



# Helix Antenna JH003

**Harxon**  
a *BDStar* company

The JH003 is a robust, full-frequency helical antenna with high interference immunity. It is designed to mitigate co-frequency signal interference, high-power signal interference, and multiple radio communication system interference, ensuring high-precision positioning in complex electromagnetic environments. The antenna employs beamforming technology to enhance signal strength and quality, and utilizes advanced pre-multiple filtering to effectively suppress out-of-band noise and multipath signals, significantly improving anti-interference capabilities. These features make it ideal for use in drones, aviation devices, vehicle-mounted devices, and shipborne devices. Additionally, it is compatible with multi-brand boards and can achieve static millimeter-level positioning. The antenna is designed to be compact ( $\varnothing 109\text{mm} \times \text{H}134\text{mm}$ ) and lightweight (only 250g), with flexible installation options. It offers IP67-rated protection against water and dust, along with excellent corrosion and shock resistance. This combination of features makes the JH003 the ideal choice for applications with stringent antenna size requirements.



## • Advanced Beamforming Technology

Beamforming technology controls the phase and amplitude of multiple antenna elements to focus the signal in the desired direction, effectively reducing unnecessary out-of-band signals and multipath signals. In environments where low-elevation co-frequency signal interference causes GNSS to malfunction, this antenna effectively reduces the reception of co-frequency signals below a 15-degree elevation angle. Within this angle range, the antenna can achieve more than 20dB co-frequency signal attenuation, with greater suppression at lower elevation angles.

## • Strong Multipath Signal Suppression

Leveraging advanced beamforming technology, this antenna reduces the reception of non-line-of-sight signals by precisely controlling the beam direction, thus effectively mitigating the adverse effects of multipath interference. This ensures that the antenna maintains exceptionally high accuracy and reliability in positioning, even when operating in challenging electromagnetic environments. **KEY FEATURES**

- Supports full-band full-frequency signal tracking
- Resistance to high-power co-frequency interference at low elevation angles
- Superior out-of-band signal rejection
- Strong multipath signal suppression
- High-power burnout protection (up to 10W)
- Flexible mounting options: upward and downward screws fixing

## • Superior Out-of-Band Signal Rejection

When multiple radio communication systems coexist in the environment, satellite signals can be overwhelmed, preventing the receiver from achieving accurate positioning. This antenna is equipped with advanced pre-multiple filters that effectively eliminate unwanted out-of-band interference signals, thereby reducing adjacent frequency signal interference.

## • Compact and Durable Structure

This antenna boasts a small form factor ( $\varnothing 109\text{mm} \times \text{H}134\text{mm}$ ) and light weight (250g). It is IP67-rated, providing excellent water and dust protection, along with corrosion and shock resistance. It offers flexible mounting options, allowing for both upward and downward screws fixing. Its TNC connector is designed to handle high-power signals, and the internal burnout protection component ensures reliability under high-power conditions up to 10W.



# Helix Antenna JH003

**Harxon**  
a **BDStar** company

## ANTENNA PERFORMANCE

### Frequency Coverage

GPS/QZSS	L1/L2/L5
BDS	B1/B2
GLONASS	G1/G2
GALILEO	E1/E5
L-band	1540M

VSWR  $\sim 2$

Impedance 50 $\Omega$

Polarization RHCP

Axial Ratio  $\sim 3$ dB

Coverage Angle Azimuth: 0-360 $^\circ$ ; Elevation: 0-90 $^\circ$

### Peak Gain

4dBic@1164~1254MHz

2.5dBic@1559~1606MHz

## CIRCUIT PERFORMANCE

LNA Gain 35 $\pm 2$ dB

### Out-of-Band Rejection

Lower Band: 1164 - 1254 MHz

$\sim 85$ dB@<1100 MHz;  $\sim 70$ dB@>1300 MHz;

$\sim 85$ dB@>1325 MHz

Upper Band: 1559-1606 MHz

$\sim 85$ dB@<1526MHz;  $\sim 35$ dB@<1536MHz;

$\sim 50$ dB@>1626MHz

Burnout Resistance  $\sim 10$ W

Noise Figure  $\sim 2.5$ dB

Group Delay  $\sim 10$ ns

VSWR  $\sim 2$

Operation Voltage 5-12V

Operation Current  $\sim 150$ mA

## SYSTEM PERFORMANCE

Phase Center Error  $\sim 4$ mm

Positioning Accuracy Static millimeter level

### Adaptation Board

Compatible with multi-brand boards, with some requiring LNA gain adjustment

## MECHANICAL

### Dimensions

$\phi 109$ mm\*H134mm (Connector not included)

Weight  $\sim 250$ g

### Antenna Cover

Radome: PC; Base: Aluminum Alloy

### Mounting

4\*M3 screws fixed, upward or downward

Color Black

Connector TNC-K

## ENVIRONMENTAL

Operating Temperature  $-40^\circ \sim +70^\circ$

Storage Temperature  $-45^\circ \sim +85^\circ$

Waterproof Rating IP67

### Salt Spray Test

Conducted for 96 hours using neutral salt spray

Mechanical Shock Test  $\sim 50$ g

Quality Level

Industrial Grade

Product Certification

FCC, CE, RoHS

Localization Rate

100%

Available from EAD  
[www.ead-ltd.com](http://www.ead-ltd.com)

**EAD**  
embedded antenna design ltd

[en.harxon.com](http://en.harxon.com)

[sales@harxon.com](mailto:sales@harxon.com)

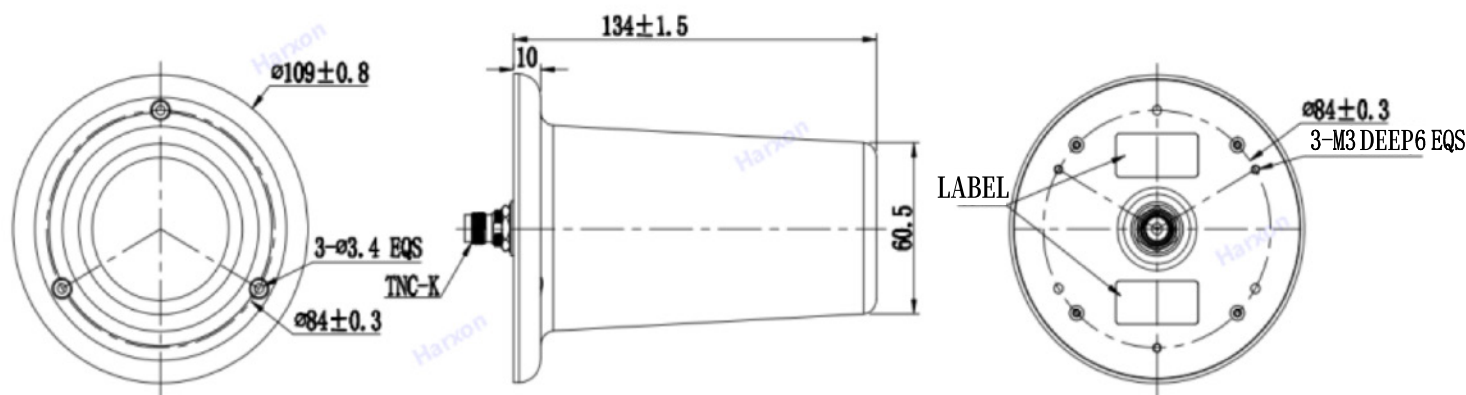
Room 501, Han's Laser Technology Centre,  
Shennan Ave No.9988, Nanshan District,  
Shenzhen, Guangdong Province, China.

Tel: +86-755-26989948

Fax: +86-755-26989994

Version 1 Specifications subject to change without notice.  
©2024 Harxon Corporation. All rights reserved.  
Printed in China  
Aug 2024

## Structure & Phase Center Drawing (mm)



TOP VIEW

SIDE VIEW

BOTTOM VIEW

Undeclared Tolerance:  $\pm 0.3$ mm