

# Dalang

## AK188





# Dalang Communication Technology Co., Ltd Product specification sheet

Product Name:	GNSS Receiver
Product model:	AK188
Version number:	V 1.0
Revision Date:	2024.09.20

# Confidentiality Statement

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Shenzhen Dalang Communication Technology Co., Ltd

# 1 Product application scenarios

The AK188 module integrates advanced UM620 modules and is equipped with high-performance ceramic antennas, which can simultaneously track satellite signals from up to 5 GNSS constellations, ensuring precise positioning even in challenging environments such as complex urban canyons. This receiver performs excellently in distinguishing positioning signals from environmental noise, and can effectively capture positioning data even under weak satellite signal conditions. This module is particularly suitable for lightweight unmanned aerial vehicles (UAVs), unmanned surface vehicles (USVs), and unmanned ground vehicles (UGVs), making it ideal for applications such as aerial photography, remote monitoring, disaster monitoring, and safety monitoring. Refer to Figure 1 for details.



Figure 1 Product Application Scenarios

## 2 functions

In this chapter, we will delve into and elaborate on the functions and working principles of AK188, detailing how it plays a key role in different applications, as follows:

1. **progressiveness technology:** The module is designed based on the Hexin Xingtong UM620 series products, which can ensure stable and high-precision positioning performance even in extreme environments.
2. **Five mode joint solution:** Supports the joint solution of Beidou, GPS, Galileo, GLONASS, and QZSS five modes, demonstrating excellent compatibility with global positioning systems and fast, reliable initialization capabilities.
3. **5Hz data output rate:** The module has a high data output rate of 5Hz, demonstrating its high-performance processing capability, which can quickly respond and adapt to dynamically changing environments.
4. **Compatibility:** Supports A-GPS services such as Assist Now Online and Assist Now Offline.
5. **Ceramic antenna:** The built-in 25 \* 25 \* 4/35 \* 35 \* 4mm ceramic antenna has lightweight, high gain, high precision, and strong anti-interference ability.
6. **Industrial noise reduction:** Adopting industrial grade low-noise RF circuit design, it enhances the ability to resist multipath interference and ensures clear signal acquisition even in high noise environments.

### 3 Structural characteristics

In this chapter, we will delve into the design details of the product and present its appearance characteristics and precise interface definitions through detailed structural diagrams. This perspective aims to provide a comprehensive framework to deepen the understanding and cognition of product structure, as shown in Figures 2, Figures 3, and Table 1.

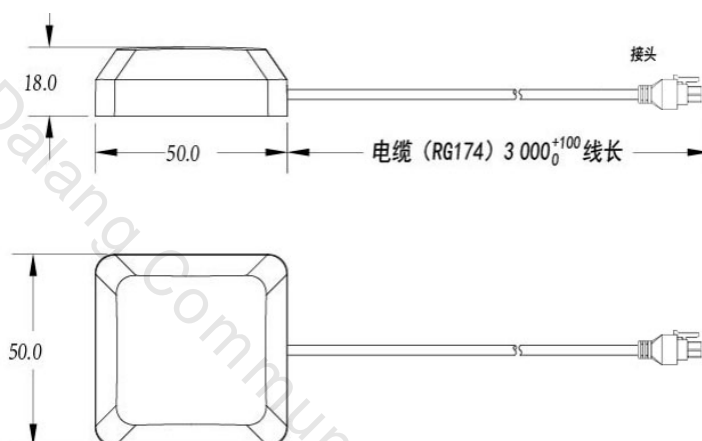


Figure 2 Product Structure Diagram

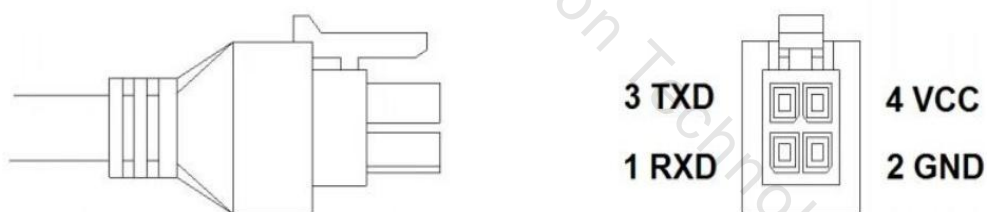


Figure 3 Interface Structure Diagram

Table 1: Interface Definition Explanation Diagram

PIN Name	describe
RXD	RS232 interface data input
GND	Grounding
TXD	RS232 interface data output
VCC	Power input, DC+5V
Connector model	Pitch 3.0mm Public Housing 2x02P

## 4 Specification parameters

In this chapter, we will provide a detailed list and explanation of the product antenna characteristics, components, environmental characteristics, design principle diagrams, and other technical details, as shown in Table 1. Table 1 Product Specification Parameters.

Specification parameters			
Chip characteristics	1	chip	Dual frequency chip
	2	Signal channel	96 channels
	3	working frequency	GPS L1 C/A, L5 GLONASS G1 BDS B1I, B1C*, B2a Galileo E1, E5a QZSS L1, L5
	4	First Time of Positioning (TTFF) 1	Cold start:<26 seconds Hot start:<2 seconds Re capture:<2 seconds
	5	sensitivity	Tracking: -162 dBm Re capture: -160 dBm Cold start: -148 dBm Hot start: -158 dBm
	6	Positioning accuracy (CEP) 1	Plane: 1.5 meters (dual frequency four system)
	7	Speed accuracy	0.05m/s
	8	1PPS	20ns
	9	Data update rate	1Hz-5 Hz (default) 1Hz
IMU gyroscope	1	range	±250°/s
	2	Zero bias stability	3.5°/h
IMU accelerometer	1	range	±8g
	2	Zero bias stability	25μg (x,y) 100μg (z)
Antenna	1	Ceramic size	35*35*4/25*25*4

<b>characteristics</b>	2	Maximum gain of antenna	2.5dBi
	3	Polarization mode	Right-handed circular polarization
	4	Noise coefficient	$\leq 0.8\text{dB}$
	5	LNA gain	L1: $20\pm 2\text{dB}$
	<b>Job characteristics</b>	1	working voltage
2		power waste	$< 100\text{mW @} 5\text{V}$
3		Overall size	50*18mm
4		weight	89.6g
5		Line length	3m
6		interface	Pitch 3.0mm Public Housing 2x02P
7		Agreement	RS232
8		working temperature	$-40^{\circ}\text{C}-85^{\circ}\text{C}$
9		Storage temperature	$-40^{\circ}\text{C}-85^{\circ}\text{C}$

## 5 Product physical picture

In this chapter, we will present real-life photos of the product, as shown in Figure 5.

Through these pictures, you can see our products from different angles and details. We believe that through authentic display, we can better convey the value and philosophy of the product, thereby enhancing your trust and satisfaction with the product.



Figure 5 Product Display