HC871

TALLYSMAN®

When **precision** matters.®

HC871 Dual-band Helical Antenna

Frequency Coverage: **GNSS/QZSS-L1/L2, GLONASS-G1/G2, Galileo-E1, BeiDou-B1**

The HC871 helical antenna is designed and crafted for precision positioning, covering the GPS/QZSS-L1/L2, GLONASS-G1/G2, Galileo-E1, and BeiDou-B1 frequency bands, including the satellite-based augmentation system (SBAS) available in the region of operation [WAAS (North America), EGNOS (Europe), MSAS (Japan), or GAGAN (India)].

Weighing only 29 g, the lightweight and compact HC871 features a precision-tuned helix element that provides excellent axial ratios and operates without the requirement of a ground plane, making it ideal for a wide variety of applications, including unmanned aerial vehicles (UAVs).

The HC871 features an industry-leading low current, low-noise amplifier (LNA) that includes an integrated low-loss pre-filter to prevent harmonic interference from high-amplitude signals, such as 700 MHz band LTE and other nearby in-band cellular signals.

All Tallysman® helical antenna elements are protected by a robust military-grade IP67-compliant plastic enclosure. The enclosure's base provides two threaded inserts for secure attachment, as well as a rubber O-ring around the outer edge to seal the antenna base and its integrated SMA connector.

Tallysman®'s HC871 has passed a rigorous 30-hour vibration test procedure, consisting of five cycles of 2-hour tests per axis (x, y, z):

- Cycle 1: 1.05 Grms;
- Cycle 2: 1.20 Grms;
- Cycle 3: 1.35 Grms;
- Cycle 4: 3.67 Grms;
- Cycle 5: 3.67 Grms.



Applications

- Autonomous unmanned aerial vehicles (UAVs)
- Precision GNSS positioning
- Precision land survey positioning
- Mission-critical GNSS timing
- Network timing and synchronization
- Sea and land container tracking
- Fleet management and asset tracking
- Marine and avionics systems
- Law enforcement and public safety

Features

- Very low noise preamp: 2.0 dB typ.
- Axial ratio: ≤ 0.5 dB at zenith
- LNA gain: 28 dB typ.
- Low current: 15 mA typ.
- ESD circuit protection: 15 kV
- Invariant performance from 2.2 to 16 VDC
- IP67, REACH, and RoHS compliant

Benefits

- Extremely lightweight (29 g)
- Ideal for RTK and PPP surveying systems
- Excellent RH circular polarized signal reception
- Great multipath rejection
- Increased system accuracy
- Excellent signal-to-noise ratio
- Industrial temperature range
- Rugged design, ideal for harsh environments

About Tallysman: With global headquarters and manufacturing in Ottawa, Canada, Tallysman is a leading manufacturer of high-precision antennas and components for Global Navigation Satellite System (GNSS) applications. Tallysman's mission is to support the needs of a new generation of positioning systems by delivering unprecedented antenna precision at competitive prices. Learn more at **www.tallysman.com**

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Revision: 1.0

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Antenna

Technology Dual-frequency, RHCP quadrifilar Helix

		Gain	Axial Ratio
		dBic typ. at Zenith	dB at Zenith
GNSS			
GPS / QZSS	L1	1.6	≤ 0.5
	L2	1.7	≤ 0.5
	L5	-	-
GLONASS	G1	1.2	≤ 0.5
	G2	1.7	≤ 0.5
	G3	-	-
Galileo	E1	1.6	≤ 0.5
	E5a	-	-
	E5b	-	-
	E6	-	-
BeiDou	B1	1.6	≤ 0.5
	B2	-	-
	B2a	-	-
	B3	-	-
IRNSS / NavIC	L5	-	-
QZSS	L6	-	-
L-band correction services		-	-
Satellite Communications			
Iridium		-	-
Globalstar		-	-
Phase Centre			
Phase Centre Variation (PCV)		± 4.0 mm (all freq.)	
Phase Centre Offset (PCO)		35 mm @ L1 | 37 mm @ L2	

Mechanicals

Mechanical Size	33.3 mm (dia.) x 63.2 mm (h.)
Weight	29 g
Available Connectors	SMA
Radome / Enclosure	Radome and base: EXL9330
Mount	2 M2.5 screws

Environmental

Operating Temperature	-40 °C to +85 °C
Storage Temperature	-50 °C to +95 °C
Random Vibration	MIL-STD-810E - Test method 514.5 4 hours per axis (x, y, z) at 3.674 Grms
Shock and Drop	-
Salt Fog	-
IP Rating (housing)	IP67
Compliance	IPC-A-610, FCC, RED / CE Mark, RoHS, REACH

Warranty:

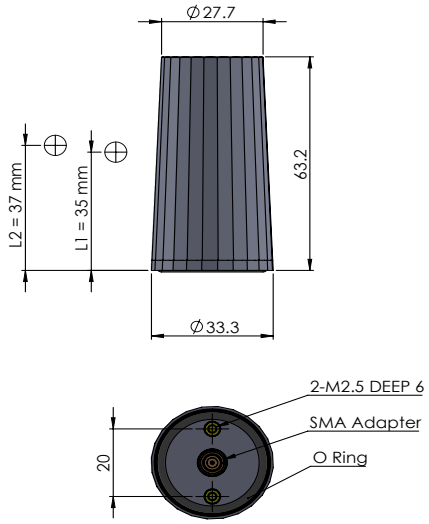
Parts and Labour	3-year standard warranty

Low Noise Amplifier (LNA) - Measured at 3.0 VDC and 25°C

Frequency Bandwith		Out-of-Band Rejection
Lower Band	**1217 - 1255 MHz**	**> 46 dB @ < 1100 MHz** **> 40 dB @ < 1190 MHz**
		> 48 dB @ < 1400 MHz **> 39 dB @ < 1500 MHz** **> 38 dB @ > 1625 MHz** **> 57 dB @ > 1700 MHz**
Upper Band	**1559 - 1606 MHz**	

Architecture	Pre-filter → LNA
Gain	28 dB typ. | 26 dB min.
Noise Figure	2.0 dB typ.
VSWR	< 1.5:1 typ. | 1.8:1 max.
Supply Voltage Range	2.2 to 12 VDC
Supply Current	15 mA typ.
ESD Circuit Protection	15 kV air discharge
P 1dB Output	10 dBm @ L1
Group Delay Variation	15 ns @ L1 | 10 ns @ L2

Mechanical Diagram



Ordering Information

Part Number **33-HC871-28**

Please refer to our **Ordering Guide** to review available radomes and connectors at:
https://www.tallysman.com/resource/tallysman-ordering-guide/

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