AK713CAN

Shenzhen Dalang Communication Technology Co., Ltd

Dalang Communication Technology Co., Ltd Product Specification

Shenzhen Dalang Communication Technology Co., Ltd

Product Name:	GNSS Receiver
Product Model:	AK713CAN
Version Number:	V 1.0
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1 Product Application Scenarios

The AK713CAN module has a built-in compass RM3100 and adopts a full system full frequency RTK engine UM980 module, providing real-time centimeter level differential positioning accuracy, suitable for unmanned aerial vehicles, automobiles, and surveying fields. The module supports both "mobile station" and "reference station" modes, utilizing carrier phase difference technology to accurately eliminate various errors and achieve high-precision positioning. In the base station mode, the output conforms to the RTCM2. x/3. x standard data stream, compatible with most commercial mobile stations, and supports network RTK reference design. In mobile station mode, it is compatible with RTCM2. x/3. x data formats and can be connected to multiple reference stations or the national Beidou ground-based augmentation system. This module has a static positioning accuracy as low as 1cm and a dynamic positioning accuracy as low as 2cm, with an output rate of 1-20Hz, balancing high performance and cost-effectiveness. See 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 AK713CAN, detailing how it plays a pivotal role in various applications as follows:

1. **Strong stability:** Based on the UM980 series product design, the module can obtain stable and high-precision positioning results even in harsh environments, optimize signal reception capabilities, and enhance adaptability to temperature and humidity changes.
2. **Built in STM32 chip, powerful processing performance, real-time data processing and data optimization.**
3. **Data output:** UAVCAN standard protocol output, high implementation and strong anti-interference ability.
4. **Anti interference:** It can effectively resist interference from other electronic devices, ensure clear and accurate positioning signals, and enhance electromagnetic compatibility design to ensure stable and accurate positioning data.
5. **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.
6. **Low noise reduction:** Industrial grade low-noise RF circuits are used, which have strong resistance to multipath suppression and improve signal reception quality.
7. **High precision:** Built in four wall spiral antenna combination enhances signal reception capability and achieves high-precision positioning.
8. **Strong heading:** Added RM3100 geomagnetic sensor, three-axis low-noise anti-interference, accurate heading data output

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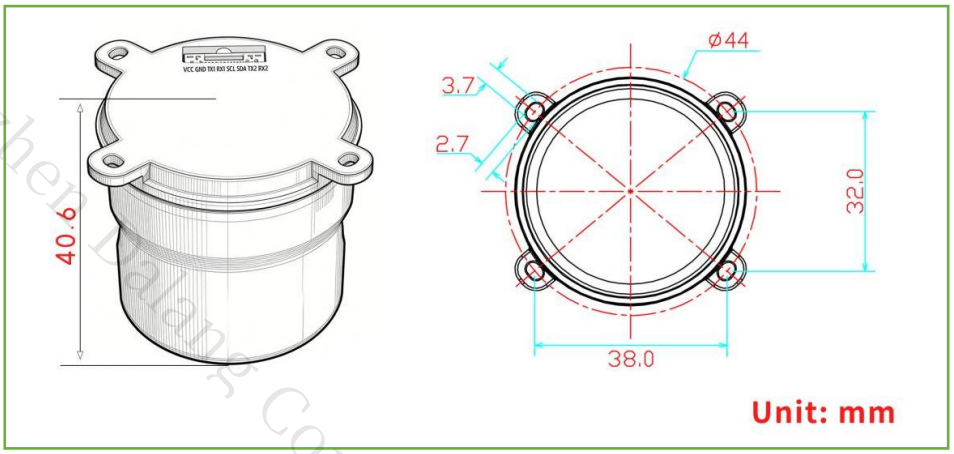
3 Structural Characteristic

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.



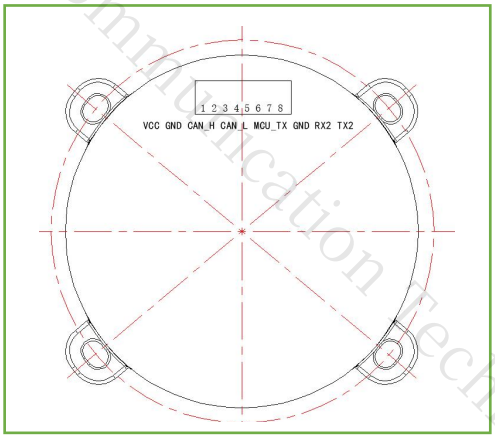


Figure 2 Dimensional Drawing (in millimeter

Table 1 PIN Function

No.	Pin Definition	Describe
1	VCC	Main power input, DC+5.0V
2	GND	Module grounding
3	CAN_H	CAN high
4	CAN_L	CAN low
5	MCU_TX	Single chip microcontroller data printing
6	GND	Module grounding
7	RX2	UM980 UART2 input, 3.3VTTL
8	TX2	UM980 UART2 output, 3.3VTTL

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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	Satellite chip	UM980
	Operating Frequency	BDS: B1I B2I B3I B1C B2a B2b GPS: L1 C/A L1C L2P (Y) L2C L5 GLONASS: L1 L2 Galileo: E1 E5a E5b E6 QZSS: L1 L2 L5 L6
	DGPS(RMS)	Plane: 0.4m
		Elevation: 0.8m
	RTK(RMS)	Flat: 0.8cm+1ppm
		Elevation: 1.5cm+1ppm
	Time accuracy (RMS)	10ns
	maximum speed	500 m/s
	Speed accuracy (RMS)	0.03m/s
	refresh rate	20Hz (maximum)
Start Time	cold start	＜25s
	Initialization time	<5s (typical value)
Output data	communication protocol	DroneCAN/UAVCAN
	Baud rate	1Mbps
Differential data	differential data	RTCM 3.3/3.2/3.1/3.0 (only supports RTCM data input from UART2)
Electrical specifications	Working Voltage	5.0V DC
	power consumption	800mW
Physical parameters	size	Φ44*40.6mm
	weight	21g
	joint	GH1.25mm 8pin
Environment	Operating Temperature	-35℃-70℃
	Storage temperature	-40℃-95℃
Compass	industrial-grade	RM3100

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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

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Note:

Using AK713CAN to connect to the flight control requires configuring the flight control to enable the flight control CAN interface. Different flight control methods vary. Taking the Mission planner ground station as an example, after connecting the flight control to the ground station, select "Configuration Debugging - All Parameter Table" and write the following parameters

CAN_P1_DRIVER is set to 1

CAN_P2_DRIVER is set to1

GPS_TYPE is set to 9 (if used as GPS1)

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