JS-SK43H-AH

Smart Antenna

Data sheet

Revision history

Version number	Revision history	Date	Edit
V1.0	First Edition	2025-09-28	WW

Table of contents

1. Product Introduction

1.1 Overview

The SK43H-AH is a compact, multi-frequency, high-precision RTK positioning and heading module. Leveraging resilient and reliable GNSS+ technology, this receiver features advanced functions such as interference and spoofing detection and automatic mitigation , setting a performance benchmark for GNSS positioning in the mass market. It not only boasts full-field-of-view satellite tracking capabilities and supports multiple super channels, providing more powerful satellite navigation signal processing capabilities , but also achieves reliable high-precision positioning even in challenging environments . Furthermore, it features industry -leading ultra-low power consumption , making it an ideal choice for drones, robots, autonomous systems, and space-constrained devices requiring highly reliable and accurate positioning . This new product is designed to meet the high-stability , high-precision positioning needs of markets such as drones, robots, precision agriculture, surveying and mapping, and autonomous systems .

1.2 Product Features

- 789 hardware channels, enabling simultaneous operation
- AIM+ features advanced capabilities including interference and spoofing detection and automatic mitigation.
- LOCK+ offers robust tracking capabilities against mechanical shocks and vibrations.
- IONO+ features advanced ionospheric interference protection.
- APME+ multipath mitigation separates direct signals from signals reflected from nearby buildings.
- RTK positioning and orientation data update rate up to 20Hz
- Small size, advanced functions
- Full-field-of-view satellite tracking: Multi-constellation, four-band GNSS receiver
- Its compact size (48.0 mm x 43.2 mm x 37.0 mm ± 0.3 mm) makes it suitable for space-sensitive applications , weighing <24g .
- First-class RTK centimeter-level positioning
- Supports ultra-short baseline heading output

1.3 Performance Indicators

Performance	Technical parameters		
Constellation Frequency	■ BD S B1I , B1C , B2a , B2I , B2b , B3I ■GPS L1 C/A,L1C, L2 PY,L2C, L5 ■GLONASS L1CA,L2CA,L2P,L3 CDMA ■Galileo E1,E5a,E5b,E6 ■QZSS L1C/A,L1C/B,L2C,L5,L6*		
First positioning time	Cold start	35s	
	Warm start	10s	
	Recapture	1s	
	RTK Initialization [1]	7s	
Signal capture	Signal tracking sensitivity	-150dBm (20dB-Hz)	
	Signal 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		
Delay [3]	<10ms		
Speed accuracy	3cm/s		
Baud rate	4800- 4Mbps (default 115200bps)		
Heading accuracy		Heading	Pitch/Roll
	1m antenna spacing	0.15°	0.25°
	5m antenna spacing	0.03°	0.05°
Maximum data rate	20Hz		

Note: Items marked with * will be adjusted according to the version.

1. Baseline <30km
2. RMS levels, 24-hour static, -130dBm, ≥ 12 using satellite
3. 99.9%

1.4 Agreement

Parameter	Protocol
NMEA 0183 , v2.3, v3.03, v4.0	Standard Protocol
SBF	Private Protocol
RTCM3.X	Input (MSM included)

1.5 Antenna specifications

The JS-SK43H-AH module features an active antenna design. An external antenna can be connected for positioning and orientation.

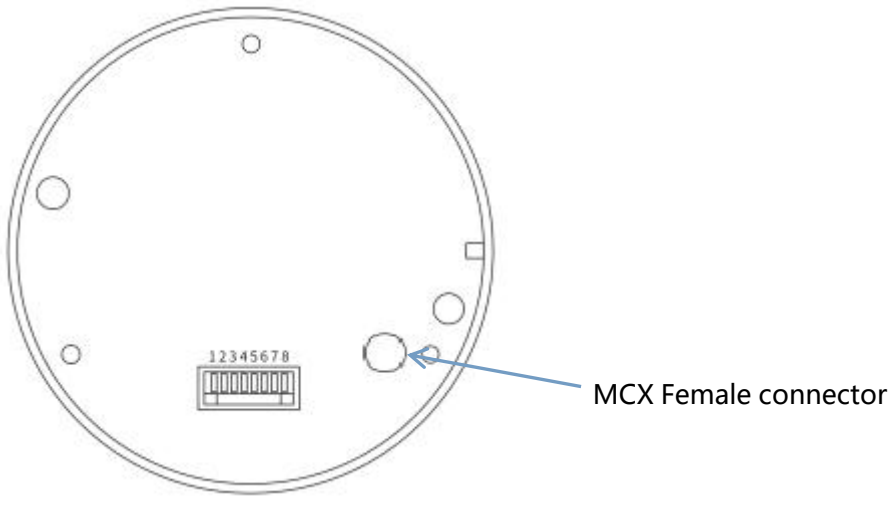
Parameter	Specification
Passive antenna size	φ35mm, height 25mm (default)
Recommended gain range for auxiliary antenna preamplifier	15-35dB

1.6 Application Areas

- Drones
- Automotive Applications
- Precision agriculture
- Maritime Navigation
- Logistics security
- Surveying and mapping
- Intelligent robots
- Smart Port
- Power grid
- Smart Transportation

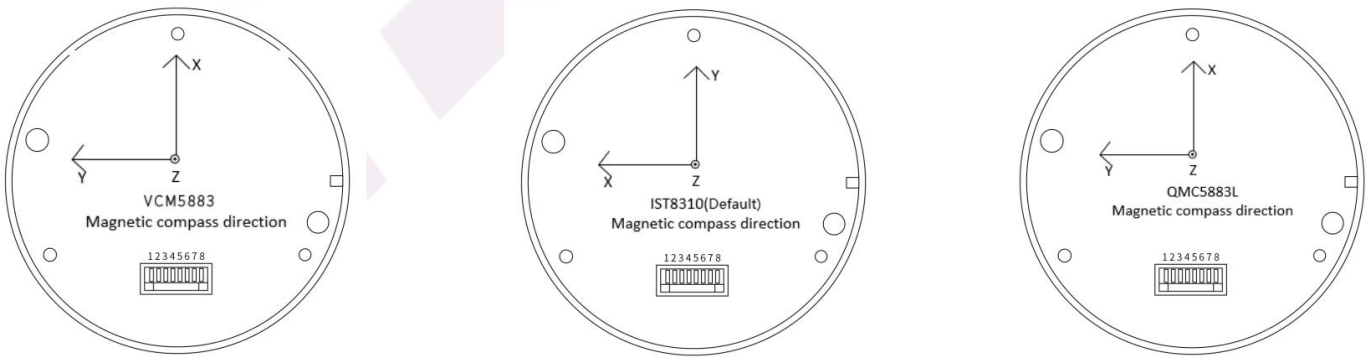
2. Pin definition

2.1 Pin Assignment



SN	Name	I/O	Description
1	GND	G	Ground
2	TX2	O	UART2 Data output
3	PPS/ RX2	O/ I	Serial port (UART 2: used for 1PPS output <Default>/ data input)
4	SDA	I/O	I2C data (keep open when not in use)
5	SCL	I	I2C clock (keep on when not in use)
6	TX1	O	Serial port 1 data output
7	RX1	I	Serial Port 1 Data Input
8	VCC	I	Power supply voltage
MCX Female Connector	RF2	I	GNSS secondary antenna interface, used for directional

2.2 Explanation of Geomagnetism



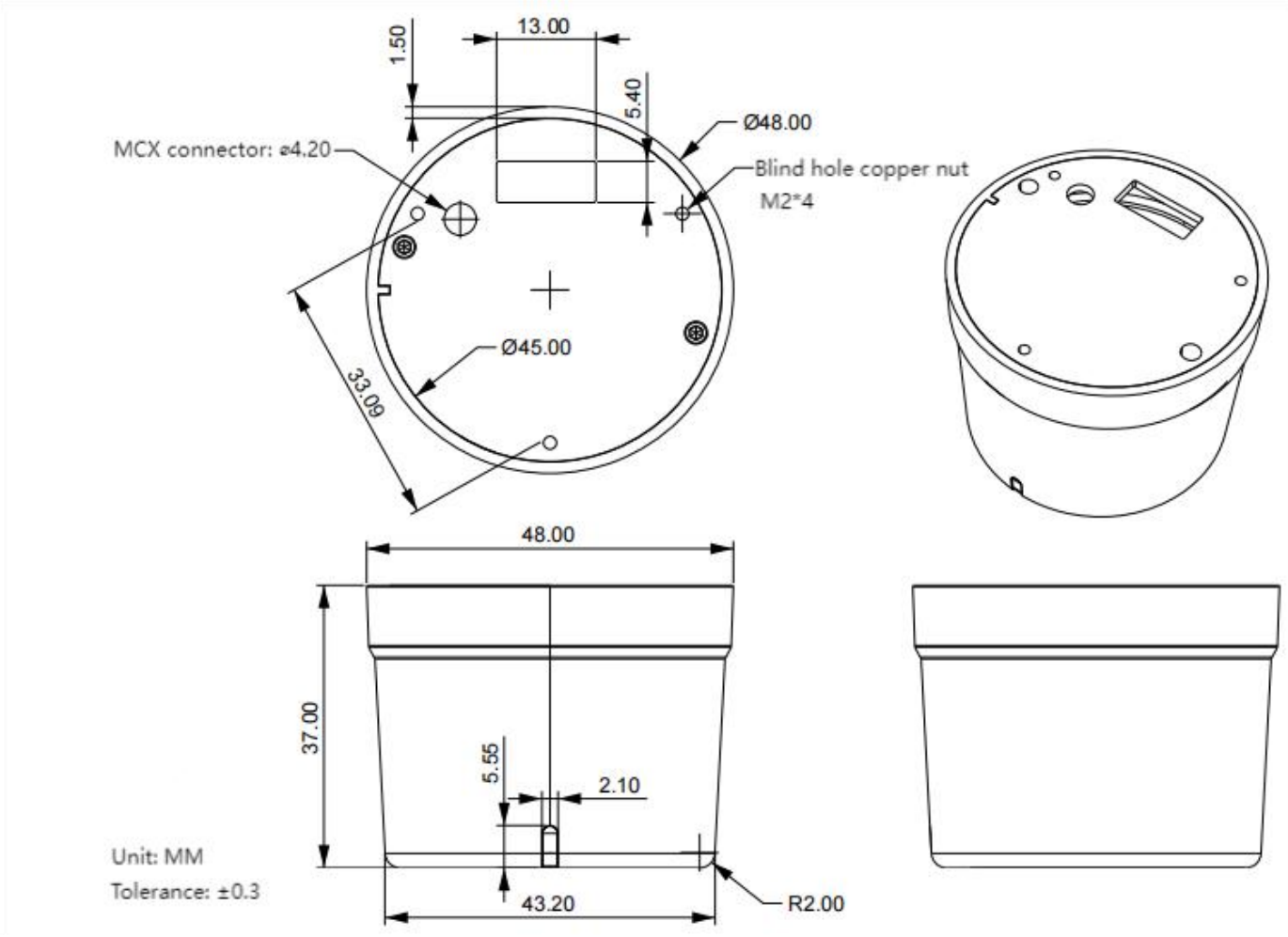
Note: Magnetic compass model:
The geomagnetic model is VCM5883, VCM5883_MS_ADDRESS 0x0C;
The geomagnetic model is IST8310 (default), IST8310_MS_ADDRESS 0x0F;
The geomagnetic model is QMC5883L, QMC5883L_MS_ADDRESS 0x0D.

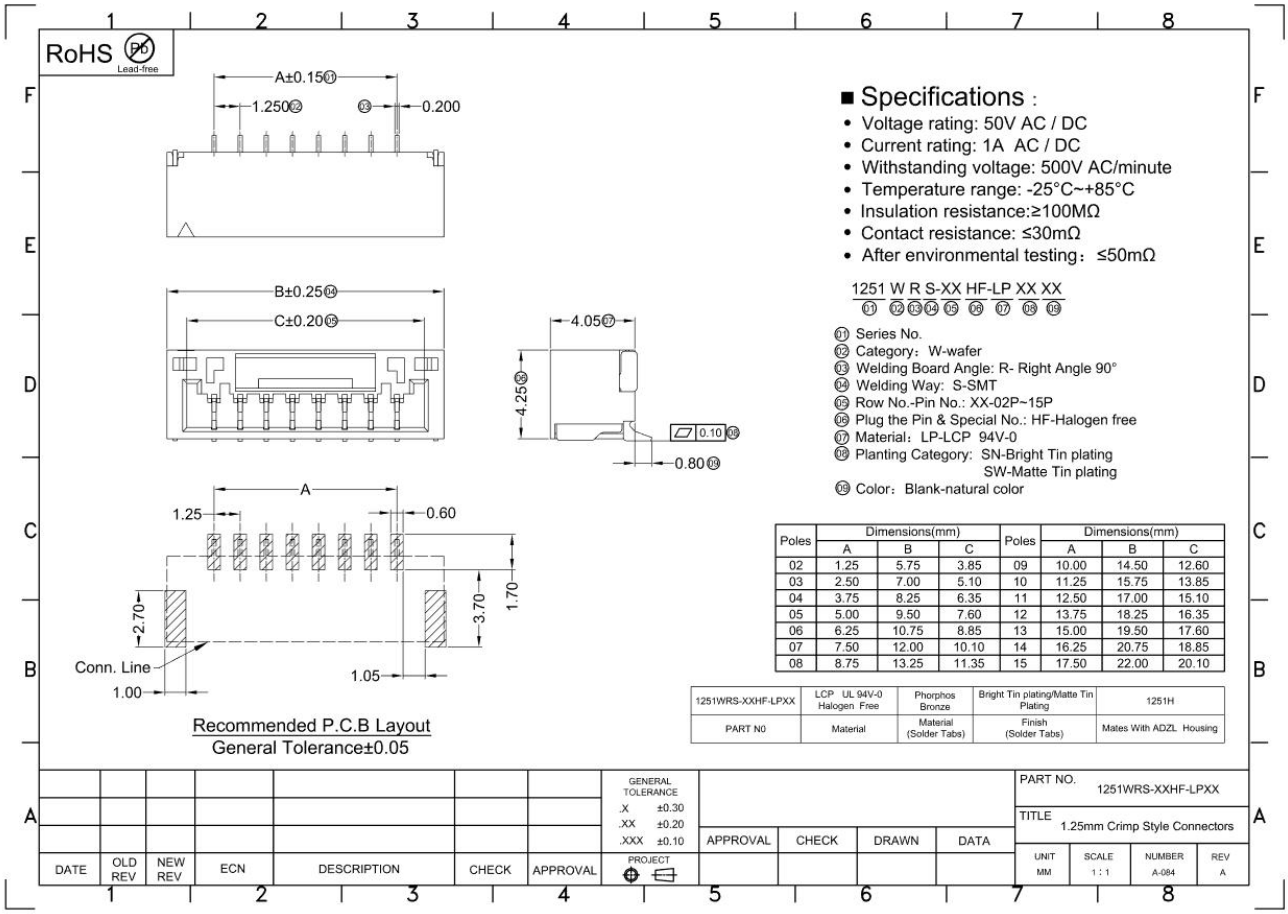
3. Electrical Specifications

Parameter	Symbol	Minimum value	Typical value	Maximum value	Unit
Supply voltage (VCC)	VCC	4.8	5.0	5.5	V
Operating current	Acquisition	135mA@5.0V	155mA@5.0V	190mA@5.0V	mA
	Tracking	133mA@5.0V	135mA@5.0V	175mA@5.0V	mA

Backup power			0.07		F
Storage temperature	Tstg	-45	--	85	℃
Operating temperature	Topr	-40	--	85	℃
Humidity				95	%

4. Mechanical dimensions

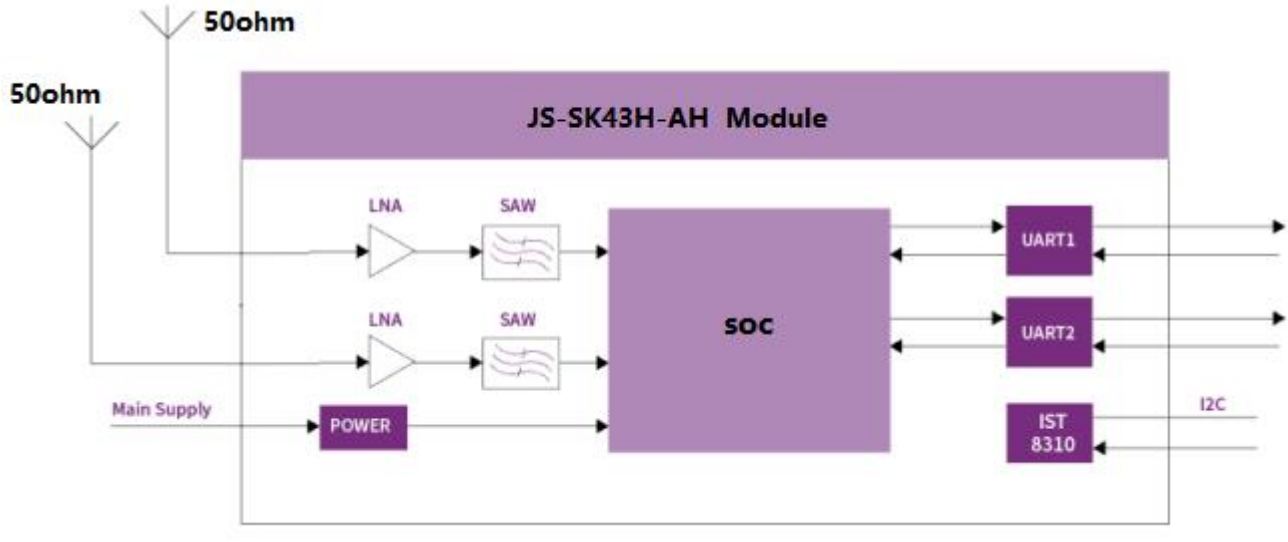




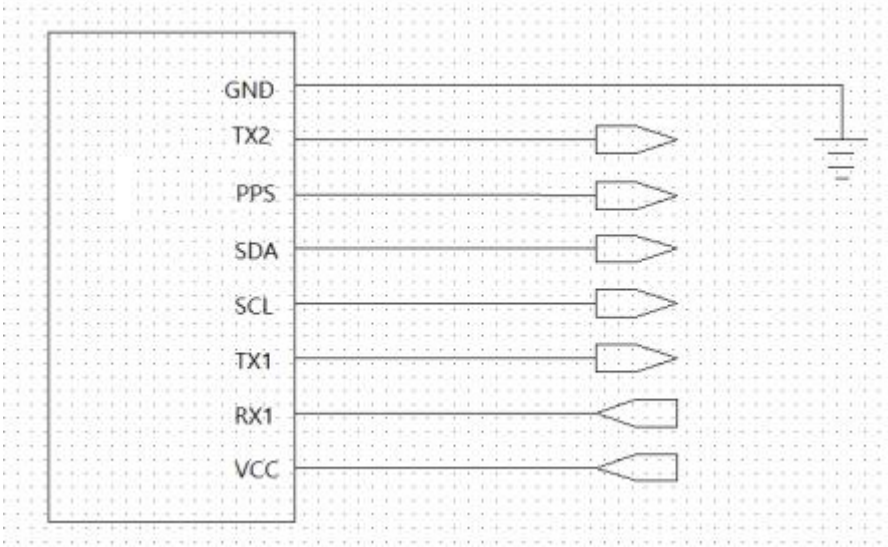
5.Interface Configuration Selection

5.1 Interface Description

SK43H-AH module includes two UART interfaces for communication with the host. Either output interface can be selected to output data, and configurable baud rates are supported.



5.2 Application Circuit



6. RoHS

This product complies with RoHS standards.