JS-SK40

High Precision GNSS Helix Antenna Module

Data sheet

Revision History

Version	Revision Content Description	Date	Editor
V1.0	First Release	2026-02-27	HJX

Table of Contents

1 Product Introduction

1.1 Overview

The JS-SK40 is a compact, multi-system, multi-frequency, high-precision RTK positioning module. Leveraging flexible and reliable GNSS+ technology with advanced interference and spoofing detection and automatic mitigation features, it sets a performance benchmark for mass-market GNSS positioning. It features full-sky satellite tracking capability and supports multiple super channels, providing more powerful satellite navigation signal processing. This enables reliable high-precision positioning even in challenging environments. With industry-leading ultra-low power consumption, it is an ideal choice for drones, robotics, autonomous systems, and space-constrained devices requiring highly reliable and precise positioning. It is a new product launched for markets such as drones, robotics, precision agriculture, surveying and mapping, and autonomous systems.

1.2 Product Features

- Supports dual antenna input
- 789 hardware channels for simultaneous operation
- AIM+ with advanced interference and spoofing detection and automatic mitigation features
- LOCK+ with excellent robust tracking capability against mechanical shock and vibration
- IONO+ with advanced ionospheric interference protection
- APME+ multipath mitigation to separate direct signals from signals reflected off nearby buildings
- Provides full raw measurement data
- RTK positioning data update rate up to 20Hz
- Compact size with ultra-low power consumption
- Full-sky satellite tracking: Multi-constellation, quad-band GNSS receiver
- Compact and lightweight (39.80mm x35.00mm×32.41mm±0.3mm), <10.2g
- RTK centimeter-level positioning

1.3 Performance

Performance	Technical Parameters		
Receiver type	■BDS B1I,B1C,B2a,B2I,B2b,B3I ■GPS L1C/A,L1C,L2PY,L2C,L5 ■GLONASS L1CA, L2CA, L2P, L3 CDMA ■Galileo E1,E5a,E5b,E6 ■QZSS L1C/A,L1C/B,L2C,L5,L6*		
Time-To-First-Fix	Cold Start	35s	
	Hot Start	10s	
	Reacquisition	1s	
	RTK Initialization[1]	7s	
Sensitivity	Tracking Sensitivity	-150dBm (20dB-Hz)	
	Acquisition Sensitivity	-140dBm (30dB-Hz)	
Positioning Accuracy[2]		Horizontal	Vertical
	3D	1.5m	2m
	DGNSS	0.4m	0.7m
	RTK[2]	0.6cm+0.5ppm	1cm+1ppm
Time Accuracy	PPS	1.4ns	
	Event	< 3ns	
Latency[3]	< 10ms		
Velocity Accuracy	3cm/s		
Baud Rate	4800- 4M bps (default 115200bps)		
Maximum Data Update Rate	20Hz		

Note: Items marked with * are subject to change with version updates

1. Baseline < 30km

2.RMS levels, 24 hours static , -130dBm, ≥ 15 satellites used

3.99.9%

1.4 Protocols

Parameter	Protocol
NMEA 0183,v2.3,v3.03v4.0	Standard Protocol
SBF	Proprietary Protocol

RTCM3.X	Input（MSM included)

1.5 Antenna

The JS-SK40 is a dual-antenna version receiver. Positioning can be achieved using the built-in active antenna.

To enable direction finding (orientation), an external antenna must be inserted into the RF connector.

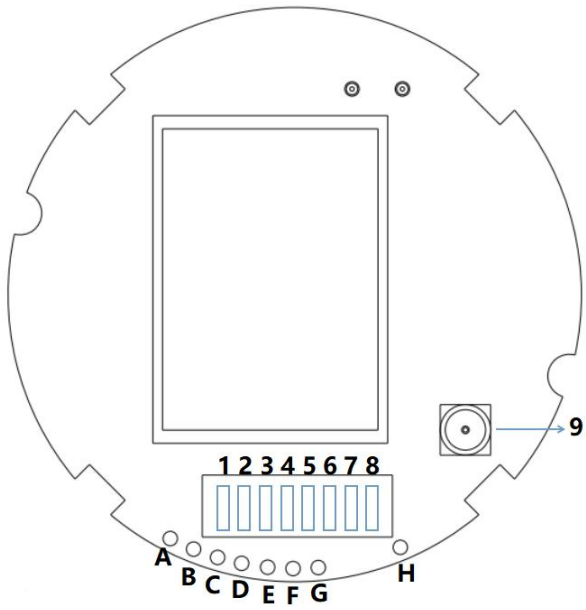
Antenna Parameter	Antenna Bias Voltage	Antenna Gain
Optimal External Antenna Input Gain	3.0-5.5V（Built-in current limit: 150mA)	15~35dB

1.6 Application Scenarios

- UAV/Drones
- Automotive Applications
- Precision Agriculture
- Marine Navigation
- Logistics & Security
- Surveying & Mapping
- Robotics
- Smart Ports
- Power Grid & Electricity
- Smart Transportation

2 Pin Definitions

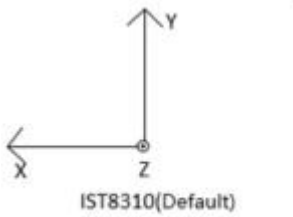
2.1 Pin Assignment



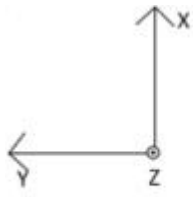
No.	Name	I/O	Description
1.A	GND	G	Ground
2.B	TX2	O	UART2 Data Output
3.C	PPS/RX2	O/I	Serial port (UART 2: Used for 1PPS Output <Default> / Data Input)

4.D	SDA	I/O	I2C Data（keep open if not used）
5.E	SCL	I/O	I2C Clock (keep open when not used)
6.F	TX1	O	UART1 Data output
7.G	RX1	I	UART1 Data input
8.H	VCC	I	Power Supply Voltage
9	RF Connector	-	Insert external antenna for dual-antenna positioning/orientation. Antenna connector type: MMCX

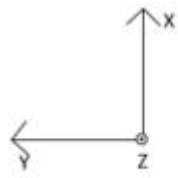
2.2 Description of Geomagnetic Sensors



IST8310(Default)
Magnetic compass direction



VCM5883
Magnetic compass direction



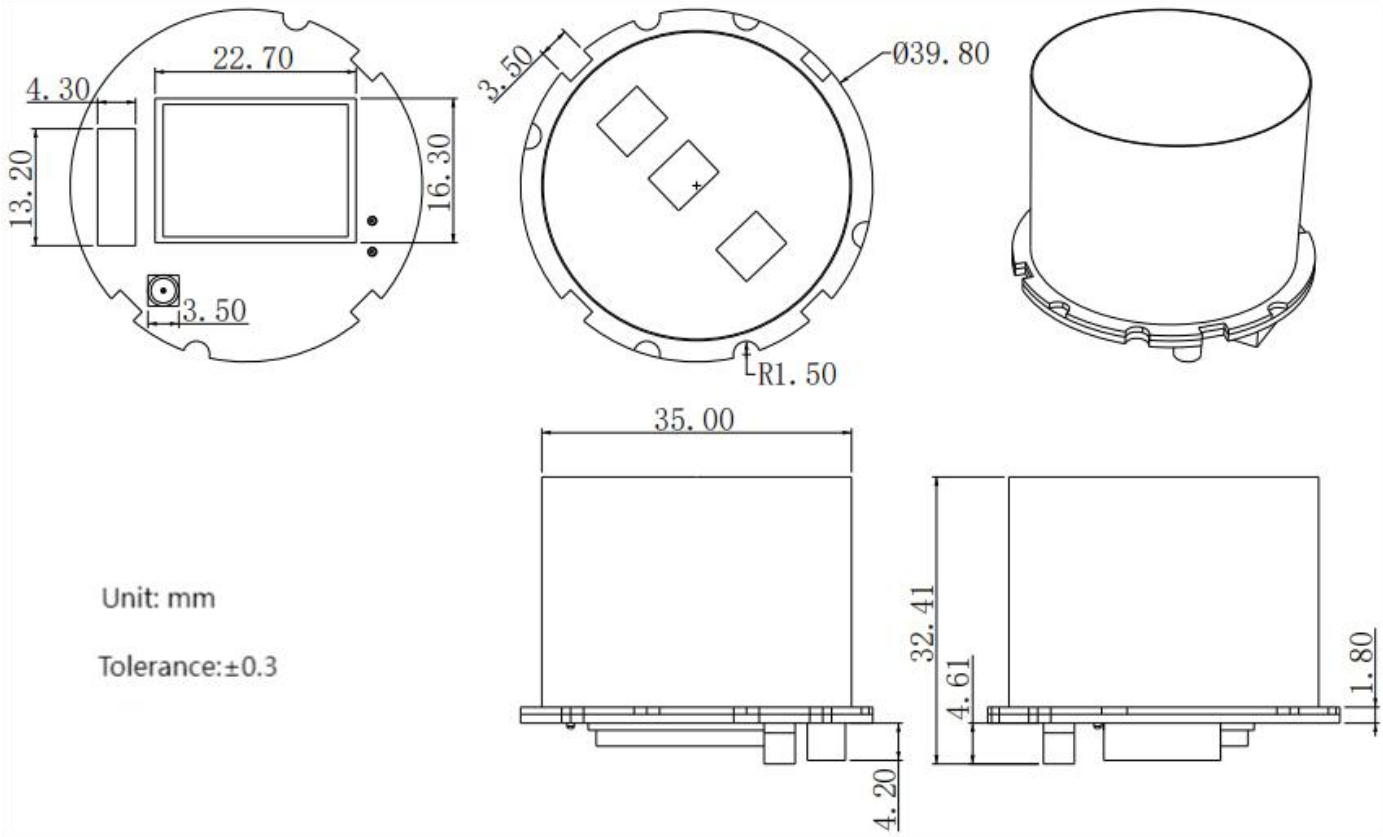
QMC5883L
Magnetic compass direction

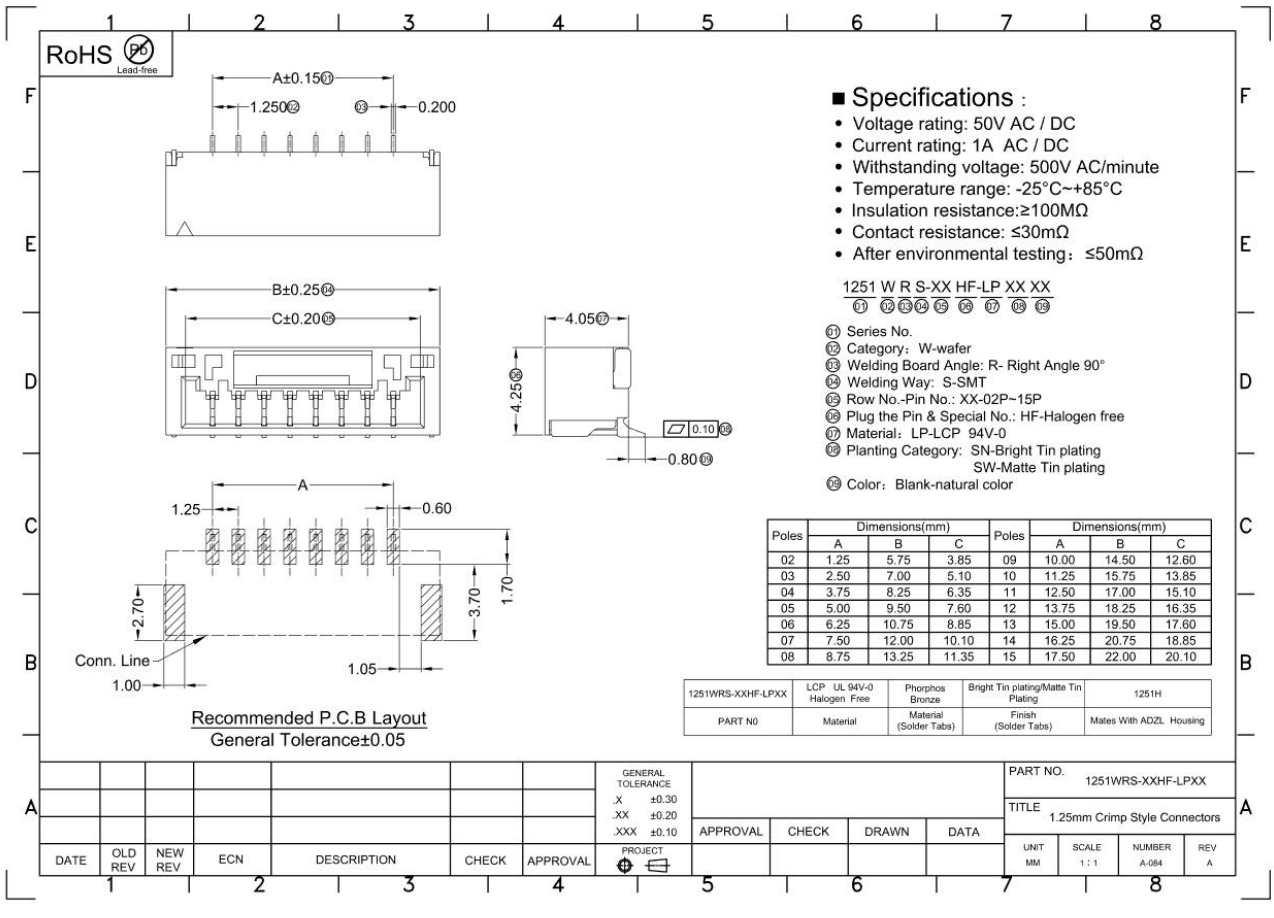
Note:
Magnetic compass model:
The geomagnetic model is IST8310(Default) , IST8310_MS_ADDRESS 0x0F .
The geomagnetic model VCM5883 (optional) , VCM5883_MS_ADDRESS 0x0C.
The geomagnetic modelQMC5883L (optional) ,QMC5883L_MS_ADDRESS 0x0D

3 Electrical Specifications

Parameter	Symbol	Min	Typical	Max	Units
Power supply voltage（VCC）	V_{CC}	4.8	5.0	5.5	V
Operating Current	Acquisition	135mA @5.0V	150mA@5.0V	180mA @5.0V	mA
	Tracking	123mA @5.0V	125mA @5.0V	170mA @5.0V	mA
Backup Power			0.07		F
Storage Temperature	Tstg	-45	--	85	°C
Operating Temperature	Topr	-40	--	85	°C
Humidity				95	%

4 Mechanical Specifications



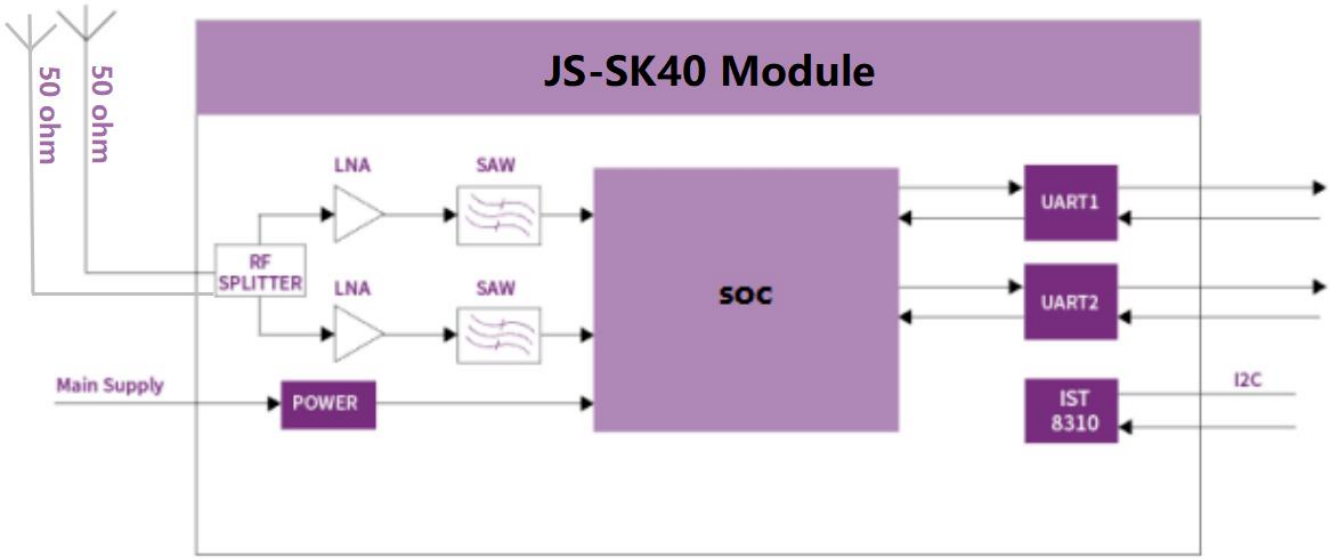


5 Interface Configuration Selections

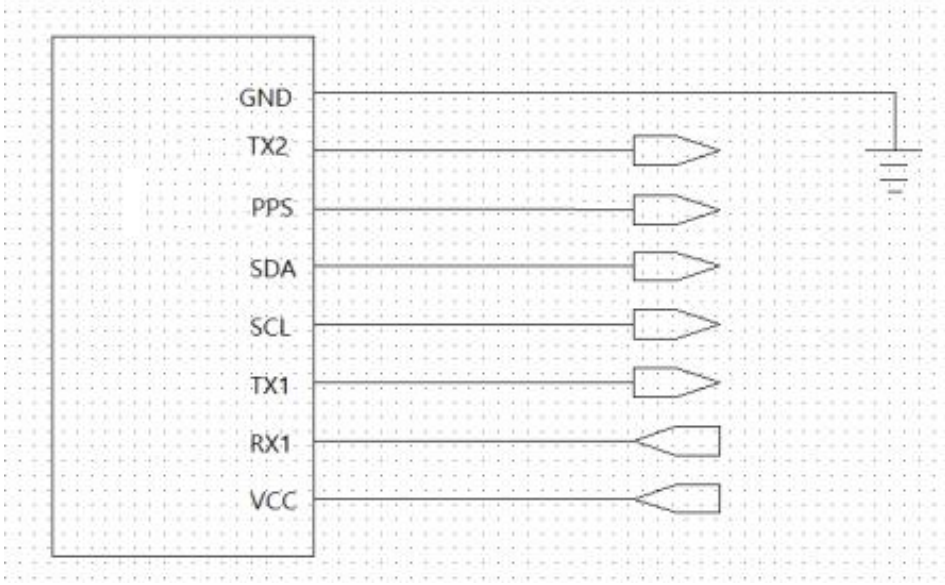
5.1 Interfaces Description

The JS-SK40 module includes two UART interfaces that can be used to communicate with a host computer.

Data can be output through either interface, and the baud rate is configurable.



5.2 Application Circuit



6 ROHS

This product is RoHS compliant.