

ARM990XF



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

Calian is excited to announce that it has added the ARM990XF full-band plus L-Band GNSS antenna to its industry-leading line of GNSS antenna products. The ARM990XF employs Calian's patented Accutenna® technology providing GPS/QZSS L1/L2/L5/L6, GLONASS-G1/G2/G3, Galileo E1/E5a/E5b/E6, and BeiDou B1/B2a/B2b/B3, NavIC L5 + L-Band coverage. The ARM990XF antenna is designed for precision full-frequency positioning where lightweight and a low profile are important.

The ARM990XF antenna is available in two form factors one includes a 100 mm integrated ground plane, weighing 140 g, and the other one is 83mm in diameter and weighs 138 grams. Both are 19 mm tall and support the ARINC mini bolt pattern of 2.0" x 1.66". Calian's ARM990XF is one of the smallest and lightest housed triple-band precision Mini ARINC GNSS antennas on the market. It has a very tight average phase center variation of less than 10 mm for all frequencies and overall azimuths and elevation angles. In addition to supporting two form factors both models are available with Low Earth Orbit (LEO) qualified components.

Housed in a weatherproof enclosure, the ARM990XF is available in four versions. Model ARM990XF-1 has an integrated 100mm ground plane, Model ARM990XF-2 is 83 mm in diameter. All models are available with either a female SMA or TNC connector.

The new ARM990XF antenna supports Calian's eXtended Filtering (XF) technology. Worldwide the radio frequency spectrum has become congested as many new LTE bands have been activated, and their signals or harmonic frequencies can affect GNSS antennas and receivers. In North America, the planned Ligado service, which will broadcast in the frequency range of 1526 to 1536 MHz, can affect GNSS signals. Similarly, new LTE signals in Europe [Band 32 (1452 – 1496 MHz)] and Japan [Bands 11 and 21 (1476 – 1511 MHz)] have also affected GNSS signals. Calian's XF technology mitigates all these signals.



Applications

- Autonomous vehicle tracking and guidance
- Precise GNSS positioning
- Precision agriculture
- Full-frequency RTK and PPP receivers
- Law enforcement and public safety
- Augmented GNSS positioning

Features

- Very low noise preamp (< 2.5 dB typ.)
- Tight phase centre variation
- High-gain LNA (28 or 33 dB typ.)
- Low current (32 mA typ.)
- ESD circuit protection (15 kV)
- Invariant performance from 2.5 to 16 VDC
- IP69K, REACH, and RoHS compliant

Benefits

- Excellent interference mitigation
- Excellent multipath rejection
- Increased system accuracy
- Excellent signal-to-noise ratio

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/gnss

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Antenna - Measured with a 100 mm Ground Plane

Technology Dual-feed Stacked RHCP ceramic patch

		Gain dBic typ. at Zenith	Axial Ratio 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	-3.0	< 1.5
BeiDou	B1	4.0	< 1.0
	B2b	2.5	< 1.5
	B2a	-1.5	< 1.5
	B3	-2.0	< 1.5
IRNSS / NavIC	L5	-1.5	< 1.5
QZSS	L6	-3.0	< 1.5
L-Band Services (1525 MHz - 1559 MHz)		3.5	< 1.0
Satellite Communications			
Iridium		-	-
Globalstar		-	-
Other			
Axial Ratio at 10°	-	Efficiency	-
PC Variation	± 8 mm	PCO	-

Mechanicals

Size	See mechanical drawing
Weight	140g (-1), 138g (-2)
Radome	Radome: Thermoplastic, Base: Aluminum
Mount	ARINC Mini (2" x 1.66")
Available Connectors	TNC and SMA Female

Environmental

Operating Temperature	-65 °C to 125 °C
Storage Temperature	-70 °C to 125 °C
Vibration	MIL-STD-810-G - 514.6, NASA-STD-7001B
Shock	MIL-STD-810-G Method 516.7
Salt Fog	MIL-STD-810-H Method 509.7
Other Tests	MIL-STD-810-H Method 507.4 (Humidity) RTCA/DO-160G Section 4.6.1
IP Rating	IP69K
Compliance	IPC-A-610, FCC, RED / CE Mark, RoHS, REACH

Warranty

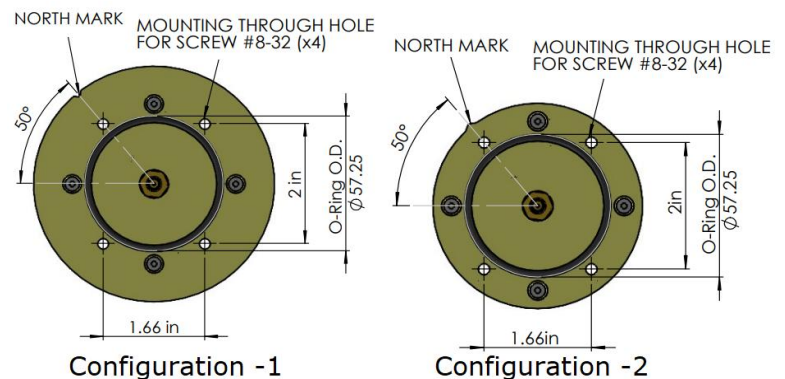
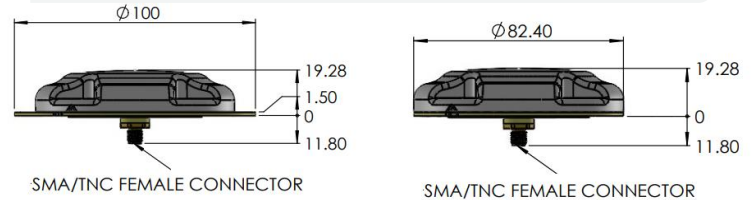
Parts and Labour	3-year standard warranty
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Low Noise Amplifier (LNA) - Not Applicable

Frequency Bandwidth		Out of Band Rejection
Lower Band	1164 - 1300 MHz	≥ 65 dB @ ≤ 0950 MHz ≥ 63 dB @ ≤ 1125 MHz ≥ 50 dB @ ≥ 1350 MHz
L-Band Corr.	1539 - 1559 MHz	≥ 55 dB @ ≤ 1525 MHz ≥ 30 dB @ ≥ 1626 MHz ≥ 65 dB @ ≥ 1650 MHz
Upper Band	1559 - 1606 MHz	

Architecture	eXtended Filtering
Gain	28 dB or 33 dB typ.
Noise Figure	2.5 dB typ.
VSWR	< 1.5:1 typ., 1.8:1 max.
Supply Voltage Range	2.5 to 16 VDC nominal, up to 50 mV p-p ripple
Supply Current	32 mA typ.
ESD Circuit Protection	15 kV air discharge
P 1dB Output	11 dBm typ.
Group Delay	12 ns @ (L1+G1), 7 ns @ (L5+L2+G2)

Mechanical Diagram



Ordering Information

Part Number 33-ARM990XF-Y-XX-GG

where Y = configuration: 1 = 10cm GP | 2 = Standard GP
where XX = female connector: 01 = TNC | 07 = SMA
where GG = 1 NA gain: 28 or 33 (dB)

Please refer to our **Ordering Guide** to review available radomes and connectors at:
<https://at.calian.com/gnss/information-support/part-number-ordering-guide/>