

# HCS885XF

PRELIMINARY

When precision matters.<sup>®</sup>

## HCS885XF Smart Helical GNSS Antenna for High Accuracy UAV

### Overview

The HCS885XF is a multi-band (L1/L5), multi-constellation integrated GNSS receiver/antenna with RTK corrections and PointPerfect<sup>®</sup> PPP-RTK augmentation compatibility. The HCS885XF is capable of providing sub 1 meter accuracy stand-alone, sub 1 cm accuracy with RTK corrections and sub 10 cm accuracy with PPP-RTK corrections. It is based on the Tallysman HC885SXF antenna, making it light-weight and very suited for unmanned aerial vehicle (UAV) applications that require precise location and precise heading.

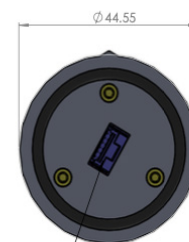
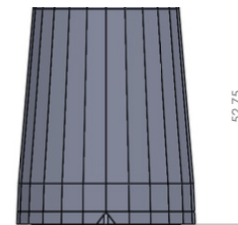
### Interference Resilience

The HCS885XF incorporates a latest generation multi-band (L1/L5) GNSS receiver with a precision-tuned multi-band Tallysman antenna (L1/L5) that provides excellent axial ratios and operates without the requirement for a ground plane. The state of the art GNSS receiver supports concurrent tracking of all four major constellations (GPS, BeiDou, Galileo and GLONASS) in multiple frequency bands. The concurrent multi-band (L1/L5) access to all four satellite constellations improves the receiver's convergence capability to deliver a quick, precise and reliable position solution.

The multi-band architecture is the most effective method for the removal of ionospheric error, and the L5 band provides superior interference and multipath performance vs. L2. The HCS885XF employs Tallysman eXtended Filter (XF) technology which mitigates near-band and out-of-band interference such as LTE signals and their harmonics, enabling operation in the most challenging deployments.

### PPP-RTK, RTK and Heading

The HCS885XF offers support for corrections services (PPP-RTK - PointPerfect) or RTK base/rover corrections, allowing performance optimization according to an application's unique requirements. The HCS885XF can be configured as a multi-receiver pair for moving base precise heading applications. HCS885XF mounts flush with three threaded inserts for secure attachment and provides a rubber O-ring around the outer edge for seal. Control, corrections and position output are delivered over a 6 pin JST receptacle connector inset into the base.



6 Position Receptacle  
Connector JST, 1.25mm

### Features

- Improved noise immunity with multi-band GNSS receiver
- Excellent RH circular polarized signal reception
- Multi-band receiver has high immunity to ionospheric errors
- Light-weight precision-tuned helical element; with excellent axial ratios and Tallysman eXtended Filtering
- Exceptional position performance (Stand-alone or corrected)
- PPP-RTK: PointPerfect<sup>®</sup> Augmentation
- RTK Base/Rover configurations and Moving Base Heading
- CMOS signalling with RS232 option
- Industrial grade IP67 enclosure
- Surface Mount with O-ring seal
- 6-pin JST port for Pixhawk standard compatibility

# HCS885XF Smart Helical GNSS Antenna

## Specifications

Antenna	Environmental
Architecture.....Multi-band (L1/L5), helical	Operating Temperature.....-40°C to +85°C
Axial Ratio.....≤ 0.5 dB at Zenith.	Storage Temperature.....-40°C to +85°C
PCV.....±3 mm	Weatherproof.....IP67
Frequencies.....GPS/QZSS: L1 C/A, L5; GLO: L1O/F; GAL: E1-B/C, E5a; BDS: B1I & B2a	Shock.....Vertical axis 50G, other axis 30G 3 axis sweep – 15 min
SBAS L1 C/A.....WAAS, EGNOS, MSAS L1Sb, GAGAN	Vibration.....10-200 Hz log sweep 3G
Channels.....184-channel u-blox F9 engine	
Anti-jamming.....Active Continuous Wave detection	
Interface	Sensitivity (4 Constellations)
Pwr, Gnd	Tracking & Nav.....-167 dBm
Tx1, Rx1.....CMOS levels, RS232 Optional.	Reacquisition.....-160 dBm
Connector.....6 Position Receptacle Connector JST, 1.25 mm	Hot starts.....-157 dBm
Optional Tx2, Rx2 or Timepulse...CMOS Levels	Cold starts.....-148 dBm
Serial Protocol	Acquisition (4 Constellations)
Output.....NMEA 0183, UBX Binary, RTCM v3.3, SPARTN v2.0	Cold start.....27 sec
Baud Rate.....Configurable	Aided start.....4 sec
Update Rate (PVT).....7 Hz (4); 8 Hz (GPS+GAL+BDS); 18 Hz (GPS+GAL); 20 Hz (GPS+GLO); 11 Hz (GPS+BDS); 25 Hz (GPS)	Reacquisition.....3 sec
Mechanical	Position and Velocity Accuracy (4 Constellations)
Dimensions.....44.55 mm dia. x 52.75 mm H	Horizontal PVT/SBAS/RTK (CEP) ...1.5m/ 1.0m/ 0.01+1ppm
Weight.....38 g	Horizontal PPP-RTK (CEP).....<0.1m SPARTN;
Mounting Method.....3x M2.5 screws	Vertical PVT/SBAS/RTK (R50) .....2.0m/ 1.5m/ 0.01m+1ppm
Cable Length.....none	Vertical PPP-RTK (R50).....<0.20m SPARTN;
	Typical Convergence.....<12s RTK; <65s SPARTN;
	Velocity accuracy.....0.05m/s
Electrical	Heading
Voltages.....5 VDC	Dynamic Heading Accuracy.....0.3°
Current.....TBD	Precise Heading Accuracy.....TBD
	Timing (optional)
	Timing Accuracy.....30 ns RMS

### Ordering Information:

33-HCS885XF-x9-PC0 (PC0 = NMEA out, no cable.)  
x = Interface. 4 = CMOS, 2 = RS-232

**HCS885XF Test Adaptor required for programming**

**33-0095-6 (5V RS-232)**

Please refer to the Ordering Guide for the current and complete list of available product options.



When precision matters.®

**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](http://www.tallysman.com)

**Contact us:**  
[info@tallysman.com](mailto:info@tallysman.com)  
T: +1 613 591-3131

© 2023 Tallysman Inc. All rights reserved. Tallysman, the "When Precision Matters" tag line and the Tallysman logo are trademarks or registered trademarks of Tallysman Inc. and/or its affiliates in Canada and certain other countries. All other trademarks mentioned in this document are the property of their respective owners. The information presented is subject to change without notice. Tallysman assumes no responsibility or any errors or omissions in this document. Tallysman Wireless Inc. hereby disclaims any or all warranties and liabilities of any kind.

Tallysman - HCS885XF - Preliminary v1\_1 Datasheet copy EN

[www.tallysman.com](http://www.tallysman.com)