

HC976



When **precision** matters.®

HC976 Triple-band Helical Antenna + L-band

Frequency Coverage: GNSS/QZSS-L1/L2, QZSS-L6, GLONASS-G1/G2, Galileo-E1/E6, BeiDou-B1/B3 + L-band correction services

Overview

The HC976 helical antenna is designed and crafted for precision positioning, covering the GPS/QZSS-L1/L2, QZSS-L6, GLONASS-G1/G2, Galileo-E1/E6, and BeiDou-B1/B3 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)] and L-band correction services.

Weighing only 42 g, the lightweight and compact HC976 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 HC976 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 three 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.



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: 1.8 dB
- Axial ratio: ≤ 0.5 dB at zenith
- LNA gain: 28 dB typ. or 35 dB typ.
- Low current: 15 mA typ. or 21 mA typ.
- ESD circuit protection: 15 kV
- Invariant performance from 2.2 to 16 VDC
- IP67, REACH, and RoHS compliant

Benefits

- Extremely lightweight (42 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

Revision: 1.0

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Antenna

Technology Triple-frequency, RHCP quadrifilar helix

		Gain	Axial Ratio
		dBic typ. at Zenith	/
GNSS			
GPS / QZSS	L1	2.5	≤ 0.5
	L2	1.2	≤ 0.5
	L5	-	-
GLONASS	G1	1.4	≤ 0.5
	G2	2.2	≤ 0.5
	G3	-	-
Galileo	E1	2.5	≤ 0.5
	E5a	-	-
	E5b	-	-
	E6	2.1	≤ 0.5
BeiDou	B1	2.5	≤ 0.5
	B2	-	-
	B2a	-	-
	B3	2.3	≤ 0.5
IRNSS / NavIC	L5	-	-
QZSS	L6	2.1	≤ 0.5
L-band correction services (1539 - 1559 MHz)		1.5	≤ 0.5
Satellite Communications			
Iridium	-	-	-
Globalstar	-	-	-
Other			
Axial Ratio at 10°	-	Efficiency	-
PC Variation	-		

Mechanicals

Size	44.2 mm (dia.) x 62.4 mm (h.)
Weight (including O-Ring)	42 g
Available connectors	SMA
Radome	Radome and Base: EXL9330
Mount	3 M2.5 screws

Environmental

Operating Temperature	-40 °C to +85 °C
Storage Temperature	-50 °C to +95 °C
Vibration	MIL STD 810D - 2 hr per axis (X,Y,Z)
Shock	-
Salt Fog	-
IEC 60529 - IP Rating	IP67 (housing)
Compliance	IPC-A-610, FCC, RED / CE Mark, RoHS, REACH

Warranty:

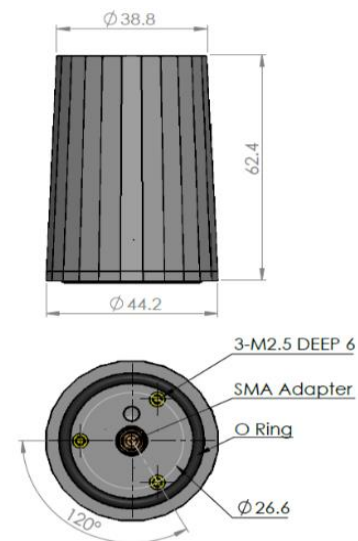
Parts and Labour	3-year standard warranty
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Low Noise Amplifier (LNA) - Measured at 3.0 VDC and 25°C

Frequency Bandwidth	Out-of-Band Rejection
Lower Band	1215 - 1300 MHz < 1000 MHz > 60 dB < 1100 MHz > 33 dB > 1350 MHz > 30 dB
L-band corrections services	1539 - 1559 MHz
Upper Band	1559 - 1606 MHz < 1500 MHz > 32 dB > 1700 MHz > 30 dB

Architecture	pre-filter → LNA
Gain	28 dB typ. or 35 dB typ.
Noise Figure	1.8 dB typ.
VSWR	< 1.5:1 typ. 1.8:1 max.
Supply Voltage Range	2.2 to 16 VDC
Supply Current	15 mA typ. (28 dB) 21 mA typ. (35 dB)
ESD Circuit Protection	15 kV air discharge
P 1dB Output	12 dBm
Group Delay Variation	5 ns @ L1 5 ns @ L2

Mechanical Diagram



Ordering Information

Part Number **33-HC976-xx**

where xx = gain (28 or 35 dB)

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