Anti-Jamming Antenna JM004

Harxon
a BDStar company

JM004 is an assured positioning solution that that protects your systems from radio frequency interference and jamming. It combines an anti-jamming antenna array and a GNSS antenna element into a marine-hardened enclosure. It can mitigate intentional or unintentional interference and jamming effects, ensuring the GNSS receiver continues to operate correctly. With low power consumption (15W), lightweight (1.9kg), and compact dimensions (φ178*H56mm), this product is available for rapid deployment and ensures future compatibility, ideal for a wide range of marine vessels.



Integrated Multi-Element Anti-Jamming Antenna

The Anti-Jamming Antenna JM004 features a 6-element B1L1E1 anti-jamming antenna array on the periphery and a full-band GNSS antenna element at its center. The central GNSS antenna supports GPS, BDS, Galileo, and GLONASS, providing RTK-level precision positioning in jamming-free environments. When jamming arises, the GNSS antenna is disrupted and unable to function, JM004 will automatically switch to anti-jamming mode and activate the anti-jamming antenna array to provide anti-jamming and positioning. This product effectively handles complex environments with intentional and unintentional jamming, automatically switching between anti-jamming and non-anti-jamming modes.

Superior Anti-Jamming Capabilities

This product can handle interference from six B1L1E1 signal sources. For single interference source, the suppression capability is no less than 105dB; for three interference sources, the suppression capability is no less than 95dB; for six interference sources, the suppression capability is no less than 85dB. JM004 consistently provides stable and reliable satellite signals to the receiver for positioning calculations, without needing prior knowledge of the interference conditions.

Improved Out-of-Band Suppression

JM004 is equipped with a 10W burn-out resistant chip, which extends lifespan and enhances reliability in challenging environments. It's also equipped with multi-stage pre-filters that mitigate out-of-band signals and prevent GNSS antenna saturation, providing a one two punch to jamming and radio frequency noise, which ensures stable operation in complex electromagnetic conditions.

Robust and Durable Structure

JM004 features an integrated antenna design with IP67 waterproof and dustproof capabilities, ensuring core components are fully sealed. The rugged glass reinforced plastic antenna radome,and the aluminum alloy base provide exceptional shock and vibration resistance; a special anti-corrosion coating is employed for long-term marine use. The built-in lightning protection and effective overvoltage protection enhance the overall antenna safety. Flexible mounting options, including surface mount and pole mount, are offered to accommodate customers' requirements.

KEY FEATURES

- 6-element B1L1E1 anti-jamming antenna array combined with full-band GNSS antenna element
- Designed with multi-stage pre-filters, effectively suppressing out-of-band noise
- Enhanced lightning protection: 3KA (8/20us) and overvoltage protection: 9~40V
- Equipped with 10W burn-out resistant chip
- Integrated antenna design with rugged anti-shock & anti-vibration housing, IP67 waterproof and dustproof
- Utilizing special anti-corrosion coating, suitable for marine applications
- Flexible mounting options: surface mount and pole mount

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ANTENNA PERFORMANCE

Antenna Elements
6-Element B1L1E1 Anti-Jamming Antenna Array + Full-Band GNSS Antenna Element (GPS L1/L2, BDS B1/B2b, Galileo E1/E5, GLONASS L1/L2)

Isolation Co-Frequency Unit Antenna≤-15dB
Peak Gain 3dBic
VSWR ≤2.0
Impedance 50Ω
Polarization
Central Element: Right-Hand Circular Polarization
Peripheral Elements: Linear Polarization

CIRCUIT PERFORMANCE

LNA Gain@B1/L1/L2 (High Precision Positioning)
Anti-Jamming Antenna Array: 20±1dB
GNSS Antenna: 36±2dB
VSWR ≤2.0
Out-of-Band Rejection
@50M≥40dB@1509M&@1629M
Noise Figure ≤2dB
Burnout Resistance ≥10W

SYSTEM PERFORMANCE

Operation Voltage DC 9-40V
Operation Current
Each Channel<120mA
(Antenna Array Elements: <100mA)
Power Consumption <15W
Number of Jamming Sources 6
Signal-to-Interference Ratio
Single Element≥105dB; Triple Element≥95dB; Sextuple Element≥85dB

MECHANICAL

Color Grey-White
Dimensions
φ178*H56mm
(Excluding connectors, accessories, and tolerances)
Weight ≤1.9kg (Including bracket)
Antenna Cover
Radome: Glass-reinforced plastic;
Base: Aluminum alloy;
Surface Coating: Marine-grade paint
Mounting
Surface Mount (4-M3 screw mount)
Pole Mount (5/8" -11 pole mount)
Connector
RF Signal: TNC-K
Power Supply + Control Signal: ZLN.2F.316.-CLL-2B Socket

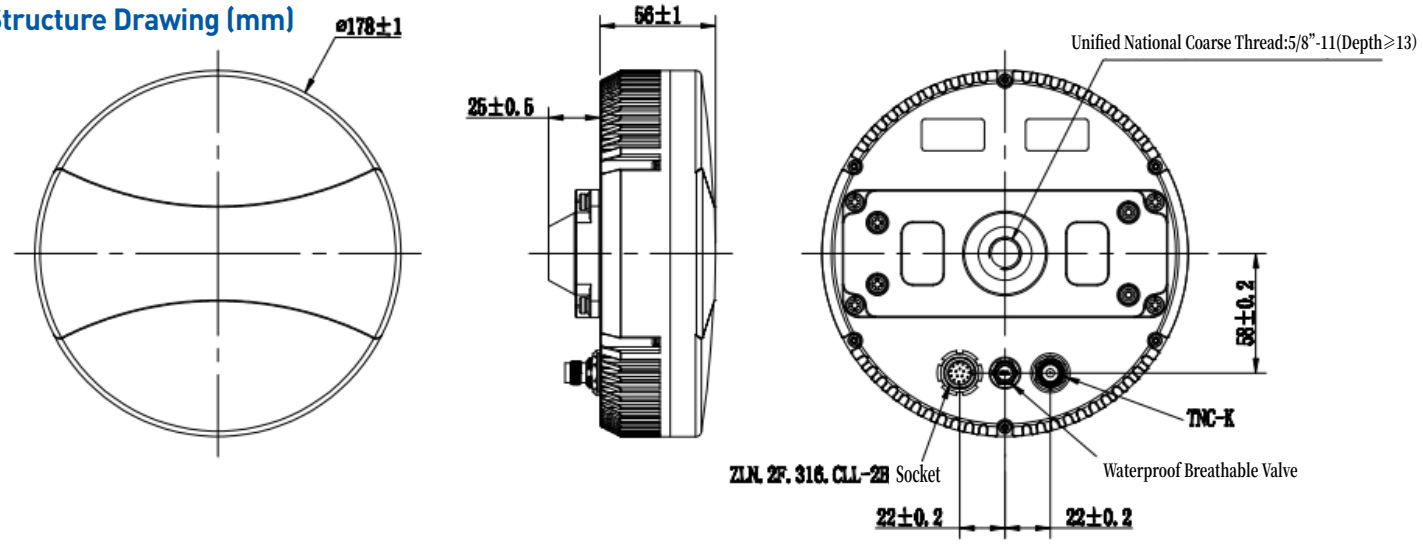
ENVIRONMENTAL CHARACTERISTICS

Operating Temperature -40°~+70°
Storage Temperature -45°~+85°
Waterproof Rating IP67
Salt Spray Test
Conducted for 28 days using neutral salt spray
Mechanical Shock Test ≤50g
Quality Level Industrial Grade
Product Certification RoHS
Localization Rate 100%

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Structure Drawing (mm)



TOP VIEW SIDE VIEW BOTTOM VIEW

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PIN Definition

Pin Number	Definition Description	Remarks
1	VCC	9~32V
2	VCC	9~32V
3	GND	Ground
4	GND	Ground
5	RS232-TXD	RS232 Transmit
6	RS232-RXD	RS232 Receive
7	RX232-GND	RX232-Ground
8-16	NC	Not Connect

Accessories

The 5/8" -11 pole mount accessory is an optional choice which shall be purchased separately. The default mounting for anti-jamming GNSS antenna is 4-M3 screw mount. The illustration of the 5/8" -11 pole mount accessory is shown below.

