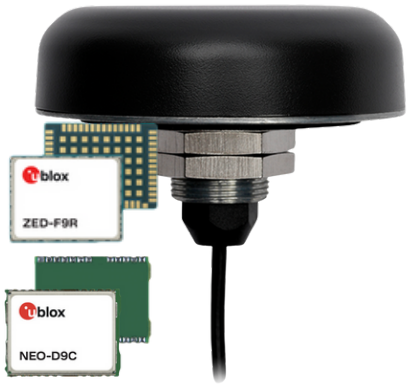
TW5390C Datasheet

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TW5390C High-Precision Smart GNSS Antenna with IMU and CLAS PPP-RTK

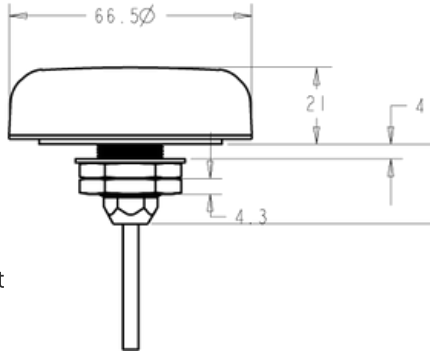
Overview

The TW5390C is a multi-band (L1/L2), multi-constellation integrated GNSS receiver/antenna with Inertial Measurement Unit (IMU) (for Untethered Dead Reckoning) and integrated L6 receiver for CLAS PPP-RTK corrections. The TW5390C 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. Combined with the IMU to achieve Sensor Fusion, TW5390C supports the most demanding positioning applications in the most challenging environments such as a dense urban canyon and off-grid positioning.



Interference Resilience

The TW5390C incorporates a latest generation multi-band (L1/L2) GNSS receiver and IMU with a Tallysman Accutenna® multi-band (L1/L2/L6) triple band 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 highly effective method for the removal of ionospheric error. The TW5390C 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 multipath 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)

Precise Point Positioning

The TW5390C offers support for a broad range of corrections services (RTCM RTK, networked PointPerfect Flex PPP-RTK or CLAS PPP-RTK over L6) 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 resilience against interference and jamming.

As an RTK rover, The TW5390C accepts RTCM RTK messaged from a base station, Virtual Reference Station or SPARTN SSR message type via the PointPerfect Flex subscription service.

Features:

- Improved noise immunity with multi-band u-blox ZED F9R GNSS receiver
- PointPerfect Flex PPP-RTK (networked) CLAS PPP-RTK over L6
- 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 standalone without correction services
- 5V operation
- RS-422 differential (or RS-232) signalling
- Industrial grade IP67 enclosure
- Surface mount magnetic package
- Multiple cable lengths (5m, 15m and 25m)

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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
Corrections Receiver	L6 CLAS PPP-RTK (SSR)

Interface

Pwr, Gnd

33-5390C-19-yy-zz	Data: USB 2.0 Type A Male
33-5390C-29-yy-zz	Data, Timepulse: RS-232;

Serial Protocol

Output	NMEA 0183, UBX Binary, RTCM v3.3, SPARTN v2.0
Baud Rate	Configurable
Update Rate	9 Hz (4); 10 Hz (GPS+GAL+BDS); 20 Hz (GPS+GAL); 20 Hz (GPS+GLO); 16 Hz (GP+BDS); 25 Hz (GPS)

Mechanical

Dimensions	68.2 mm dia. x 22 mm H
Weight	185 g
Mounting Method	Industrial grade fixed Mount
Cable Length	5, 15, 25m with RJ45 termination (-29)

Electrical

Voltages	5 VDC
Current	0.6 Watts (nominal operating) Measured @ 5VDC supply

Environmental

Operating Temperature	-40°C to +85°C
Storage Temperature	-40°C to +85°C
Weatherproof	IP67
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	-160 dBm
Hot starts	-158 dBm
Cold starts	-147 dBm

Acquisition

Cold start	25 sec
Aided start	3 sec
Reacquisition	2 sec

Horizontal Posistion Accuracy (4 Constellations)

Standard PVT	1.5m CEP
Standard SBAS	1.0m CEP
Corrected RTK	0.01m + 1ppm CEP
Augmented SPARTN (PPP-RTK)	<0.06m CEP
SPARTN Convergence	<45 sec*

Heading

Dynamic Heading Accuracy . . . . . 0.3° (30 m/sec)

Timing

Timing Accuracy . . . . . 30 ns RMS

Ordering Information:

33-5390C-19-yy-zz-PC0 (USB 2.0 Type A Male; Data: USB 2.0, PC0 = NMEA out, no adaptor cable)
33-5390C-29-yy-zz-PC0 (RJ45; Data: RS-232, Timepulse RS-232, 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)

33-5390C-19-yy-zz-PC0 SDK Test Adaptor required for programming	**none**
33-5390C-29-yy-zz-PC0 SDK Test Adaptor required for programming	**33-0095-16**

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** to learn about innovative healthcare, communications, learning and cybersecurity solutions.

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