

TW164



TALLYSMAN®

When precision matters.®

TW164 1-to-4 Port Smart Power GNSS Signal Splitter

Frequency Coverage: Full GNSS Spectrum

Overview

The Tallysman TW164 is a professional-grade full GNSS band signal splitter that connects one antenna up to four receivers, and supports GPS/QZSS-L1/L2/L5, QZSS-L6, GLONASS-G1/G2/G3, BeiDou-B1/B2/B2a/B3, Galileo-E1/E5a/E5b/E6, and L-band correction services.

GNSS has become a critical component in safety, security, timing, and infrastructure applications, all of which require very high availability. As a result, resilient fault-tolerant components are essential to avoid service interruptions.

The design of first-generation GNSS signal splitters suffered from a single point of failure: only one attached receiver powered the splitter and the antenna. If this receiver failed or was unplugged, all attached receivers also failed.

Tallysman's current-generation TW164 Smart Power GNSS signal splitter provides two additional key features:

First, it accepts power from all attached GNSS receivers and selects power from a receiver using the following protocol. Port #1 is given priority if its voltage is within the specified range (3.0 V - 12.5 V). However, if port #1's receiver is disconnected or if its receiver power goes below the under-voltage or above the over-voltage specification, the TW164 will switch to the next port in numerical order, as long as its power and voltage are within the expected range. The switching and port selection is, therefore, deterministic.

Second, if the antenna fails and does not draw current, the TW164 will provide the receiver powering the antenna with a current draw lower than 1 mA, indicating an antenna fault.

The TW164 offers the best in-class performance in terms of noise figure, isolation, and linearity. In addition, it is packaged in a robust, compact, lightweight, and water-proof (IP67) corrosion-protected aluminum housing.



Applications

- GNSS signal distribution
- GNSS receiver testing
- High-availability applications
- Network and infrastructure timing

Features

- Accepts power from all attached receivers
- Automatically switches on power failure of one receiver
- Antenna failure detection/indication
- Rugged military-grade aluminum enclosure
- Amplification to compensate for signal-splitting loss
- Very low noise figure
- IP67-compliant

Benefits

- Allows up to four GNSS receivers to share a single antenna
- Fits in-line with antenna cable
- Robust package
- Ideal for harsh environments

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

Revision: 1.0

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Electrical Specifications

| Parameter | Conditions / Description | Minimum | | Typical | | Maximum | | Units |
|-------------------------------------|---|-----------|------------|---------------|------------|---------------|------------|------------------------|
| | | 0 dB gain | 10 dB gain | 0 dB gain | 10 dB gain | 0 dB gain | 10 dB gain | |
| Frequency Range | Bandwidth supported | 1100 | | - | | 1700 | | MHz |
| Gain | - | -1.0 | 9.0 | 0.0 | 10.0 | 1.0 | 11.0 | dB |
| Impedance | - | - | | 50.0 | | - | | Ω |
| Noise Figure | All Receiver Ports | - | - | 3.5 | 1.7 | 3.8 | 2.0 | dB |
| Output Isolation | - | 40.0 | 23.0 | - | - | - | - | dB |
| Input/Output SWR | - | - | | 1.4:1 1.1:1 | | 1.5:1 1.2:1 | | ratio |
| Input Gain Compression Point (P1dB) | Gain = 0 dB | -21.0 | | -17.0 | | -14.0 | | dBm |
| 3rd Order Intercept (IIP3) | Gain = 0 dB | -11.0 | | -7.0 | | -4.0 | | dBm |
| RF Input (Damage Threshold) | Maximum RF Input without damage | - | | - | | 5.0 | | dBm |
| Amplitude Balance | Between Ports | - | | 0.1 | | 0.5 | | dB |
| Phase Balance | Between Ports | - | | 2.0 | | 5.0 | | degrees ($^{\circ}$) |
| DC In | DC input on any port | 3.0 | | - | | 12.5 | | VDC |
| Receiver Over-voltage | - | 12.7 | | 14.9 | | 16.9 | | VDC |
| Receiver Under-voltage | - | 2.3 | | 2.5 | | 2.8 | | VDC |
| Splitter Current | Current consumed by splitter | - | | 15.0 | | 25.0 | | mA |
| Antenna Through Current | Maximum current provided to the antenna | - | | - | | 230.0 | | mA |

Mechanicals

| | |
|------------|---|
| Size | 117.0 mm (L.) x 111.6 mm (w.) x 38.0 mm (h.) |
| Weight | 405 g (type-N connectors) or 280 g (TNC connectors) |
| Connectors | 5 TNC (female) or 5 type-N (female) |
| Enclosure | military-grade corrosion-protected aluminum (6061-T6) |

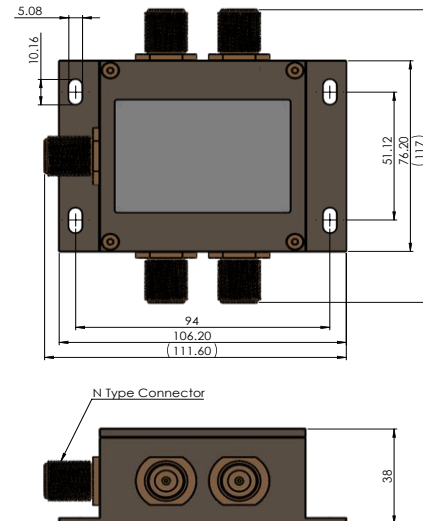
Environmental

| | |
|-----------------------|---|
| Operating Temperature | -40 °C to 85 °C |
| Storage Temperature | -50 °C to 95 °C |
| Vibration | - |
| Shock | - |
| Salt Fog | - |
| IEC 60529 - IP Rating | IEC-60529- IP67 (enclosure) |
| Compliance | RoHS, REACH and WEEE, EN60950-1, RED / CE Certified MIL-STD-810, FCC Part 15B and R&TTE equivalent. |

Warranty

| | |
|------------------|--------------------------|
| Parts and Labour | 3-year standard warranty |
|------------------|--------------------------|

Mechanical Diagram



Ordering Information

Part Number **32-0164-xx-yy**

where xx = connectors: 14 = type-N (female) | 01 = TNC (female)
yy = gain: 00 = no gain | 10 = 10 dB gain

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