

## TW5386 Smart GNSS UDR Antenna for High Accuracy Positioning

### Overview

The TW5386 is a multi-band (L1/L2), multi-constellation integrated GNSS receiver/antenna with Inertial Measurement Unit (Untethered Dead Reckoning) and RTK for Precise Point Positioning. The TW5386 is capable of providing sub 1 meter accuracy stand alone and sub 10 cm accuracy with RTK corrections to support the most demanding positioning applications in the most challenging environments such as a dense urban canyon.

### Interference Resilience

The TW5386 incorporates a latest generation multi-band (L1/L2) GNSS IMU receiver with a Tallysman Accutenna™ multi-band (L1/L2) dual feed patch. 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 multi-band (L1/L2) architecture is the most effective method for the removal of ionospheric error. The TW5386 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 further mitigates effects of severe multi-path reflections and provides continuous position availability during periods of GNSS outages caused by signal obstruction offering exceptional performance to meet the most challenging precise positioning applications.

### Precise Point Positioning

The TW5386 offers support for a broad range of corrections services (RTK base/rover or network) allowing performance optimization according to each application's unique requirements. The concurrent multi-band (L1/L2) access to all four satellite constellations improves the receiver's convergence capability to deliver a quick, precise and reliable position solution which is resilient to ionospheric errors and improves robust to interference and jamming.

The TW5386 accepts RTCM RTK messaged from a base station, Virtual Reference Station or SPARTN SSR message type via the Point Perfect subscription service.

The TW5386 provides sub 10 cm positioning accuracy in conjunction with RTK applied corrections.

### Features

- Improved noise immunity with multi-band GNSS receiver
- Improved multi-path rejection with Dual feed Accutenna™
- Multi-band GNSS receiver is resilient to ionospheric errors
- High reliability timing with expansive constellation array
- IMU provides continuous availability during periods of signal loss
- Exceptional position performance without correction services
- Broad 5V-36V operation
- RS-485 differential (or RS-232 optional) signalling
- Industrial grade IP69K enclosure
- Rugged fixed mount
- Multiple cable lengths (5m, 15m and 25m)
- Available with conical radome



Mechanical Dimensions (mm)

# TW5386 Smart GNSS Antenna

## Specifications

### Antenna

Architecture	Multi-band (L1/L2), Dual Feed
Axial Ratio	L1:< 1 dB typical.
Frequencies	GPS L1C/A L2C, GLO L1OF L2OF, GAL E1B/C E5b, BDS B1I B2I, QZSS L1C/A L2C
SBAS L1 C/A	WAAS, EGNOS, MSAS, GAGAN
Channels	184-channel u-blox F9 engine
Anti-jamming	Active CW detection

Measured @ 5VDC supply

### Interface

Pwr, Gnd	
Tx, RX, Timepulse	RS-485 levels (RS-232 option)

### Serial Protocol

Output	NMEA 0183, UBX Binary, RTCM v3.3, SPARTN v2.0
Baud Rate	Configurable
Update Rate	Configurable, 2Hz* (30Hz via HNR)

### 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	0.6 Watts (nominal operating)

### Environmental

Operating Temperature	-40°C to +85°C
Storage Temperature	-40°C to +85°C
Weatherproof	IP69K
Shock	Vertical axis 50G, other axis 30G
Vibration	3 axis sweep – 15 min 10-200 Hz log sweep 3G

### Sensitivity

Tracking & Nav	-160 dBm
Reacquisition	-160 dBm
Hot starts	-158 dBm
Cold starts	-147 dBm

### Acquisition

Cold start	25 sec
Aided start	3 sec
Reacquisition	2 sec

### Position Accuracy

Horizontal PVT	1.5m CEP
Horizontal SBAS	1.0m CEP
Horizontal RTK	0.01 + 1ppm R50*

Horizontal PPP-RTK (SPARTN)	<0.06m CEP
Typical Convergence	<45 sec*

### Timing

Timing Accuracy	30 ns RMS
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### Ordering Information:

33-5386-7-yy-zz-PC0 (RS-485, PCO = factory Configuration, NMEA out, no adaptor cable.)

33-5386-27-yy-zz-PC0 (RS-232, PCO = factory Configuration, 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)

**TW5386 Standard SDK Test Adaptor required for programming 33-0095-x-1 (RS-485) -3 (RS-232) 33-0095-1 (RS-485)**

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)

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