TW3990

CALIAN
Confidence. Engineered.

Multi-Constellation Full-Band Antenna

Frequency Coverage: GPS L1, L2, L5 | QZSS L6 | GALILEO E1, E5a, E5b, E6 | BEIDOU B1, B2a, B2b, B3 | GLONASS G1, G2, G3 | NavIC L5 + L-Band

The TW3990 is a precision-tuned full-band Accutenna® technology antenna providing full coverage of GPS/QZSS-L1/L2/L5/L6, GLONASS-G1/G2/G3, Galileo-E1/E5a/E5b/E6, BeiDou-B1/B2/B2a/B3, NavIC-L5, including the satellite-based augmentation system (SBAS) available in the region of operation [WAAS (North America), EGNOS (Europe), MSAS (Japan), or GAGAN (India)], plus L-Band correction services. It is especially designed for precise full-band GNSS positioning.

The TW3990 features a precision-tuned, twin circular dual-feed, stacked patch element. The signals from the two orthogonal feeds are combined in a hybrid combiner, amplified in a wideband LNA, then band-split for narrow filtering in each band and further amplified prior to recombination at the output. The antenna also has a strong pre-filter to mitigate inter-modulated signal interference from Ligado, LTE and other cellular bands. The TW3990 offers excellent axial ratio and a tightly grouped phase centre variation.

Ideal for train control sensors, autonomous vehicle tracking and guidance, precision agriculture, and other applications where precision matters, The TW3990 provides superior multipath signal rejection, a linear phase response, and tight phase centre variation (PCV).

The TW3990 meets all requirements of the Association of American Railroads (AAR)'s Electronics Environmental Requirements and System Management Standard (S-9401.V1.0). In addition, it is also compliant with the EN45545-2, EN50121, EN50155, and EN61373 standards.

The TW3990 is housed in a through-hole mount, weatherproof (IP69K) enclosure for permanent installations. L-bracket (PN 23-0040-0) or pipe mount (PN 23-0065-0) are available. A 100 mm ground plane is provided with the antenna, which ensures optimal performance. This antenna is also available in an OEM format: TW3997 (28 dB) and TW3990E (35 dB).

Applications

- Autonomous vehicle tracking and guidance
- Positive Train Control (PTC)
- Positive Train Location (PTL)
- Precision GNSS position
- Precision agriculture
- Full-band RTK and PPP receivers
- Law enforcement and public safety

Features

- Very low noise preamp (2.5 dB typ.)
- Low axial ratio (< 2.0 dB typ.)
- Tight phase centre variation
- High-gain LNA (37 dB typ.)
- Low current (24 mA typ.)
- ESD circuit protection (15 kV)
- Invariant performance from 2.5 to 16 VDC
- IP69K, REACH, RoHS, and S-9401.V1.0 compliant
- EN45545-2, EN50121, EN50155, and EN61373 compliant
- AAR Certified

Benefits

- Excellent multipath rejection
- Increased system accuracy
- Excellent signal-to-noise ratio

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

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Antenna

Technology: Dual-feed Stacked RHCP ceramic patch

		Gain (dBic typ. at Zenith)	Axial Ratio (dB at Zenith)
GNSS			
GPS / QZSS	L1	4.0	< 1.0
	L2	4.0	< 1.0
	L5	-1.5	< 1.5
GLONASS	G1	2.5	< 1.5
	G2	2.5	< 1.5
	G3	2.5	< 1.5
Galileo	E1	4.0	< 1.0
	E5A	-1.5	< 1.5
	E5B	2.5	< 1.5
	E6	-3.0	< 1.5
BeiDou	B1	4.0	< 1.0
	B2	2.5	< 1.5
	B2a	-1.5	< 1.5
	B3	-2.0	< 1.5
IRNSS / NavIC	L5	-1.5	< 1.5
QZSS	L6	-3.0	< 1.5
L-Band Services (1525 MHz - 1559 MHZ)		3.5	< 1.0
Satellite Communications			
Iridium		-	-
Globalstar		-	-
Other			
Axial Ratio at 10°	-	Efficiency	-
PC Variation	± 8 mm	PCO	

Mechanicals

Size	66 mm (dia.) x 21 mm (h.) [100 mm ground plane recommended]
Weight	185 g
Radome	Radome: EXL9330, Base: Zamak White Metal
Mount	Through-hole
Available Connectors	Please refer to ordering guide

Environmental

Operating Temperature	-70 °C to 85 °C
Storage Temperature	-70 °C to 95 °C
Vibration	MIL-STD-810D Method 514.3-1
Shock	MIL-STD-810G Method 516.6
Salt Fog	MIL-STD-810F Method 509.4
IP Rating	IP69K
Compliance	IPC-A-610, FCC, RED, RoHS, REACH

Warranty

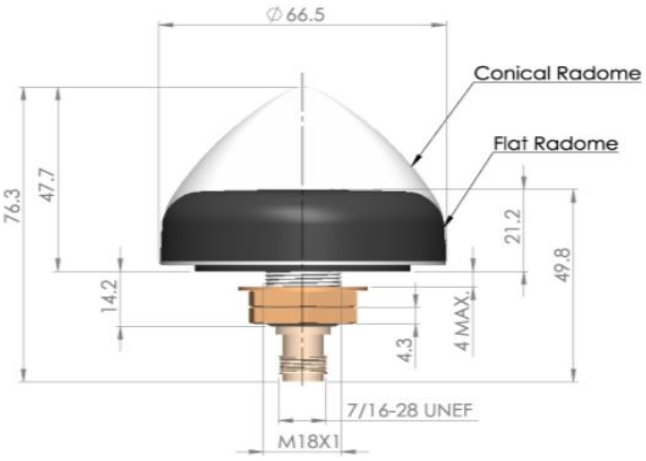
Parts and Labour: 3-year standard warranty

Low Noise Amplifier (LNA) - Measured at 3V and 25°C

Frequency Bandwith		Out of Band Rejection
Lower Band	1164 - 1300 MHz	< 1000 MHz > 60 dB < 1100 MHz > 50 dB > 1345 MHz > 30 dB
L-Band Correction Services	1539 - 1559 MHz	-
Upper Band	1559 - 1606 MHz	< 1525 MHz > 20 dB > 1635 MHz > 35 dB > 1800 MHz > 40 dB > 2000 MHz > 50 dB

Architecture	Pre-filtered
Gain	37 dB typ. | 35 dB min.
Noise Figure	2.5 dB typ. @ 25 °C
VSWR	< 1.5:1 typ. | 1.8:1 max.
Supply Voltage Range	2.5 to 16 VDC nominal, up to 50mV p-p ripple
Supply Current	24 mA typ. @ 25 °C
ESD Circuit Protection	15 kV air discharge
P 1dB Output	11 dBm typ.
Group Delay	-

Mechanical Diagram



Ordering Information

Part Number **33-3990-xx-yy-zzzz**

where xx = connector type, yy = shape and colour of radome, and zzzz = cable length in mm

Please refer to our **Ordering Guide** to review available radomes and connectors at:
https://www.tallysman.com/resource/tallysman-ordering-guide/

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