

TW3872XF



TW3872XF Extended-Filter Dual-Band GNSS Antenna

Frequency Coverage: GPS/QZSS-L1/L2, GLONASS-G1/G2, Galileo-E1, BeiDou-B1

Overview

The TW3872XF is a precision-tuned dual-band Accutenna® technology antenna providing coverage for GPS/QZSS-L1/L2, GLONASS-G1/G2, Galileo-E1, and BeiDou-B1, including the satellite-based augmentation system (SBAS) available in the region of operation [WAAS (North America), EGNOS (Europe), MSAS (Japan), or GAGAN (India)].

The TW3872XF features an industry-leading low current, low-noise amplifier (LNA) that includes an integrated low-loss pre-filter to prevent harmonic interference from high-amplitude signals, such as 700 MHz band LTE and other near-band cellular signals. As the radio frequency spectrum has become more congested, the signals and harmonic frequencies of new LTE bands [e.g. 800MHz x 2 = 1600MHz (GLONASS-G1)] can affect GNSS antennas and receivers. New LTE signals in Europe [Band 32 (1452 - 1496 MHz)] and Japan [Bands 11 and 21 (1476 - 1511 MHz)] have also been observed to interfere with GNSS signals. In addition, Inmarsat satellite communication (uplink: 1626.5 - 1660.5 MHz) can also affect GNSS signals. The new Tallysman XF antennas have been designed to mitigate out-of-band signals and prevent GNSS antenna saturation. Tallysman's custom XF filtering mitigates all existing signals and new Ligado and LTE signals, enabling the antennas and attached GNSS receivers to perform optimally.

Ideal for train control sensors, autonomous vehicle tracking and guidance, precision agriculture, and other applications where precision matters, The TW3872XF provides superior multipath signal rejection, a linear phase response, and tight phase centre variation (PCV).

The TW3872XF 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.3 The TW3872XF offers excellent axial ratio and a tightly grouped phase centre variation.

The TW3872XF is housed in a through-hole mount, weatherproof enclosure for permanent installations. L-bracket (PN #23-0040-0) or pipe mount (PN #23-0065-0) are available for non-rooftop installation. A 100 mm ground plane is provided with the antenna, which ensures optimal performance.

The extended-filter embedded TW3967XF (28 dB gain) and TW3972EXF (37 dB gain) antennas are also available.



Applications

- Autonomous vehicle tracking and guidance
- Positive Train Control (PTC)
- Positive Train Location (PTL)
- Precision GNSS position
- Precision agriculture
- Triple-frequency 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 (45 mA typ.)
- ESD circuit protection (15 kV)
- Invariant from 2.5 to 16 VDC

Benefits

- Excellent interference mitigation
- Excellent multipath rejection
- Increased system accuracy
- Excellent signal-to-noise ratio
- IP69K, REACH, RoHS, and S-9401.V1.0 compliant
- EN45545-2, EN50121, EN50155, and EN61373 compliant

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

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Frequency Coverage: GPS/QZSS-L1/L2, GLONASS-G1/G2, Galileo-E1, BeiDou-B1

Antenna			
Technology	Dual-feed Stacked RHCP ceramic patch		
		Gain dBic typ. at Zenith	Axial Ratio dB at Zenith
GNSS			
GPS / QZSS	L1	4	< 1.0
	L2	4	< 1.0
	L5	-	-
GLONASS	G1	2.5	< 1.5
	G2	2.5	< 1.5
	G3	-	-
Galileo	E1	4	< 1.0
	E5A	-	-
	E5B	-	-
	E6	-	-
BeiDou	B1	4	< 1.0
	B2	-	-
	B2a	-	-
	B3	-	-
IRNSS / NavIC	L5	-	-
QZSS	L6	-	-
L-Band Services (1525 MHz - 1559 MHz)			
Satellite Communications			
Iridium	-	-	-
Globalstar	-	-	-
Other			
Axial Ratio at 10°	-	Efficiency	-
PC Variation	± 10 mm	PCO	-

Mechanicals	
Size	66 mm (dia.) x 21 mm (h.) 100 mm ground plane provided
Weight	185 g
Radome	Radome: EXL9330, Base: Zamak White Metal
Mount	19 mm 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 514.4 and 514.5
Shock	MIL-STD-810G Method 516.6
Salt Fog	MIL-STD-810F Method 509.4
IP Rating	IP69K
Compliance	IPC-A-610, FCC, RED / CE Mark, RoHS, REACH, S-9401.V1.0, EN45545-2, EN50121, EN50155, EN61373

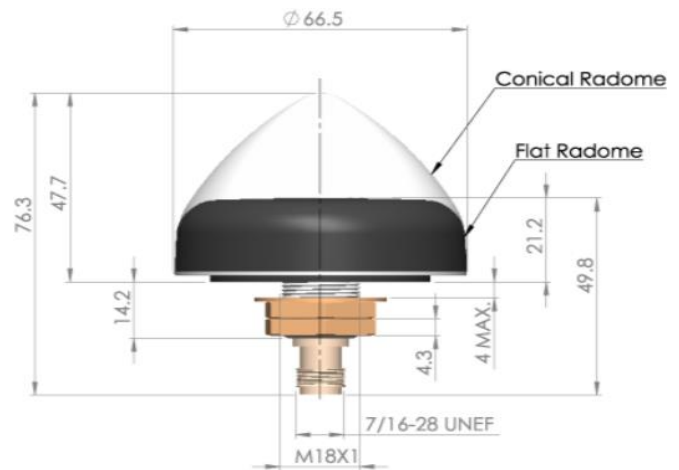
Warranty:	
Parts and Labour	3-year standard warranty

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

	Frequency Bandwidth	Out of Band Rejection
Lower Band	1217 - 1255 MHz	≥ 90 dB @ ≤ 1100 MHz ≥ 90 dB @ ≤ 1125 MHz ≥ 80 dB @ ≥ 1350 MHz
L-Band - Correction Services	-	-
Upper Band	1559 - 1606 MHz	≥ 70 dB @ ≤ 1500 MHz ≥ 50 dB @ ≤ 1525 MHz ≥ 40 dB @ ≤ 1536 MHz ≥ 95 dB @ = 1650 MHz ≥ 75 dB @ ≥ 1660 MHz

Architecture	Pre-filter → LNA stage 1 → filter → LNA stage 2
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
Max. Input Power	45 mA typ. @ 25 °C
ESD Circuit Protection	15 kV air discharge
P 1dB Output	5.5 dBm typ.
Group Delay	-

Mechanical Diagram



Ordering Information

Part Number **33-3872XF-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/>