

DaLang

AK181





DaLang Communication Technology Co., Ltd. Product Specification

Product Name:	GNSS ANTENNA
Product Model:	AK181
Version Number:	V 1.0
Revision Date:	2023.9.28

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Contents

1 Product Application Scenarios	1
Figure 1 Product Application Scenarios	1
2 Features	2
3 Structural Characteristic	3
Figure 2 Product structure diagram	3
Figure 3 Product correlation chart	3
Figure 4 Process flow diagram	3
4 Specifications	4
Table 1 Product Specifications	4
5 Product Photos	6
Figure 5 Product Images	6

Shenzhen Dalang Communication Technology Co., Ltd

1 Product Application Scenarios

The AK181-GNSS antenna is a high-performance device with advanced eight-arm coupling and four-feed point technology. It supports Beidou, GPS, GLONASS, and GALILEO systems, receiving L1, L2, and L5 signals. With a built-in low-noise amplifier (LNA) and dualstage filter system, it enhances signal quality and clarity, excelling in anti-interference. Ideal for high-precision and multi-system applications like geodetic surveying, precision agriculture, and vehicle navigation. 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 AK181, detailing how it plays a pivotal role in various applications as follows:

1. **Multi-Arm Helix Technology:** The antenna features a multi-arm helix design, ensuring efficient right-hand circular polarization, optimizing signal reception, and maintaining phase center stability. This reduces measurement errors, enhancing positioning accuracy and reliability.
2. **High Gain and Gain Roll-Off Performance:** The antenna unit boasts high gain characteristics with minimal gain roll-off, meaning it can maintain good reception even for low-elevation satellite signals, improving overall signal stability and coverage.
3. **Low Noise and High Gain Amplifier:** The sophisticated amplifier design, combined with excellent out-of-band suppression, effectively reduces background noise while enhancing the desired signal strength, making the antenna more effective in receiving weak signals, especially in high-interference environments.
4. **Compact and Lightweight:** The antenna's small size and light weight make it easy to carry and install, ideal for applications requiring mobility or rapid deployment in multiple locations.

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.

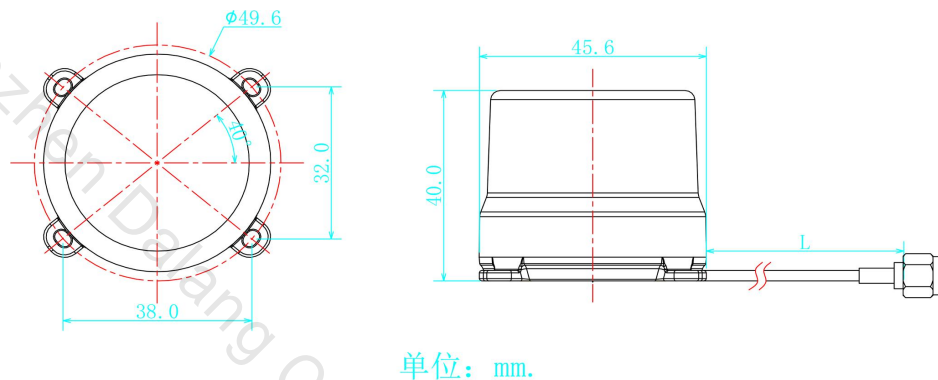


Figure 2 Product structure diagram

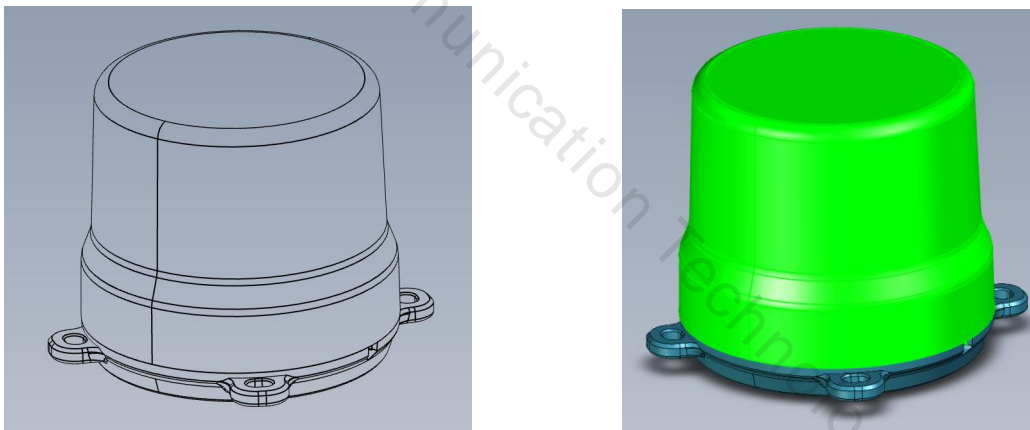


Figure 3 Product correlation chart

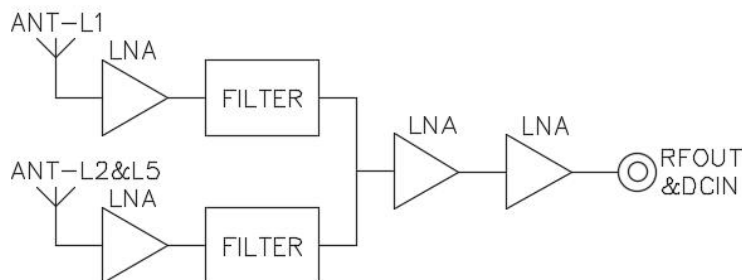


Figure 4 Process flow diagram

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 1.

Table 1 Product Specifications

Specification			
Electrical Characteristics	1	Operating Frequency	GPS: L1:1575.42±1.023MHz. L2:1227.60±1.023MHz, L5:1176.45±1.023MHz 北斗: B1:1561.098+2.046MHz, B2:1207.14+2.046MHz. B3:1268.52+10.23MHz. GLONASS L1=1602+0.5625*k(MHz) L2=1246+0.4375*k(MHz), GALILE: E1: 1575.42mhz E5a:1176.45 E5b:1207.14 E6:1278.75
	2	Frequency Range	1160-1284/1559-1612MHz
	3	V.S.W. R	≤2.0
	4	Axial Ratio	Elevation at 90 degrees: ≤ 3, Elevation at 15 degrees: ≤ 5
	5	Gain	Elevation at 90 degrees: ≥ 6 dB, Elevation at 20 degrees: ≥ 0 dB
	6	Front to back Power	±60 degrees: ≥ 15 dB
	7	Phase Center	<2mm
	8	Impedence	50Ω
	9	Polarization	RHCP

	10	Out-of-Band Suppression	1268+100MHZ \geq 50db, 1170-100MHZ \geq 50db, 1602+100MHZ \geq 50db, 1561-100MHZ \geq 50db.
LNA	1	LNA GAIN	38 \pm 2dB
	2	V.S.W. R	<2
	3	Noise Figure	<2.0
	4	DC Voltage	3.0~16V
	5	Current	<35 mA
Mechanical Structure	1	Part Name	SPEC
	2	Antenna	FPC
	3	Installation Method	Through Connector
	4	Antenna Dimensions	Φ 45.6*40mm
	5	Product Weight	25.8g
	6	Coaxial line	RG316
	7	Line length	L=500mm
	8	RF Output Interface	SMA-J
	9	Antenna Housing	ABS+PC
	10	PCB Board	FR4
Environmental Characteristics	1	Operating Temperature	-40°C~+85°C, 10%~95% RH
	2	Storage Temperature	-40°C~+85°C, 10%~95% RH
	3	Humidity	Sine sweep @1.5mmAM 10~55Hz each Axis
	4	Vibration Resistance	95% No-condensing

5 Product Photos

In this chapter, we will showcase real-life images of the product, as shown in 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 5 Product Images