JS-NK40

High Precision GNSS Helix Antenna Module

Data sheet

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Revision History

Version	Revision Record	Date
V1.0	Initial Release	2026-2-28

1 Product Introduction

1.1 Overview

The JS-NK40 is a high-precision GNSS antenna module that supports multi-system, multi-frequency on-chip RTK positioning solution. Based on a new generation of high-performance GNSS chips, it features a built-in 2GHz dual-core CPU, advanced anti-interference unit, and integrates a high-speed floating-point processor and a dedicated RTK coprocessor. It supports 1408 super channels, providing more powerful satellite navigation signal processing capabilities, ensuring reliable and accurate positioning even in complex electromagnetic environments. It is a new product launched by to meet the high-precision positioning application needs of markets such as drones, lawnmowers, precision agriculture, and surveying and mapping.

1.2 Product Features

- Based on high-performance JS-N2 module
- Supports 1408 super channels
- Supports multi-system multi-frequency high-precision RTK solution
- RTK positioning data update rate up to 20Hz
- Supports BDS B1I/B2I/B3I+GPS L1/L2/L5+GLONASS L1/L2+Galileo E1/E5a/E5b+QZSS L1/L2/L5+SBAS
- Automatic identification of differential input RTCM format
- Integrated TCXO, LNA, SAW, RTC
- Integrated high-gain helical antenna
- Lightweight and compact (39.80mm x35.00mm×32.0mm±0.3mm)，<10.2g
- Instant RTK initialization

1.3 Performance Metrics

Performance	Specifications		
Receiver type	■BDS B1I、B2I、B3I ■GPS L1C/A、L2P (Y)/L2C、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)	1.5 cm+1ppm	2.0 cm+1ppm
Time Accuracy(RMS)	20ns		
Velocity Accuracy (RMS)[3]	0.03m/s		
Initialization Time[2]	< 5s(typical)		
Baud Rate	9600- 921600 bps (default 115200bps)		
Data Update Rate	20Hz		

✌1 -130dBm, ≥12 satellites used

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

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

1.4 Protocols

Parameter	Protocol
Data Format	NMEA 0183，Unicore
Differential Data	RTCM3.X

1.5 Antenna

The JS-NK40 module uses an active antenna design.

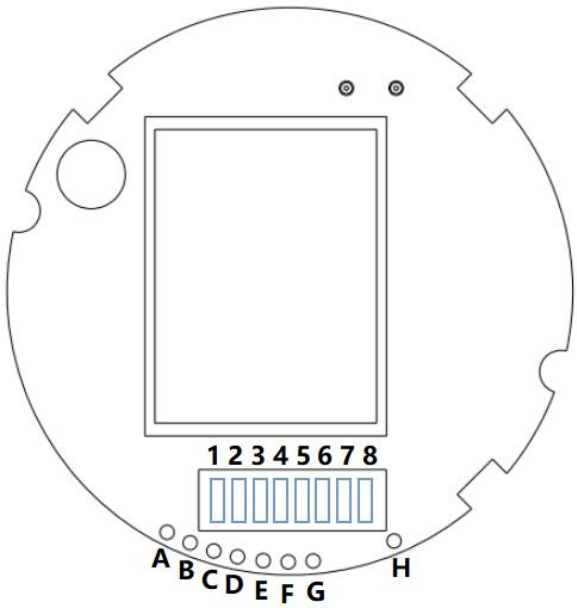
Parameter	Specification
Helical Antenna	φ35mm，Height 25mm

1.6 Application Scenarios

- UAV/Drones
- Automotive Applications
- Precision Agriculture
- Handheld Devices
- Logistics Security
- Surveying and Mapping
- Robotics
- Smart Ports
- Electric Power Grid
- Smart Transportation

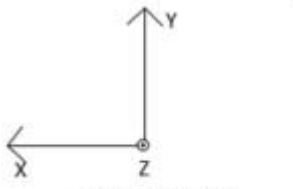
2 Pin Definitions

2.1 Pin Assignment

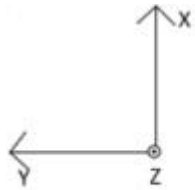


No.	Name	I/O	Description
1. A	GND	-	Ground
2. B	TX2	O	UART 2 output RTCM3 data
3. C	PPS/RX2	O/I	Serial Port(UART 2: for 1PPS output <Default>/RTCM3 input)
4. D	SDA	I/O	I2C Data (keep open if not used)
5. E	SCL	I/O	I2C Clock (keep open if not used)
6. F	TX1	O	UART 1 data output
7. G	RX1	I	UART 1 data input
8. H	VCC	P	Main Supply

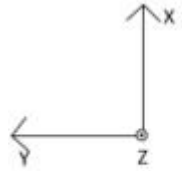
2.2 Description of Geomagnetic Sensors



IST8310(Default)
Magnetic compass direction



VCM5883
Magnetic compass direction



QMC5883L
Magnetic compass direction

Note:

Magnetic compass model:

The geomagnetic model IST8310(Default) , IST8310_MS_ADDRESS 0x0F;

The geomagnetic model VCM5883 (optional) , VCM5883_MS_ADDRESS 0x0C;

The geomagnetic model QMC5883L (optional) ,QMC5883L_MS_ADDRESS 0x0D.

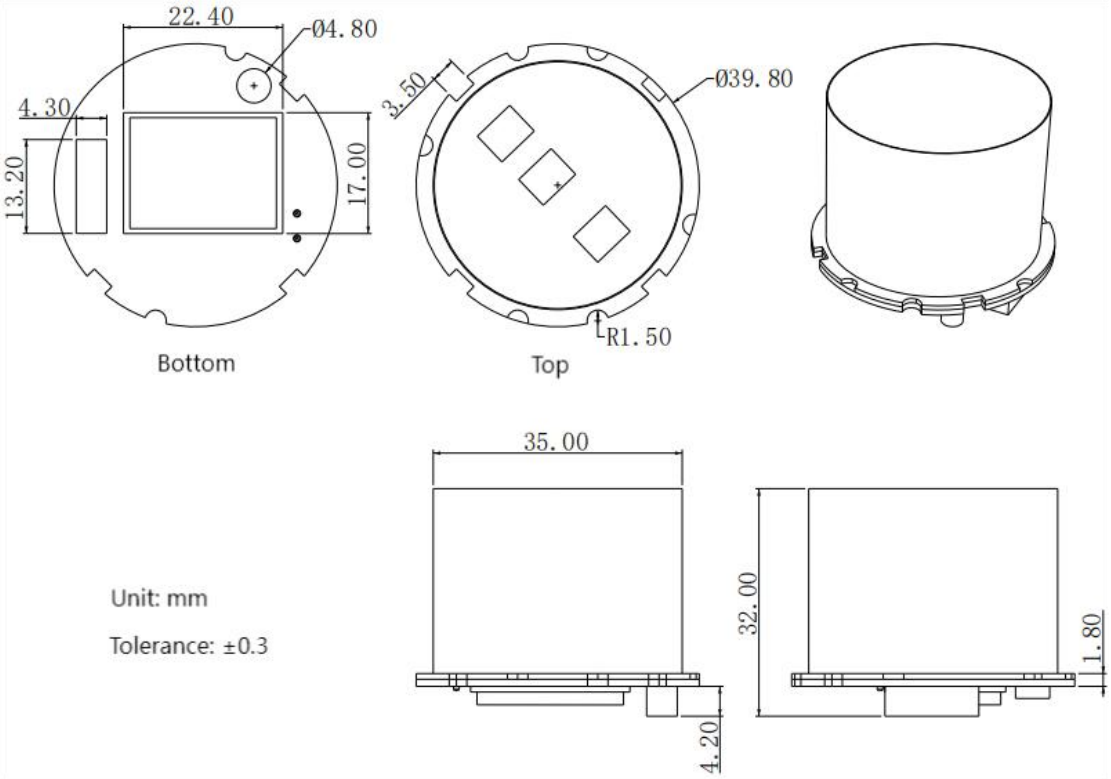
3 Electrical Specifications

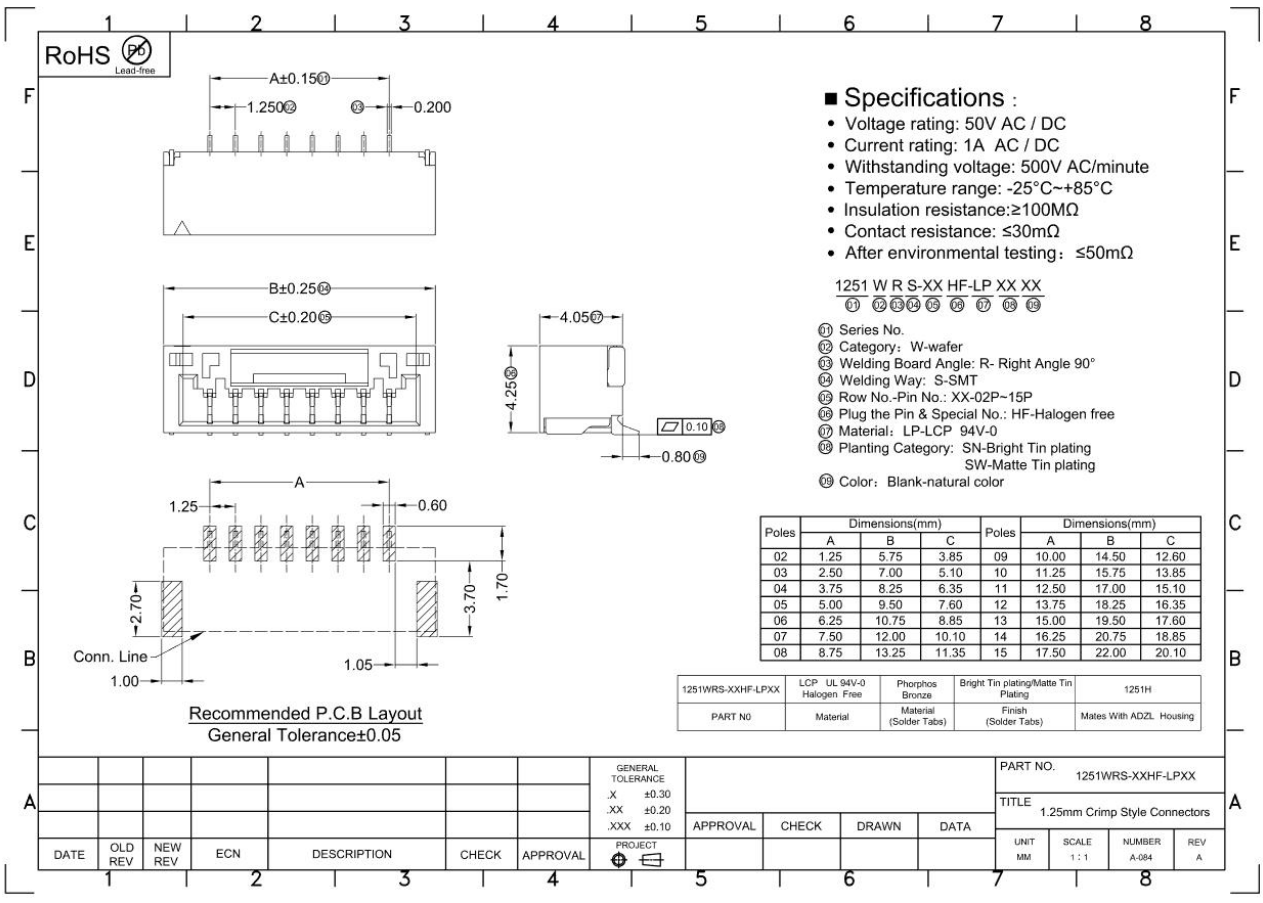
Parameter	Symbol	Min	Typical	Max	Units
Power supply voltage（VCC)	VCC	3.3	5.0	5.5	V
Operating Current	I	180mA @3.3V	220mA @3.3V	310mA @3.3V	mA
Backup Power			0.07		F
VCC Max Ripple	Vrpp	0	--	50	mV
MSD(MSL) Level	Level 3	--	--	--	--
Storage Temperature	Tstg	-40	--	85	℃
Operating Temperature[1]	Topr	-40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

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

2 Hot start cannot be carried out when the temperature is below -25℃ or above 60℃

4 Mechanical specifications

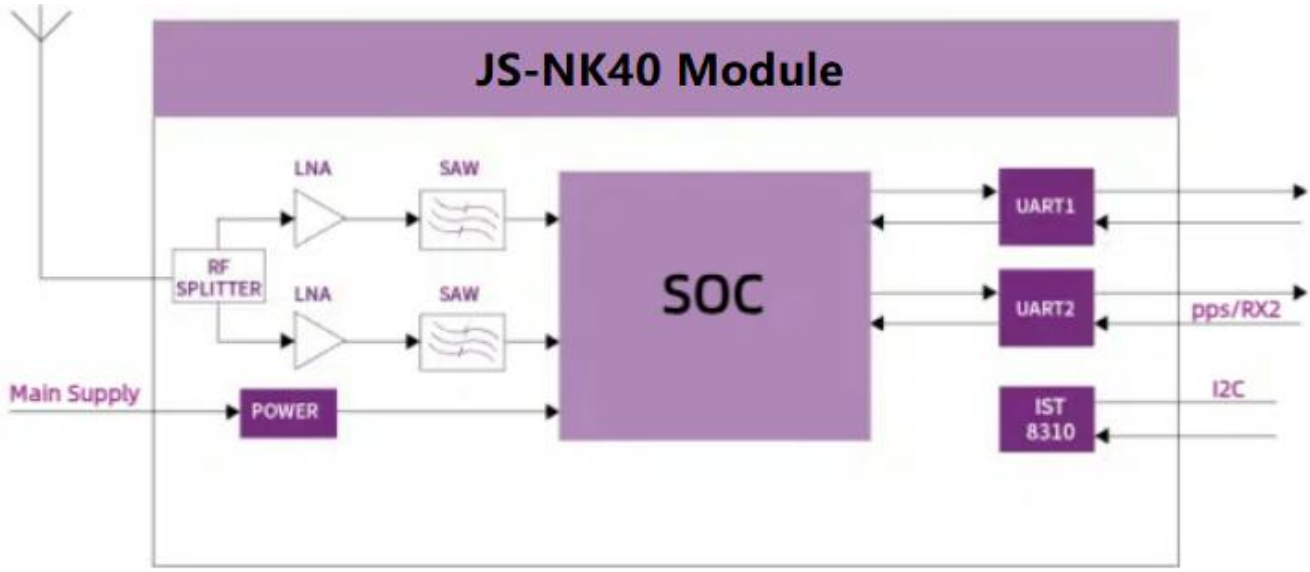




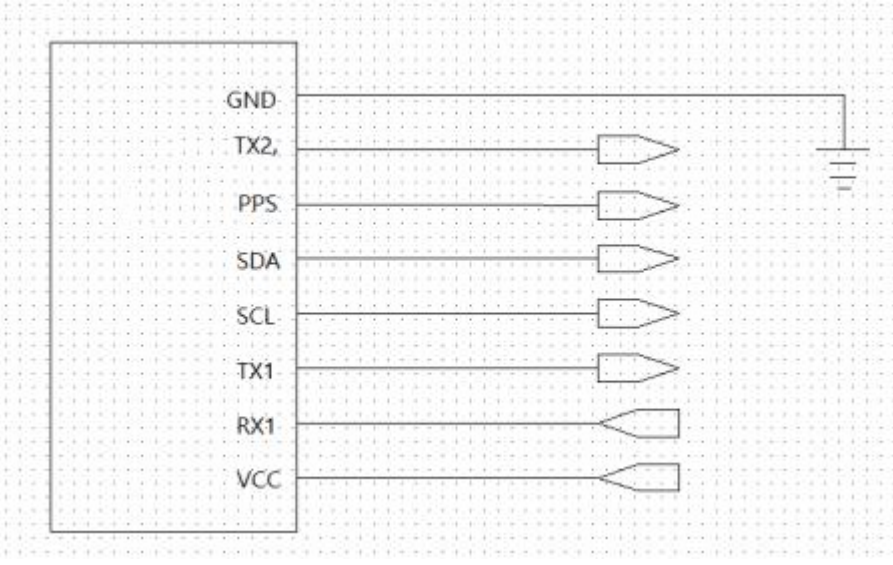
5 Interface Configuration Selections

5.1 Interfaces Description

The JS-NK40 module contains two UART interfaces, which can be used for communication with a host. Either output interface can be selected to output data, and it supports configurable baud rates.



6 Application Circuit



7 ROHS

This product is RoHS compliant.