JUMPSTAR

Accurate positioning

22°43'59.57617"N 114°03'03.61546"E

JS-NK43-2

Data sheet

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Revision History

Version	Description of revisions	Date
V1.0	Initial release	2024-8-7
V1.1	Housing update	2024-9-11
V1.2	Modify application circuit	2025-03-12

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1 Product Introduction

1.1 Overview

The NK43-2 is a high-precision module supporting multi-system, multi-frequency on-board RTK positioning and dual-antenna heading calculation. Based on a new generation high-performance GNSS chip, it features a built-in 2GHz dual-core CPU, advanced anti-interference unit, integrated high-speed floating-point processor, and a dedicated RTK coprocessor. With support for 1408 super channels, it provides significantly enhanced satellite navigation signal processing capability, ensuring reliable and accurate positioning even in complex electromagnetic environments. This new product is launched to meet the high-precision positioning application requirements for markets such as UAVs, lawn mowers, precision agriculture, and surveying & mapping.

1.2 Product Features

- Based on the high-performance JS-N2 module
- Supports 1408 super channels
- Supports multi-system, multi-frequency high-precision RTK positioning calculation
- RTK positioning data update rate up to 20Hz
- Supports BDS B11/B21/B31 + GPS L1/L2/L5 + GLONASS L1/L2 + Galileo E1/E5a/E5b + QZSS L1/L2/L5 + SBAS
- Adaptive recognition of RTCM format for differential input
- Integrated TCXO, LNA, SAW, RTC
- Integrated high-gain helical antenna
- Lightweight and compact (48.0mm x 43.2mm x 37.0mm ±0.3mm)
- Instant RTK initialization technology

1.3 Performance Specifications

Parameters	Details		
Constellations & Frequency bands	■BDS B1I、B2I、B3I ■GPS L1C/A、L1C、L2P(Y)、L5 ■GLONASS L1、L2 ■Galileo E1、E5a、E5b ■QZSS L1、L2、L5		
Time to First Fix [1]	Cold Start<30s		
Positioning Accuracy[2]		Horizontal	Vertical
	3D(RMS)	1.5 m	2.5 m
	DGPS(RMS)	0.4 m+1 ppm	0.8 m+1ppm
	RTK(RMS)	1.5cm+1ppm	2.0cm+1ppm
Time Accuracy (RMS)	20 ns		
Velocity Accuracy (RMS)[3]	0.03 m/s		
Initialization Time[2]	< 5 s(Typical)		
Baud Rate	9600- 921600 bps (default 115200bps)		
Date Update Rate	20 Hz		

✌1 --130dBm, ≥12 satellites in use

✌2 Test results may vary due to atmospheric conditions, baseline length, multi-path, number of visible satellites, and satellite geometry

✌3 Open sky, unobstructed view, 99%@static

1.4 Protocol

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

1.5 Antenna

The JS-NK43-2 module uses an active antenna design.

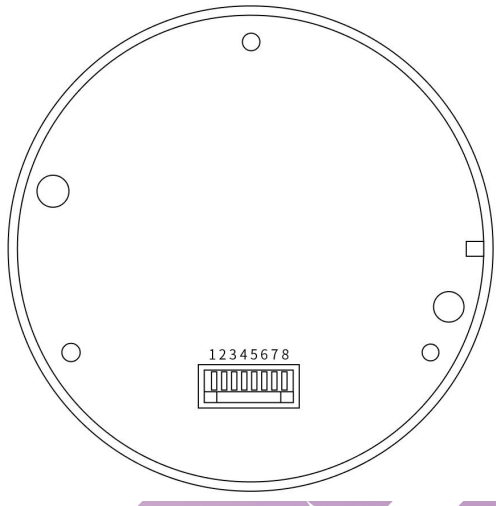
1.6 Applications

- UAV/Drones
- Automotive Applications
- Precision Agriculture
- Handheld Devices

- Logistics & Security
- Surveying & Mapping
- Intelligent Robots
- Smart Ports
- Power Grid & Electricity
- Intelligent Transportation

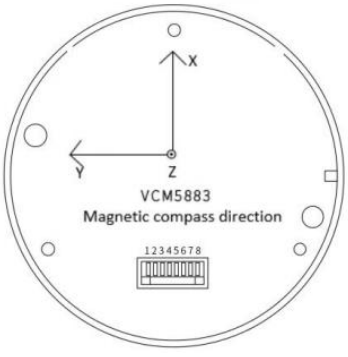
2 Pin Definitions

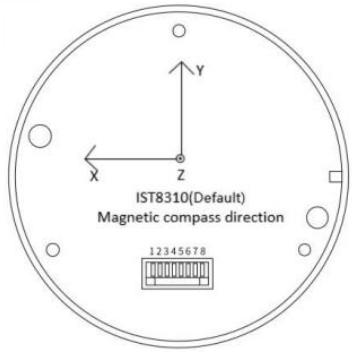
2.1 Pin Assignment

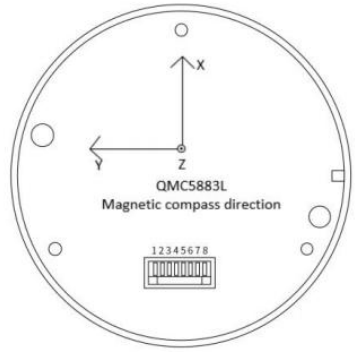


No.	Name	I/O	Description
1	GND	G	Ground
2	TX2	O	UART2 Output RTCM3 Data
3	PPS/RX2	O/I	Serial Port (UART2 for 1PPS Output <Default>/RTCM3 Input)
4	SDA	I/O	I2C Data (Leave open if not used)
5	SCL	I/O	I2C Clock (Leave open if not used)
6	TX1	O	UART1 Data Output
7	RX1	I	UART1 Data Input
8	VCC	I	Power Supply Voltage

2.2 Description of geomagnetic sensors







Note: Geomagnetic Sensor Model: Optional.
Magnetic Compass Model:
If geomagnetic model is VCM5883, VCM5883_MS_ADDRESS 0x0C;
If geomagnetic model is IST8310 (default), IST8310_MS_ADDRESS 0x0F;
If geomagnetic model is QMC5883L, QMC5883L_MS_ADDRESS 0x0D.

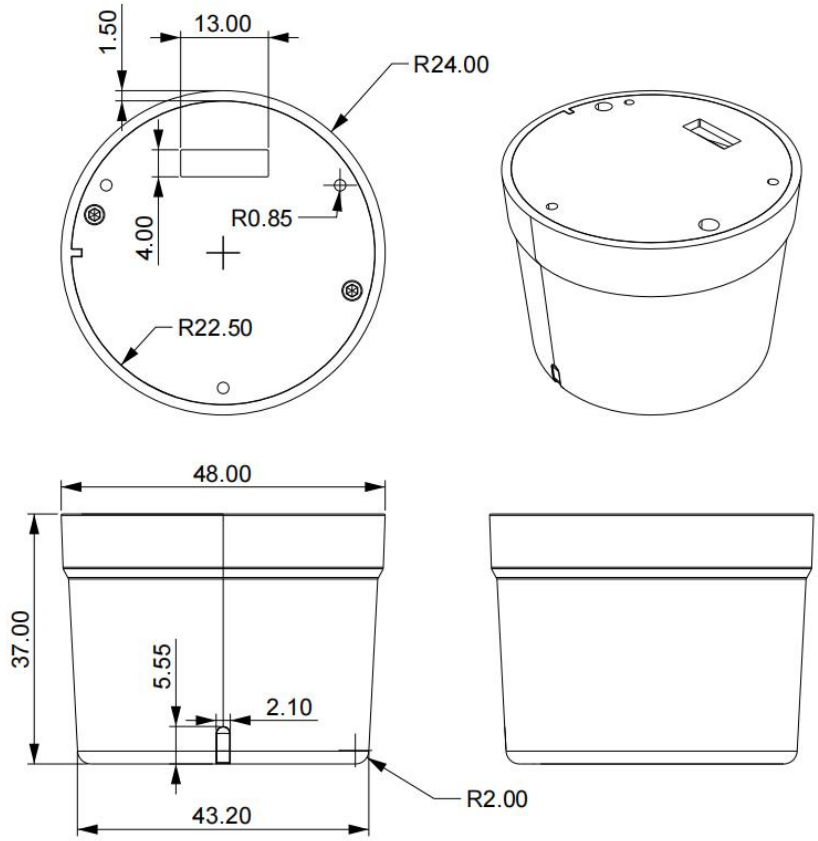
3 Electrical Specifications

Parameter	Symbol	Min.	Typical	Max.	Unit
Supply Voltage (VCC)	VCC	3.3	5.0	5.5	V
Operating Current	I	180mA @3.3V	220mA @3.3V	310mA @3.3V	mA
Backup Power Supply			0.07		F
VCC Max Ripple	Vrpp	0	--	50	mV
MSD(MSL) Level	Level 3	--	--	--	--
Storage Temperature	Tstg	-40	--	85	℃
Operating Temperature[1]	Topr	-40	--	85	℃
Farad capacitor Temperature[2]	Tstg	-25		60	℃
Humidity				95	%

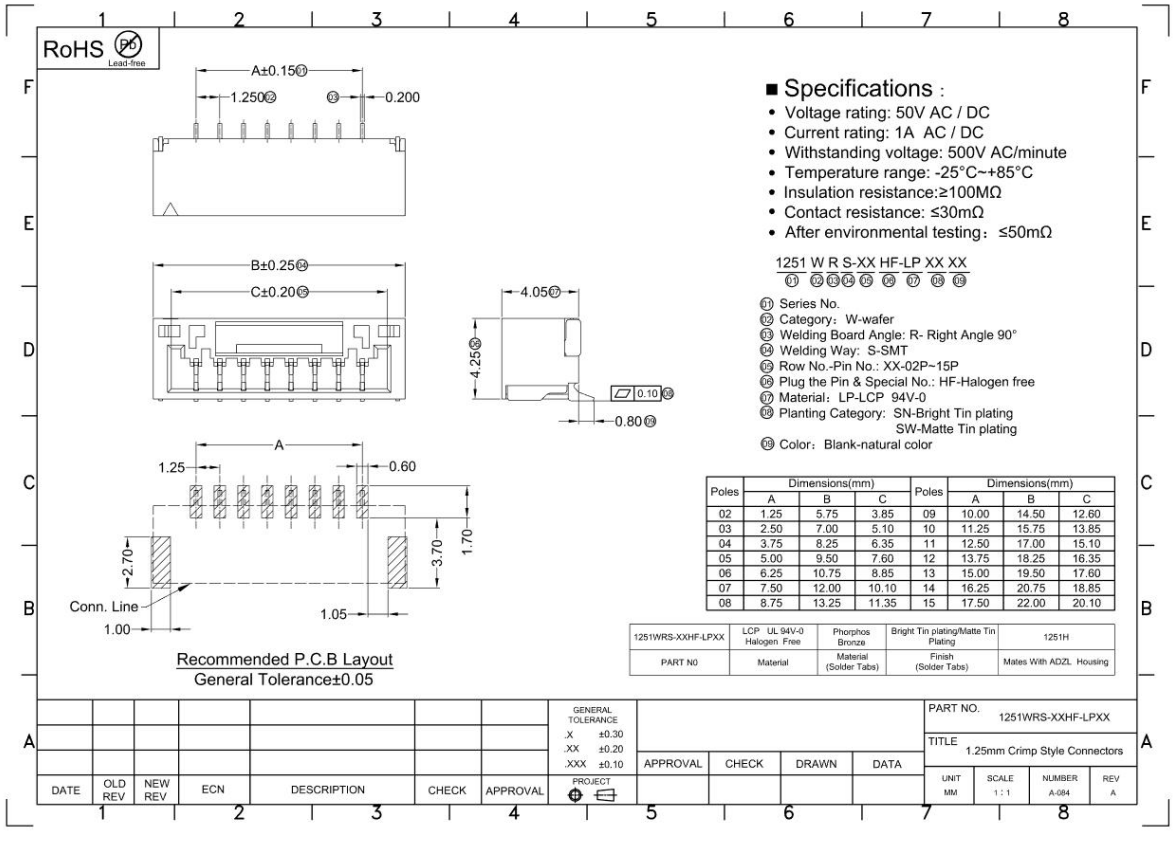
1 The current operating temperature is the temperature range without Farad capacitor

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

4 Mechanical Dimensions



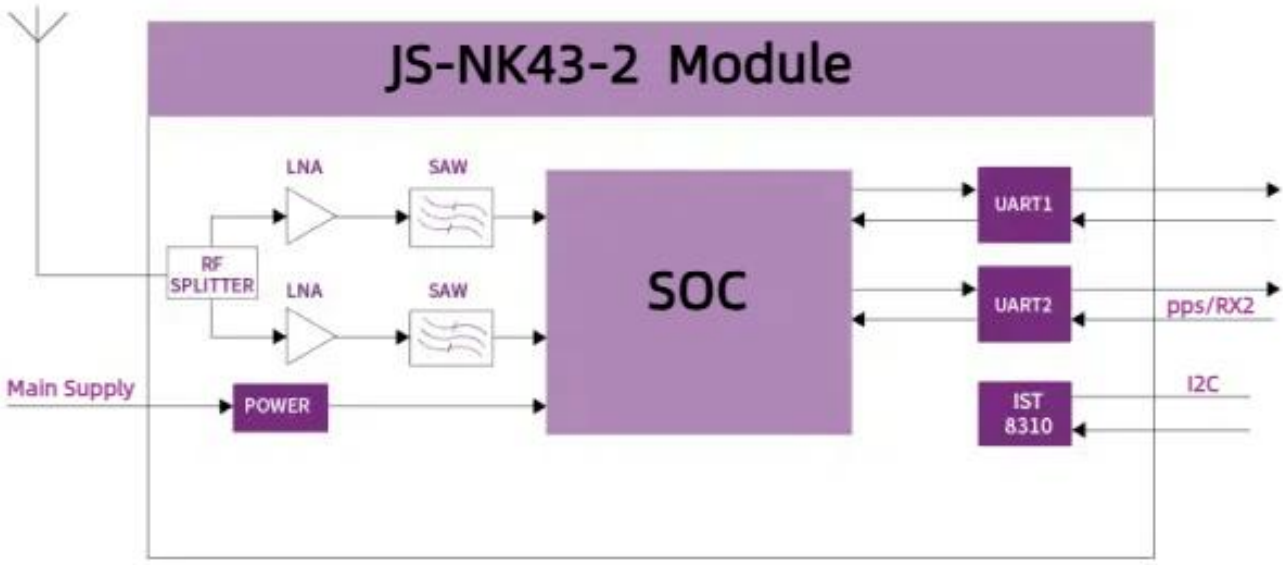
Unit: mm



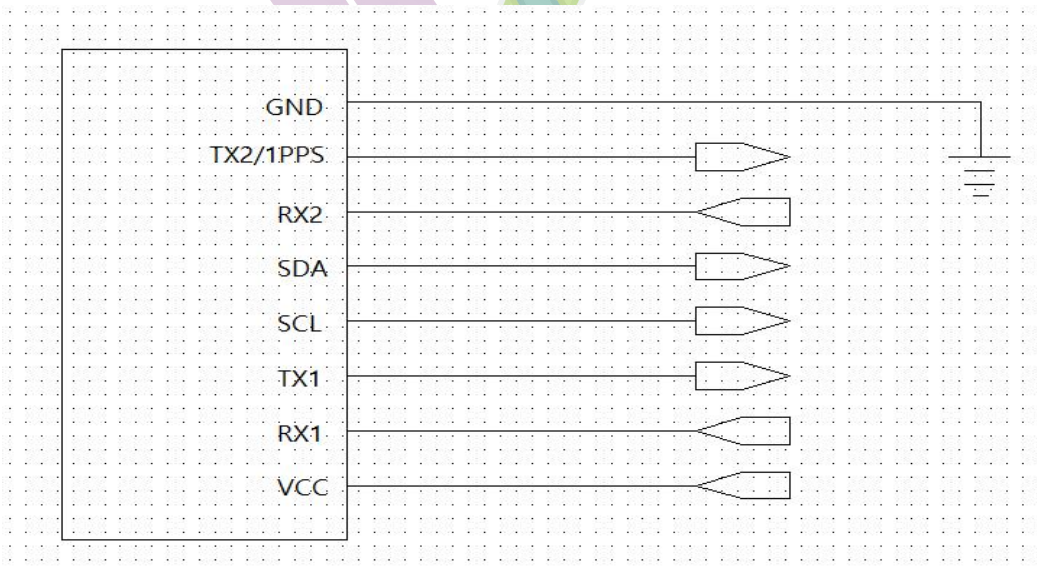
5 Interface Configuration Selection

5.1 Interface Description

The NK43-2 module includes two sets of UART interfaces for communication with the host. Output data can be configured via either interface with adjustable baud rates..



5.2 Application Circuit



6 ROHS

This product complies with the RoHS standard.