

### Description

The RF3 Series C-Band LNA offers premium performance and reliability in a small package. The latest technology in GaAs HEMT devices produces the lowest possible noise temperatures in an un-cooled LNA. In addition, the RF3 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 RF3 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 RF3 Series LNA is ready for integration into your system.

### FEATURES

- Noise Temperatures as low as 30K
- All C-Band Frequencies available
- 36-Month Warranty
- Compact Design - No Add-On Modules for AC Power or Fault Alarm Options
- Input and Output Isolators
- +12 to +28 VDC Operation
- Cable Power Standard (+12 to +28 VDC operation; +15 to +28 VDC with F1 option) in Addition to the DC Connector
- Waterproof, Painted Aluminum Housing
- Voltage Surge Protection
- 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**

PARAMETER	NOTES	LIMITS	UNITS
Frequency Range	All standard bands	3.400 to 4.800	GHz
Noise Temperature	(see ordering information)	30 to 45	K @ +23 °C ambient
Gain	50, 65, & 70 dB available (see ordering information)	60 (min.)	dB
Gain Flatness	Full band /40MHz	±0.50 (max.)	dB
Gain Slope	/40MHz	±0.20 (max.)	dB
Gain Stability vs. Time		0.01 (max.)	dB/MHz
		±0.10 (max.)	dB/hour
		±0.20 (max.)	dB/24 hours
		±0.20 (max.)	dB/month
Output Power @ 1dB Gain Compression (P <sub>1dB</sub> )	+ 20 dBm optional (see ordering information)	+12	dBm
Output Third Order Intercept Point	Measured with two tone input; each tone @ -65 dBm input	+22	dBm
Input/Output VSWR		1.25:1(max.)	
Input Overdrive	(maximum level)	0	dBm CW
Out-of-Band Signal Presence	Specification-compliant	-10	dBm CW input; in 5.850 to 6.425 GHz band
Group Delay	/40 MHz		
Linear		0.01	ns/MHz
Parabolic		0.001	ns/MHz <sup>2</sup>
Ripple		0.1	ns peak-to-peak
AM/PM Conversion	@ -10 dBm output power	0.03 (max.)	%dB
Primary Power	(see ordering information for available options)		
Voltage	(+ 15 VDC for fault option)	+12 to +28	VDC
Current	(200mA for +20 dBm power option)	120 typical	mA

**Mechanical**

Size	width X length X height	4.00 X 6.11 X 2.75 102 X 155 X 70	in. mm.
Weight		3	lbs.
Finish		Paint	White; epoxy enamel
Feed Pressure		2	PSI
Connectors	RF Input RF Output (standard) RF Output (option) DC Voltage  AC/Fault (option)	WR229 Waveguide <sup>1</sup> Type N <sup>2</sup> SMA 3-pin MS <sup>2</sup> 3-pin MS mate 6-pin MS <sup>2</sup> 6-pin MS mate	CPR229G flange Female Female MS3112E8-3P MS3116F8-3S MS3112E10-6P MS3116F10-6S

<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**

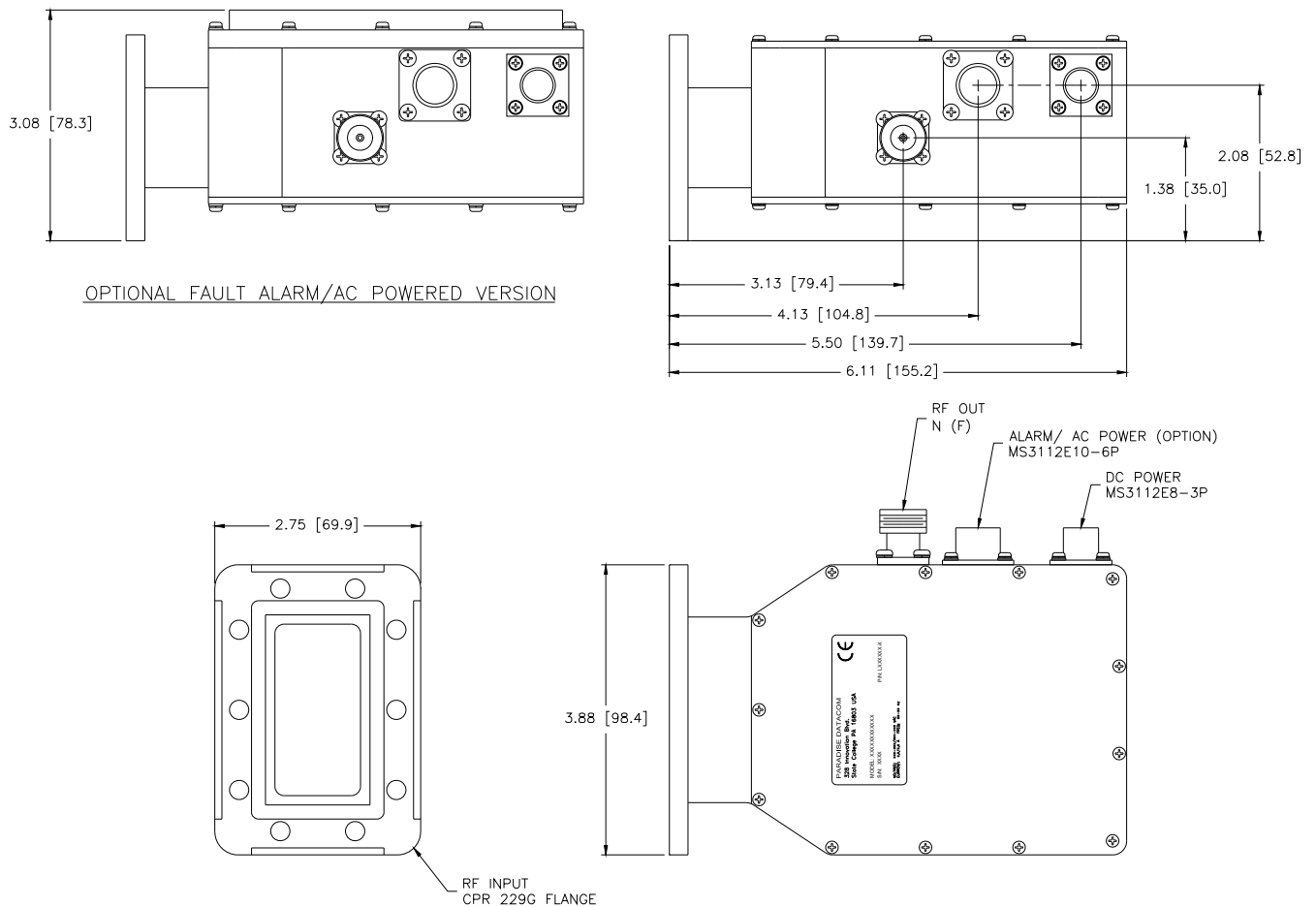
Operating Temperature	Ambient	-40 to +60	°C
Storage Temperature	Ambient	-40 to +70	°C
Relative Humidity	Condensing	100	%

Specifications are subject to change.

#### Technical Notes

Gain vs. Ambient Temperature Coefficient	-0.04 dB/°C for Units with 50 dB Gain -0.05 dB/°C for Units with 60 - 75 dB Gain
Noise Temperature vs. Ambient Temperature	De-rate noise temperature by 0.33K/°C for ambient temps over +23 °C

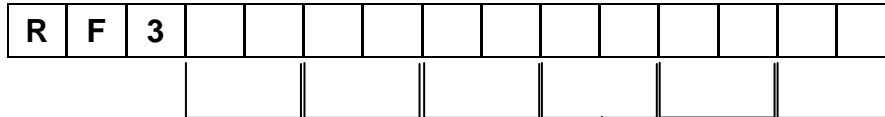
#### Outline, RF3 Series C-Band LNA



#### PRIME POWER / ALARM INTERFACE

PIN	STANDARD (3-PIN)	DC POWER (A3 ONLY OPTION)	ALARM (F1 ONLY OPTION)	AC POWER (A1 ONLY OPTION)	ALARM/ AC POWER (F1 & A1 OPTIONS)	ALARM/ DC POWER (F1 & A3 OPTIONS)
A	+12 to +28 VDC	-18 to -64 VDC	+15 to +28 VDC	85 to 265 VAC LINE	85 to 265 VAC LINE	-18 to -64 VDC
B	GROUND	-18 to -64 VDC RTN.	GROUND	AC GROUND	AC GROUND	-18 to -64 VDC RTN
C	GROUND	GROUND	GROUND	85 to 265 VAC RTN.	85 to 265 VAC RTN.	GROUND
D	--	--	OPEN ON FAULT	NC	OPEN ON FAULT	OPEN ON FAULT
E	--	--	COMMON	NC	COMMON	COMMON
F	--	--	CLOSED ON FAULT	NC	CLOSED ON FAULT	CLOSED ON FAULT

### C-Band LNA Configurator



**Noise Temperature (K)**  
(dependent on freq. band)

Freq. Band	Noise Temp.
XX	30,35,40
B1	30,35,40
B2	30,35,40
B3	30,35,40
B4	40,45

**Gain (dB)**

50	65	SP=Custom
60	70	

**Frequency Band (GHz)**

XX	3.7 - 4.2
B1	3.4 - 4.2
B2	3.6 - 4.2
B3	3.625 - 4.2
B4	4.5 - 4.8

**Special Notes**

XX - None  
P3 - +20dBm P<sub>1dB</sub> / +30dBm OIP3  
CP<sup>1</sup> - Cable Power w/ Internal Bias Tee (with MS Connector power entry) with Type N(f) RF Output  
CR<sup>1</sup> - Cable Power w/ Internal Bias Tee (w/o MS Connector power entry) with Type N(f) RF Output

<sup>1</sup> Not available with A1 or A3 Input Voltage options

**Fault Alarm**

XX - None  
F1 - Contact Closure (Dry form "C") (Requires +15 to +28 VDC)

**Input Voltage**

XX - +12 to +28 VDC\*  
A1 - 85-265 VAC, 47-440 Hz  
A3 - -18 to -64 VDC

\* +15 to +28 VDC with option F1