



JS-ARP28-2 Dual Band GNSS High-precision Positioning Module

Data Sheet





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Modified Record

Version	Date	Modified Content	Modified by
V1.0	2025-4-29	First Version	WW
V1.1	2025-11-5	Modified backup battery parameter	WW

1.1 Overview

JS-ARP28-2 is a dual-band (L1+L5) GNSS high-precision positioning module with significant features such as small size, light weight, and high cost performance. It adopts high performance & low power consumption architecture, enabling optimized multi-band & multi-mode signal tracking, it is equipped with an advanced anti-multipath & anti-interference RF front-end, provided up to 8 anti-single-tone interference filters for the L1 and L5 frequency bands, significantly improves the positioning accuracy and TTFF performance in complex environments. Based on advanced SOC chip design, the module achieves ultra-high sensitivity and extremely acquisition capability, the innovative dynamic power management technology ensures its low-power consumption operation in continuous positioning mode, it is specially designed for wearable devices, IoT, GNSS modules, trackers, drones, automotive navigation, supporting multi-constellation joint calculation, even in extreme environment such as urban canyons and indoor-outdoor transitions, it still maintain positioning stability.

1.2 Product Features

- Base on high performance GNSS SOC chip
- Up to 10Hz update rate
- 200 tracking channels & a dedicated search engine
- Low power design
- Support GPS、BDS、GLONASS、Galileo、QZSS and IRNSS
- Support SBAS
- Support A-GNSS
- Indoor & outdoor multipath detections and compensations
- Integrate TCXO、LNA、SAW、RTC
- Compact size(28.0mm x 28.0mm x 8.0mm±0.3mm), lightweight (<12.0g)
- Compliance ROHS standard
- The module can be equipped with a geomagnetic sensor



1.3 Specifications

Parameter	Description	
Constellation & frequency	■GPS L1 L5 ■GLONASS G1 ■BDS B1I B1C B2I B2B B2A ■QZSS L1 L5 ■Galileo E1 E5 ■IRNSS L5	
Sensitivity	Tracking & navigation Reacquisition Warm start Cold start	-165 dBm -159 dBm -159 dBm -148 dBm
Time to first fix ¹	Cold start AGPS Warm start	28s 1.5s 1s
GNSS Position accuracy ²	Single position	horizontal: 1.0 m CEP vertical: 2.0 m CEP
Time Accuracy	PPS	< 20ns RMS
Velocity ³		0.1 m/s CEP
Operational constraint ⁴	dynamic altitude velocity	≤ 4 g 20000 m 500 m/s
Baud rate	9600-2M bps (default 115200 bps) ⁵	
Max update rate	10Hz (default 1Hz)	

¹ All satellites are -130dBm

² Open sky, 24hour static, -130dBm, >6SVs, CEP 50%

³ 50%@30m/s dynamic operation

⁴ Assume airborne ≤4g platform

⁵ Open debug log need support baud rate up to 2M

1.4 Protocol

Protocol	Type
NMEA 0183	Input/output, ASCII

1.5 Antenna

Type	Specification
Passive antenna	25.0*25.0*2.0mm(L5), 18.0*18.0*2.0mm(L1)

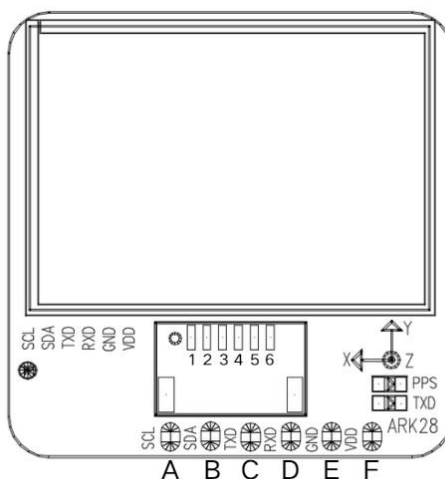


1.6 Production Application

- Drones/UAV
- Smart robotics
- Intelligent logistics scheduling
- Personal travel & wilderness adventure
- Personal protection
- Automotive application
- Wearable devices
- Vehicle navigation & tracking
- AVL & service base location
- Handhold receiver application

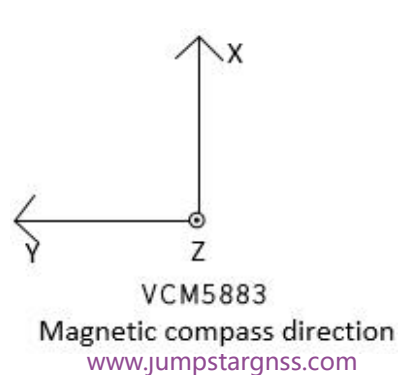
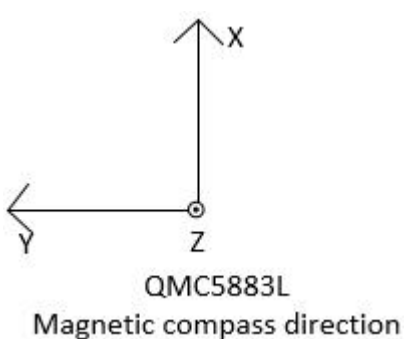
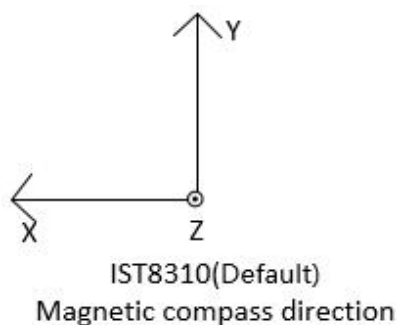
2 Pin definition

2.1 Pin assignment



NO.	Name	I/O	Description
1、A	SCL	I/O	I2C clock(keep it on when not in use)
2、B	SDA	I/O	I2C data(keep it on when not in use)
3、C	TXD	O	Serial port 1 data output
4、D	RXD	I	Serial port 1 data input
5、E	GND	-	Ground
6、F	VCC	P	Power supply voltage

2.2 Geomagnetic Illustrate





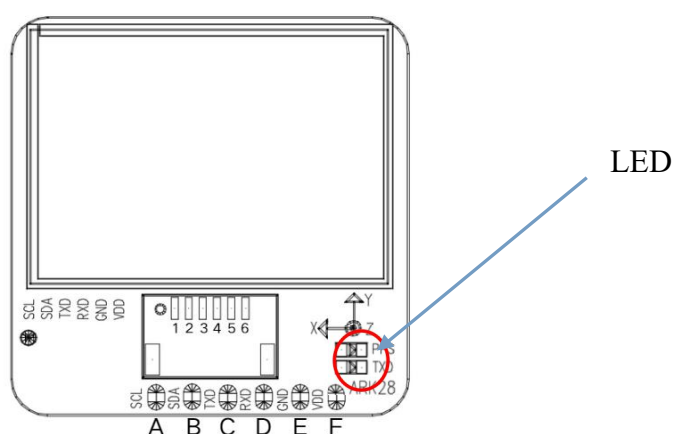
✎₁ Magnetic compass model:

Geomagnetic model IST8310(default),IST8310_MS_ADDRESS 0x0F;

Geomagnetic model QMC5883L, QMC5883L_MS_ADDRESS 0x0D;

Geomagnetic model VCM5883, VCM5883_MS_ADDRESS 0x0C.

2.3 LED indicator status



LED indicator light (Green)	Work conditions	
PPS indicator light	Unlocated	constant lighting
	Successful located	Flashes once per second (3D)
TXD indicator light	1HZ	Flashes once per second
	5HZ	Flashes five times per second
	*Flash frequency depends on the data transmission rate	

3 Electrical characteristics

Parameter	Symbol	Mini	Type	Max	Unit
Supply voltage	VCC	3.3	5.0	5.5	V
Average current	I	18@3.3V	25@3.3V	28@3.3V	mA
Backup battery voltage	V_BACK	1.8	3.3	3.6	V
Backup battery			0.03		F
Backup battery current	I_BCKP		14uA@3.3V		uA

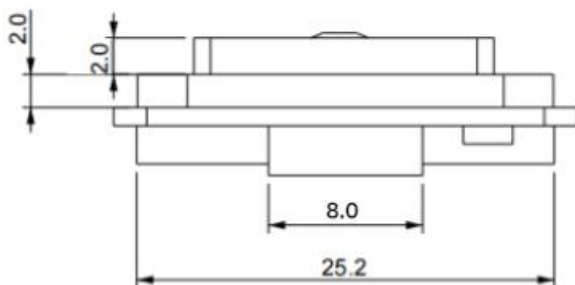
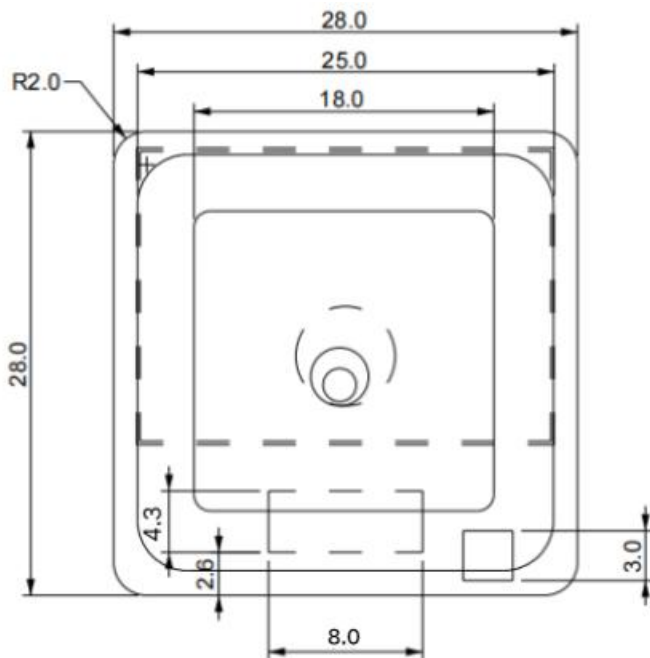


Digital input/output voltage	Div	3.3		3.3	V
Storage temperature	Tstg	-40		85	°C
Work temperature ¹	Topr	-40		85	°C
Farad capacitor ²	Tstg	-25		60	°C
Humidity				95	%

¹ The temperature range is work temperature range without farad capacitors

² The module can't operate to warm start when the temperature is below -25°C or above 60°C

4 Mechanical dimension



Unit: mm

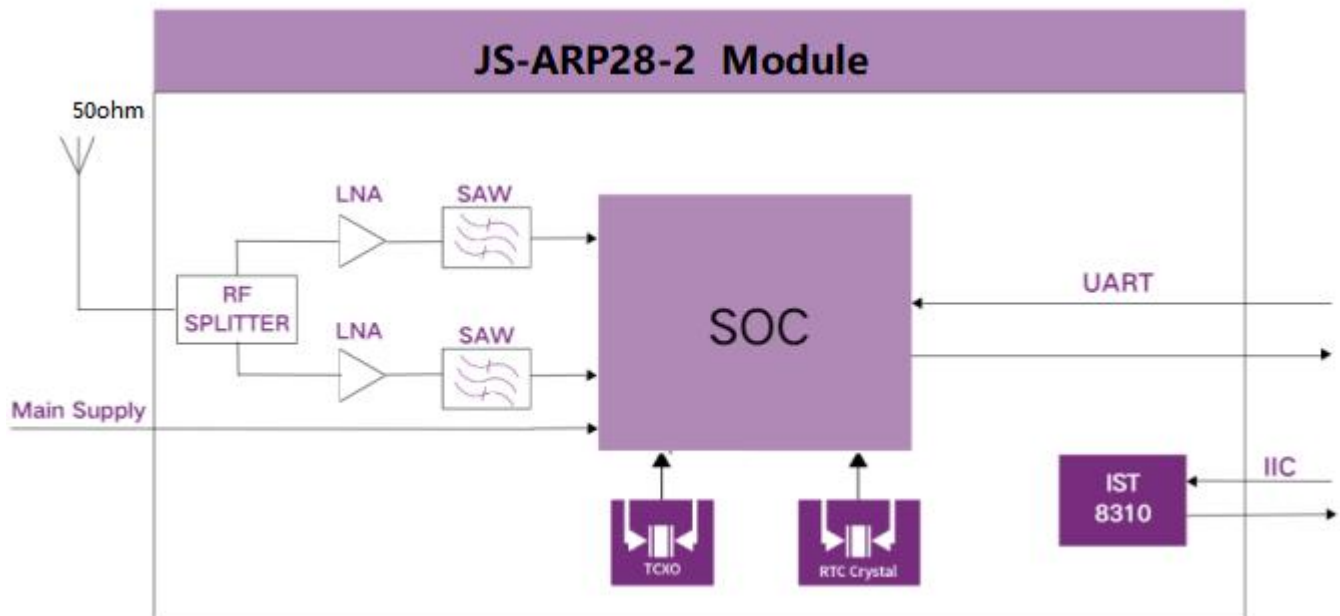
Tolerance: $\pm 0.3\text{mm}$



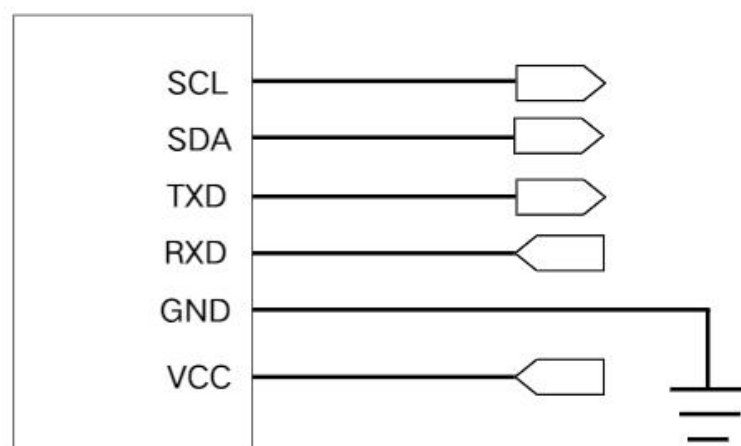
5. Interface configuration selection

5.1 Interface description

JS-ARP28-2 The module can be selected according to the corresponding interface output and the need for additional sensors, Support UART interface output.



5.2 Application circuit



6. ROHS

Compliance with RoHS standard.