

# TWA928L

## TWA928L AccuAuto Embedded Autonomous Vehicle Triple-Band GNSS Antenna + L-Band

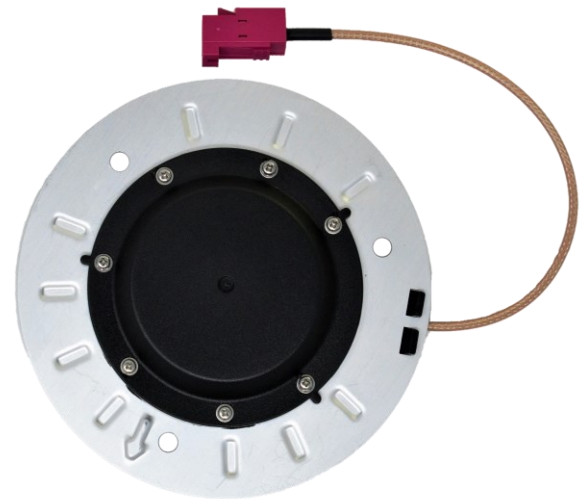
Frequency Coverage: GPS/QZSS-L1/L2/L5, GLONASS-G1/G2/G3, Galileo-E1/E5a/E5b, BeiDou-B1/B2/B2a, NavIC-L5  
+ L-Band correction services

The Tallysman<sup>®</sup> TWA928L AccuAuto Embedded Autonomous Vehicle antenna has been designed to meet the demanding needs of the autonomous vehicle market. It features a patented Tallysman<sup>®</sup> Accutenna<sup>®</sup> technology multi-constellation and multi-frequency antenna element. This antenna features an integrated ground plane, radome, and underside cover that provides mist and condensation protection. The bottom cover also supports the antenna cable and mitigates cable vibration to ensure the antenna has a long service life, while the ground plane improves antenna performance. All TWA928L electronic components are Automotive Electronics Council (AEC) certified, designed to perform under the most challenging environmental conditions, such as extreme temperatures (-40 °C to +125 °C) and continuous shock and vibration.

Filtering out-of-band and in-Band radio frequencies is a key requirement of a high-quality antenna. To prevent out-of-band noise from saturating the antenna, the TWA928L has a deep pre-filter. This feature enables reliable GNSS signal reception in challenging urban environments where inter-modulated signal interference from LTE and other cellular bands is common.

Other key components are precision-tuned, twin circular dual-feed (Patented Accutenna<sup>®</sup> Technology), stacked patch elements. 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. These features allow the TWA928L antenna to offer an excellent axial ratio, enabling multipath mitigation, leading to a very tight antenna phase centre.

Tallysman<sup>®</sup>'s TWA928L antenna is ideally suited for Real-Time Kinematic (RTK) and Precise Point Positioning (PPP) positioning, for autonomous vehicle navigation and guidance, and other applications where accuracy and precision matters.



### Applications

- Autonomous vehicle navigation
- Precision GNSS positioning
- Mission-critical GNSS timing & synchronization
- RTK / PPP surveying systems
- Safety & security

### Features

- Integrated ground plane
- Low noise preamp < 2.5 dB typ.
- Axial ratio: < 2.0 dB typ.
- Tight phase centre variation (PCV)
- High-gain LNA (28 dB typ.)
- Low current: 30 mA typ.
- ESD circuit protection (15 kV)
- Invariant performance from 2.5 to 16 VDC
- IP67, REACH, RoHS, and AEC compliant

### Benefits

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

**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](http://www.tallysman.com)

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+ L-Band correction services

Antenna			
Technology		Dual-feed Stacked RHCP ceramic patch	
		Gain	Axial Ratio
		dBic typ. at Zenith      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	-	-
BeiDou	B1	4.0	< 1.0
	B2	2.5	< 1.5
	B2a	-1.5	< 1.5
	B3	-	-
IRNSS / NavIC	L5	-1.5	< 1.5
QZSS	L6	-	-
L-band correction services		3.5	< 1.0
Satellite Communications			
Iridium		-	-
Globalstar		-	-
Other			
Axial Ratio at 10°		-	Efficiency
Phase Centre Variation		-	-

Mechanicals	
Mechanical Size	127 mm (dia.) x 19.4 mm (h.)
Weight	~110 g (excluding cable)
Available Connectors	see Ordering Guide
Radome / Enclosure	EXL9330
Mount	3x 6M holes

Environmental	
Operating Temperature	-40 °C to + 125 °C
Storage Temperature	-50 °C to + 125 °C
Mechanical Vibration	pending
Shock and Drop	pending
Salt Fog	pending
Low Pressure - Altitude	-
IP Rating (housing)	IP67
Compliance	IPC-A-610, FCC, RED / CE Mark, RoHS, REACH, AEC

Warranty:	
Parts and Labour	1-year standard warranty

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## Low Noise Amplifier (LNA) - Measured at 3.0 VDC and 25°C

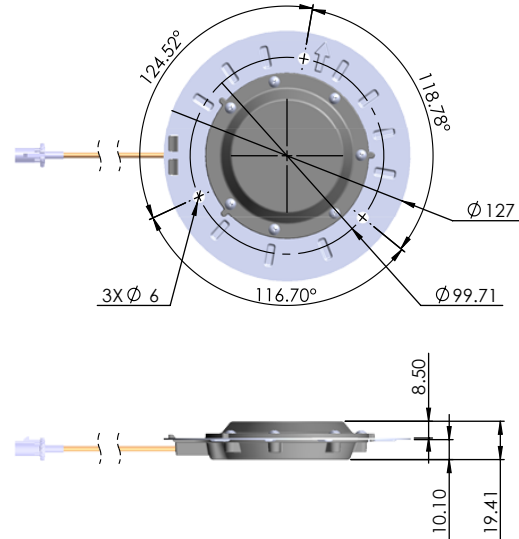
Frequency Bandwidth	Out-of-Band Rejection
Lower Band	1160 - 1255 MHz
L-band corrections services	1539 - 1559 MHz
Upper Band	1559 - 1606 MHz

≥ 70 dB @ ≤ 1000 MHz
≥ 55 dB @ ≤ 1125 MHz
≥ 55 dB @ ≥ 1300 MHz
≥ 58 dB @ = 1425 MHz
≥ 38 dB @ ≤ 1525 MHz
≥ 40 dB @ ≥ 1626 MHz

Architecture	Pre-filter → LNA stage 1 → filter → LNA stage 2
Gain	28 dB typ.
Noise Figure	< 2.5 dB typ. at 25 °C
VSWR	< 1.5:1 typ.   1.8:1 max.
Supply Voltage Range	2.5 to 16 VDC nom., up to 50mV p-p ripple
Supply Current	30 mA typ. @ 25 °C
ESD Circuit Protection	15 kV air discharge
P 1dB Output	-
Group Delay Variation	-

## Mechanical Diagram



## Ordering Information

Part Number **33-A928L-xx-zzzz**

Where xx= connector type; 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/>