

Dalang

AK721-JM



Shenzhen Dalang Communication Technology Co., Ltd



Dalang Communication Technology Co., Ltd Product Specification

Product Name:	GNSS Receiver
Product Model:	AK721-JM
Version Number:	V 1.0
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1 Product Application Scenarios

The AK721-JM GNSS module supports multiple star systems (GPS/GLONASS/Galileo/BDS/QZSS) and L1/L5 dual frequency technology, ensuring stable positioning in complex environments. With a super high sensitivity of -166dBm, it can accurately capture satellite signals even in weak signal areas. The fastest cold start time is only 5 seconds (AGNSS on), and the hot start response time is 1 second, meeting high efficiency requirements. More support centimeter level RTK positioning (horizontal 1cm+1ppm), providing reliable support for high-precision applications such as drones, precision agriculture, and surveying. The strong adaptability at an altitude of 10000 meters and a speed of 500m/s makes it easy to cope with challenges in vehicle, aviation, and industrial levels. Refer to Figure 1 for details.



Figure 1 Product Application Scenarios

2 Features

In this chapter, we will delve into and comprehensively elaborate on the functionalities and operating principles of the AK721-JM, detailing how it plays a pivotal role in various applications as follows:

1. Multi star system: supports GPS, GLONASS, Galileo, BDS, QZSS, with multiple signal sources, more stable positioning, and a wide range of available scenarios.

2. High sensitivity: The capture and tracking sensitivity is high, and it can also locate complex environments (such as weak signal areas).

3. Quick cold start: The hot start takes only 1 second, while the AGNSS fully starts in 5 seconds, allowing for quick position acquisition.

4. High precision: RTK mode has high horizontal and vertical accuracy, and also performs well in single point positioning, meeting the needs of surveying and mapping.

5. Low power consumption: Backup mode has extremely low power consumption, which is beneficial for battery powered devices to have long battery life.

6. Wide functional adaptability: Supports multiple protocols, TTL output interface, and adapts to different devices and systems.

3 Structural Characteristic

In this section, we will conduct an in-depth analysis of the product's design details, presenting its aesthetic features and precise interface specifications through detailed structural diagrams. This perspective aims to provide a comprehensive framework, thereby enhancing the understanding and perception of the product's architecture. Refer to Figure 2, Table 1.

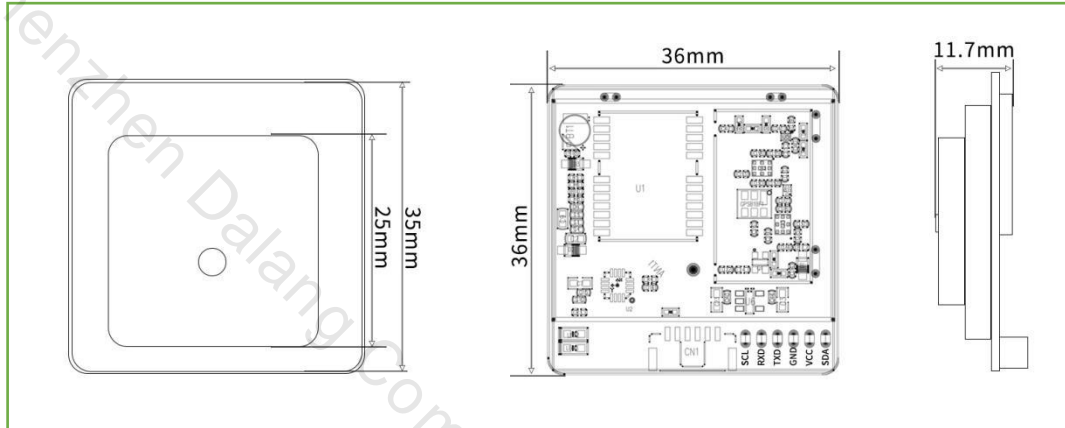
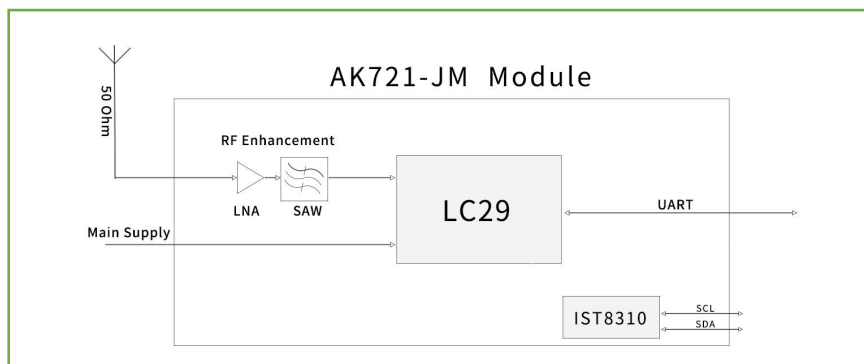


Figure 2 Schematic Diagram

Table 1 PIN Function

NO.	PIN name	describe
1	SDA	The data line in the I2C communication protocol is used for bidirectional transmission of data.
2	VCC	Main power input pin, receives voltage from external power source
3	GND	Ground pin, used to connect to the ground of the circuit and provide the reference voltage required for the circuit loop
4	TXD	Serial transmission data pin, used to send data of serial data stream
5	RXD	Serial receive data pin, used to receive data from a serial data stream
6	SCL	The clock line in the I2C communication protocol is used for synchronous data transmission.

Figure 3 flow diagram



4 Specifications

In this section, we will provide a detailed list and explanation of the product's chip features, sensitivity, accuracy, operating principles, and other technical details, as detailed in Table 2.

Table 2 Product Specifications

Chip characteristics	Operating Frequency	GPS L1 C/A L5 GLONASS L1 L5 Galileo E1 E5a BDS B1I B2a QZSS L1 C/A L5	
	Default galaxy	GPS+GLONASS +Galileo+BDS+QZSS	
Sensitivity	capture	-145dBm	
	Re capture	-157dBm	
	track	-165dBm	
Time To First Fix	TTFF (AGNSS closed)	Completely cold start	26s
		warm start	16s
		hot start	1s
	TTFF (AGNSS enabled)	Completely cold start	5s
	Single point positioning	Level: 1.5mCEP	
		Vertical: 2.5mCEP	
	RTK	Level: 1.0cm+1ppmCEP	
		Vertical: 1.5cm+1ppmCEP	
speed accuracy	0.03m/s CEP		
Timing accuracy	20ns RMS		
Operation restrictions	maximum height	10000m	
	maximum speed	500m/s	
	Maximum acceleration	4g	
Output data	Baud rate	115200-921600bps(default 115200bps)	
	output interface	TTL	

	Output Protocol	NMEA0183 / RTCM3.X
	update frequency	Default 1Hz (1Hz-10Hz)
Power consumption	capture	30mA(99mW)
	track	30mA(99mW)
	Backup mode	25 μ A(82.5 μ W)
Electrical and Physical	working voltage	3.3V~5.5V DC (typical 5.0V)
	size	ϕ 36*11.7mm
	weight	32.4g
	joint	GH1.25mm 6pin
Environment	operation temperature	-40°C-85°C
	storage temperature	-40°C-85°C
Compass		IST8310

5 Product Photos

In this chapter, we will showcase real-life images of the product, as shown in Figure 4. These images provide a detailed view of our product from various angles and perspectives. We believe that through authentic representation, we can better convey the value and concept of the product, thereby enhancing your trust and satisfaction.



Figure 4 Product Images

6 measured data

