

## Description

The RF18 Series Ka-Band LNA offers premium performance and reliability in the most versatile package available.

The latest technology in GaAs HEMT devices produces the lowest possible noise temperatures in an un-cooled LNA. System performance is enhanced by outstanding gain stability and gain flatness.

In addition, the RF18 Series LNA is backed by a 36-month warranty and by more than 30 years experience in the design of high performance communications amplifiers.

The performance of the RF18 Series LNA is matched by a full range of features chosen with the communication system designer in mind.

From the compact weatherproof housing to the standard combination of RF cable and circular connector DC input, the RF18 Series LNA is ready for integration into your system.

## FEATURES

- Noise Temperatures as low as 140K
- 36-Month Warranty
- Input and Output Isolators
- +12 to +28 VDC Operation
- Waterproof, Painted Aluminum Housing
- Reverse Voltage Protection
- Pressurizable Feed

## OPTIONS

- Fault Alarm (Current Sensing)
- Universal AC Power Supply
- Internal Bias Tee

## CONFIGURATIONS

- 1:1 Redundant LNA System
- 1:2 Redundant LNA System

## ENVIRONMENTAL

- Operating Temperature: -40 to +70 °C
- 100% Relative Humidity, Condensing

### ELECTRICAL SPECIFICATIONS

PARAMETER	NOTES	LIMITS	UNITS
Frequency Range		18.300 to 20.200	GHz
Noise Temperature	(See configuration matrix)	140 to 200	K @ +23 °C ambient
Gain Gain Flatness Gain Slope Gain Stability vs. Time	Full band Per 40 MHz	55 (min.) ±1.00 (max.) ±0.20 (max.) ±0.10 (max.) ±0.20 (max.) ±0.20 (max.)	dB dB dB/40 MHz dB/hour dB/24 hours dB/month
Output Power @ 1dB Gain Compression ( $P_{1dB}$ )		+8 (min.)	dBm
Output Third Order Intercept Point	Measured with two tone input; each tone @ -65 dBm input	+16 (min.)	dBm
Input VSWR Output VSWR		1.30:1 (max.) 1.50:1 (max.)	
Input Overdrive		0	dBm CW
Group Delay Linear Parabolic Ripple	Per 40 MHz	0.01 (max.) 0.001 (max.) 0.1 (max.)	ns/MHz ns/MHz <sup>2</sup> ns peak-to-peak
AM/PM Conversion	@ -10 dBm output power	0.03 (max.)	°/dB
Primary Power Voltage Current, typical	(see configuration matrix for options)	+12 to +28 180	VDC mA

### MECHANICAL SPECIFICATIONS

Weight		0.4 (0.2)	lbs. (kg)
Finish		Paint	White; epoxy enamel
Feed Pressure		2	PSI
Connectors	RF Input RF Output (standard) DC Voltage	WR42 Waveguide <sup>1</sup> SMA 6-pin MS <sup>2</sup>	Cover flange Female MS3112E10-6P

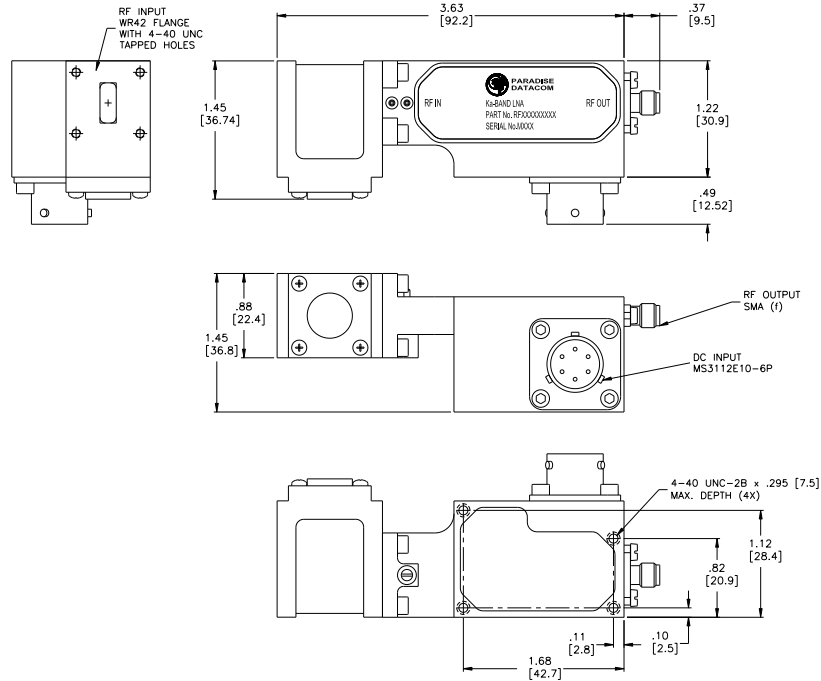
<sup>1</sup> Use supplied full (for mating with a grooved flange) or half (for mating with a flat flange) gasket to ensure a weatherproof seal.

<sup>2</sup> Cover connectors with electrical putty or tape to ensure a weatherproof seal.

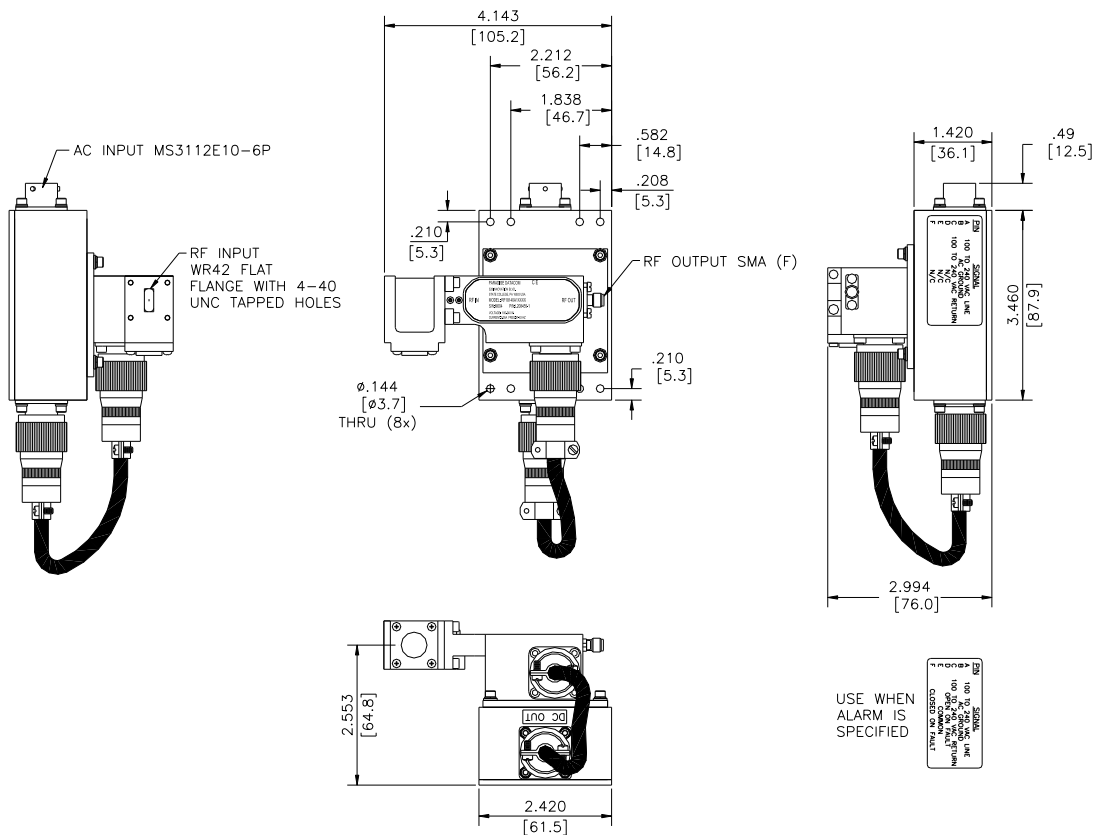
### ENVIRONMENTAL SPECIFICATIONS

Operating Temperature	Ambient	-40 to +70	°C
Storage Temperature	Ambient	-40 to +70	°C
Relative Humidity	Condensing	100	%

**OUTLINE DRAWING**



**OUTLINE DRAWING, AC INPUT OPTION, A1**



**PRIME POWER / ALARM INTERFACE (MS311E10-6P)**

PIN	STANDARD
A	+12 to +28 VDC
B	GROUND
C	GROUND
D	OPEN ON FAULT
E	COMMON
F	CLOSED ON FAULT

**TECHNICAL NOTES**

Gain vs. Ambient Temperature Coefficient	-0.02 dB/°C																
Noise Temperature vs. Ambient Temperature	De-rate noise temperature by 1.0 K/°C for ambient temperatures over +23 °C																
Noise Temperature to Noise Figure Conversion	$10 \times \log \left( \frac{T_{noise}(K)}{T_{ref}(K)} + 1 \right) \text{ where } T_{ref}(K) = 290(K)$ <table border="1" data-bbox="899 1014 1339 1329"> <thead> <tr> <th>Noise Temp. (K)</th> <th>Noise Figure (dB)</th> </tr> </thead> <tbody> <tr> <td>140</td> <td>1.71</td> </tr> <tr> <td>150</td> <td>1.81</td> </tr> <tr> <td>160</td> <td>1.91</td> </tr> <tr> <td>170</td> <td>2.00</td> </tr> <tr> <td>180</td> <td>2.10</td> </tr> <tr> <td>190</td> <td>2.19</td> </tr> <tr> <td>200</td> <td>2.28</td> </tr> </tbody> </table>	Noise Temp. (K)	Noise Figure (dB)	140	1.71	150	1.81	160	1.91	170	2.00	180	2.10	190	2.19	200	2.28
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**Ka-Band LNA Configurator**

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**Noise Temperature (K)**

140	150	160
170	180	190
	200	

**Input Voltage**

XX - +15 to +20 VDC  
 A1 - 100-240 VAC, 47-440 Hz

**Special Notes**

XX - None  
 CP<sup>1</sup> - Internal Bias Tee  
 (Powered via Cable)

<sup>1</sup> Not available with A1 Input Voltage option

**Fault Alarm**

XX - None  
 F1 - Contact Closure (Dry form "C")

**COMMENTS:**

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Specifications are subject to change without notice.