



Accurate
positioning



22°43'59.57617"N 114°03'03.61546"E

JS-ANK45-2

Datasheet



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Revision History

Version	Revision Record	Date	Edit By
V1.0	Initial Release	2025-03-25	WW



1 Product Introduction

1.1 Overview

The ANK45-2 is a high-precision module supporting multi-system, multi-frequency RTK positioning calculations. Based on a next-generation RF baseband and high-precision algorithm integrated GNSS chip with a high-performance positioning engine, it features a built-in 2GHz dual-core CPU, advanced anti-interference units, and integrates a high-speed floating-point processor and a dedicated RTK co-processor. With support for 1408 super channels, it provides enhanced satellite navigation signal processing capabilities, ensuring reliable and accurate positioning even in complex electromagnetic environments. Designed for applications requiring high-precision positioning, such as drones, lawn mowers, precision agriculture, and surveying, this product meets the demands of these markets.

1.2 Product Features

- Based on the high-performance JS-N2 module
- Supports 1408 super channels
- Enables multi-system, multi-frequency high-precision RTK positioning algorithm
- RTK positioning data update rate of up to 20Hz
- Supports BDS B1I/B2I/B3I, GPS L1/L2/L5, GLONASS L1/L2, Galileo E1/E5a/E5b, QZSS L1/L2/L5, and SBAS
- Adaptive recognition of RTCM format differential input
- Integrated high-gain antenna
- Integrated TCXO, LNA, SAW, and RTC
- Supports antenna signal detection
- Compact and lightweight (45.0×45.0×12.7mm ±0.3mm), <40g
- Rich hardware interfaces supporting multiple configurations, including optional UART and RS232
- Instant RTK initialization technology

1.3 Performance Specifications

Performance	Technical Parameters		
Constellation & Bands	■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)	20 ns		
Velocity Accuracy ³	0.03 m/s		
Initialization Time ²	< 5 s(typica)		
Baud Rate	9600- 921600 bps (default: 115200bps)		
Max Data Update Rate	20 Hz		

§1 -130dBm, ≥12 satellites in use

§2 Test results may vary due to atmospheric conditions, baseline length, multipath effects, number of visible satellites, and satellite geometry.

§3 50% @ 30m/s dynamic operation

1.4 Protocols

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

1.5 Antenna Specifications

JS-ANK45-2 module uses a passive antenna design.

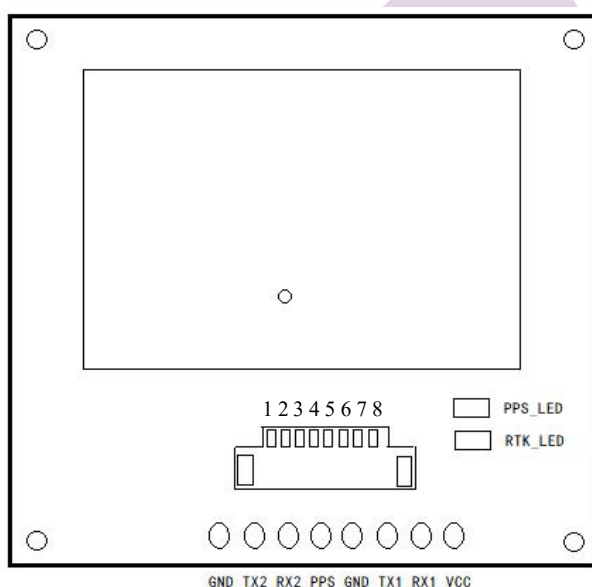
Parameter	Specifications
Antenna	L1 36*36*3mm
	L5 25*25*4mm

1.6 Application Fields

- Drones
- Automotive applications
- Precise agriculture
- Shared vehicles
- Logistics and security
- Surveying and mapping
- Smart robots
- Smart ports
- Power grid and electricity
- Intelligent transportation

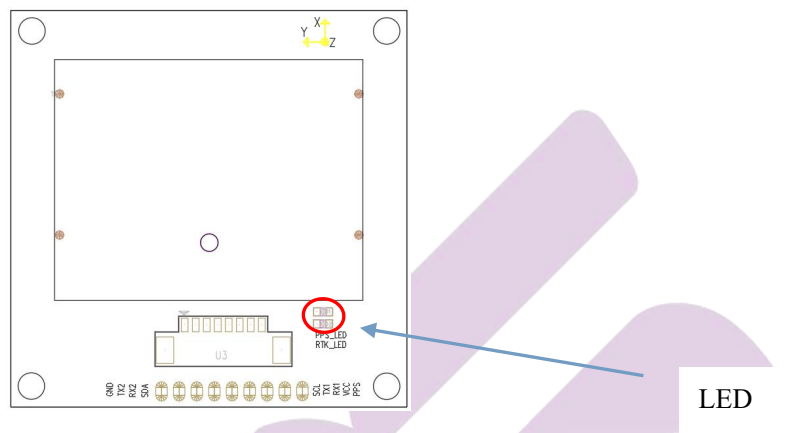
2 Pin Definitions

2.1 Pin Assignment



No.	Name	I/O	Description
1	GND	-	ground
2	TX2/SDA	O	UART2 output (default) / I2C data
3	RX2/SCL	O/I	UART2 input (default) / I2C clock
4	PPS	I/O	Pulse per second
5	GND	I/O	Ground
6	TX1	O	UART1 data output
7	RX1	I	UART1 data input
8	VCC	P	Power supply voltage

2.2 LED Status Indicators



LED	Status Description
PPS_LED	Pulse per second, high level valid
RTK_LED	RTK positioning indicator, high level valid. Outputs high level when RTK fixed solution is achieved; outputs low level for other positioning states or when not positioning.

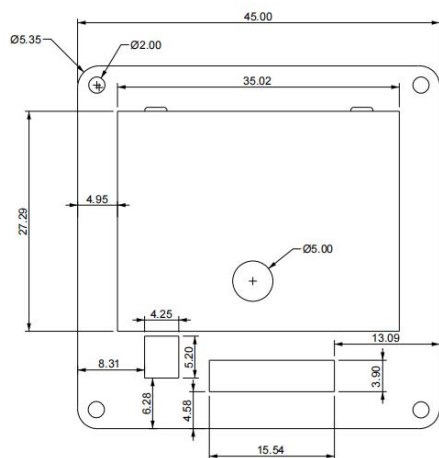
3 Electrical Specifications

Parameter	Symbol	Min	Typical	Max	Unit
Power supply voltage (VCC)	VCC	3.0	5.0	5.5	V
Operating Current	I	180mA @3.3V	220mA @3.3V	310mA @3.3V	mA
Backup battery			0.07		F
VCC Ripple (Max)	Vrpp	0	--	50	mV
MSD(MSL) Level	Level 3	--	--	--	--
Storage Temperature	Tstg	-40	--	85	°C
Operating Temperature ¹	Topr	-40	--	85	°C
Supercapacitor ²	Tstg	-25		60	°C
Humidity				95	%

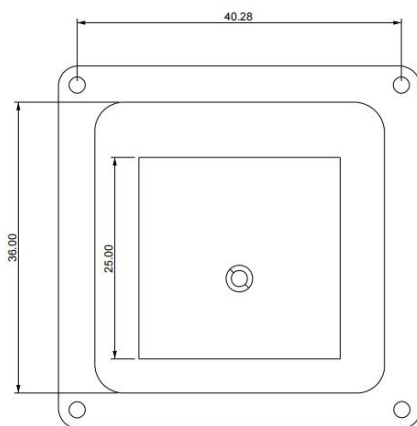
¹ Current temperature range applies when no supercapacitor is used.

² Hot start functionality is unavailable when the operating temperature is below -25°C or above 60°C.

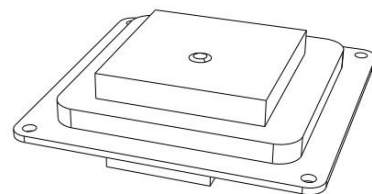
4 Mechanical Dimensions



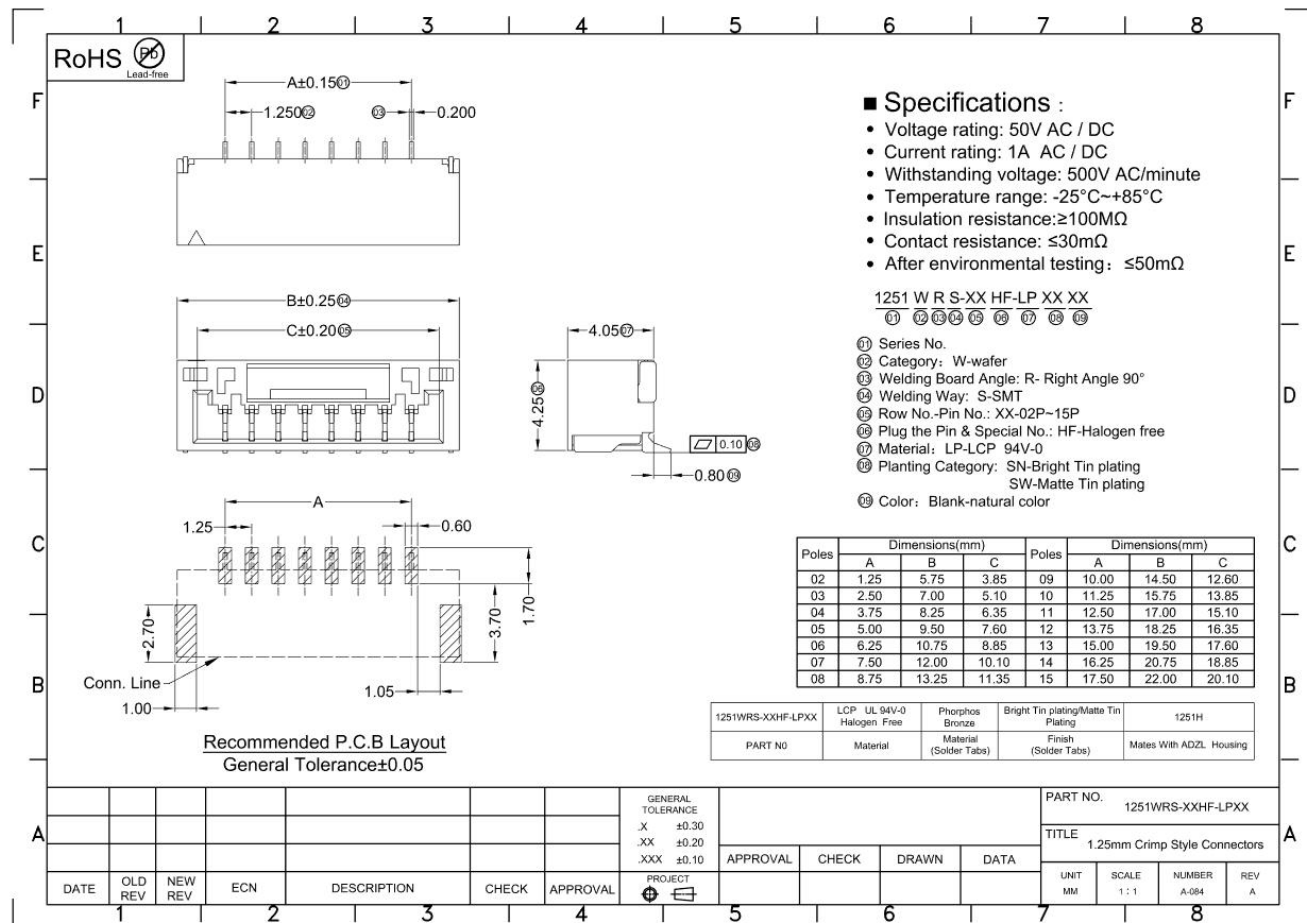
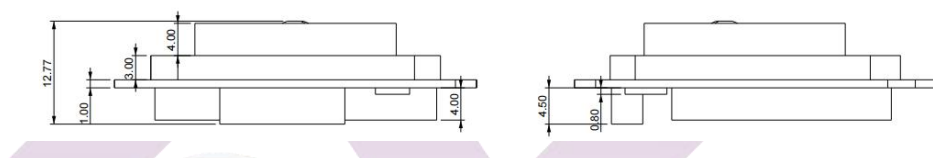
底部



顶部



单位: mm
公差: ± 0.3

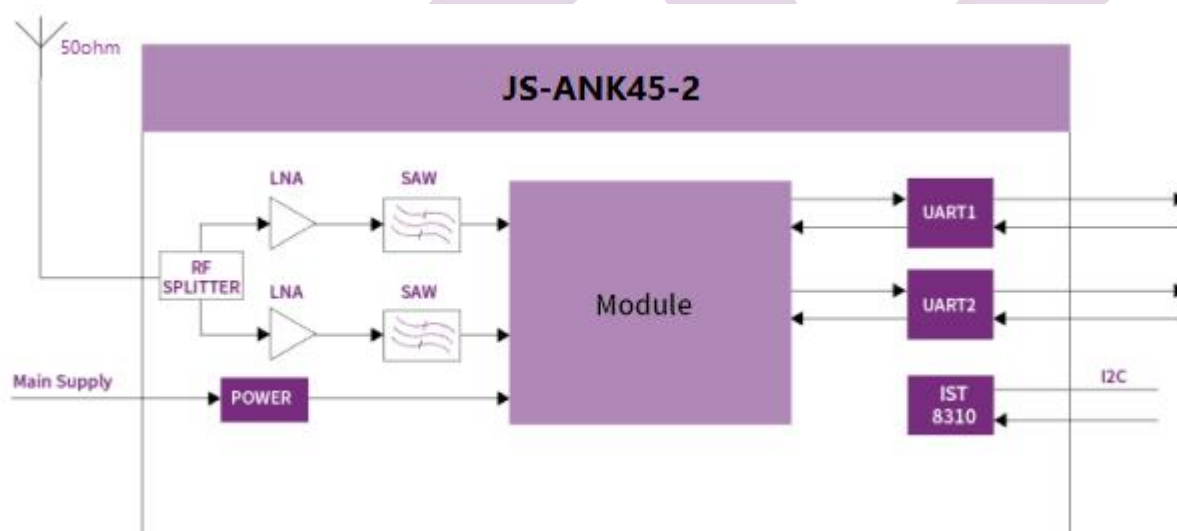


5 Interface Configuration Options

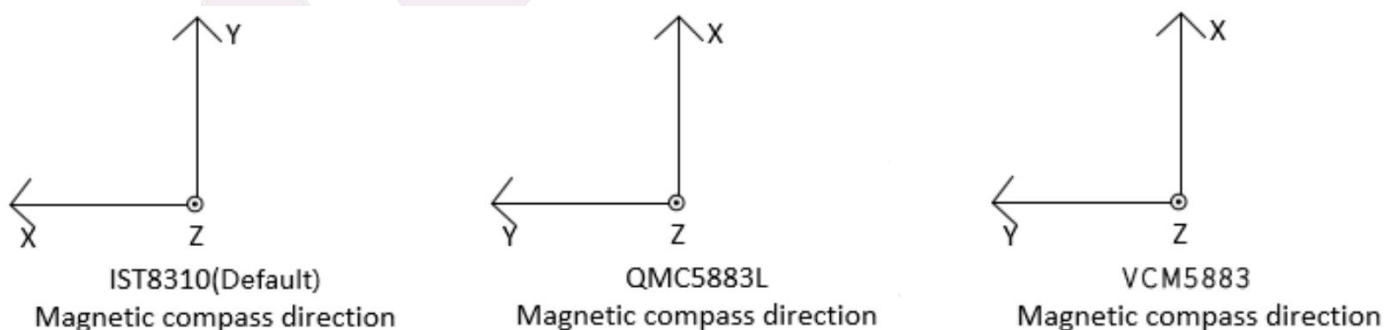
5.1 Interface Description

The ANK45-2 module can be configured based on the required interface outputs and additional sensors. The default option includes a magnetometer (Compass). Other interface options are as follows:

Model No.	TTL	RS232	IST8310
JS-ANK45-2 (Default)	√	NC	NC
JS-ANK45R-2	NC	√	NC
JS-ANK45G-2	√	NC	√
JS-ANK45RG-2	NC	√	√



5.2 Magnetometer (Compass) Description



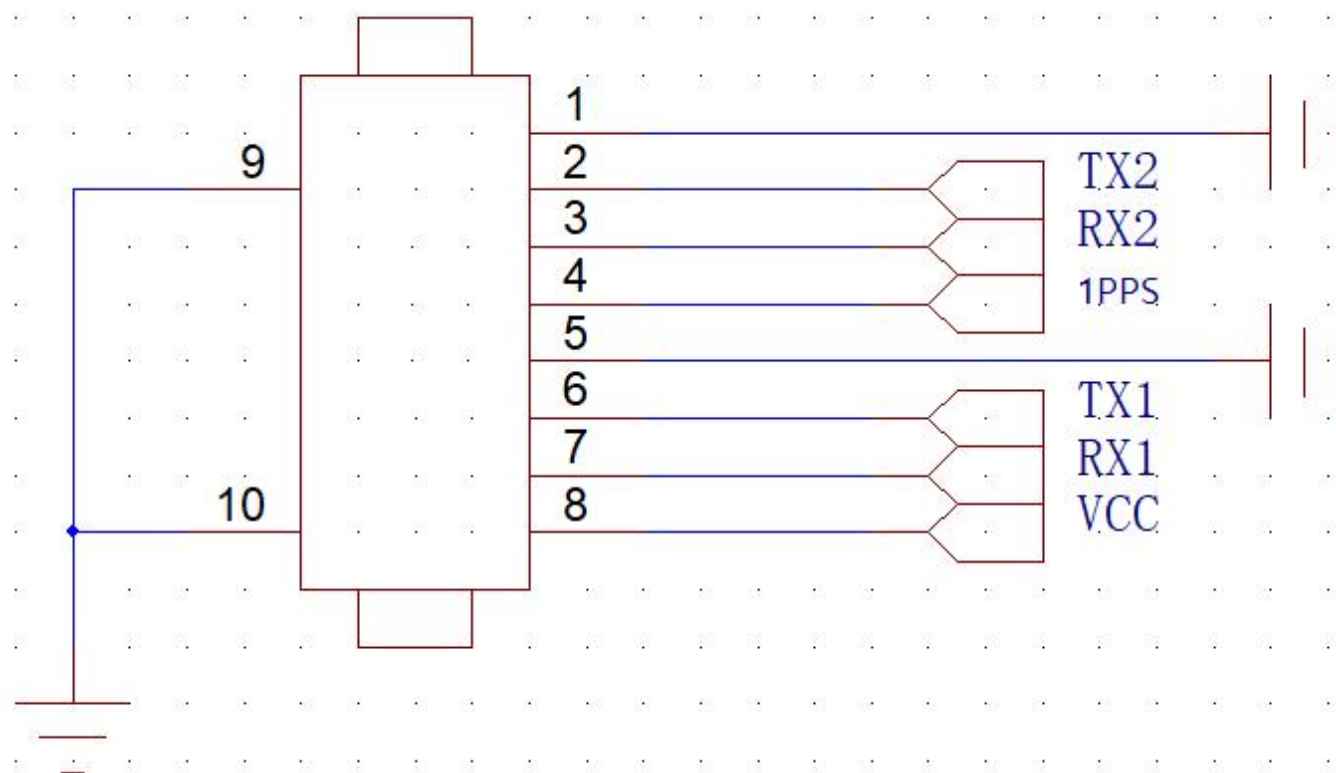
Note: Magnetometer (Compass) models are optional.

Default: IST8310 , IST8310_MS_ADDRESS 0x0F;

Optional: QMC5883L, QMC5883L_MS_ADDRESS 0x0D;

Optional: VCM5883, VCM5883_MS_ADDRESS 0x0C.

6 Application Circuit



7ROHS

This product is RoHS compliance.