

# ARM928XF - Space



## Multi-Constellation Triple-Band Space-Qualified Antenna

Frequency Coverage: GPS L1, L2, L5 | GALILEO E1, E5a, E5b | BEIDOU B1, B2a, B2b | GLONASS G1, G2 | NavIC L5

The ARM928XF space qualified antenna employs Calian's patented Accutenna® technology providing GPS/QZSS L1/L2/L5, GLONASSG1/G2/G3, Galileo E1/E5a/E5b, and BeiDou B1/B2a/B2b + L-Band coverage. Calian's ARM928XF space qualified antenna is one of the smallest and lightest housed triple-band precision Mini ARINC GNSS antennas on the market. It has a very tight phase center variation of less than 10 mm for all frequencies and overall azimuths and elevation angles. The ARM928XF space qualified antenna also supports Calian's eXtended Filtering (XF) technology which mitigates out of band signals.

The ARM928XF space qualified antenna is built with Low Earth Orbit qualified components that have the following features: wide operational temperature range (-65 to +125°C), rugged construction (passed NASA-STD-7001B vibration testing), extensive environmental testing, space qualified materials and assembly process and end of line qualification testing.

The ARM928XF space qualified antenna 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". Both models are available with either a female SMA or TNC connector.



Configuration -1



Configuration -2

### Applications

- Autonomous vehicle tracking and guidance
- Precise GNSS positioning
- Precision agriculture
- Triple-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 dB typ.)
- Low current (45 mA typ.)
- ESD circuit protection (15 kV)
- Invariant performance from 2.5 to 16 VDC
- IP69K, REACH, RoHS, and S-9401.V1.0 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](http://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	-	-
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 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	140 g
Radome	Radome: ULTEM 2200, Base: Aluminum 6061-T6
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 - Test Method 516.7
Salt Fog	MIL-STD-810-H - Test Method 509.7
Other Tests	Humidity (Method 507.4), Temp. (DO-160D)
IP Rating	Allows outgassing
Compliance	IPC-A-610, FCC, RED / CE Mark, RoHS, REACH

## Warranty

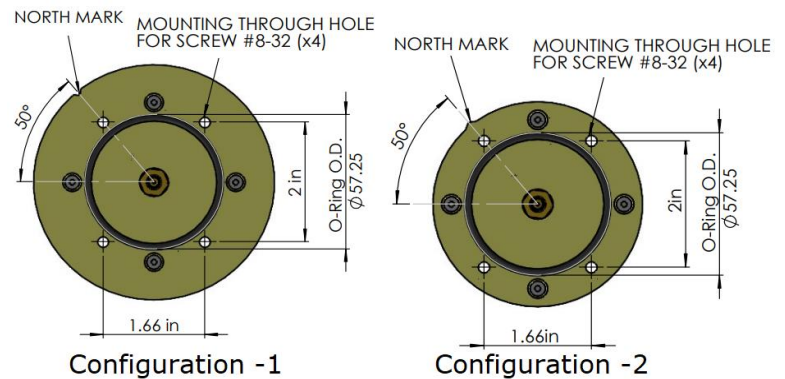
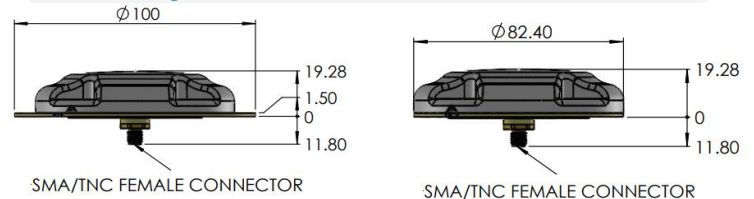
Parts and Labour	3-year standard warranty
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## Low Noise Amplifier (LNA) - Measured at 3V and 25°C

Frequency Bandwidth		Out of Band Rejection
Lower Band	1164 - 1255 MHz	≥ 70 dB @ ≤ 1050 MHz ≥ 65 dB @ ≤ 1125 MHz ≥ 70 dB @ ≥ 1350 MHz
L-Band Corr.	1539 - 1559 MHz	≥ 65 dB @ ≤ 1500 MHz ≥ 45 dB @ ≤ 1525 MHz ≥ 05 dB @ ≤ 1536 MHz ≥ 30 dB @ ≥ 1626 MHz ≥ 65 dB @ ≥ 1650 MHz
Upper Band	1559 - 1606 MHz	

Architecture	eXtended Filtering
Gain	28 dB typ., 25 dB min.
Noise Figure	2.5 dB typ.
VSWR	< 1.5:1 typ., 2:1 max.
Supply Voltage Range	2.5 to 16 VDC nominal, up to 50 mV p-p ripple
Supply Current	45 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



Configuration -1

Configuration -2

## Ordering Information

Part Number

33-ARM928XF-Y-XX-S

where Y = configuration: 1 = 10cm GP | 2 = Standard GP  
where XX = female connector: 01 = TNC | 07 = SMA  
S = LEO Space Qualified Components

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