



Accurate
positioning

22°43'59.57617"N 114°03'03.61546"E



JS-NK43-1

PRODUCT SPECIFICATION

Data Sheet



Shenzhen Jumpstar Technology Co.,Ltd

Email : info@jumpstar-tech.com

Tel : (86) 0755-23732282

Fax : (86) 0755-23732823

Add : Room 1305, Building A, Lechuanghui Building,
1211 Guangguan Road, Longhua District, Shenzhen

Revision History

Version	Revision Record	Date
V1.0	Initial release	2023-05-10
V1.1	Housing update	2024-09-11

Disclaimer

This manual provides information about products from Shenzhen Jumpstar Technology Co., Ltd. (hereinafter "Jumpstar"). This document does not grant any patent, trademark, copyright, ownership rights, or licenses under any rights of Jumpstar or third parties, either expressly, by implication, estoppel, or otherwise.

Except for liabilities explicitly stated in Jumpstar sales terms and conditions, the company assumes no additional responsibilities. Jumpstar makes no express or implied warranties regarding the sale and/or use of its products, including but not limited to fitness for a particular purpose, merchantability, or non-infringement of patents, copyrights, or other intellectual property rights. Jumpstar is not liable for issues arising from improper connections or operations not conforming to this manual. Specifications and product descriptions are subject to change without notice.

Design defects or errors in our products, if discovered, will be documented in errata sheets, which may cause discrepancies with published specifications. The latest errata sheets are available upon request.

Before ordering, please contact **Jumpstar** or local distributors for the most up-to-date specifications.

Contents

Revision History	2
1 Product Introduction	4
1.1 Overview	4
1.2 Product Features	4
1.3 Performance	5
1.4 Protocols	6
1.5 Antenna	6
1.6 Applications	6
2 Pin definitions	6
2.1 Pin assignment	6
2.2 Description of geomagnetic sensors	7
3 Electrical specifications	7
4 Mechanical specifications	9
5 Interface configuration selections	10
5.1 Interfaces description	10
5.2 Application Circuit	10
6 ROHS Compliance	10

1 Product Introduction

1.1 Overview

The JS-NK43-1 is a high-precision RTK positioning module supporting full constellations and frequencies, including BDS, GPS, GLONASS, Galileo, and QZSS. It integrates a next-generation RF baseband and high-precision algorithm SoC GNSS engine, with a dual-core 2G CPU, high-speed floating-point processor, and dedicated RTK coprocessor. It supports 1408 super channels for enhanced satellite signal processing.

The module tracks all major constellations and frequencies:

BDS: B1I/B2I/B3I/B1C/B2a/B2b

GPS: L1/L2/L5

GLONASS: L1/L2

Galileo: E1/E5a/E5b/E6

QZSS: L1/L2/L5/L6

SBAS

With exceptional sensitivity, rapid acquisition, multi-frequency anti-jamming technology, and enhanced RTK engine performance, it delivers reliable positioning even in challenging environments. Ideal for drones, precision agriculture, surveying, and other high-accuracy applications.

1.2 Product Features

- High-performance GNSS SoC chip
- 1408 super channels
- Full-system, full-frequency RTK positioning
- RTK update rate up to 20Hz
- Support BDSB1I/B2I/B3I/B1C/B2a/B2b+GPS L1/L2/L5+GLONASS L1/L2+Galileo E1/E5a/E5b/E6+QZSS L1/L2/L5/L6+SBAS
- Support AGPS
- Integrated high-gain antenna
- Compact size: 48.0mm × 43.2mm × 37.0mm ±0.5mm
- 60dB narrowband anti-jamming

1.3 Performance

Parameter	Specification			
Receiver type	■BDS B1I、 B2I、 B3I、 B1C、 B2a、 B2b ■GPS L1C/A、 L1C、 L2P(Y)、 L5 ■GLONASS G1、 G2 ■Galileo E1、 E5a、 E5b、 E6 ■QZSS L1、 L2、 L5、 L6			
Time-To-First-Fix ¹	Cold Start		20s	
Position accuracy ²		Horizontal	Vertical	
	3D(RMS)	1.5m	2.5m	
	DGPS(RMS)	0.4m	0.8m	
	RTK(RMS)	0.8cm+1ppm	1.5cm+1ppm	
Observation Accuracy (RMS) ²				
	BDS	GPS	GLONASS	Galileo
B1I、 B1C、 L1C/A、 E1、 G1 Pseudo-range	10cm	10cm	10cm	10cm
B1I、 B1C、 L1C/A、 E1、 G1 Carrier Phase	1mm	1mm	1mm	1mm
B3I、 L2P(Y)、 L2C、 G2 Pseudo-range	10cm	10cm	10cm	10cm
B3I、 L2P(Y)、 L2C、 G2 Carrier Phase	1mm	1mm	1mm	1mm
B2I、 B2a、 B2b、 L5、 E5a、 E5b Pseudo-range	10cm	10cm	10cm	10cm
B2I、 B2a、 B2b、 L5、 E5a、 E5b Carrier Phase	1mm	1mm	1mm	1mm
Time Accuracy (RMS)	10ns			
Velocity Accuracy (RMS)	0.03m/s			
Initialization Time	< 5s(Typica)			
Baud Rate	115200- 230400bps (Default 115200bps)			
Max navigation update rate	20 Hz (Default 1Hz)			

① -130dBm, ≥12 satellites

② 24-hour static test, -130dBm, ≥12 satellites.

1.4 Protocols

Parameter	Protocol
Data Format	NMEA 0183
Differential Data	RTCM3.3/3.2/3.1/3.0

1.5 Antenna

JS-NK43-1 Designed for passive antennas.

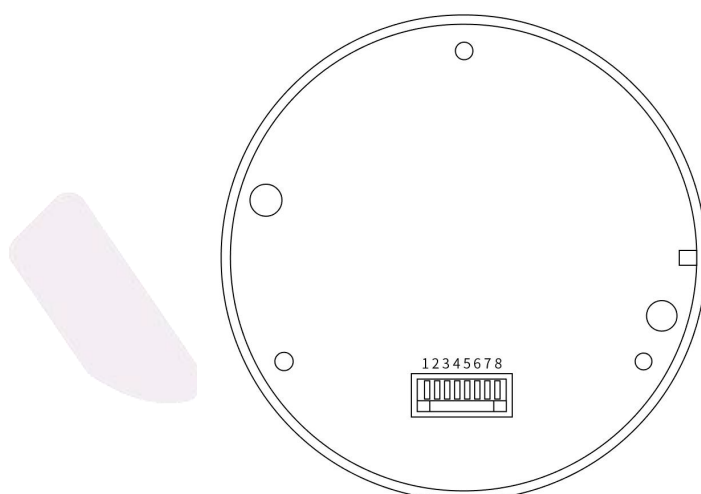
Parameter	Specification
Passive Antenna Size	φ35mm, Height 25mm (Default)

1.6 Applications

- Drones/UAV
- Automotive
- Precision Agriculture
- Marine Navigation
- Logistics & Security
- Surveying & Mapping
- Smart Robotics
- Smart Ports
- Power Grids
- Intelligent Transportation

2 Pin Definitions

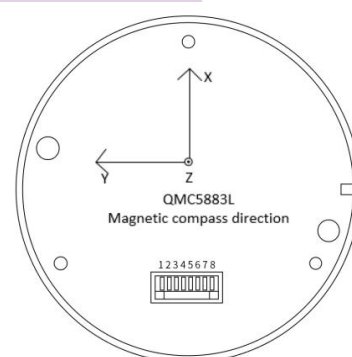
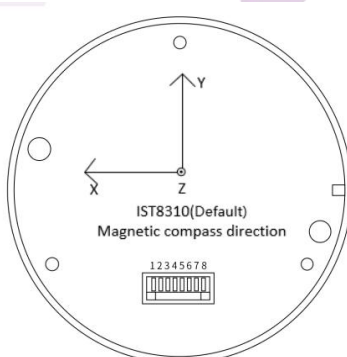
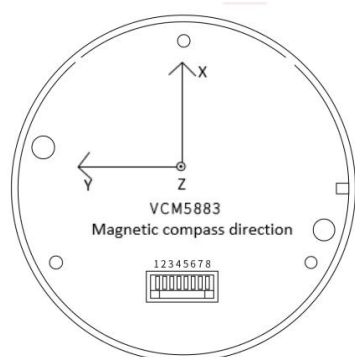
2.1 Pin assignment



No.	Item	I/O	Description
1	GND	G	Ground
2	TX2	O	UART2 Output (RTCM3 Data)

3	PPS/RX2	O/I	UART2: 1PPS Output (Default)/RTCM3 Input
4	SDA	I/O	I2C Data (Leave open if unused)
5	SCL	I/O	I2C Clock (Leave open if unused)
6	TX1	O	UART1 Data Output
7	RX1	I	UART1 Data Input
8	VCC	I	Power Supply (3.3V-5.5V)

2.2 Description of geomagnetic sensors



Note: geomagnetic compass models:

The geomagnetic model VCM5883, VCM5883_MS_ADDRESS 0x0C

The geomagnetic model IST8310(Default) , IST8310_MS_ADDRESS 0x0F

The geomagnetic model QMC5883L ,QMC5883L_MS_ADDRESS 0x0D

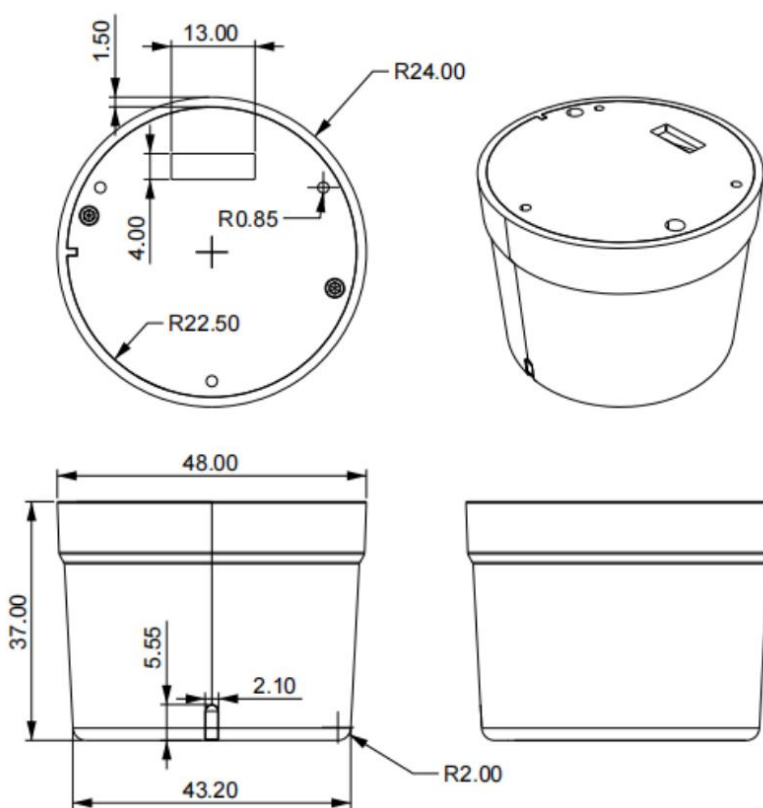
3 Electrical specifications

Parameter	Symbol	Min	Typical	Max	Unit
Supply Voltage (VCC)	V _{CC}	3.3	5.0	5.5	V
Operating Current	Acquisition	135mA @3.3V	165mA@3.3V	185mA @3.3V	mA
	Tracking	130mA @3.3V	160mA @3.3V	180mA @3.3V	mA
VCC Ripple (Max)	V _{rpp}	0	--	50	mV
Input Low Voltage	V _{in_low}	0	--	V _{CC} +0.2	V
Input High Voltage	V _{in_high}	V _{CC} *0.7	--	V _{CC} +0.2	V
Output Low Voltage (I _{out} =4mA)	V _{out_low}	0	--	0.45	V
Output High Voltage (I _{out} =4mA)	V _{out_high}	V _{CC} -0.45	--	V _{CC}	V
MSD(MSL) Level	Level 3	--	--	--	--
Storage Temperature	T _{stg}	-45	--	85	°C
Operating Temperature ¹	T _{opr}	-40	--	85	°C
Super Capacitor Temp. ²	T _{stg}	-25		60	°C
Humidity				95	%

1 The current operating temperature is the temperature range without super capacitor.

2 Hot-start disabled if temperature < -25°C or >60°C.

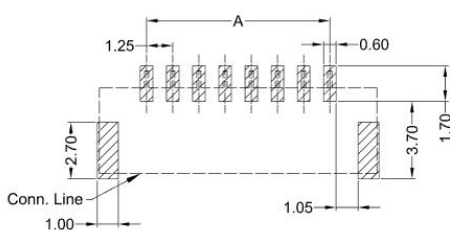
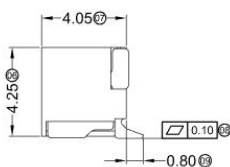
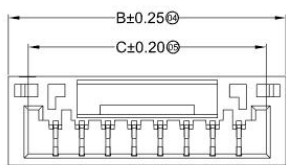
4 Mechanical Dimensions



Unit: mm. Tolerance: $\pm 0.5\text{mm}$

RoHS

A ± 0.15
1.250
0.200



Recommended P.C.B Layout
General Tolerance ± 0.05

Specifications :

- Voltage rating: 50V AC / DC
- Current rating: 1A AC / DC
- Withstanding voltage: 500V AC/minute
- Temperature range: $-25^{\circ}\text{C} \sim +85^{\circ}\text{C}$
- Insulation resistance: $\geq 100\text{M}\Omega$
- Contact resistance: $\leq 30\text{m}\Omega$
- After environmental testing: $\leq 50\text{m}\Omega$

1251 W R S-XX HF-LP XX XX

⑪ ⑫ ⑬ ⑭ ⑮ ⑯ ⑰ ⑱

- ⑪ Series No.
- ⑫ Category: W-wafer
- ⑬ Welding Board Angle: R- Right Angle 90°
- ⑭ Welding Way: S-SMT
- ⑮ Row No.-Pin No.: XX-02P~15P
- ⑯ Plug the Pin & Special No.: HF-Halogen free
- ⑰ Material: LP-LCP 94V-0
- ⑱ Planting Category: SN-Bright Tin plating
SW-Matte Tin plating
- ⑲ Color: Blank-natural color

Poles	Dimensions(mm)			Poles	Dimensions(mm)		
	A	B	C		A	B	C
02	1.25	5.75	3.85	09	10.00	14.50	12.60
03	2.50	7.00	5.10	10	11.25	15.75	13.85
04	3.75	8.25	6.35	11	12.50	17.00	15.10
05	5.00	9.50	7.60	12	13.75	18.25	16.35
06	6.25	10.75	8.85	13	15.00	19.50	17.60
07	7.50	12.00	10.10	14	16.25	20.75	18.85
08	8.75	13.25	11.35	15	17.50	22.00	20.10

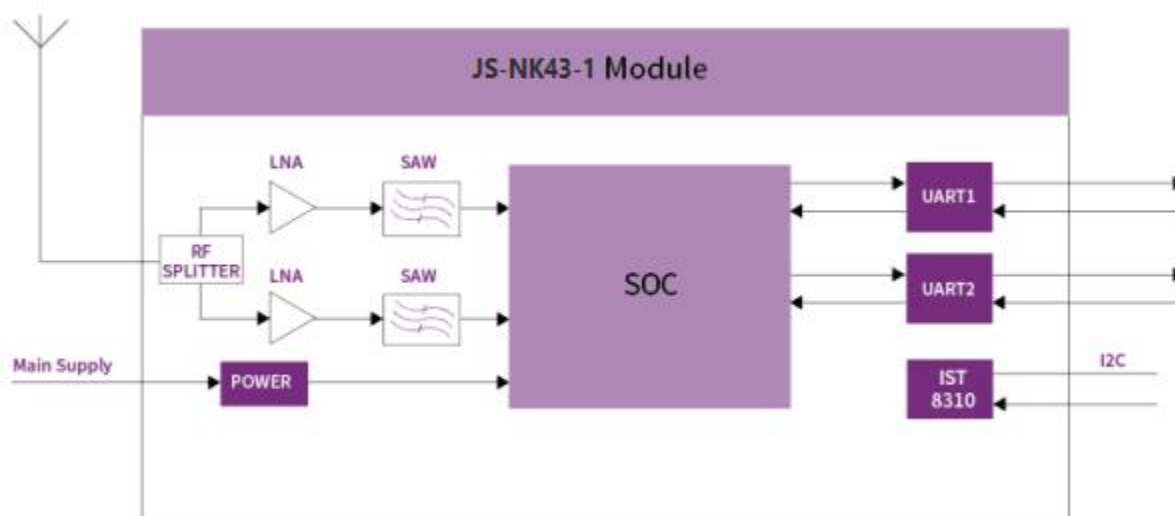
1251WRS-XXHF-LPXX	LCP UL 94V-0 Halogen Free	Phosphor Bronze	Bright Tin plating/Matte Tin Plating	1251H
PART NO	Material	Material (Solder Tabs)	Finish (Solder Tabs)	Mates With ADZL Housing

								PART NO. 1251WRS-XXHF-LPXX			
								TITLE 1.25mm Crimp Style Connectors			
DATE	OLD REV	NEW REV	ECN	DESCRIPTION	CHECK	APPROVAL	PROJECT	UNIT	SCALE	NUMBER	REV
1			2	3	4	5	6	7	8		A

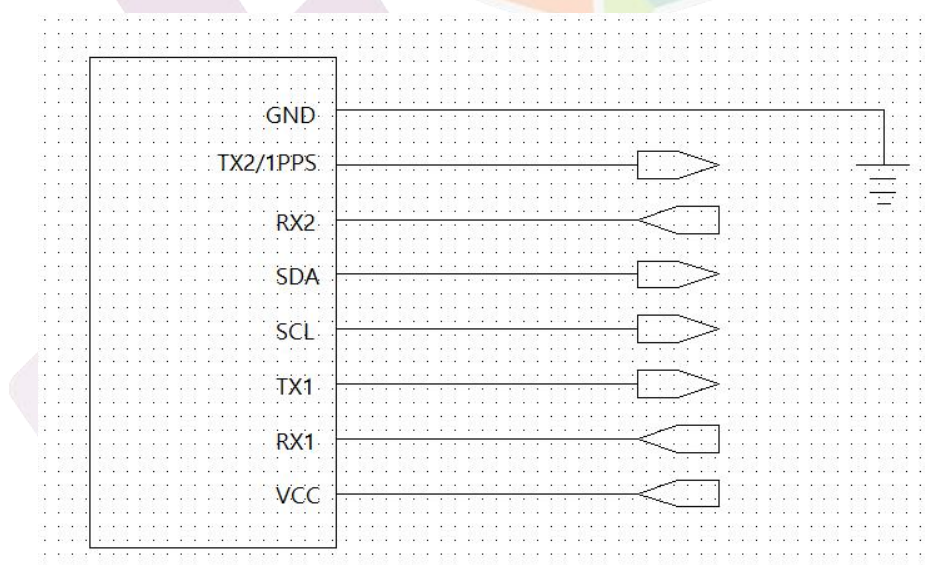
5 Interface Configuration

5.1 Interface Description

The JS-NK43-1 includes two UART interfaces for host communication. Output data can be configured via either interface with adjustable baud rates.



5.2 Application Circuit



6 ROHS Compliance

This product is RoHS compliance.