenna capable of receiving signals in L1, L2, L5 and S bands. It is software upgradable to track upcoming signals as they become available and to provide customer performance required for user application. In addition, Rigel-A110 when integrated with stable clocks can function as GNSS desciplined clock source.

Environmental

Rigel-A110 is designed for rugged/medium dynamic applications without compromising on its ergonomics. Rigel-A110 comes with a 3.12" Graphic OLED module to indicate PVT information and Antenna health with other important information. Rigel-A110 carries proven hardware/software architecture to withstand rigorous environmental requirements.

Communication Connectivity

Rigel-A110 offers communication connectivity to the outside world through dedicated Ethernet, RS232/RS422 and high speed serial interfaces. The Ethernet interface supports NTP/PTP for network synchronization.

Rigel-A110 can accept real time RTCM corrections through dedicated RS-232 port to further improve the positioning accuracy. Rigel-A110 comes with a Windows™ based Graphical User Interface (GUI) for real time monitoring and control of the sensor

Customization and Support

Specifications listed in this data sheet correspond to the receiver's standard configuration only. For any customization of the sensor please contact Accord Software and Systems Pvt. Ltd.

ACCORD

Technical Specifications*

Features

- Multi-constellation, multi-frequency GNSS receiver
- Dual Frequency corrections provides real-time ionospheric corrections for further accuracy enhancements
- Includes Multipath Mitigation
- Anti-Jam & Anti-Spoof capability
- Receiver Autonomous Integrity Monitoring (RAIM)
- Carrier phase measurements output
- Support RTCM corrections
- Supports DGNSS input version 2.3
- Can act as DGNSS Base Station to provide corrections version 2.3
- Designed for static and dynamic platforms
- TEC related measures with S4 index, time series of signals phase and amplitude @ 50 Hz / 100 Hz
- External 10 MHz Oscillator input to meet unique timing applications
- Includes Ultra low noise OCXO (Optional)
- External 1-PPS reference input for precise time transfer
- High measurement data throughput
- Support for RINEX output
- NMEA 0183 format version 4.10
- Flexible and rugged communication ports
- Accord's proprietary compact binary data output
- TCP/IP or UDP connectivity
- Support's NTP/PTP (Optional)
- Standard on board logging
- Windows™ based Graphical User Interface (GUI)
- Firmware upgradable for feature enhancements

Performance

Signals Tracked

Constellation	Signals
GPS	L1, L2C, L5
GLONASS	L1, L2
GALILEO	E1, E5A/B
BEIDOU(Compass)	B1, B2
NavIC	L5, S
QZSS	L1, L2, L5
SBAS	L1

Measurement Precision[*1]

Code Phase[*2]	25 cm or better for C/No > 44 dB-Hz
Carrier Phase	1 mm or better for C/No > 44 dB-Hz

Position Performance[*3]

Stand alone	3 m (RMS)
Velocity accuracy	0.02 m/s[*4]

Sensitivity[*5]

Acquisition	-140 dBm
Tracking	-150 dBm

Signal Dynamics[*6]

Velocity	515 m/s
Acceleration	4 g
Jerk	1 g/s

Time to First Fix (TTFF)

Cold start[*7]	50 s
Hot start[*8]	20-24 s
Reacquisition	< 1 s

Maximum Data Rate[*9]

Measurement data	100 Hz
Positioning data	100 Hz

Time Accuracy

1-PPS output[*10]	25 ns (RMS)

Physical and Electrical

Enclosure

- Rugged aluminum case

Power

Input voltage[*11]	9-36 VDC
Power consumption	15 W (Typical)

Antenna Input Port

Output voltage	+5 VDC
Maximum current	200 mA
Connector	TNC Female
Impedance	50 Ω

Dimension

Rx only	235 x 145 x 40 mm^3

Weight

Rx only	< 2.5 kg
Rx + Display	< 3 kg

Communication Ports[*12]

Ethernet port	10BaseT/100BaseT TCP/IP, UDP NTP/PTP(optional)
RS-232/RS-422	2 ports Up to 1 Mbps
MIL-1553B RT	Bus A and B
1-PPS	Time Input/Output[*13]
10 MHz	Reference Input/Output[*13]
DGNSS Port	RS-232/RS-422(Receive only)
DGNSS Base Station	RS-232 only

Environmental

Vibration	**MIL STD 810-G**
Random	Method 514.6-D (Cat 19)
Sinusoidal	Method 514.6-A
Humidity	**MIL STD 810-G** Method 507.5-I
EMI/EMC	**MIL-STD-461E** CE, CS, RS & RE
CATH	**MIL STD 810-G** Method 520.3-II
Acceleration	**MIL STD 810-G** Method 513.6-II
Shock	**MIL STD 810-G** Method 516.6-I

Environmental

Temperature

Operating	-40°C to +70°C
Storage	-40°C to +85°C

Antenna

Frequency	1176 ± 12 MHz 1227 ± 20 MHz 1246 ± 3 MHz 1575 ± 15 MHz 1602 ± 5 MHz 2492 ± 8.5 MHz
Passive Gain	Peak: > +5 dBic
Gain roll off (from Zenith to horizon)	Better than 10 dB
Polarization	RHCP
Axial Ratio	< 3 dB
VSWR	< 1.5:1
LNA Gain	> 28 dB @ L Band > 20 dB @ S Band
LNA Noise Figure	< 2.0 dB
Impedance	50 Ω
DC Supply	+5 to +15 V
Interface Connector	TNC Female

*Specifications are subject to change without notice. Please contact us for more details.

[*1]Typical values under ideal conditions (no satellite errors, no atmospheric errors, no multipath and no interference)

[*2]Non-smoothed

[*3]Depends on satellite geometry and dynamics

[*4]Under static scenario, nominal signal strength of 42 dB-Hz

[*5]Under moderate dynamic scenarios

[*6]With export clearance, product can support:

- Velocity : 10 Km/s
- Acceleration : 75 g
- Jerk : 25 g/s
- No Altitude Limit

[*7]Under nominal signal strength of 40 dB-Hz with no information available

[*8]Ephemeris and approximate position known

[*9]Data Rate is configurable, Max of 100 Hz for Single Position output on Ethernet port

[*10]Does not include RF and antenna delay

[*11]Optional AC adopters are available

[*12]All interfaces are not available in Standard Product. Contact us for more details

[*13]10 MHz out / 1-PPS out is available at a time & it is configurable

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