BX316 GNSS Kit

High-end Radio (RS05R) Version

Overview

The BX316 is a GNSS RTK board for providing accurate positioning and heading information. It supports multi-constellation (GPS L1/L2, GLONASS L1/L2, and BeiDou B1/B2) signals and can output continuous and reliable RTK position and headings, even in harsh environments.

The BX316 commands and logging are compatible with NovAtel protocols. Ethernet, USB, LVTTL / RS232, CAN, PPS, and event mark are supported. In-built 4GB memory supports data collection. The BX316 offers real-time, cost-efficient and cm-level positioning as well as flexible interfaces for a variety of applications, such as precision navigation, precision agriculture, surveying, and UAVs.

In the Box

- 2x BX316 RTK receivers
- 3x GNSS antennas with cables
- 2x RS05R radio station modems
- 2x RS05R radio station antennas
- 2x RS05R radio station cable assemblies
- 2x TTL-RS232 converters
- 2x UART TTL-USB converters
- 2x 40-pin external cables
- 2x Power cables

Key Features

Supports RTK positioning mode or RTK positioning + heading mode. The two modes are software configurable

Supports 384 channels

Command compatible with NovAtel protocol

Supports 20Hz RTK solution updates and raw data outputs

Supports in-built 4GB memory, which makes data collection easy

Supports PPS output and event mark input

Serial ports with LVTTL or RS232

External antenna input through SMA connectors

Data output: NMEA-0183 and Tersus binary format

Correction: RTCM 2.x/3.x/CMR/CMR+

Easy to integrate with Pixhawk and other autopilots

Supports large range of input power conditions

The RS05R High-end Radio

The Tersus radio station RS05R is a rover radio solution for wireless applications. It provides reliable data communications for mission-critical applications where a combination of stability, superior performance and long communication range are required.

The RS05R is a lightweight, ruggedized UHF receiver designed for digital radio communications between 410 MHz and 470 MHz in either 12.5 kHz or 25 kHz channels, which can be widely used in GNSS/RTK surveying and precise positioning systems. The RS05R is equipped with a LED display and a keypad, which can be used for checking the operating status, changing the operating channel, and transmitter power level.

Technical Specifications

Performance

Signal Tracking for Primary Antenna:	
GPS L1/L2, GLONASS L1/L2, BeiDou B1/B2	
Signal Tracking for Secondary Antenna:	
GPS L1+GLONASS L2 or GPS L1+BeiDou B2	
GNSS Channels:	384
Single Point Positioning Accuracy (RMS):	
– Horizontal:	1.5m
– Vertical:	3.0m
RTK Positioning Accuracy (RMS):	
– Horizontal:	10mm+1ppm
– Vertical:	15mm+1ppm
Observation Accuracy (zenith direction):	
– C/A Code:	10cm
– P Code:	10cm
– Carrier Phase:	1mm
Heading Accuracy:	
– 1m Baseline (RMS):	0.15°
Time To First Fix (TTFF):	
– Cold Start:	<50s
– Warm Start:	<30s
Timing Accuracy (RMS):	20ns
Velocity Accuracy (RMS):	0.03m/s
Initialization (typical):	<10s
Initialization Reliability:	>99.9%
Correction:	RTCM 2.x/3.x/CMR/CMR+
Max. Update Rate:	20Hz
Input Voltage:	5V~12V DC
Power Consumption (typical):	3.5W
Active Antenna Input Impedance:	50Ω
Storage:	In-built 4GB memory

Communication

Serial Ports:	LVTTL x2 or RS232 x2
USB Ports:	USB device x1
CAN Ports:	ISO/DIS 11898 x2*
PPS Ports:	LVTTL x1
Event Mark:	LVTTL x2*
Ethernet:	10/100M BASE-T x1*

* This port's function is related to FW version

Physical

Size:	108x54x12mm
Weight:	50g
Antenna Connector:	SMA female x2
COM Baud Rate:	Up to 921600bps
Operating Temperature:	-40℃ ~ +85℃

Optional Accessories

AX3702 GNSS Antenna
3m GNSS antenna cable with TNC/SMA connectors
Tersus GNSS instrument transport case

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