

Smart Antenna HX-COX012A

HX-COX012A is a multi-band multi-constellation embedded smart antenna developed by Harxon. Combining Harxon's world leading antenna technology with Unicore's full-constellation full-frequency RTK positioning module, HX-COX012A delivers precise positioning performance in a compact and integration-ready structure. It's able to provide single point meter level accuracy, DGPS sub-meter level accuracy and RTK centimeter/millimeter level accuracy, very suited for various UAV applications that require precise location and precise heading.



INTEGRATED DESIGN AND COMPACT FORM FACTOR

The compact smart antenna, weighing only 12g and measuring $\Phi 46 \times H 19.2$ mm, greatly reduces the weight of UAVs and features low power consumption. Additionally, the antenna and module are well compatible with each other, simplifying the development process and reducing costs for engineers, which greatly improves the overall reliability of the UAVs.

PRECISION-TUNED GNSS HELICAL ANTENNA

The main part of HX-COX012A is an ultra-low profile Harxon helix antenna designed for high precision positioning of UAV. It excels in offering superior satellite signal tracking, including GPS, GLONASS, GALILEO, Beidou, QZSS and SBAS. The antenna provides excellent axial ratios, enables excellent multipath mitigation and a very precise phase center.

HIGH PERFORMANCE RTK POSITIONING MODULE

HX-COX012A is integrated with Unicore's full-constellation full-frequency RTK positioning module, which integrates RF, baseband and high precision algorithm. It can simultaneously track multiple frequencies of all GNSS systems, enabling the module to output high-precision RTK positioning.

STRONG ANTI-INTERFERENCE PERFORMANCE

HX-COX012A is capable of offering superior positioning performance in challenging environments. The antenna equips a robust pre-filtered LNA that features an excellent out-of-band interference rejection performance, and the module features 60 dB narrowband anti-jamming and advanced jamming detection technology, effectively avoiding disconnection dangerous when UAVs are operated under tower and electric power lines.

KEY FEATURES

- Smart antenna integrated with RTK module
- Small size and light weight (only 12g)
- Support BDS/GPS/GLONASS/Galileo/ QZSS/ SBAS
- Strong anti-interference performance

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PERFORMANCE

Signal Received	
BDS	B1I/B2I/B3I/B1C/B2a
GPS	L1C/A/L2P/L5
GLONASS	G1/G2
Galileo	E1/E5b/E5a
QZSS	L1/L2/L5
SBAS	
Nominal Impedance	50Ω
Polarization	RHCP
Axial Ratio	≤3dB
Azimuth Coverage	360°
Output VSWR	≤2.0
Peak Gain	3dBi

LNA

LNA Gain	23±2dB
Noise Figure	≤1.5dB
Output VSWR	≤2.0
Passband Ripple	±2dB
Differential Propagation Delay	≤10ns

WHOLE PRODUCT PARAMETERS

Positioning Module	UM960
Single Point Accuracy	
Horizontal: 1.5m	Vertical: 2.5m
DGPS Accuracy	
Horizontal: 0.4m	Vertical: 0.8m
RTK Accuracy	
Horizontal: 0.8cm+1ppm	Vertical: 1.5cm+1ppm
Timing Accuracy (RMS)	20ns
Velocity Accuracy (RMS)	0.03 m/s
Channels	1408
Time to First Fix	
Cold Start<30s	
Warm Start<20s	
Hot Start<5s	
Initialization Time	<5s (Typical)
Initialization Reliability	>99.9%
Data	
Data Refresh Rate: 50Hz Positioning	
Differential Data: RTCM 3.X	
Data Format: NMEA-0183, Unicore	
Operation Voltage	3.3-5V
Power Consumption	500mW (Typical)
Constellation Tracking	>40

MECHANICAL

Dimensions	Φ46*H19.2mm (Shield cover and connector not included)		
Weight	≤12g		
Connector	GH1.25-6P		
Mounting	4 x M1.6 Screws		
Interface Pin Order			
1: GND	2: TX1	3: RX1	4: RX2
5: TX2	6: VCC		

ENVIRONMENTAL

Operating Temperature	-40°C~+70°C
Storage Temperature	-55°C~+85°C

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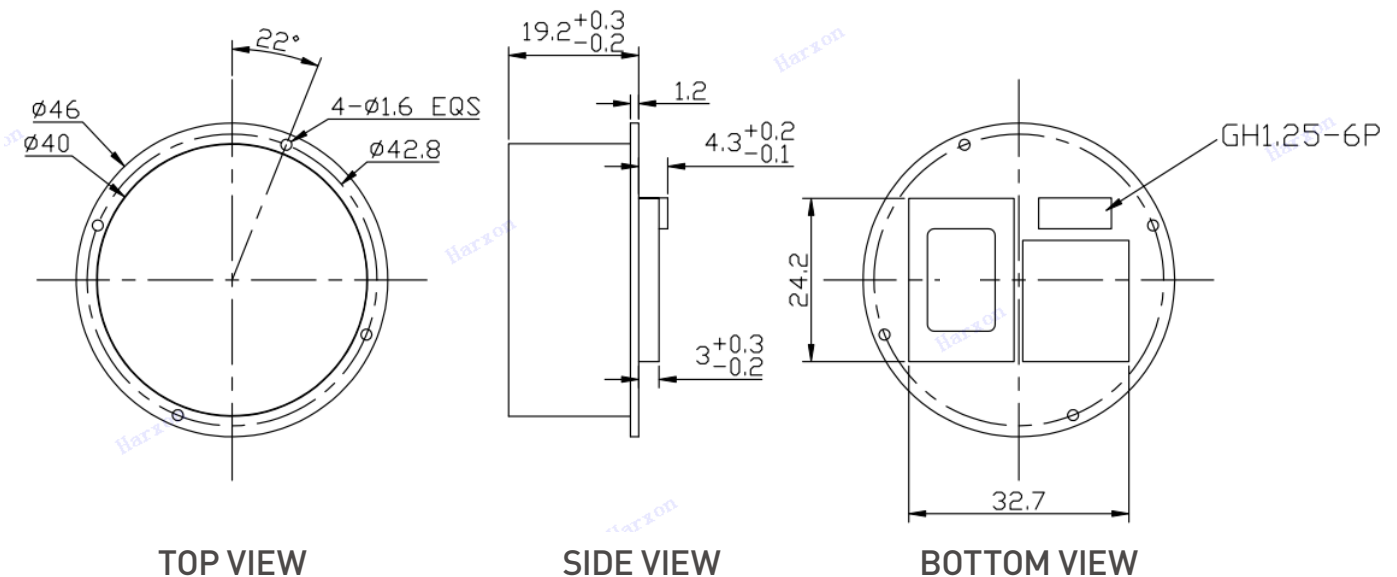
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Structure & Phase Center Drawing (mm)



Undeclared Tolerance:±0.3mm