TW5387 Datasheet

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TW5387 High-Precision Smart GNSS Antenna with RTK and IMU

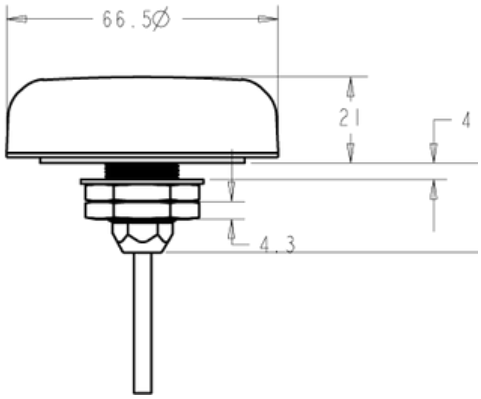
Overview

The TW5387 is a multi-band (L1/L5), multi-constellation integrated GNSS receiver/antenna with Inertial Measurement Unit (IMU) (for Untethered Dead Reckoning) and RTK for Precise Point Positioning. The TW5387 is capable of providing sub 1 meter accuracy stand alone, and 1 cm accuracy with with RTK corrections. Combined with the IMU to achieve Sensor Fusion, TW5387 supports the most demanding positioning applications in the most challenging environments such as a dense urban canyon.



Interference Resilience

The TW5387 incorporates a latest generation multi-band (L1/L5) GNSS receiver and IMU with a Tallysman Accutenna® multi-band (L1/L5) dual feed patch. The state of the art GNSS receiver supports concurrent tracking of three major constellations (GPS, BeiDou, and Galileo) in multiple frequency bands. The multi-band (L1/L5) architecture is highly effective method for the removal of ionospheric error. The TW5387 employs multi-stage filtering with low noise figure LNAs, combined with the dual feed Accutenna®, which greatly improves the rejection of multi-path signal interference. The IMU Sensor Fusion with GNSS data and optionally speed data further mitigates effects of severe multi-path reflections and provides continuous position availability during periods of GNSS signal obstruction offering exceptional performance to meet the most challenging precise positioning applications.



Mechanical Dimensions (mm)

Real Time Kinematic Positioning

The TW5387 offers support Real-Time Kinematic base/rover corrections allowing performance optimization to sub 1 cm. The concurrent multi-band (L1/L5) access to three satellite constellations improves the receiver's convergence capability to deliver a quick, precise and reliable position solution which is unaffected by ionospheric errors, and improved resilience to jamming. The TW5387 accepts RTK RTCM messages from a base station to act as a rover in RTK mode, and includes IMU. The TW5387 provides sub 1 cm positioning accuracy in conjunction with applied RTK corrections.

Features:

- Improved noise immunity with multi-band Quectel LG69TAP GNSS receiver
- On-board Inertial Measurement Unit (UDR and ADR - wheelticks) provides continuous availability during periods of signal loss
- Improved multi-path rejection with Dual feed L1/L5 Accutenna®
- Multi-band GNSS receiver is resilient to ionospheric errors
- High reliability timing with expansive constellation array
- Exceptional position performance standalone without correction services
- Broad 5V-36V operation
- RS-422 differential (or RS-232) signalling
- Industrial grade IP69K enclosure
- Rugged fixed mount
- Multiple cable lengths (5m, 15m and 25m)
- Available with conical radome

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Specifications

Antenna

Architecture ..... Multi-band (L1/L5), Dual Feed
Axial Ratio ..... L1: < 1 dB typical.
Frequencies ..... GPS L1C/A L5, GAL E1 E5a, BDS B1I B2a, QZSS L1C/A L5

Interface

Pwr, Gnd
33-5387-07-yy-zz ..... Data, Timepulse: RS-422 levels
33-5387-27-yy-zz ..... Data: RS-232; Timepulse: RS-422

Serial Protocol

Output ..... NMEA 0183, UBX Binary, RTCM v3.3,
Baud Rate ..... Configurable
Update Rate: ..... 10 Hz

Mechanical

Dimensions ..... 66.5 mm dia. x 21 mm H
Weight ..... 135 g
Mounting Method ..... Industrial grade fixed Mount
Cable Length ..... 5, 15, 25m with RJ45 termination

Electrical

Voltages ..... 5 V to 36 VDC
Current ..... 0.5 Watts (nominal operating)
Measured @ 5VDC supply

Environmental

Operating Temperature ..... -40°C to +85°C
Storage Temperature ..... -40°C to +85°C
Weatherproof IP69K
Shock ..... Vertical axis 50G,other axis 30G 3 axis sweep – 15 min

Vibration ..... 10-200 Hz log sweep 3G

Sensitivity

Tracking & Nav ..... -160 dBm
Reacquisition ..... -153 dBm
Cold starts ..... -145 dBm

Acquisition Time To First Fix

Cold start ..... 36 sec
Aided start ..... 10 sec
Reacquisition ..... 3 sec

Horizontal Posistion Accuracy (4 Constellations)

Standard PVT ..... 1.0 m CEP
Corrected RTK ..... 0.01m + 1ppm CEP
RTK Convergence ..... 10 sec*

Timing

Timing Accuracy ..... 100 ns RMS

Ordering Information:

33-5387-07-yy-zz-PC0 (RJ45; Data and Timepulse: RS-422, PC0 = NMEA out, no adaptor cable)
33-5387-27-yy-zz-PC0 (RJ45; Data: RS-232, Timepulse RS-422, PC0 = NMEA out, no adaptor cable)

yy = Radome (00=grey conical, 10-grey low profile, 01-white conical, 11=white low profile)
zz = Cable length in meters. Standard is 5m. (15m and 25m are special order only)

33-5387-07-yy-zz-PC0 SDK Test Adaptor required for programming **33-0095-10**
33-5387-27-yy-zz-PC0 SDK Test Adaptor required for programming **33-0095-13**

About Calian
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