



Description

The RF2 Series Ku-Band LNA offers premium performance and reliability in the most versatile package available for a Ku-Band LNA. The latest technology in GaAs HEMT devices produces the lowest possible noise temperatures in an uncooled LNA. In addition, the RF2 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 RF2 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 circular connector DC input, and optional RF cable power, the RF2 Series LNA is ready for integration into your system.

FEATURES

- Noise Temperatures as low as 65K
- All Standard Ku-Band Frequencies available
- 36-Month Warranty
- Input and Output Isolators
- +15 to +20 VDC Operation
- Waterproof, Painted Aluminum Housing
- Reverse Voltage Protection
- Pressurizable Feed

OPTIONS

- Universal AC Power Supply
- Fault Alarm (Current Sensing)

CONFIGURATIONS

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

Electrical Specifications

PARAMETER	NOTES	LIMITS	UNITS
Frequency Range	All standard bands	10.700 to 13.000	GHz
Noise Temperature	(See configuration matrix)	65 to 100	K @ +23 °C ambient
Gain	50 dB available (See configuration matrix)	60 (min.)	dB
Gain Flatness	Full band	±0.50 (max.)	dB
Gain Slope	Per 40 MHz	±0.20 (max.)	dB/40 MHz
Gain Stability vs. Time		±0.10 (max.)	dB/hour
		±0.20 (max.)	dB/24 hours
		±0.20 (max.)	dB/month
Output Power @ 1dB Gain Compression (P_{1dB})	+ 15 dBm optional (See configuration matrix)	+10 (min.)	dBm
Output Third Order Intercept Point	Measured with two tone input; each tone @ -65 dBm input	+20 (min.)	dBm
Input/Output VSWR		1.30:1 (max.)	
Input Overdrive		0	dBm CW
Out-of-Band Signal Presence	Specification-compliant	-30	dBm CW input; 14.00 - 14.50 GHz
Group Delay	Per 40 MHz		
Linear		0.01 (max.)	ns/MHz
Parabolic		0.001 (max.)	ns/MHz ²
Ripple		0.1 (max.)	ns peak-to-peak
AM/PM Conversion	@ -10 dBm output power	0.03 (max.)	°/dB
Primary Power	(See configuration matrix for options)		
Voltage	(250 mA for +15 dBm power option)	+15 to +20	VDC
Current, typical		250	mA

Mechanical Specifications

Size	width X length X height	2.75 X 9.64 X 2.12 69.9 X 244.9 X 53.9	in. mm.
Weight		2	lbs.
Finish		Paint	White; epoxy enamel
Feed Pressure		2	PSI
Connectors	RF Input RF Output (standard) RF Output (option) DC Voltage (AC/Fault option)	WR75 Waveguide ¹ SMA Type N ² 6-pin MS ² 6-pin MS mate	Cover flange Female Female MS3112E10-6P MS3116F10-6S

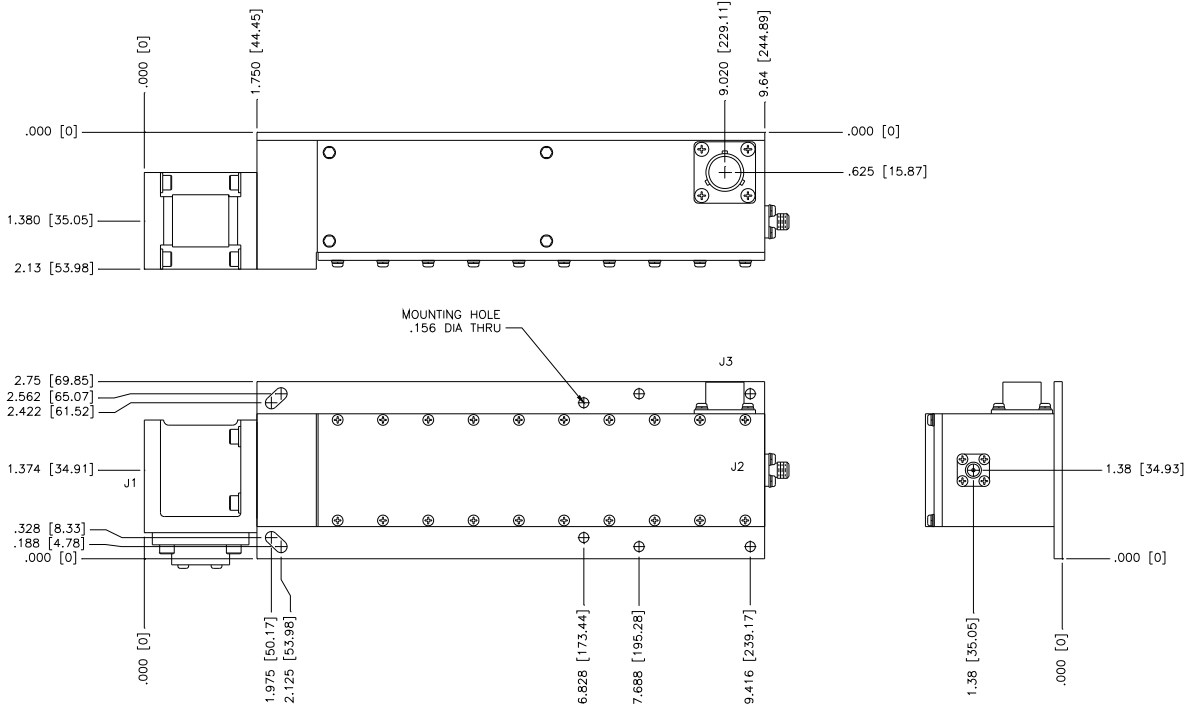
1 Use supplied full (for mating with a grooved flange) or half (for mating with a flat flange) gasket to ensure a weatherproof seal.

2 Cover connectors with electrical putty or tape to ensure a weatherproof seal.

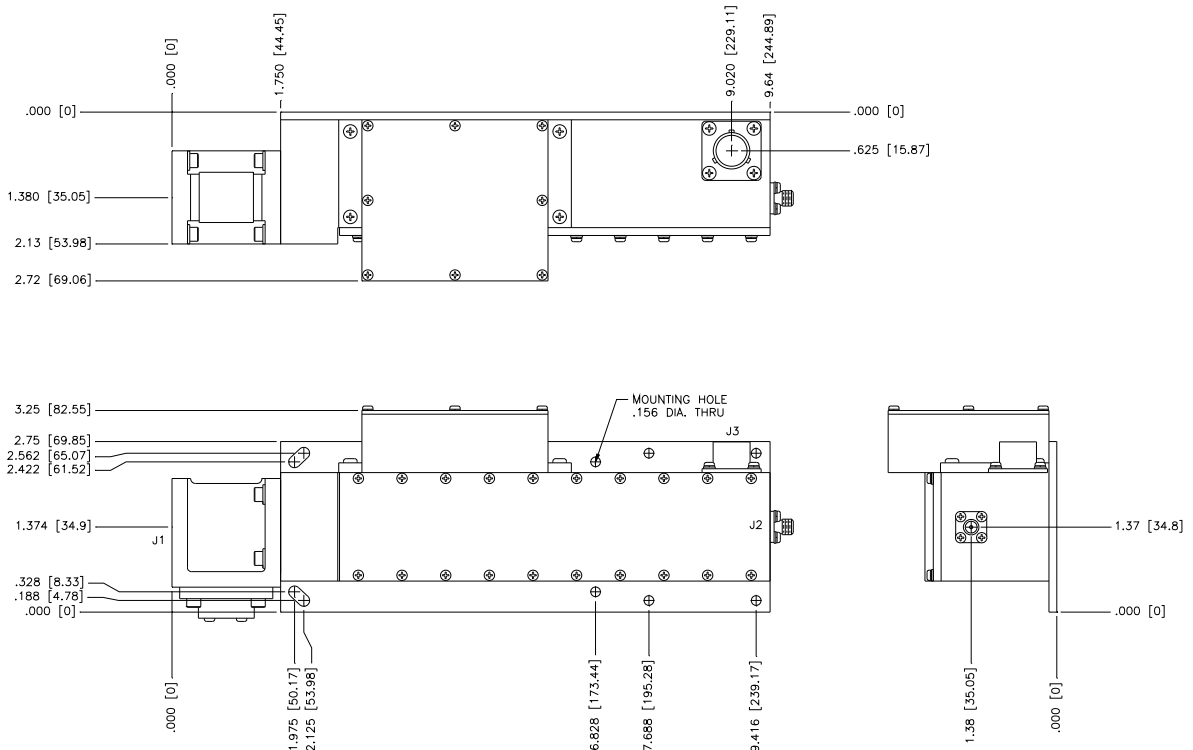
Environmental Specifications

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

Outline Drawing, Standard DC Power



Outline Drawing, Optional AC Power



PRIME POWER / ALARM INTERFACE

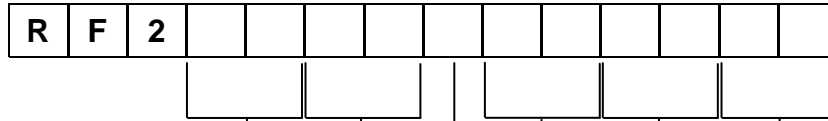
PIN	STANDARD	ALARM	AC POWER*	ALARM/AC POWER*	DC POWER
A	+15 to +20 VDC	+15 to +20 VDC	85 to 265 VAC LINE	85 to 265 VAC LINE	-18 to -64 VDC
B	GROUND	GROUND	AC GROUND	AC GROUND	-18 to -64 VDC RTN
C	GROUND	GROUND	85 to 265 VAC RTN.	85 to 265 VAC RTN.	GROUND
D	NC	OPEN ON FAULT	NC	OPEN ON FAULT	NC
E	NC	COMMON	NC	COMMON	NC
F	NC	CLOSED ON FAULT	NC	CLOSED ON FAULT	NC

*AC Power option requires an add-on enclosure that houses the universal power supply.

TECHNICAL NOTES

Gain vs. Ambient Temperature Coefficient	-0.05 dB/°C for Units with 60 dB Gain -0.04 dB/°C for Units with 50 dB Gain																		
Noise Temperature vs. Ambient Temperature	De-rate noise temperature by 0.40K/°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="883 993 1325 1346"> <thead> <tr> <th>Noise Temp. (K)</th> <th>Noise Figure (dB)</th> </tr> </thead> <tbody> <tr><td>65</td><td>0.88</td></tr> <tr><td>70</td><td>0.94</td></tr> <tr><td>75</td><td>1.00</td></tr> <tr><td>80</td><td>1.06</td></tr> <tr><td>85</td><td>1.12</td></tr> <tr><td>90</td><td>1.17</td></tr> <tr><td>95</td><td>1.23</td></tr> <tr><td>100</td><td>1.29</td></tr> </tbody> </table>	Noise Temp. (K)	Noise Figure (dB)	65	0.88	70	0.94	75	1.00	80	1.06	85	1.12	90	1.17	95	1.23	100	1.29
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Ku-Band LNA Configurator



Noise Temperature (K)

65	75	85	95
70	80	90	100 (00)

Gain (dB)

50	SP = Custom
60	

Frequency Band (GHz)

A = 10.95 - 12.75	K = 10.70 - 11.70
B = 10.95 - 11.75	L = 10.95 - 11.95
C = 11.70 - 12.20	M = 10.70 - 12.20
D = 12.25 - 12.75	N = 10.90 - 11.70
E = 11.25 - 11.75	P = 12.20 - 12.75
F = 10.70 - 12.75	R = 10.90 - 12.75
G = 10.95 - 11.70	S = 11.70 - 12.75
H = 10.95 - 12.20	T = 10.90 - 12.80
J = 12.50 - 12.75	U = 11.80 - 13.00

Special Notes

XX = None (SMA(F) RF Output)
 XN = Type N(F) RF Output
 P3 = +15dBm P_{1dB} / +25dBm OIP3 and SMA(F) RF Output
 CP¹ = Cable Power with Type N(F) RF Output and Cir-Mil Removed

¹ Not available with A1 or A3 Input Voltage options

Fault Alarm

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

Input Voltage

XX = +15 to +20 VDC
 A1 = 100-240 VAC, 47-440 Hz
 A3 = -18 to -64 VDC

Use and Disclosure of Data

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