

# VSE6028L



TALLYSMAN®

A CALIAN® COMPANY

When precision matters.®

## VSE6028L Embedded VeroStar™ Full GNSS Precision Antenna + L-band

Frequency Coverage: GPS/QZSS-L1/L2/L5, QZSS-L6, GLONASS-G1/G2/G3, Galileo-E1/E5a/E5b/E6, BeiDou-B1/B2/B2a/B3, NavIC-L5  
+ L-band correction services

The patent-pending VSE6028L antenna employs Tallysman's unique VeroStar™ technology, providing high gain over the full GNSS spectrum: GPS/QZSS-L1/L2/L5, QZSS-L6, GLONASS-G1/G2/G3, Galileo-E1/E5a/E5b/E6, BeiDou-B1/B2/B2a/B3, and 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)], as well as L-band correction services.

The light and compact embedded VeroStar™ VSE6028L is designed and crafted for high-accuracy positioning while being robust and reliable.

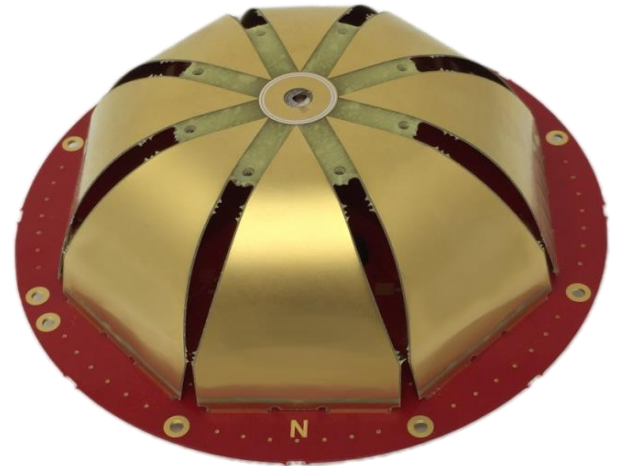
With an exceptionally low roll-off from zenith to the horizon, the VeroStar™ antenna provides the best-in-class tracking of GNSS and L-band correction signals from low elevation angles. In addition, the optimized axial ratio at all elevation angles results in excellent multipath rejection, thus enabling accurate and precise code and phase tracking of GNSS and L-band correction signals.

A wide-band spherical antenna element enables the VeroStar™ to deliver a  $\pm 2$  mm phase centre variation (PCV), making it ideal for high-precision applications, such as autonomous vehicle navigation (land, sea, and air), smart survey devices, and maritime positioning.

The VeroStar™ antenna features a robust pre-filter and high-IP3 LNA architecture, minimizing de-sensing from high-level out-of-band signals, including 700 MHz LTE, while still providing a noise figure of only 1.8 dB.

The embedded VeroStar™ antenna has passed shock and vibration tests to ensure it can survive the rigours of day-to-day field use.

The unique features of the VeroStar™ antenna guarantee it can deliver high signal-to-noise ratio (SNR) and highly accurate and precise code and phase tracking of GNSS signals from all elevation angles in the most challenging environments.



### Applications

- High-precision GNSS systems
- All embedded precision applications, such as:
  - Autonomous vehicle navigation (land, sea, air)
  - Deformation monitoring stations
  - Land survey rover
  - Marine navigation
  - RTK/PPP systems
  - Reference networks

### Features

- Tight phase centre variation ( $\pm 2$  mm typ.)
- Low axial ratios from zenith to horizon
- Low roll-off from zenith to the horizon
- Superior low-elevation L-band correction reception
- High G/T at low elevation angles
- Invariant performance from 3.0 to 16 VDC
- Low current (50 mA)
- Low noise figure (1.8 dB)
- Light, compact, and robust design
- IP69K, REACH, and RoHS compliant

### Benefits

- Consistent performance across all frequency bands
- Excellent GNSS tracking from low elevation angles
- Extreme accuracy and precision
- Excellent multipath rejection

**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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Frequency Coverage:

GPS/QZSS-L1/L2/L5, QZSS-L6, GLONASS-G1/G2/G3, Galileo-E1/E5a/E5b/E6, BeiDou-B1/B2/B2a/B3, NavIC-L5  
+ L-band correction services

## Antenna

Technology Full GNSS frequency crossed dipoles

		Gain	Axial Ratio
		dBic typ. at Zenith	dB at Zenith
<b>GNSS</b>			
GPS / QZSS	L1	4.0	< 1.0
	L2	4.5	< 1.0
	L5	4.0	< 1.0
GLONASS	G1	4.0	< 1.0
	G2	4.5	< 1.0
	G3	4.5	< 1.0
Galileo	E1	4.0	< 1.0
	E5a	4.0	< 1.0
	E5b	4.5	< 1.0
	E6	4.0	< 1.0
BeiDou	B1	4.0	< 1.0
	B2	4.5	< 1.0
	B2a	4.0	< 1.0
	B3	4.0	< 1.0
IRNSS / NavIC	L5	4.0	< 1.0
QZSS	L6	4.0	< 1.0
L-band correction services		4.0	< 1.0
<b>Satellite Communications</b>			
Iridium		-	-
Globalstar		-	-
<b>Other</b>			
Axial Ratio at 10°	5.0 dB max.	Efficiency	> 70%
Phase Centre Variation	± 2 mm typ. (no azi.)	G/T @10°C (L-band c.s.)	≥ -25.4 dB/K

## Mechanicals

Mechanical Size	106 mm (dia.) x 38.7 mm (h.)
Weight	80 g
Available Connectors	MCX (female)
Radome / Enclosure	-
Mount	8 x M2 screws

## Environmental

Operating Temperature	-45 °C to +85 °C
Storage Temperature	-55 °C to +95 °C
Mechanical Vibration	MIL-STD-810E - Test method 514.5
Shock and Drop	MIL-STD-810G - Test method 516.6
Salt Fog	-
Low Pressure - Altitude	-
IP Rating (housing)	-
Compliance	IPC-A-610, FCC Part 15, RED / CE Mark, RoHS, REACH

## Warranty:

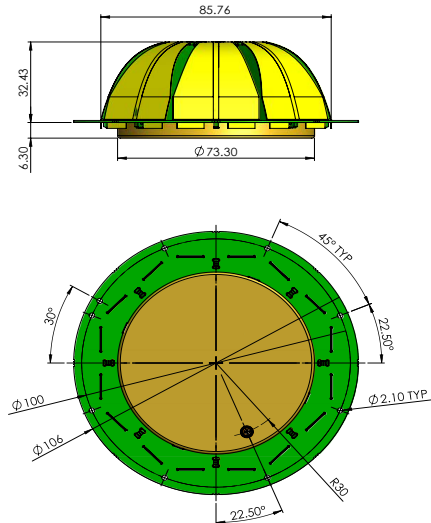
Parts and Labour	1-year standard warranty
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## Low Noise Amplifier (LNA) - Measured at 3.0 VDC and 25°C

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

Architecture	Pre-filter → LNA stage 1 → filter → LNA stage 2
Gain	28 dB min.
Noise Figure	1.8 dB typ. @ 25 °C
VSWR	< 1.5:1 typ.   1.8:1 max.
Supply Voltage Range	3.0 to 16 VDC nominal
Supply Current	50 mA typ.
ESD Circuit Protection	15 kV air discharge
P 1dB Output	+ 6.0 dBm
Group Delay Variation	< 10 ns

## Mechanical Diagram



## Ordering Information

Part Number **33-VSE6028L**

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