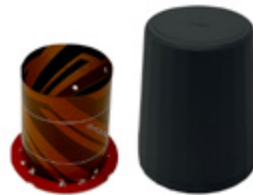




## Lightweight Smart GNSS Antennas

Unmanned vehicle applications (robots, drones) typically need high-precision GNSS and ultra light weight. Calian smart GNSS antennas deliver repeatable, reliable results via digital interfaces in the lightest packages, shortening your time to market and future-proofing your products.



Unmanned vehicles by their nature need to know exactly where they are, to <6 cm or better. They also need to know **precisely** where they are going. Modern GNSS techniques make this a reality: multi-band, multi-constellation satellite capability, carrier phase measurements, low noise amplifiers, in-band noise filtering, multi-path rejection, PPP-RTK or RTK augmentation/corrections **AND** mobile-base/rover antenna pairs for precise heading.

Utilizing all of this capability takes very careful implementation: with GNSS precision comes susceptibility to common impairments injected into the GNSS solution by the system environment.

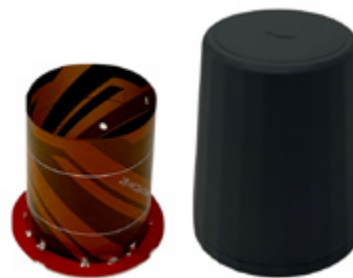
Calian uses our GNSS expertise to reliably integrate our industry leading antennas with the best receivers, delivering location/heading information to your application over a range of digital interfaces; in super lightweight solutions (down to 8 g). We follow that up with support, via Software Development Kits, drivers and connectors for industry frameworks (e.g. PixHawk<sup>®</sup>, ROS<sup>™</sup> 2), and augmentation service integration (e.g. PointPerfect from u-blox).

**Why focus on engineering a GNSS solution that can break everytime you change something in your system design? Let Calian smart GNSS antennas deliver your solution.**

### Multi-band, Multi-constellation antennas: Accutenna® and Short Helical

Calian makes a broad range of high performance GNSS antennas, designed to present GNSS receivers with as pristine a signal as possible. For lightweight GNSS antennas, we have incorporated our patented quadrifilar helical element to target extremely lightweight solutions. The result is the HCS885XF housed Smart GNSS antenna (38 g) and the embedded HCS885EXF (8 g). The HCS885 family features the following antenna characteristics:

- Dual Band (L1/L5), Multi-Constellation: GPS/QZSS: L1 C/A, L5; GLO: L1OF; GAL: E1-B/C, E5a; BDS: B1I & B2a
  - L5 offers better signal strength than L2
- $\leq 0.5$  dB Axial Ratio at Zenith, excellent gain for signal consistency and multi-path rejection over all elevation and azimuth angles
- Calian eXtended Filtering to mitigate harmonics from high amplitude interference, common with modern spectrum congestion
- Extreme low weight



HCS885EXF

HCS885XF

### Low-power u-blox Augmented Receivers, PointPerfect PPP-RTK

Our smart GNSS helicals integrate u-blox' low power Neo F9P receivers, which support PointPerfect PPP-RTK corrections, and Base/Rover configurations for RTK corrections and moving base precise heading on unmanned vehicles by implementing a pair of antennas. Base configured antennas can also use PPP-RTK to enhance over all precision of the base/rover pair.



### System Support: Flush Mount, Digital I/F, JST Connectors, SDK's and ROS2 Drivers

By integrating the antenna and the receiver, the Smart Antenna isolates the GNSS signal from injected system impairments noise, prior to presentation to the receiver. The GNSS information is presented to the rest of the system by a digital interface. The interface is a UART style, with either CMOS or RS-232 voltage levels, via a 6-pin JST connector which is the type commonly used in the PixHawk® open standard for drone hardware. Control of the HCS885 and receipt of location/heading is via NMEA messages or u-blox UBX over the serial interface. Corrections are RTCM between rover/base, and SPARTN messages from u-blox over MQTT.

Software Development Kits are available to help develop system drivers and to trial performance. Calian has also partnered with InDro Robotics to develop ROS™ 2 (Robot Operating System 2) drivers for the HCS885.



### Lighter Accutenna® Antennas: TW5790, TW5786, TW5784

It's not all about helicals. You may need a lower physical profile, or L-Band correction support. Calian is also offering its existing line of flush mount Accutenna based Smart GNSS antennas with an aluminum base that is 50 g lighter than previous versions. All the systems support for the Smart Helicals are also available for these products.



### About Calian

We keep the world moving forward. Calian® helps people communicate, innovate, learn and lead safe and healthy lives. Every day, our employees live our values of customer commitment, integrity, innovation and teamwork to engineer reliable solutions that solve complex problems. That's Confidence. Engineered. A stable and growing 40-year company, we are headquartered in Ottawa with offices and projects spanning North American, European and international markets. Visit [calian.com](http://calian.com) to learn about innovative healthcare, communications, learning and cybersecurity solutions.