



A Tallysman Accutenna[®] TW3970 Triple Band GNSS Antenna + L-band Correction Services

The TW3970 is an Accutenna[®] technology antenna providing triple band GPS L1/L2/L5, GLONASS G1/G2/G3, BeiDou B1/B2, Galileo E1/E5a+b plus L-band correction services coverage and is especially designed for precision triple frequency positioning. The TW3970 provides superior multi-path signal rejection, a linear phase response, and tight Phase Centre Variation (PCV). This antenna is ideal for precision agriculture, autonomous vehicle tracking and guidance, and other applications where precision matters.

The TW3970 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 wide-band LNA, then band-split for narrow filtering in each band and further amplified prior to recombination at the output.

The TW3970 offers excellent axial ratio and a tightly grouped phase center variation.

The TW3970 covers from 1164MHz to 1254MHz and 1525MHz to 1606MHz.

The TW3970 is housed in a through-hole mount, weather-proof enclosure for permanent installations. L Bracket or Pipe Mount (part numbers 23-0040-0, 23-0065-0 respectively) are available for non-rooftop installation. A 100mm ground plane is recommended for non-roof-top installations.

This product is also available in an OEM format (TW3965 for 28dB and TW3970E for 35dB)

Applications

- Precision GPS position
- Triple Frequency RTK receivers
- Mission Critical GPS Timing
- Military & Security

Features

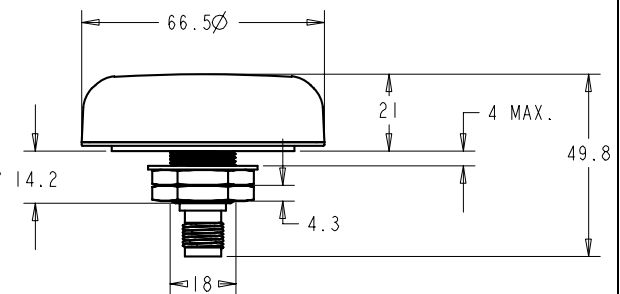
- Very low Noise Preamp, < 2dB
- Axial ratio: <2dB typ.
- Tight Phase Center Variation
- LNA Gain 35 dB typ.
- Low current: 20 mA typ.
- ESD circuit protection: 15 KV
- Invariant performance from: +2.5 to 16VDC

Benefits

- Ideal for triple band RTK surveying systems
- Great multipath rejection
- Increased system accuracy
- Great signal to noise ratio
- IP67, REACH, and RoHS compliant



TW3870 Dimensions (mm)





When precision matters[®]

TW3970 Triple Band GNSS Antenna + L-band Correction Services

Specifications (Measured a Vcc = 3V, and Temperature=25°C)

Antenna

| | | | |
|----------------------------------|-----------------------------------------|------------------------|----------------------------|
| Patch Architecture | Circular, Dual Feed, Dual Stacked Patch | | |
| E5a/L5 Gain (100mm ground plane) | -1.5dBic Min at Zenith | | |
| E5b/G3 Gain (100mm ground plane) | 3.0 dBic Min at Zenith | | |
| L2 Gain (100mm ground plane) | 4.3 dBic Min at Zenith | | |
| G2 Gain (100mm ground plane) | 2.5 dBic Min at Zenith | | |
| E1 Gain (100mm ground plane) | 4.6 dBic Min at Zenith | | |
| L1 Gain (100mm ground plane) | 4.4 dBic Min at Zenith | | |
| G1 Gain (100mm ground plane) | 3.0 dBic Min at Zenith | | |
| Axial Ratio @ zenith | | | |
| L5/E5ab | <1.5dB | L2/B2 | <1dB |
| G2/E6/B3 | <1.5dB | L-Band/L6/L1 | <1dB |
| L1/E1 | <1dB | G1 | <1.5dB |
| 1dB Bandwidth, | | L5/L2: 1164MHz-1254MHz | L-Band/L1: 1525MHz-1606MHz |

Electrical

| | | | | |
|----------------------------------|-----------------------------------------------------|--------|------------------------------------------------|--------|
| Bandwidth | L2/L5: 1164MHz-1254MHz (Filter bandwidth) | | L-band/L1: 1525 MHz-1606MHz (Filter bandwidth) | |
| Overall LNA Gain | 35dB typ, 32 dB min, | | | |
| Gain Variation with Temperature. | 3dB max over operational temperature range | | | |
| LNA Noise Figure | 2.5dB max at 25°C | | | |
| VSWR (at LNA output) | <1.5:1 | | | |
| Supply Voltage Range | +2.5 to 16VDC nominal, up to 50mV p-p ripple | | | |
| EMI Immunity | 50V/Meter, excepting L1 +/-100MHz and L2 +/- 100MHz | | | |
| Supply Current | 20 mA typ. at 25°C, 25mA max at 75°C. | | | |
| ESD Circuit protection | 15 KV air discharge. | | | |
| Out-of-Band Rejection | L5/E5/L2/G2 | | L1/E1/B1/G1 | |
| | <1050 MHz | >45 dB | <1450 MHz | >30dB |
| | <1125 MHz | >30 dB | >1690 MHz | > 30dB |
| | >1350 MHz | >35 dB | >1730 MHz | > 40dB |

Mechanicals & Environmental

| | |
|-------------------------------|-------------------------------------------------------------------------|
| Mechanical Size, Ground Plane | 66mm x 21mm (see drawing on other page), 100mm ground plane recommended |
| Operating Temperature Range | -40°C to +85°C |
| Enclosure | Radome: EXL9330, Base: Zamak White Metal |
| Weight | 185 g |
| Attachment Method | Permanent 3/4" (19mm) through hole mount |
| Environmental | IP67, RoHS and REACH compliant |
| Shock | Vertical axis: 50 G, other axes: 30 G |
| Vibration | 3 axis, sweep = 15 min, 10 to 200 Hz sweep: 3 G |
| Salt fog / spray | MIL-STD-810F Section 509.4 |

Ordering Information

TW3970 – Triple Band GNSS antenna with L-Band Correction 33-3970-xx-yy-zzzz

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

Please refer to the Ordering Guide (<http://www.tallysman.com/index.php/gnss/ordering-guide/>) for the current and complete list of available radomes and connectors.

Tallysman Wireless Inc

106 Schneider Road, Unit 3, Ottawa ON K2K 1Y2 Canada

Tel 613 591 3131

Fax 613 591 3121

sales@tallysman.com

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