

Dalang

AK735





Dalang Communication Technology Co., Ltd Product Specification

Product Name: GNSS Receiver

Product Model: AK735

Version Number: V 1.0

Revision Date: 2025.09.25

Confidentiality Statement

This document and the information contained within are the property of **"Dalang Communication Technology Co., Ltd"**, and are for use only by authorized individuals for specific purposes. This document contains confidential information. Without explicit written permission from **"Dalang Communication Technology Co., Ltd"**, no person or group may copy, distribute, disseminate, display, or disclose this document or any part of it to a third party in any form. Recipients must strictly adhere to confidentiality obligations, protect the information in the document from being disclosed or misused, and ensure that all relevant personnel follow the same confidentiality rules. Individuals or organizations violating this statement will face legal prosecution and/or contractual penalties.

Thank you for your support and cooperation in protecting the confidential information of **"Dalang Communication Technology Co., Ltd"**.

Contents

1 Product Application Scenarios	1
Figure 1 Product Application Scenarios	1
2 Features	2
3 Structural Characteristic	3
Figure 2 Dimensional Drawing (in millimeters)	3
Table 1 PIN Function	3
4 Specifications	4
Table 2 Product Specifications	4
5 Product Photos	6
Figure 4 Product Images	6

Shenzhen Dalang Communication Technology Co., Ltd



1 Product Application Scenarios

The AK735 product is a single inertial navigation RTK receiver based on the Beiyun M21 chip. The core is equipped with a high-precision inertial measurement unit (IMU) and a deep coupled integrated navigation engine, which can comprehensively receive multi-frequency GNSS signals from GPS, BDS, GLONASS, Galileo and other systems. It not only achieves high-precision RTK positioning of 1.0cm+1ppm, but also continuously outputs stable position data through the dead reckoning function of the single inertial navigation system, ensuring the continuity of positioning even in satellite signal loss scenarios such as urban canyons and tunnels. The whole machine achieves ultimate lightweight and compact design while maximizing performance, with a weight of only 92g and a small size control of $68 \times 68 \times 19\text{mm}$. It does not require too much installation space and has strong adaptability. It can be widely used in scenarios such as autonomous driving assisted positioning, drone precision operation, intelligent robot inspection, surveying and exploration, providing real-time and reliable position and attitude information support for various devices. 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 AK735, detailing how it plays a pivotal role in various applications as follows:

- 1. Multi system compatibility:** Supports mainstream global satellite navigation systems such as Beidou, GPS, GLONASS, Galileo, etc., enhancing signal coverage and positioning reliability.
- 2. Centimeter level high precision:** Using RTK (Real Time Kinematic) technology, it provides real-time centimeter level positioning to meet the requirements of high-precision applications.
- 3. Strong anti-interference ability:** Equipped with advanced anti multipath and anti electromagnetic interference algorithms, it can maintain stability in complex environments
- 4. Low power design:** Optimized power management, suitable for energy sensitive application scenarios such as drones and portable devices.
- 5. Rapid convergence:** High sensitivity receiving technology reduces RTK initialization time and improves operational efficiency.
- 6. Industrial grade reliability:** wide temperature working range, earthquake and dust resistance, suitable for harsh outdoor environments.
- 7. Compatibility:** Fully compatible with other automatic flight control systems such as Pixhawk and APM, with good compatibility and seamless integration support for multiple flight platforms.
- 8. Low noise reduction:** Industrial grade low-noise RF circuits are used, which have strong resistance to multipath suppression and improve signal reception quality.

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, Figure 3, Table 1.

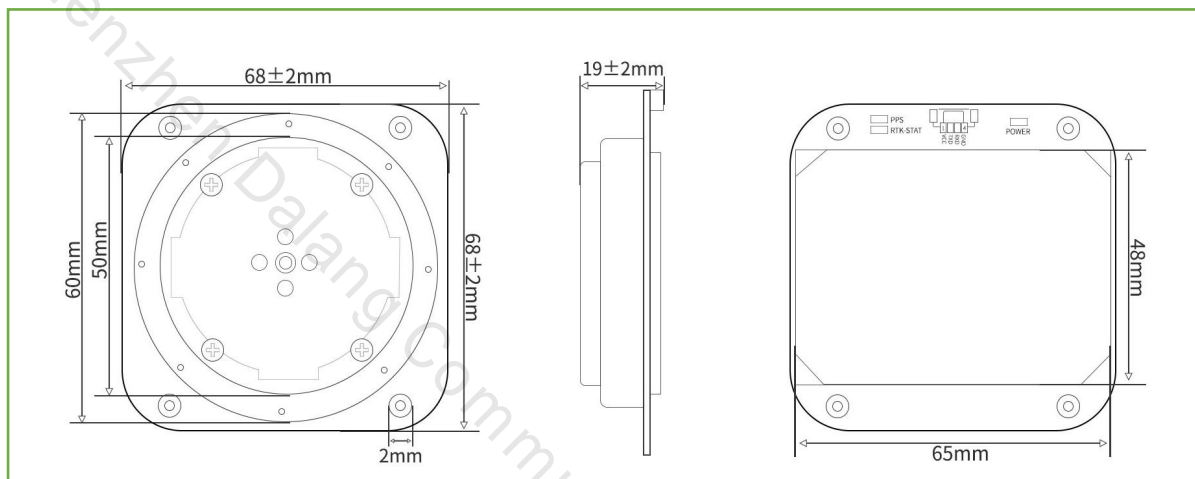


Figure 2 Dimensional Drawing (in millimeters)

Table 1 PIN Function

NO.	Pin Definition	Describe
1	VCC	Main power input,+3.3V~5V
2	TX1	UART1 output, 3.3V TTL
3	RX1	UART1 input, 3.3VTTL
4	GND	Module grounding

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	Beiyun M21
Chip characteristics	Operating Frequency BDS-2: B1I/B2I/B3I BDS-3: B1C*/B2a/B2b(PPP)*/B3I GPS: L1 C/A/L1C*/L2/L5 GLONASS: G1/G2 Galileo: E1/E5a/E5b/E6(HAS)* QZSS: L1C/A/L1C/L2/L5、L6(CLAS)* NavIC: L5 SBAS*:L1C/A
	Receiving channel 1507 channel
Accuracy	Horizontal positioning accuracy (RMS) Single point: 1.5m RTK:1.0cm + 1ppm
	Elevation positioning accuracy (RMS) Single point: 2.5m RTK:1.5cm + 1ppm
	Timing accuracy (RMS) ≤ 20 ns
	Speed accuracy (RMS) 0.03m/s
	RTK calculation delay 50ms
Start Time	cold start 30s
	hot start 5s
	RTK initialization time <5s (typical value)
	Lost lock recapture time <1s
IMU performance (Gyroscope)	range ±300° /s
	angle random walk 0.5° / √ h
	Zero bias instability 5° /h
	Full temperature zero bias 0.3° /s

	Scale error	4‰
	Three-axis orthogonal coupling error	1.7 (0.1°) ‰
IMU performance (accelerometer)	range	± 16g
	rate random walk	0.3m/s/√h
	Zero bias instability	50 μg
	Full temperature zero bias	5 μg
	Scale error	2‰
	Three-axis orthogonal coupling error	0.9 (0.05°) ‰
	System functional safety*	ASIL B
Output data	Baud rate	115200bps (default) [Optional: 4800-921600]
	output interface	TTL
	Output Protocol	NMEA0183、RTCM 3.3
	update frequency	GNSS positioning: 1-10 Hz (Default 1HZ) INS positioning: 100 Hz IMU raw data: 100 Hz
Differential data	Differential data	RTCM 3.3/3.2/3.1/3.0
	Carrier phase output	Support, output RAWX statement
	FLASH	built-in
Electrical specifications	working voltage	3~5.5V DC
	power consumption	800mW
Physical parameters	size	68*68*19mm
	weight	92g
	joint	GH1.25mm 4pin
Environment	operation temperature	-35℃-80℃
	storage temperature	-40℃-95℃

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