HCS885EXF

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Confidence. Engineered.

HCS885EXF Embedded Smart GNSS Helical Antenna for Precise Heading

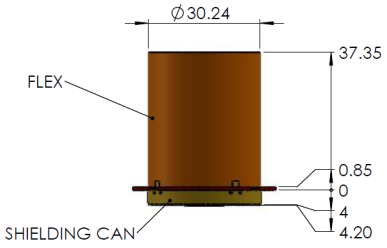
Overview

The HCS885EXF is a multi-band (L1/L5), multi-constellation integrated GNSS receiver/antenna with RTK corrections and PointPerfect® PPP-RTK augmentation compatibility. The HCS885EXF is capable of providing sub 1 meter accuracy stand alone, sub 6 cm accuracy with PPP-RTK corrections and sub 1 cm with RTK corrections. It is capable of moving base RTK Precise Heading, and can act as either base or rover. It is based on the Calian HC885SXF antenna, making it light-weight and very suited for unmanned aerial vehicle (UAV) applications that require precise location and precise heading.

Interference Resilience

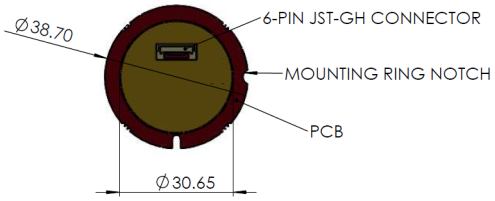
The HCS885EXF incorporates a latest generation multi-band (L1/L5) GNSS receiver IMU with a Tallysman precision tuned multi-band (L1/L5) helical antenna that provides excellent axial ratios and operates without the requirement for a ground plane. The state of the art GNSS receiver supports concurrent 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 HCS885EXF 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 Precise Heading

The HCS885EXF supports PointPerfect PPP-RTK augmentation, over network connections, and RTK base/rover capability, with moving base RTK Precised Heading, particularly useful for UAV and robotic applications. The HCS885EXF can be configured as a multi-receiver base/rover pair. Combining fast survey-in of the base unit with moving base RTK enhances the location accuracy as well as the heading accuracy. HCS885EXF mounts fluxh with three thredded inserts for secure attachment and provides a rubber O-ring around the outer edge for seal. Control, corrections and position output are delivered via a 6 pin JST receptacle connector inset into the base.



Features

- Improved noise immunity with multi-band u-blox NEO F9P GNSS receiver
- PointPerfect PPP-RTK (networked)
- RTK Base/Rover configurations and Moving Base RTK Precise Heading
- Excellent Right-Hand circular polarized signal reception
- Multi-band GNSS receiver has high resilience to ionospheric errors
- Light-weight precision-tuned helical element; with excellent axial ratios and Calian's Tallysman eXtended Filtering
- 5V operation
- CMOS signalling with RS232 option
- Custom tuning to OEM enclosure
- Surface mount
- 6-pin JST port for Pixhawk framework compatibility

HCS885EXF Smart GNSS Antenna

Specifications

Antenna

Architecture	Multi-band (L1/L5), Helical
Axial Ratio	≤ 0.5 dB at Zenith
PCV	±3 mm
Frequencies	GPS/QZSS: L1 C/A, L5; GLO: L1OF; GAL: E1-B/C, E5a; BDS: B1I & B2a
SBAS L1 C/A	WAAS, EGNOS, MSAS L1Sb, GAGAN
Channels	184-channel u-blox F9 engine
Anti-jamming	Active Continuous Wave detection

Interface

Pwr, Gnd

HCS885EXF-29	Data, opt. timepuse or TX2/RX2: RS-232
HCS885EXF-49	Data, opt. timepuse or TX2/RX2: CMOS
Connector	6 Position JST Receptacle Connector, 1.25mm

Serial Protocol

Output	NMEA 0183, UBX Binary, RTCM v3.3, SPARTN v2.0
Baud Rate	Configurable
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)

Mechanical

Dimensions	38.75 mm dia. x 41.11 mm H
Weight	8 g
Mounting Method	Customer Defined
Cable Length	no cable

Electrical

Voltages	5 VDC
Current	TBD

Environmental

Operating Temperature	-40℃ to +85℃
Storage Temperature	-40℃ to +85℃
Weatherproof	IP67
Shock	Vertical axis 50G,other axis 30G 3 axis sweep – 15 min
Vibration	10-200 Hz log sweep 3G

Sensitivity (4 Constellations)

Tracking & Nav	-167 dBm
Reacquisition	-160 dBm
Hot starts	-157 dBm
Cold starts	-148 dBm

Acquisition

Cold start	27 sec
Aided start	3 sec
Reacquisition	3 sec

Posistion and Velocity Accuracy (4 Constellations)

Horizontal PVT/SBAS/RTK (CEP)	1.5m/ 1.0m/ 0.01+1ppm
Horizontal PPP-RTK (CEP)	<0.1m SPARTN;
Vertical PVT/SBAS/RTK (R50)	2.0m/ 1.5m/ 0.01m+1ppm
Vertical PPP-RTK) (R50)	<0.20m SPARTN;
Typical Convergence	<12s RTK; <65s SPARTN;
Velocity accuracy	0.05m/s

Heading

Dynamic Heading Accuracy	0.3°
Precise Heading Accuracy	TBD

Timing

Timing Accuracy	30 ns RMS

Ordering Information:

33-HCS885XF-29-PC0 (JST 6 pos. receptacle, 1.25mm; Data, *opt. Timepulse, TX2,RX2*: RS-232; PC0 = NMEA out, no adaptor cable.)
33-HCS885XF-49-PC0 (JST 6 pos. receptacle, 1.25mm; Data, *opt. Timepulse, TX2,RX2*: CMOS; PC0 = NMEA out, no adaptor cable.)

33-HCS885EXF-29-PC0 SDK Test Adaptor required for programming
33-HCS885EXF-49-PC0 SDK Test Adaptor required for programming
33-0095-6 (5V RS-232)
33-0095-7 (5V CMOS)

About Calian GNSS: With global headquarters and manufacturing in Ottawa, Canada, Calian GNSS is a leading manufacturer of high-precision antennas and components for Global Navigation Satellite System (GNSS) applications. Calian GNSS' 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.calian.com/GNSS**

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