



Accurate
positioning

22°43'59.57617"N 114°03'03.61546"E



JS-AUP17FG-1

PRODUCT SPECIFICATION

Data Sheet



Shenzhen Jumpstar Technology Co.,Ltd

Email : info@jumpstar-tech.com

Tel : (86) 0755-23732282

Fax : (86) 0755-23732823

Add : Room1305, Building A, Lechuanghui Building, No.1211 Guanlan Road,
Longhua District, Shenzhen, China.

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Change History of Revision

Revision	Date	Contents of Revision Change	Remark
V1.0	2023-08-08	First release	Wang Wei

1 Functional description

1.1 Overview

JS-AUP17FG-1 is a low-power, low-cost multi-mode solution antenna integration module with exceptional sensitivity and acquisition time for all L1 GNSS systems. It supports simultaneous reception of 4 GNSS (GPS, GLONASS, Galileo, Beidou). The number of visible satellites is large and the receiver selects the best signal. This maximizes location availability, especially in challenging conditions such as deep urban canyons. Super-s(Super Signal) technology provides tremendous RF sensitivity and can improve dynamic position accuracy by up to 25% in small antenna or NLOS scenarios. JS-AUP17FG-1 is able to detect jamming and spoofing events and report them to the host, enabling the system to react to such events. Advanced filtering algorithms mitigate the effects of RFI and jamming, thus enabling the product to work as intended.

1.2 Product Features

- Build on high-performance GNSS Chips
- Cold start acquisition sensitivity of -148dBm and -166dBm tracking sensitivity
- Up to 10 Hz navigation update rate
- Supports BDS,GPS, QZSS, SBAS,GLONASS ,Galileo
- Supports A-GNSS
- Integrated TCXO, LNA, SAW, RTC
- Compact size (20.0mm x 21.0mm x 7.6mm±0.3mm) suitable for space-sensitive application
- Support standard NMEA 0183, UBX

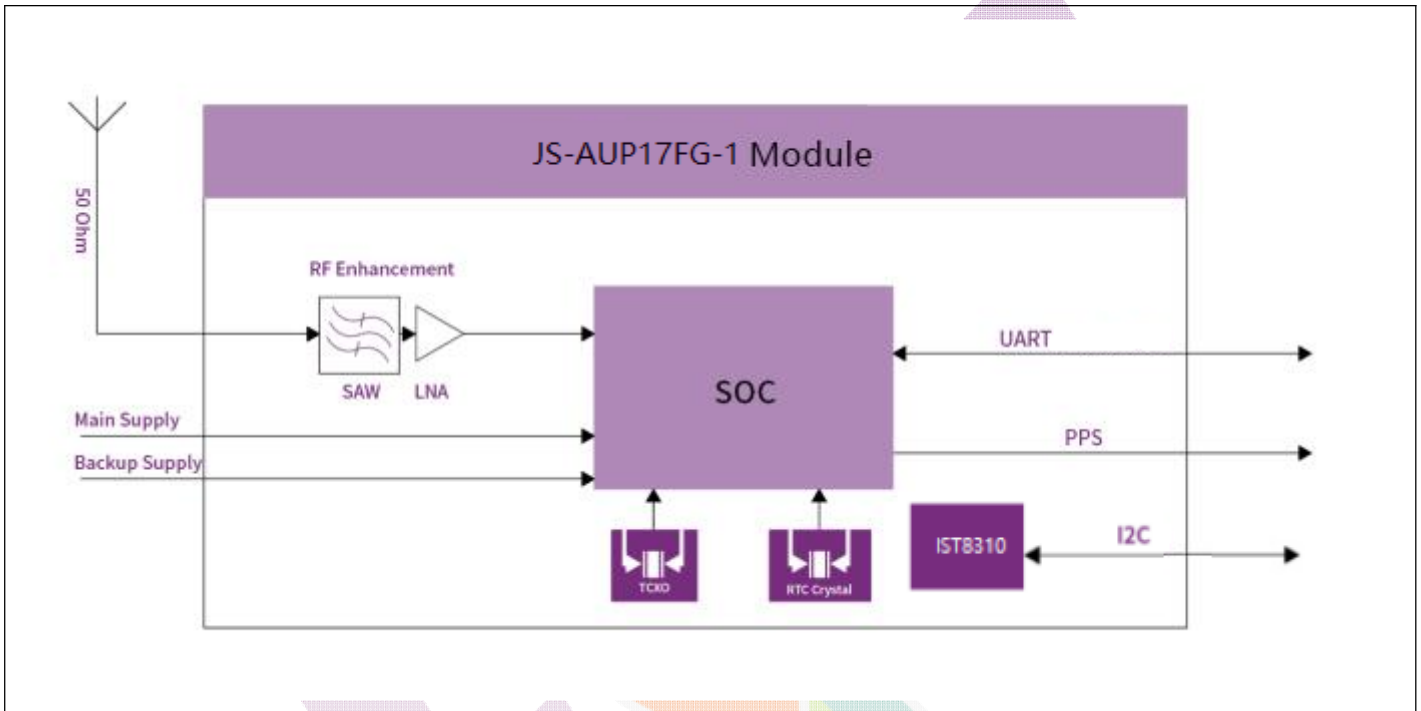
1.3 Performance

Parameter	Specification
Receiver type*	■GPS/QZSS L1C/A ■SBAS EGNOS, GAGAN, MSAS and WAAS ■GLONASS L1OF ■BDS B1I,B1C ■Galileo E1B/C
Sensitivity ¹	Tracking & Navigation -166dBm Reacquisition -160dBm Hot Start -160dBm Cold Start -148dBm
Time-To-First-Fix ²	Cold Start 29 s Hot Start 1 s
Horizontal Position accuracy ³	Autonomous 2.0 m CEP SBAS 1.5 m CEP
Accuracy of time pulse signal	RMS 30 ns 99% 60 ns
Velocity accuracy ⁴	0.05 m/s
Dynamic heading accuracy ⁴	0.3 deg
Operational limits ⁵	Dynamics ≤ 4 g Altitude 80000 m Velocity 500 m/s
Frequency of time pulse signal	Default 1PPS (0.25 Hz to 10 MHz configurable)
Baud Rate	4800 -- 460800 bps (Default 38400 bps)
Max navigation update rate	10 Hz (Default 1Hz, configurable)

*Default GPS+Galileo+BeiDou+QZSS+SBAS, BeiDou B1I cannot be enabled simultaneously with BeiDou B1C or GLONASS L1OF.

- 1 All satellites at $\geq -130\text{dBm}$
- 2 CEP 50%, 24 hours static, $\geq -130\text{dBm}$, $> 6\text{SVs}$
- 3 50% at 30 m/s for dynamic operation
- 4 Assuming Airborne $< 4\text{g}$ platform

1.4 Block Diagram



1.5 Protocols

Protocol	Type
NMEA v2.1, 2.3, 4.0, 4.10 and 4.11 (default)	Input/output, ASCII
UBX	Input/output, binary, u-blox proprietary

1.6 Antenna

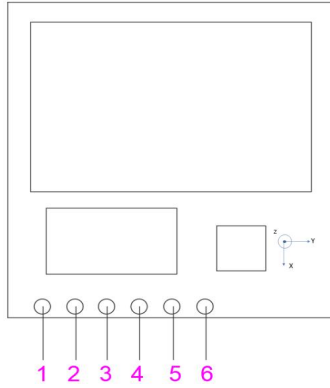
Parameter	Specification
Passive Antenna Type	18.0*18.0*4.0mm

1.7 Product Application

- Drone
- Marine navigation, Fleet management
- Aerial photography drone
- Educational and training drone
- Intelligent robots
- Formation drones
- Unmanned aerial vehicle
- Inspection drone

2 Pin definitions

2.1 Definition of Pin Assignment



No.	Name	I/O	Description
1	SCL	O	I2C Clock (keep open if not used)
2	SDA	I/O	I2C Data (keep open if not used)
3	TXD	O	TTL Output
4	RXD	I	TTL Input
5	GND	G	Ground
6	VCC	P	Main Supply

3 Electrical Specifications

Parameter	Symbol	Min	Type	Max	Units
Power supply voltage	VCC	2.8	5.0	5.5	V
Average supply current	Acquisition	19@5.0V	24@5.0V	35@5.0V	mA
	Tracking	17@5.0V	22@5.0V	33@5.0V	mA
Backup battery			0.07		F
Backup battery current	I_BCKP		28@3.3V		uA
Backup battery voltage	V_back	1.8		3.6	V
Digital IO voltage	Div	2.8		3.3	V
Storage temperature	Tstg	-40		85	°C
Operating temperature ¹	Topr	-40		85	°C
Farah capacitance ²	Tstg	-25		60	°C
Humidity				95	%

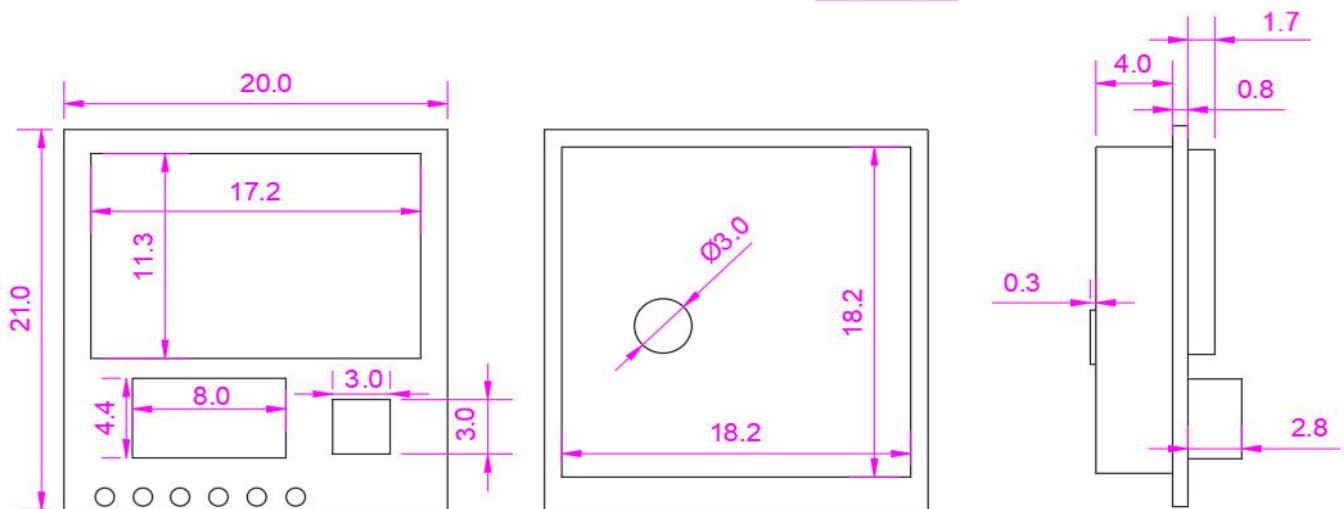
*These values are only provided to the customer information as a typical current demand example. They use cold start

commands to characterize the samples. Actual power requirements depend on firmware version used, external circuitry, number of satellite tracks, signal strength, type and start time, duration, internal amplifier gain mode, and test conditions.

*The inrush current at startup can reach 100 mA. Ensure that the external power supply output power reaches 100ma.

- 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 -20°C or above 60°C

4 Mechanical Specifications



units: mm

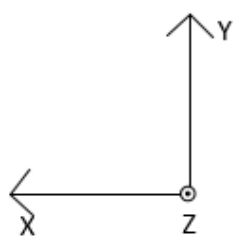
dimension error: $\pm 0.3\text{mm}$

5 Interface configuration selections

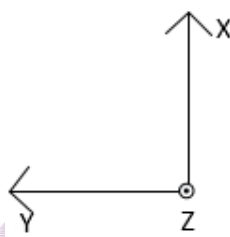
5.1 Interfaces description

The JS-AUP17FG-1 GPS module can be selected according to the need for the corresponding additional sensor, the main options are as follows.

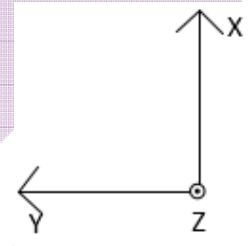
NAME	Flash	IST8310(Default)/QMC5883/VCM5883
JS-AUP17FG-1(Default)	√	√
JS-AUP17F-1	√	NC



IST8310(Default)
Magnetic compass direction



QMC5883L
Magnetic compass direction



VCM5883
Magnetic compass direction

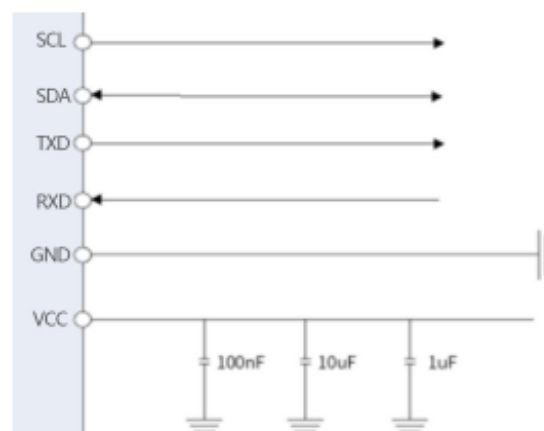
Note: Magnetic compass model:

The geomagnetic model is IST8310(Default) , IST8310_MS_ADDRESS 0x0F.

The geomagnetic model is QMC5883L ,QMC5883L_MS_ADDRESS 0x0D.

The geomagnetic model is VCM5883 , VCM5883_MS_ADDRESS 0x0C.

5.2 Application Circuit



6 ROHS

This product is RoHS compliance