L-Band Low Noise Amplifiers

LL-1500 Series

LL-1500 series L-Band Low Noise Amplifiers are specially designed for satellite earth station receiver front ends and other telecommunications applications. Utilizing state-of-the-art HEMT and MMIC technology, these amplifiers have been designed for both fixed and transportable applications. High performance models are available with noise temperatures as low as 35 K. Noise temperature specifications are guaranteed over the full bandwidth of the LNA.

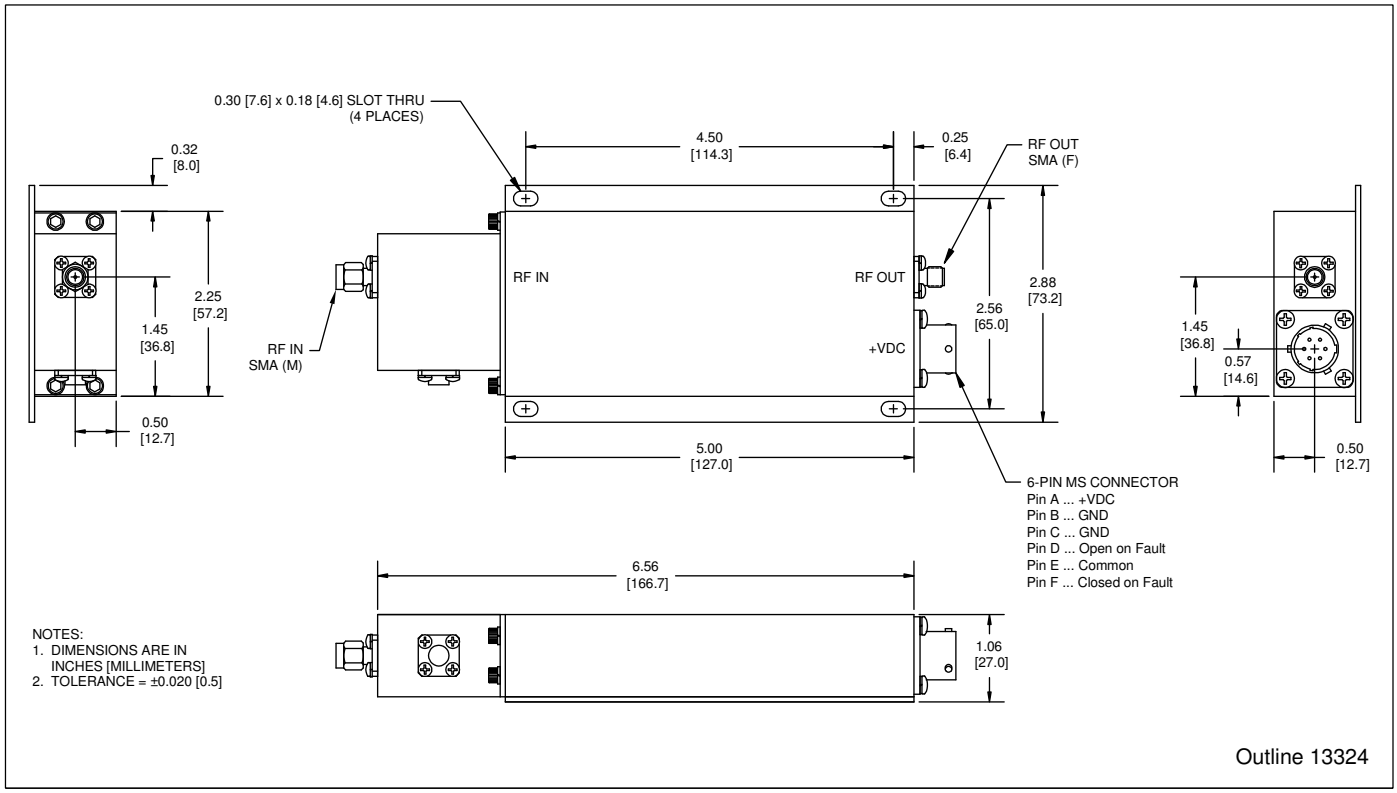
Features

- State-of-the-art noise performance
- HEMT/MMIC design
- Internal regulator
- Reverse polarity protection
- High reliability
- Fault alarm

Option

- 50 or 60 dB gain

Outline Drawing



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Parameter	Notes	Min.	Nom./Typ.†	Max.	Units
Frequency Range	Band “B”	1510		1577	MHz
Gain	Standard Option 1	50 60	53 63	55 65	dB dB
Gain Flatness	Full band Per 10 MHz			±0.5 ±0.25	dB dB
VSWR	Input Output		1.20 1.25	1.25 1.30	:1 :1
Noise Temperature [A]	At +23 ℃ Versus temperature		 See Table 2	See Table 1	
Power Output	At 1 dB compression	+10	+13		dBm
3rd Order Intercept	Output, OIP_3	+20	+23		dBm
Group Delay per 36 MHz	Linear Parabolic Ripple			0.05 0.005 1.0	ns/MHz ns/MHz^2 ns p-p
AM/PM Conversion	-5 dBm output power			0.05	°/dB
Gain Stability (Constant Temp)	Short term (10 min) Medium term (24 hrs) Long term (1 week)			±0.1 ±0.2 ±0.5	dB dB dB
Gain Stability	Versus temperature		-0.04		dB per ℃
Maximum Input Power	Damage threshold Desens. Threshold, [B] 1625-1661 MHz			+10 -50	dBm dBm
Connectors	Input Output Power		SMA Male SMA Female PT02E10-6P-027 (mate supplied)		
Power Requirements	Voltage Current, Standard Curent, Option 1	11	12 150 200	15 175 220	V mA mA
Operating Temperature		-40		+60	℃

† When there is only one value on a line, the Nom./Typ. column is a nominal value; otherwise it is a typical value. Typical values are intended to illustrate typical performance, but are not guaranteed.

[A] Maximum noise temperature at +23 ℃ at any frequency in the specified band.

[B] Desens. Threshold is -60 dBm with Option 1 (60 dB gain).

Table 1 – Part Number/Ordering Information

LL□15S□-□

Frequency Band

1510–1577 MHz ..... B

Noise Temperature

45 K 45
40 K 40
35 K 35

Gain Option

50 dB gain, standard X
60 dB gain, Option 1 1

Table 2 – Noise Temperature vs. Ambient Temperature

Noise temperature vs. ambient temperature can be found from the equation,

$$NT_2/NT_1 = (T_2/T_1)^{1.5}$$

where:

NT_2 = Noise Temperature at T_2
NT_1 = Noise Temperature at T_1
T_2 = Temperature 2 in K
T_1 = Temperature 1 in K
(K = ℃ + 273)

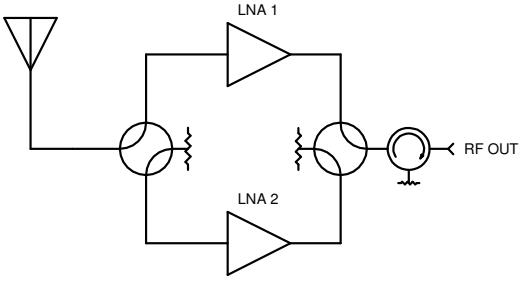
For the case where T_1 = 296 K (+23 ℃), the ratio NT_2/NT_1 is shown in the table below:

Ambient Temperature T_2 (℃)	Ratio NT_2 / NT_1
0	0.88
+23	1.00
+40	1.09
+50	1.14
+60	1.19

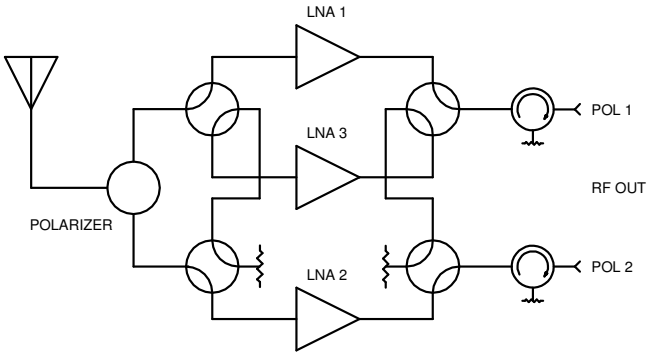
Example: For model LLB15S45-X, NT_1 = 45 K at +23 ℃; what is NT_2 at +50 ℃?
From the table, NT_2/NT_1 at +50 ℃ = 1.14: NT_2 = 1.14 x (45 K) = 51.3 K at +50 ℃

Typical Applications

1:1 Redundant Systems



1:2 Redundant Systems



Other Products

- Solid-State Power Amplifiers and SSPA Systems
- Solid-State Power BUCs and SSPB Systems
- Low Noise Amplifiers and LNA Systems
- Low Noise Block Converters and LNB Systems
- Block Up and Block Down Converters
- Synthesized Converters
- Line Drive Amplifiers
- Power Supply Monitors
- Redundant Control Panels for SSPAs, SSPBs, and LNAs

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