VSM6028L

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CALIAN®
Confidence. Engineered.

Mini Embedded VeroStar™ Multi-Constellation Full-Band Antenna

Frequency Coverage: GPS L1, L2, L5 | QZSS L6 | GALILEO E1, E5a, E5b, E6 | BEIDOU B1, B2a, B2b, B3 | GLONASS G1, G2, G3 | NavIC L5 + L -Band

The patent-pending VSM6028L antenna employs Calian'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™ VSM6028L is designed for high-accuracy positioning while being robust and reliable.

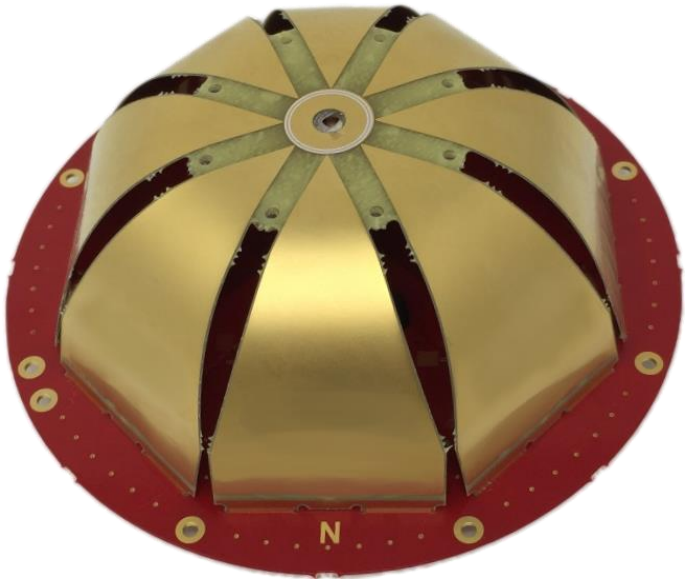
With an exceptionally low roll-off from zenith to the horizon, the VeroStar™ antenna provides the best-in-class tracking of GNSS and L-Band correction signals from low elevation angles. In addition, the optimized axial ratio at all elevation angles results in excellent multipath rejection, thus enabling 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 ±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 (± 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
- 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 Calian: With global headquarters and manufacturing in Ottawa, Canada, Calian is a leading manufacturer of high-precision antennas and components for Global Navigation Satellite System (GNSS) applications. Calian'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.calian.com

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Antenna

Technology: Full GNSS frequency crossed dipoles

		Gain (dBic typ. at Zenith)	Axial Ratio (dB at Zenith)
GNSS			
GPS / QZSS	L1	3.5	< 1.0
	L2	4.0	< 1.0
	L5	3.5	< 1.0
GLONASS	G1	3.5	< 1.0
	G2	4.0	< 1.0
	G3	4.0	< 1.0
Galileo	E1	3.5	< 1.0
	E5A	3.5	< 1.0
	E5B	4.0	< 1.0
	E6	4.0	< 1.0
BeiDou	B1	3.5	< 1.0
	B2b	4.0	< 1.0
	B2a	3.5	< 1.0
	B3	4.0	< 1.0
IRNSS / NavIC	L5	3.5	< 1.0
QZSS	L6	4.0	< 1.0
L-Band Services (1525 MHz - 1559 MHZ)		3.8	< 1.0
Satellite Communications			
Iridium		-	-
Globalstar		-	-
Other			
Axial Ratio at 10°	5.0 dB max.	Efficiency	> 70%
PC Variation	± 2 mm typ. (no azi.)		

Mechanicals

Size	90 mm or 106 mm (dia.) x 32.4 mm (h.)
Weight	58g (90 mm), 69 g (106 mm)
Radome	-
Mount	8x M2 screws
Available Connectors	-

Environmental

Operating Temperature	-40 °C to +85 °C
Storage Temperature	-55 °C to +95 °C
Vibration	MIL-STD-810E - Test method 514.5
Shock	MIL-STD-810G - Test method 516.6
Salt Fog	-
IP Rating	-
Compliance	IPC-A-610, FCC Part 15, RED / CE Mark, RoHS, REACH

Warranty:

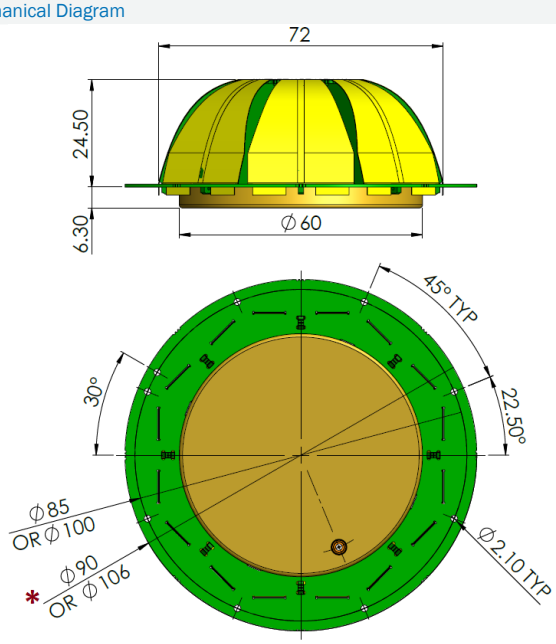
Parts and Labour	1-year standard warranty

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

Frequency Bandwith		Out of Band Rejection
Lower Band	1160 - 1300 MHz	≥ 70 dB @ ≤ 500 MHz ≥ 45 dB @ ≤ 900 MHz ≥ 44 dB @ ≤ 1064 MHz ≥ 30 dB @ ≤ 1080 MHz ≥ 24 dB @ ≥ 1370 MHz ≥ 45 dB @ ≥ 1410 MHz ≥ 60 dB @ ≥ 1430 MHz
L-Band Corr.	1539 - 1559 MHz	≥ 80 dB @ ≤ 1450 MHz ≥ 50 dB @ ≤ 1480 MHz ≥ 35 dB @ ≤ 1500 MHz ≥ 60 dB @ ≥ 1650 MHz ≥ 75 dB @ ≥ 1700 MHz
Upper Band	1559 - 1606 MHz	

Architecture	eXtended Filtering
Gain	28 dB min.
Noise Figure	1.8 dB typ.
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

Mechanical Diagram



Ordering Information

Part Number **33-VSM6028L-xxx**

where xxx = ground plane diameter: 090 = 90 mm | 106 = 106 mm

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