

X-Band Low Noise Amplifiers

LX-7000 Series



LX-7000 series X-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 GaAs FET technology, these amplifiers have been designed for both fixed and transportable applications. High performance models are available in several gains, with noise temperatures as low as 45 K. Noise temperature specifications are guaranteed over the full bandwidth of the LNA.

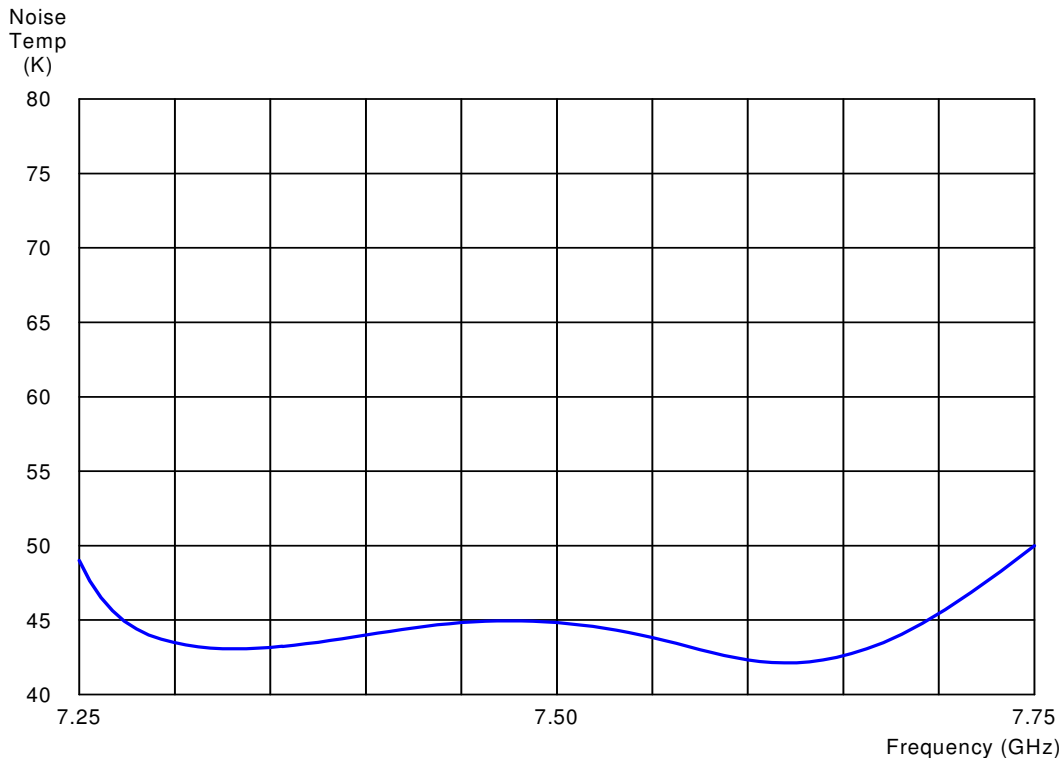
Features

- State-of-the-art noise performance
- HEMT/GaAs FET design
- Weatherproof enclosure
- Internal low-loss input isolator
- Internal regulator
- Reverse polarity protection
- Surge and transient protection
- High reliability
- Form 'C' alarm

Options

- Low gain, 50 dB
- High output power, +20 dBm
- Interstage transmit reject filter
- Universal AC input power supply

Typical Performance, Model LXA7S50-XXXX



Parameter	Notes	Min.	Nom./Typ. [†]	Max.	Units
Frequency Range		7.25		7.75	GHz
Gain	Standard	60	63	65	dB
	Option 1	50	53	55	dB
Gain Flatness	Full band			±0.5	dB
	Per 40 MHz			±0.2	dB
VSWR	Input		1.20	1.25	:1
	Output		1.30	1.50	:1
Noise Temperature ^A	At +23 °C Versus temperature		See Table 1 See Table 2		
Power Output at 1 dB compression	Standard	+15	+17		dBm
	Option 2	+20	+21		dBm
3rd Order Output intercept Point	Standard	+25	+27		dBm
	Option 2	+30	+31		dBm
Group Delay per 40 MHz	Linear (Standard)			0.01	ns/MHz
	Parabolic (Standard)			0.001	ns/MHz ²
	Ripple (Standard)			0.1	ns p-p
	Linear (Option 7)			0.05	ns/MHz
	Parabolic (Option 7)			0.005	ns/MHz ²
	Ripple (Option 7)			1.0	ns p-p
AM/PM Conversion	-5 dBm output power			0.05	%dB
Gain Stability (Constant Temp)	Short term (10 min)			±0.1	dB
	Medium term (24 hrs)			±0.2	dB
	Long term (1 week)			±0.5	dB
Gain Stability versus temperature	Standard		-0.05		dB per °C
	Option 1		-0.04		dB per °C
Maximum Input Power	Damage threshold			0	dBm
	Desens. threshold, Std.			-50	dBm
	Desens. threshold, Opt. 7 ^B			-30	dBm
Connectors	Input		CPR112G Flange		
	Output		Type N Female		
	Power, Standard ^C		PT02E10-6P-027 (mate supplied)		
Power Requirements	Voltage, Standard	12	15	24	V
	Current, Standard		240	270	mA
	Current, Option 2		300	330	mA
	Option 4, AC voltage	90		265	Vac
Operating Temperature	Frequency	47		63	Hz
		-40		+60	°C

[†] 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 °C at any frequency in the specified band.

^B Desens. threshold for 7.90-8.40 GHz frequency range.

^C Power may be supplied either via the RF output connector (cable powered) or via the MS connector.

Table 1 – Part Number/Ordering Information

		LX□7S□-□□□□			
Frequency Band	7.25–7.75 GHz	A			
Noise Temperature	50 K		50		
	45 K		45		
Options	Standard gain: 60 dB gain			X	
	• Option 1: 50 dB gain		1		
	Standard output: +15 dBm output			X	
	• Option 2: +20 dBm output		2		
	Standard DC power (12–24 Vdc)			X	
	• Option 4: Universal AC Input (90–265 Vac, 47–63 Hz).....		4		
	Standard, no interstage filter			X	
	• Option 7: Interstage Tx reject filter, >15 dB rejection, 7.90-8.40 GHz				7

Table 2 – Noise Temperature vs. Ambient Temperature

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

$$NT_2/NT_1 = (T_2/T_1)^{1.6}$$

where:

- NT₂ = Noise Temperature at T₂
- NT₁ = Noise Temperature at T₁
- T₂ = Temperature 2 in K
- T₁ = Temperature 1 in K
(K = °C + 273)

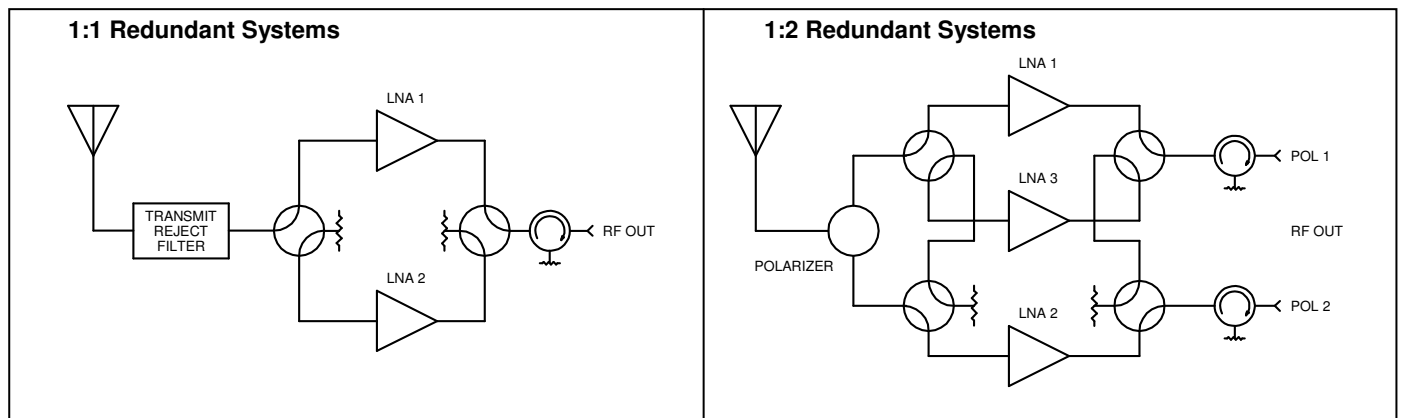
For the case where T₁ = 296 K (+23 °C), the ratio NT₂ / NT₁ is shown in the table below:

Ambient Temperature T ₂ (°C)	Ratio NT ₂ / NT ₁
0	0.88
+23	1.00
+40	1.09
+50	1.15
+60	1.21

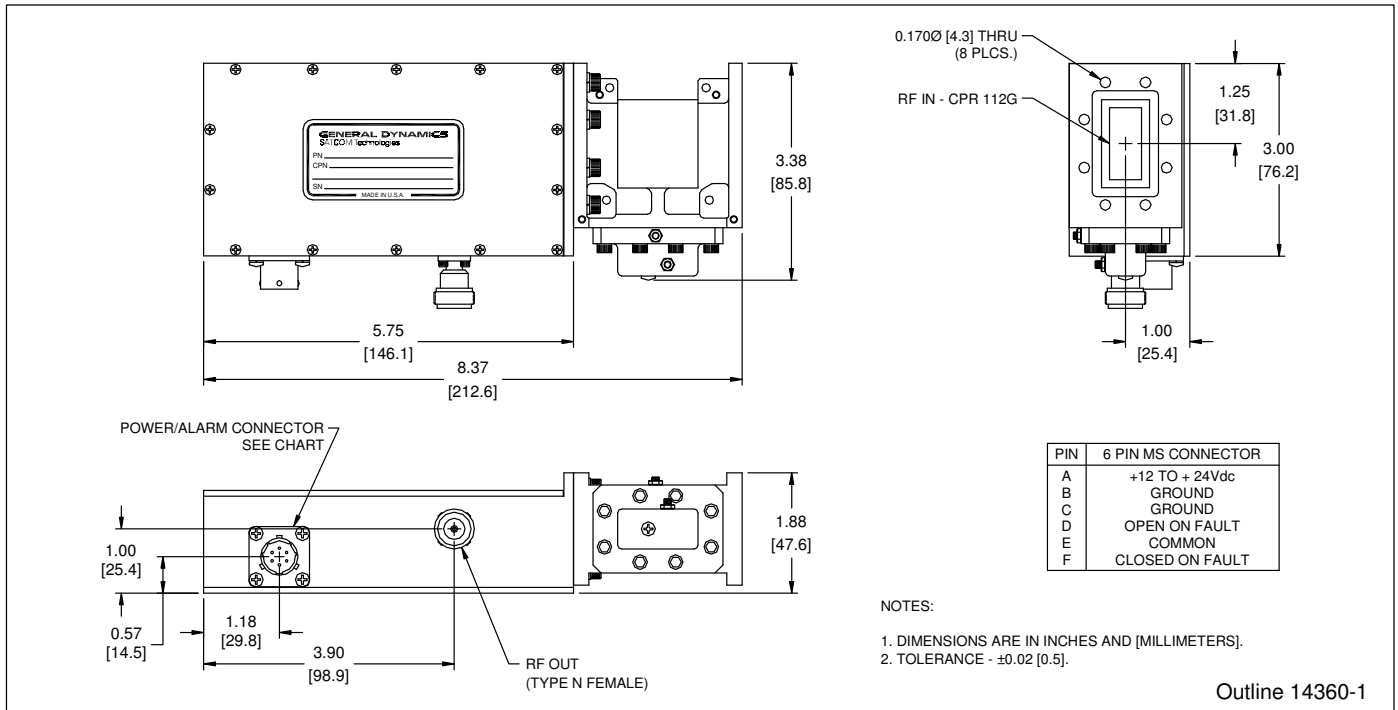
Example: For model LXA7S50-XXXX, NT₁ = 50 K at +23 °C; what is NT₂ at +40 °C?

From the table, NT₂ / NT₁ at +40 °C = 1.09: NT₂ = 1.09 x (50 K) = 54.5 K at +40 °C

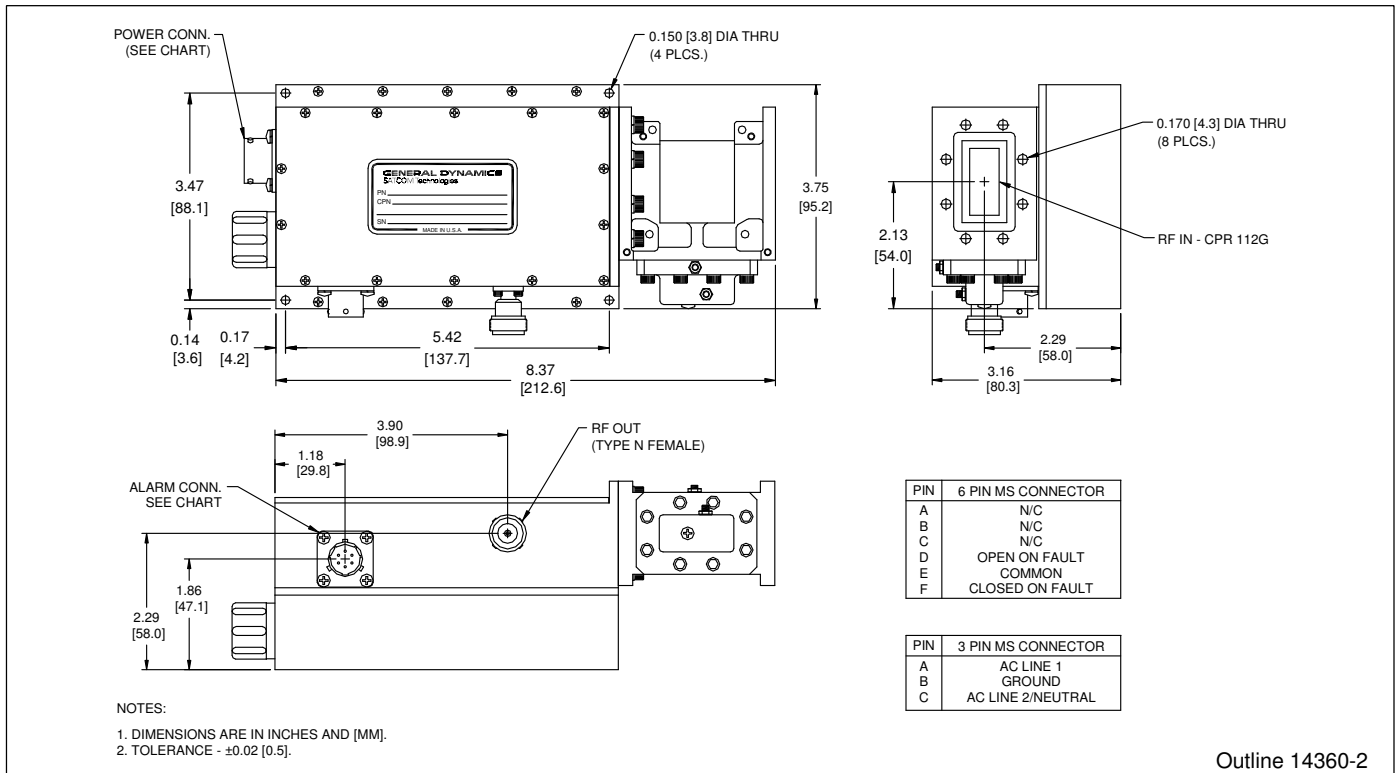
Typical Applications



Outline Drawing, Standard LNA



Outline Drawing, LNA with AC Power Supply



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