BX316D GNSS UAV Kit

With 1W/915MHz Radio (Eagle)

Overview

BX316D UAV Kit consists of BX316D UAV Basic and Eagle Radio Option. BX316D GNSS receiver is a dual frequency GNSS receiver, which provides cm-level positioning and heading in real time, and accurate raw observation for static post processing and post processing kinematic (PPK). Its flexible interfaces can be used in a variety of applications, such as precision navigation, precision agriculture, surveying, and UAVs.

Eagle Radio option is used for transmitting and receiving correction data at 915MHz. It has high transmitting power to provide wide communication range. With AX3703 mini GNSS antenna for Rover, the overall light weight is ideal for UAV applications.

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

Pin-to-Pin compatible with NovAtel OEM617D

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 level

External antenna inputs 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

Note: If users want to customize the product portfolio, please contact sales@tersus-gnss.com by email.

Technical Specifications
- BX316D enclosure

Performance

Signal Tracking for Primary Antenna:
GPS L1/L2, GLONASS L1/L2, BeiDou B1/B2

Signal Tracking for Secondary Antenna:
GPS L1+GLONASS L1 or GPS L1+BeiDou B1

GNSS Channels:	384

Single Point Positioning Accuracy (RMS):
– Horizontal:	1.5m
– Vertical:	3.0m

RTK Positioning Accuracy (RMS):
– Horizontal:	10mm+1ppm
– Vertical:	15mm+1ppm

PPK 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:	5~15V DC
Power Consumption (typical):	3W
Active Antenna Input Impedance:	50Ω
Storage:	In-built 4GB memory

Communication

Serial Ports:	LVTTL x2
USB Ports:	USB 2.0 device x1
CAN Ports:	ISO/DIS 11898 x1*
PPS Ports:	LVTTL x1
Event Mark:	LVTTL x1
Antenna Connector:	SMA female x2
COM Baud Rate:	Up to 460800bps

* This port's function is related to firmware version.

Physical

Size:	100.2x57.4x24mm
Weight:	150g
Operating Temperature:	$-40℃ \sim +85℃$

Technical Specifications
- 1W/915MHz Radio (Eagle)

General

Frequency:	915MHz
Operating Mode:	Half-duplex
Operation Voltage:	7V~28V
Power Consumption (typical):	
– Transmitting:	1.2W@DC12V
– Receiving:	< 0.6W@DC12V
Dimension:	100x47x21mm
Weight:	≈80g
Operation Temperature:	-40℃ ~ +85℃
Storage Temperature:	-40℃ ~ +85℃
Antenna Port:	SMA
Antenna Impedance:	50Ω
Serial Port:	TTL

Modem

Air Baud Rate:	20Kbps to 1Mbps
Serial Baud Rate:	1200bps to 115200bps
Modulation Type:	QPSK/BPSK +DSSS

Transmitter

Frequency Stability (at 25℃):	≤±5ppm
RF Output Power:	1200mW
Output Current:	≤1000mA
Modulation Distortion:	≤ 3%
Carrier Frequency Tolerance:	≤ 5*10 -6

Receiver

Sensitivity:	-125dBm@20kbps
	-112dBm@100kbps
Adjacent Channel Selectivity:	≥ 65dB
Distortion:	≤ 5%
Bit Error Rate:	≤ 0.001%

Interface (Pin) Definition

Type:	TTL
Pin 1:	GND
Pin 2:	T/B
Pin 3:	R/A
Pin 4:	CFG
Pin 5:	GND
Pin 6:	7-28V