

JS-BCK43H-3

Multi-Constellation Multi-Frequency RTK Board

Data Sheet

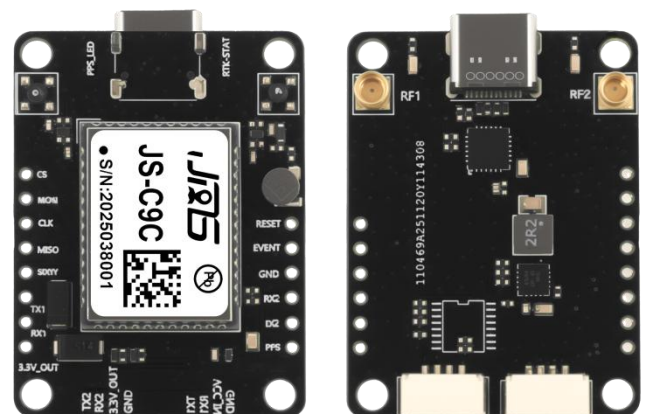


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1. Function Description

1.1 Overview

The JS-BCK43H-3 is a high-precision, multi-frequency, multi-constellation GNSS board . Its inertial navigation system provides powerful positioning assistance even with weak satellite signals . This device employs a dual-antenna mode , utilizing interferometry to improve heading accuracy and reliability. It also supports integrated navigation algorithms, enabling rapid positioning even in complex environments . The JS-BCK43H-3 is suitable for applications such as drones, unmanned aerial vehicles , fully automated robots, precision control scenarios, and precision agriculture. .

1.2 Product Characteristics

- Use high-performance chips
- Built-in inertial navigation and bidirectional antenna input
- Supports multi- frequency on-chip positioning across the entire system
- Default navigation update rate is 10 Hz, maximum navigation update rate for IMU is 100 Hz.
- It can smoothly track satellite signals even during high-frequency vibrations and rapid movements.
- Supports multi- frequency satellite tracking across the entire constellation
- Flexible use and easy integration
- Best-in-class SWaP (size, weight, and power)
- Compact in size (39.00mm * 30.00mm * 6.04mm ± 0.2 mm) and lightweight (<25g) , it is suitable for use in tight spaces .
- Supports standard NMEA 0183 protocol , CMR , RTCM 2.X, 3.X
- It suppresses potential narrowband and single-tone radio interference signals within the GNSS signal band, achieving an interference-to-signal ratio of up to 60 dB.
- Heading accuracy 0.2° @ 1m base line
- RTK positioning accuracy can reach the millimeter level

IMU (Inertial Measurement Unit)	Gyroscope	Measurement range: $\pm 125^{\circ}/s$
		Zero-bias repeatability: $0.5^{\circ}/s$
		Zero bias stability: $5^{\circ}/h$
		Angle random walk: $0.12^{\circ}/\sqrt{h}$
	Accelerometer	Measurement range: $\pm 2g$
		Zero-biased repeatability: 20mg
		Zero bias stability: 50ug
		Velocity random walk: $0.07 m/s/\sqrt{h}$
Data update rate	Default 10Hz	
Maximum update rate	Single-point positioning: 50Hz	
	RTK: 50Hz	
	IMU: 100Hz	
Baud rate	9600~921600bps (default 115200bps)	
Anti-interference	It has the ability to suppress potential narrowband and single-tone radio interference signals within the GNSS signal band, with an interference-to-signal ratio of up to 60 dB.	

✎1. Adjusted along with the version

✎2. d is the distance traveled.

✎3. 1 ppm increases the error by 1 mm per kilometer

1.4 Agreement Description

Output data format	Type
NMEA 0183 Protocol	GPGLL, GPGSV, GPGLL, GPGSA, GPGST, GPHDT, GPRMC, GPVTG, GPZDA etc.
Binary format	Custom binary
RTCM 2.x	RTCM 1, RTCM 3, RTCM 9, RTCM 1819, RTCM 31, RTCM 41, RTCM 42
RTCM 3.x	1004~1008, 1012, 1019, 1020, 1033, 1042, 1045/1046, 1230, 4078 MSM3~MSM7: 1073~1077, 1083~1087, 1123~1127, 1093~1097
CMR (GPS)	CMROBS, CMRRREF

1.5 antenna

The JS-BCK43H-3 is a dual-antenna version of the board , requiring both a main antenna and an slave antenna for use. The main antenna must be connected to the positioning connector marked RF1 on the board , and the slave antenna must be connected to the directional connector marked RF2 . In single-antenna mode, the JS-BCK43H-3 only requires connecting RF1 for positioning.

Antenna parameters	Impedance matching	Antenna gain
Optimal input gain of antenna	50Ω	20~35dB

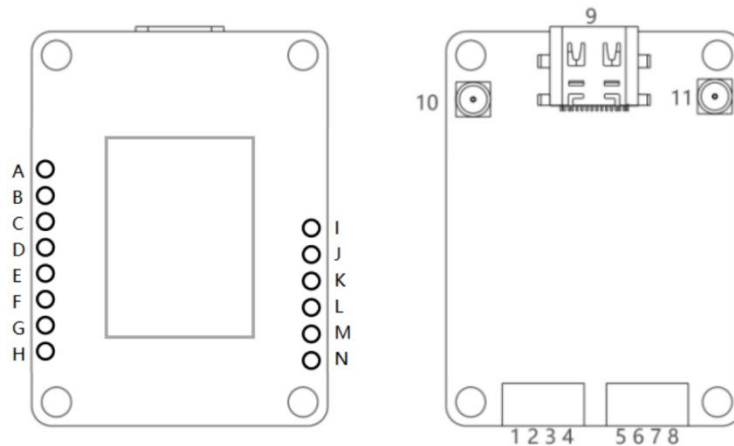
1.6 Product Application

- Drone Applications • Low-Speed Drones
- Intelligent logistics scheduling
- Smart lawnmower
- Surveying and mapping
- Precision agriculture and location services
- Driving test

- Heading output
- In-vehicle equipment applications
- Precision control

2. Pin definition

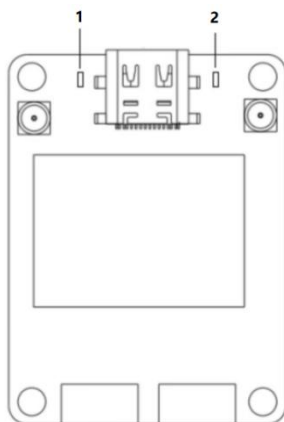
2.1 Pin assignment



S.N.	Name	Input/Output	Description
1. K	GND	-	Ground
2	V CC_IN	Input	GNSS power supply 3.5 - 12.0V, standard 5V power supply.
3. G	RX1	Input	Serial port 1 GNSS receiving data
4. F	TX1	Output	Serial port 1 GNSS data transmission
5	GND	-	Ground
6. H	3.3V_OUT	Output	3.3V can be used to power other devices.
7. L	RX2	Input	Serial port 2 GNSS receiving data
8. M	TX2	Output	Serial port 2 GNSS data transmission
9	USB	Input / Output	TYPE-C power supply + data transmission
10	RF1	Input	GNSS main antenna interface, used for positioning , power supply voltage 3.0-5.5V .
11	RF2	Input	GNSS slave antenna interface, used for directionality , power supply voltage 3.0-5.5V .
A	CS	Input / Output	Film Selection
B	MOSI	Output	GNSS data transmission
C	CLK	Output	Synchronization Timing
D	MISO	Input	GNSS received data
E	SDRY	Input	Indicates slave device status, triggers master control to read.

I	RESET	Output	Reset
J	EVENT	Output	External interrupt triggered
N	PPS	Output	Second pulse

2.2 Indicator lights

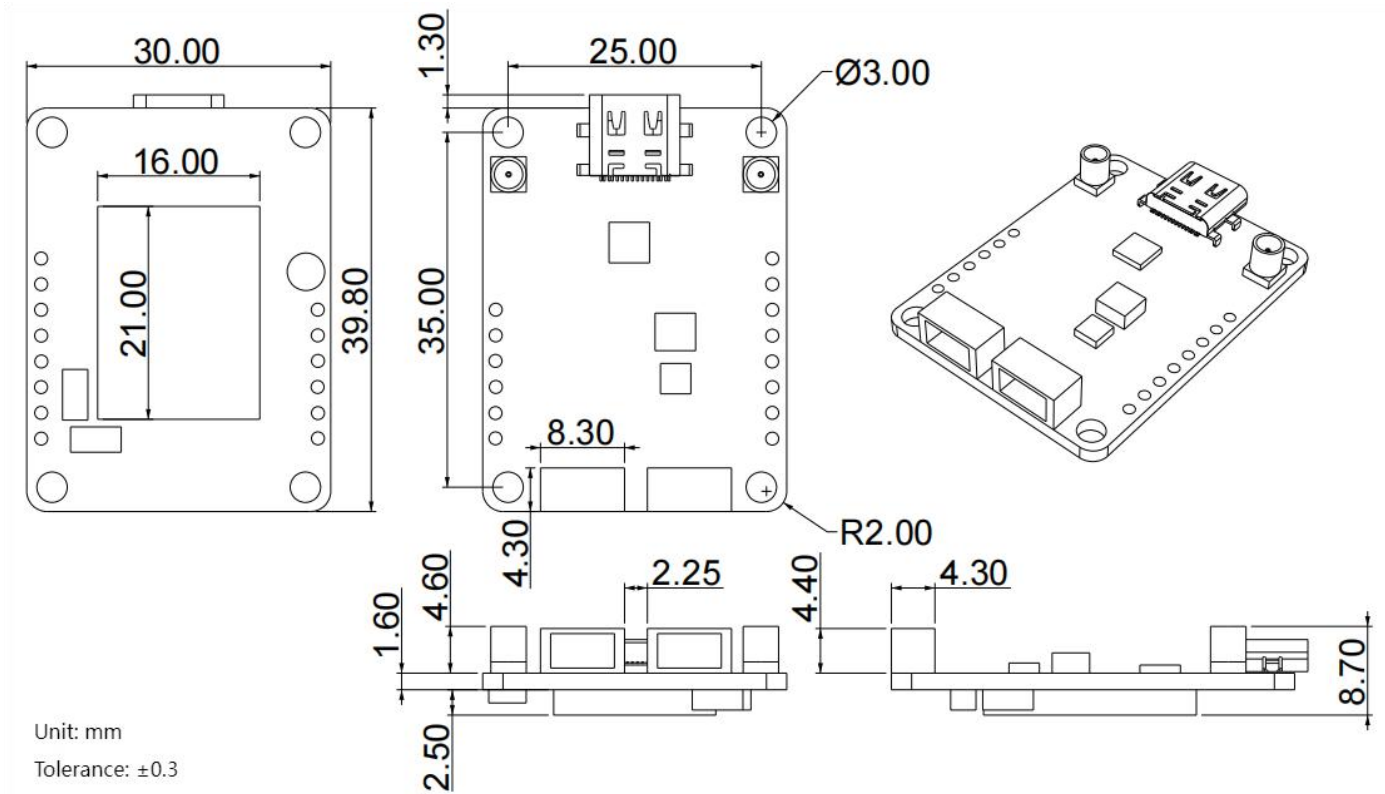


S.N.	Name	Input/Output	Description
1	RTK	Output	It outputs a high-level pulse when receiving or transmitting differential signals, and a low-level pulse in other states, turning off the LED. (Green LED)
2	PPS	Output	Second pulse (green LED)

3. Electrical characteristics

Parameter	Symbol	Minimum	Conventional	Maximum	Unit
Power supply voltage range	VCC	3.5	5.0	12.0	V
Operating current	Lopr	118 @ 5 V	125 @ 5 V	136 @ 5 V	mA
Power consumption	0.625W (Interference suppression not enabled)		0.725W (Anti-interference function enabled)		
Storage temperature	Tstg	- 40	-	85	°C
Operating temperature	Tstg	-40	-	85	°C
humidity	RH	-	Non-condensing	95	%rh

4. Mechanical dimensions



5. Interface Configuration Selection

The JS-BCK43H-3 board includes two UART ports and one Type-C interface, which can be used to communicate with the host.

