



# 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 G1/G2, 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, LVTTTL, RS232, CAN, PPS, and event mark are supported. An on-board SD card (up to 32GB) 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

Command compatible with NovAtel protocol

Supports 20Hz RTK solution updates and raw data outputs

Supports IMU raw data output

Supports external 32GB SD card, which makes data collection easy

Supports PPS output and event mark input

Serial ports with LVTTTL 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

Frequencies From Primary Antenna:	
GPS L1/L2, GLONASS G1/G2, BeiDou B1/B2	
Frequencies From Secondary Antenna:	
GPS L1+GLONASS G2 or GPS L1+BeiDou B2	
Standard Positioning Accuracy:	
– Horizontal (RMS):	1.5m
– Vertical (RMS):	3.0m
RTK Positioning Accuracy:	
– Horizontal (RMS):	10mm+1ppm
– Vertical (RMS):	15mm+1ppm
Observation Accuracy:	
– C/A Code (zenith direction):	10cm
– P Code (zenith direction):	10cm
– Carrier Phase (zenith direction):	1mm
Heading Accuracy:	
– 1m Baseline (RMS):	0.1°
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

## 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

Input Voltage:	5V~12V DC
Power Consumption (typical):	3.5W
Active Antenna Input Impedance:	50Ω
Size:	108x54x12mm
Weight:	50g
Antenna Connector:	SMA female x2
COM Baud Rate:	Up to 921600bps
Operating Temperature:	-40°C ~ +85°C

