

HC860

HC860 Dual-Purpose Dual-Band GNSS + Active Iridium Helical Antenna

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

The dual-purpose (GNSS and Iridium signal reception) HC860 helical antenna is designed 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)] and for active Iridium signal reception. The HC860 also supports active Iridium[®] reception in the 1616.0-1626.5 MHz band.

Weighing only 42 g, the light and compact HC860 features a precision-tuned helix element that provides excellent axial ratios and operates without the requirement of a ground plane, making it ideal for many applications, including autonomous vehicle navigation (land, sea, and air), handheld land survey devices, automotive positioning, timing and other precise positioning applications

The HC860 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.

Tallysman's helical family 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.

All Tallysman housed 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 male SMA connector.

For mounting instructions, visit:

https://www.tallysman.com/downloads/Helical_Mounting_Instruction.pdf

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Applications

- Iridium[®] data 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

- Low noise preamp (1.7 dB typ.)
- Axial ratio (≤ 0.5 dB at zenith)
- LNA gain (28 dB typ. | 35 dB typ.)
- Low current (15 mA typ. [28 dB] | 21 mA typ. [35 dB])
- ESD circuit protection (15 kV)
- Invariant performance from 2.5 to 12 VDC
- IP67, REACH, and RoHS compliant

Benefits

- Extremely light (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

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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 | 2.2 | ≤ 0.5 |
| | L2 | 2.4 | ≤ 0.5 |
| | L5 | - | - |
| GLONASS | G1 | 2.6 | ≤ 0.5 |
| | G2 | 2.1 | ≤ 0.5 |
| | G3 | - | - |
| Galileo | E1 | 2.2 | ≤ 0.5 |
| | E5a | - | - |
| | E5b | - | - |
| | E6 | - | - |
| BeiDou | B1 | 2.2 | ≤ 0.5 |
| | B2 | - | - |
| | B2a | - | - |
| | B3 | - | - |
| IRNSS / NavIC | L5 | - | - |
| QZSS | L6 | - | - |
| L-band correction services | | - | - |
| Satellite Communications | | | |
| Iridium | | 2.5 | ≤ 0.5 |
| Globalstar | | - | - |
| Phase Centre | | | |
| Phase Centre Variation (PCV) | | ± 3.0 mm (all freq.) | |
| Phase Centre Offset (PCO) | | 30 mm @ L1 35 mm @ L2 | |

| Mechanicals | |
|----------------------|-------------------------------|
| Mechanical Size | 44.2 mm (dia.) x 62.4 mm (h.) |
| Weight | 42 g |
| Available Connectors | SMA (male) |
| Radome / Enclosure | Radome and Base: EXL9330 |
| Mount | 3x M2.5 screws |

| Environmental | |
|-----------------------|--|
| Operating Temperature | -45 °C to +85 °C |
| Storage Temperature | -55 °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 |

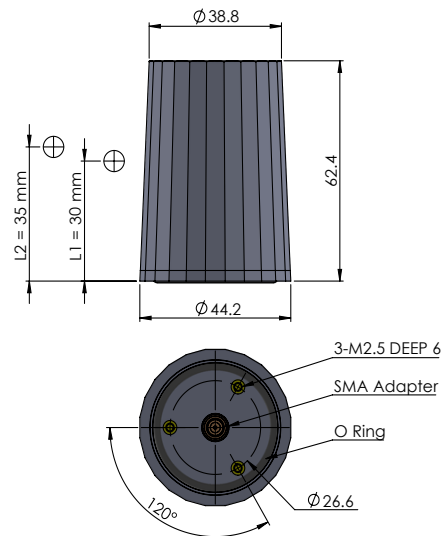
| Warranty: | |
|------------------|--------------------------|
| Parts and Labour | 3-year standard warranty |

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

| Frequency Bandwidth | Out-of-Band Rejection |
|---------------------|---|
| Lower Band | 1217 - 1255 MHz > 43 dB @ < 1100 MHz > 30 dB @ < 1200 MHz > 32 dB @ > 1300 MHz |
| Upper Band | 1559 - 1626.5 MHz > 26 dB @ ≤ 1450 MHz > 50 dB @ ≥ 1700 MHz |

| | |
|------------------------|---|
| Architecture | Pre-filter → LNA |
| Gain | 28 dB typ. 35 dB typ. |
| Noise Figure | 1.7 dB typ. |
| VSWR | < 1.5:1 typ. 2.0:1 max. |
| Supply Voltage Range | 2.5 to 12 VDC |
| Supply Current | 15 mA typ. (28 dB) 21 mA typ. (35 dB) |
| ESD Circuit Protection | 15 kV air discharge |
| P 1dB Output | 10 dBm @ L1 |
| Group Delay Variation | 15 ns @ L1 12 ns @ L2 |

Mechanical Diagram



Ordering Information

Part Number **33-HC860-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/>



Contact NavtechGPS for product details. www.NavtechGPS.com
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