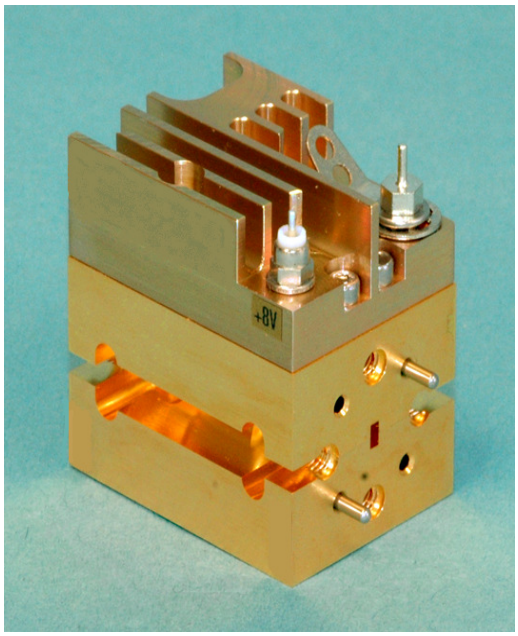
LOW NOISE AMPLIFIERS



FEATURES:

- Wideband coverage
- Modular compact design
- Military or commercial units available
- 2.92, 2.4, 1.85 mm or Waveguide interfaces as required
- Internal voltage regulation and bias circuitry
- State-of-the-art noise figure performance

APPLICATIONS:

- Sensitive receivers
- Spectrum analyzer preamplifiers
- Wideband radiometry
- Radar front-ends
- Communication subsystems
- Remote Sensing

DESCRIPTION

Millitech's series LNA low noise amplifier utilizes advanced PHEMT MMICs and transistors for state-of-the-art noise performance in the 18 to 120 GHz frequency range.

Each amplifier has internal bias circuitry that generates gate control voltages, provides proper voltage sequencing and bias
The standard amplifier interfaces include coaxial connectors of 2.92 mm (0 to 40 GHz), 2.4 mm (0 to 50 GHz), and 1.85 mm (0 to 65 GHz), as well as waveguide interfaces ranging from WR-42 to WR-10.

Standard products offer sufficient gain for most applications but multiple MMIC amplifier chips can be combined or cascaded for applications that require higher gain or greater output power.

The broad bandwidth and low noise of the series LNA makes them perfect for a wide range of applications including radiometry, polarimetry, EW systems, instrumentation and radar systems. For applications requiring driver or power amplification, please refer to series AMP, Millitech's power amplifiers.

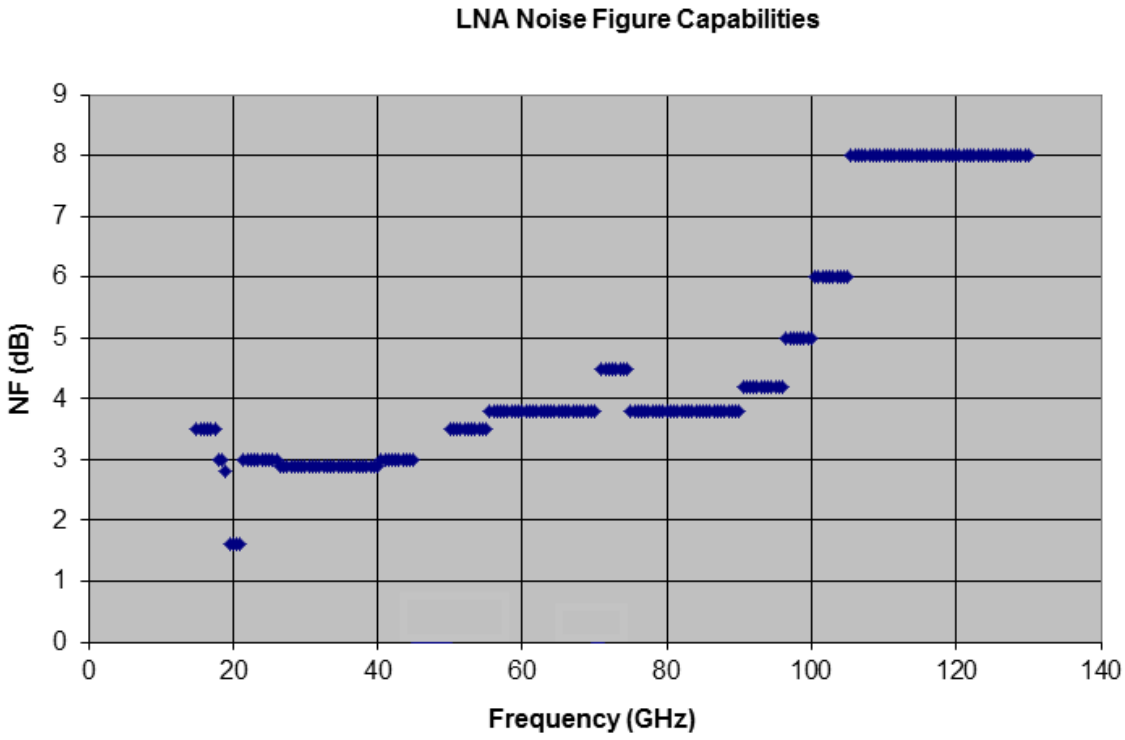
SPECIFICATIONS

Model Number	FLow	FHigh	Gain (typ.) (dB)	NF (typ.) (dB)	Connector	Current (A) (typ.)	Input Voltage (V) (min-max	Max RF Input Power (dBm)	Outline Drawing
LNA-42-02160	19.0	21.2	19.0	2.8	WR-42	.100	7.5 - 15	-2	Fig.2
LNA-42-03160	19.2	21.2	23.0	1.6	WR-42	.020	7.5 - 15	TBA	TBA
LNA-42/K-03160	19.2	21.2	23.0	1.6	WR-42 – 2.4mm	.020	7.5 - 15	TBA	TBA
LNA-42-02010	18.0	26.5	19.0	3.0	WR-42	.100	7.5 – 15	-2	Fig.2
LNA-KK-02010[1]	14.0	27.0	18.0	3.5	2.92/2.4 mm	.100	7.5 – 15	-2	Fig.1
LNA-KK-03050[1]	26.0	34.0	22.5	3.8	2.92/2.4 mm	.080	7.5 – 15	TBA	Fig.1
LNA-28-03050	26.5	34.0	24.0	3.0	WR-28	.080	7.5 – 15	TBA	Fig.3
LNA-28-03110	32.0	34.0	19.0	3.0	WR-28	.075	7.5 – 15	12	Fig.3
LNA-KK-03060[1]	27.0	36.0	18.5	4.0	2.92/2.4 mm	.075	7.5 – 15	12	Fig.1
LNA-28-03060	27.0	36.0	20.0	3.2	WR-28	.075	7.5 – 15	12	Fig.3
LNA-28-02170	34.0	36.0	19.0	3.1	WR-28	.075	7.5 – 15	15	Fig.3
LNA-KK-01080[1]	18.0	40.0	19	5	2.92/2.4 mm	.090	7.5 - 15	-3	TBA
LNA-KK-01090[1]	18.0	40.0	9.5	5	2.92/2.4 mm	.090	7.5 - 15	-3	Fig. 1
LNA-KK-01020[1]	24.0	40.0	23 to 15[3]	3.6	2.92/2.4 mm	.075	7.5 - 15	-1	Fig.1
LNA-28-01050	26.5	40.0	12.0	4.0	WR-28	.060	7.5 - 15	TBA	Fig.3
LNA-28-01020	26.5	40.0	25 to 17[3]	2.9	WR-28	.075	7.5 - 15	-1	Fig.3
LNA-KK-02110[1]	26.0	40.0	17.0	4.3	2.92/2.4 mm	.075	7.5 – 15	15	Fig.1
LNA-28-02110	26.5	40.0	19.0	3.3	WR-28	.075	7.5 – 15	15	Fig.3
LNA-KK-03070[1]	30.0	40.0	17.0	5.0	2.92/2.4 mm	.065	7.5 – 15	12	Fig.1
LNA-28-03070	30.0	40.0	19.0	4.0	WR-28	.065	7.5 – 15	12	Fig.3
LNA-KK-02060[1]	32.0	40.0	18@33GHz, 15.5@36GHz, 17.5@40GHz, 17.8@43GHz, 14.5@46GHz	5.0@33GHz, 4.5@36GHz, 4.0@40GHz, 4.5@43GHz, 5.3@46GHz	2.92/2.4 mm	.055	7.5 – 15	15	Fig.1
LNA-28-02060	32.0	40.0	18.5@33GHz, 16@36GHz, 18@40GHz, 18.3@43GHz, 15@46GHz	4.5@33GHz, 4@36GHz, 3.5@40GHz, 4@43GHz, 4.8@46GHz	WR-28	.055	7.5 – 15	15	Fig.3
LNA-22-01020	33.0	40.0	21.5 to 17[3]	2.9	WR-22	.075	7.5 – 15	-1	Fig.4
LNA-KK-02070[1]	35.0	40.0	16 to 12[3]	4.0	2.92/2.4 mm	.100	7.5 – 15	-5	Fig.1
LNA-28-02070	35.0	40.0	18 to 14[3]	3.0	WR-28	.100	7.5 – 15	-5	Fig.3
LNA-22-03070	33.0	42.0	20.0	4.0	WR-22	.065	7.5 – 15	12	Fig.4

Model Number	FLow	FHigh	Gain (typ.) (dB)	NF (typ.) (dB)	Connector	Current (A) (typ.)	Input Voltage (V) (min-max)	Max RF Input Power (dBm)	Outline Drawing
LNA-22-02070	35.0	45.0	18 to 11[3]	3.0	WR-22	.100	7.5 – 15	-5	Fig.4
LNA-22-02060	33.0	46.0	18.5@33GHz, 16@36GHz, 18@40GHz, 18.3@43GHz, 15@46GHz	4.5@33GHz, 4@36GHz, 3.5@40GHz, 4@43GHz, 4.8@46GHz	WR-22	.055	7.5 – 15	15	Fig.4
LNA-15-02080	50.0	55.0	11 to 8[3]	3.5	WR-15	.100	7.5 – 15	TBA	Fig.5
LNA-15-03090	55.0	65.0	19.0	4.8	WR-15	.080	7.5 – 15	-5	Fig.5
LNA-15-02240	55.0	65.0	20.0	5.0	WR-15	.060	7.5 – 15	0	Fig. 5
LNA-VV-03090	55.0	65.0	18.5	5.3	1.85 mm	.080	7.5 – 15	-5	TBA
LNA-15-02600	55.0	70.0	20	3.8	WR-15	.069	7.5 – 15	*	Fig. 5
LNA-12-02190	71.0	86.0	12.0	5.5	WR-12	.050	7.5 – 15	-5	Fig.6
LNA-12-02280	71.0	86.0	21, 19@86GHz	5.0	WR-12	.075	7.5 – 15	0	Fig. 6
LNA-10-02200	75.0	86.0	11.0	5.5	WR-10	.050	7.5 – 15	-5	Fig.7
LNA-12-02310	67.0	90.0	25	3.2@70GHz, 3.1@80GHz, 3.3@90GHz	WR-12	.040	7.5 – 15	TBA	Fig.6
LNA-12-02220	75.0	90.0	13.0@75GHz, 15.5@82GHz, 13.5@90GHz	3.8	WR-12	0.12	7.5 – 15	TBA	Fig.6
LNA-10-02220	75.0	96.0	13.0@75GHz, 15.5@85GHz, 14.0@96GHz	3.7@75GHz, 4.0@96GHz	WR-10	.012	7.5 – 15	TBA	Fig.7
LNA-10-03130	85.0	96.0	19.0	4.6	WR-10	.050	7.5 – 15	-10	Fig.7
LNA-10-03100	80.0	100.0	16.0	5.0	WR-10	.050	7.5 – 15	-10	Fig.7
LNA-10-02120	82.0	100.0	16.0	6.0	WR-10	.065	7.5 – 15	-10	Fig.7
LNA-10-02130	88.0	100.0	30.0	5.5	WR-10	.100	7.5 – 15	-10	Fig.7
LNA-10-02310	75.0	105.0	25, 20 from 95-105 GHz	3.5@75GHz, 3.8@95GHz, 5.2@105GHz	WR-10	.040	7.5 – 15	TBA	Fig.7
LNA-10-03310[4]	75.0	105.0	24, 20 from 95-105 GHz	3.5@75GHz, 3.8@95GHz, 5.2@105GHz	WR-10	.080	7.5 – 15	TBA	TBA
LNA-10-02580	80.0	105.0	16.0	6.0	WR-10	.15	7.5 – 15	TBA	Fig. 7
LNA-10-03290[4]	80.0	105.0	15.0	6.0	WR-10	.30	7.5 – 15	TBA	TBA
LNA-08-03210[2]	90.0	130.0	17 to 10[2]	8.0	WR-08	.040	7.5 – 15	-20	Fig.8

*** / Contact Millitech for details**
1 / For 2.4 mm, substitute "QQ" for "KK" in the model number.
2 / The LNA-08-03210 gain drops to 10 dB at 130 GHz.
3 / Descends with frequency.
4 / Balanced amplifier. Return loss is ~20dB.

Note: Some model numbers are ITAR controlled. Please call Millitech for details.



OUTLINE DRAWINGS

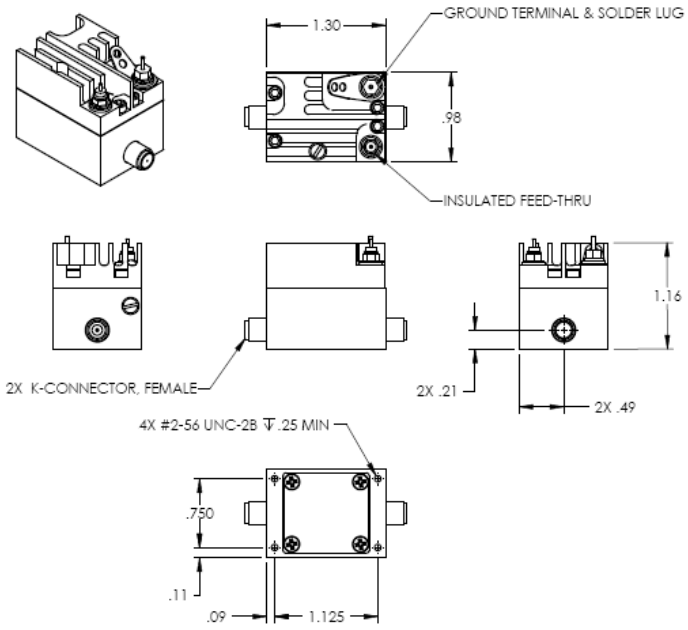


Figure 1

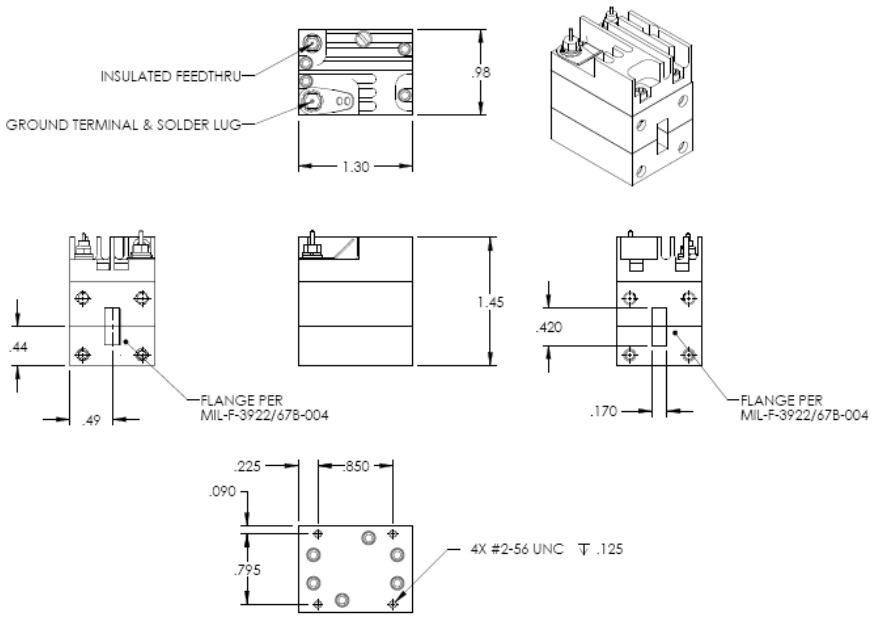


Figure 2

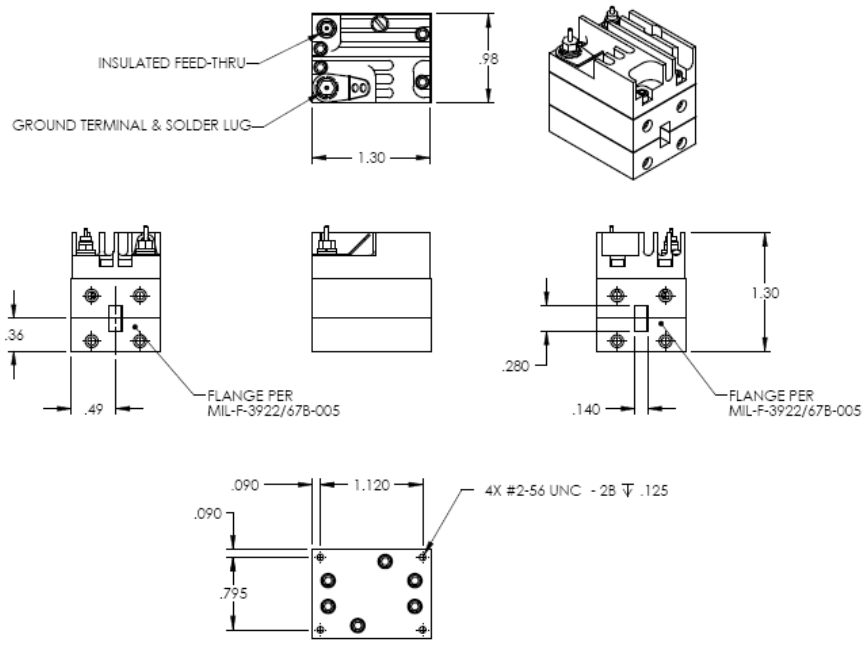


Figure 3

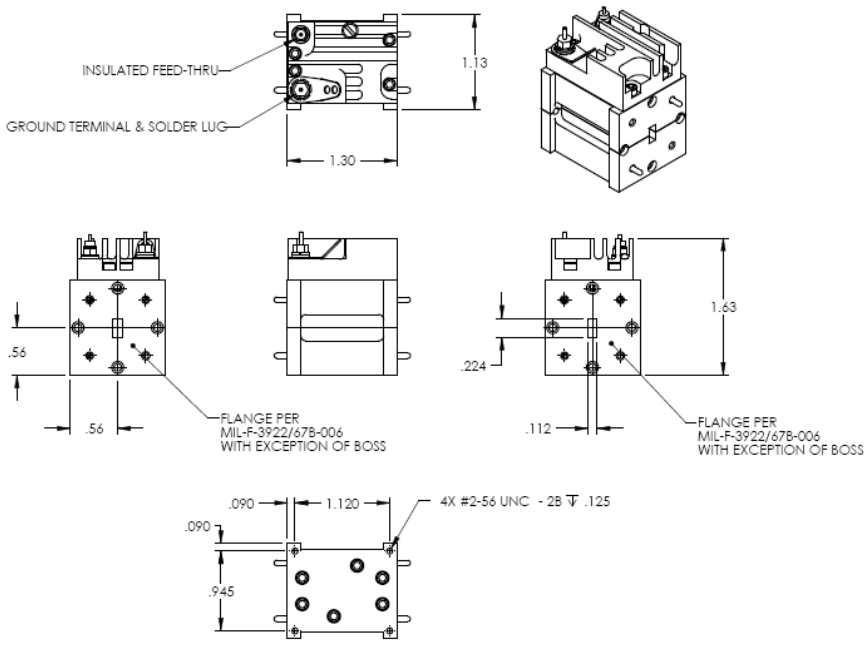


Figure 4

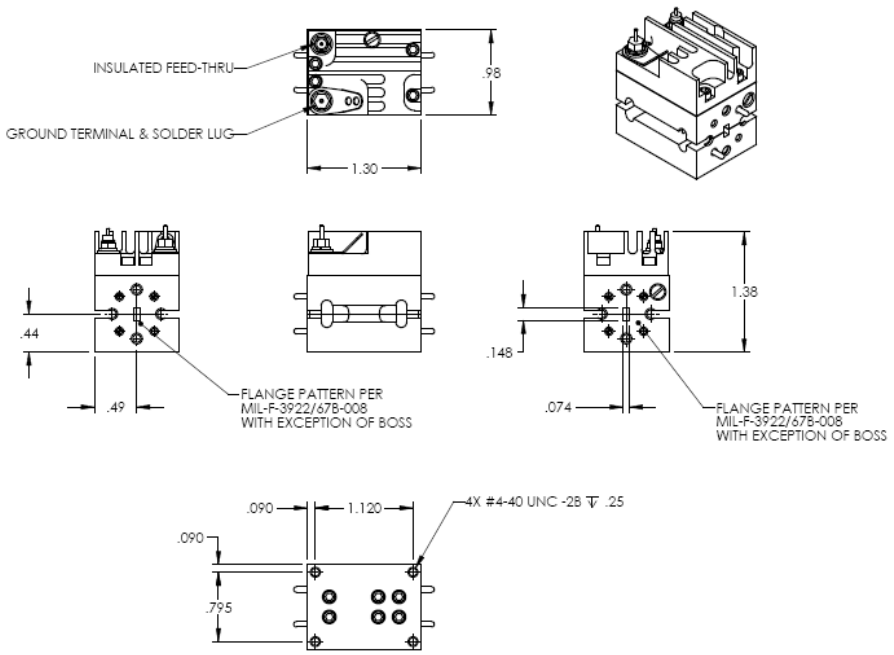


Figure 5

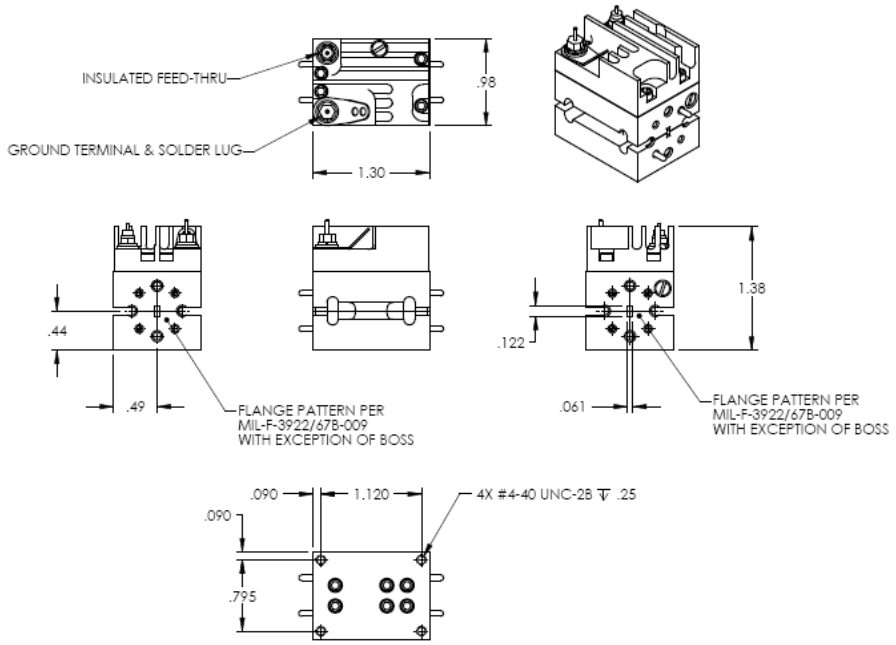


Figure 6

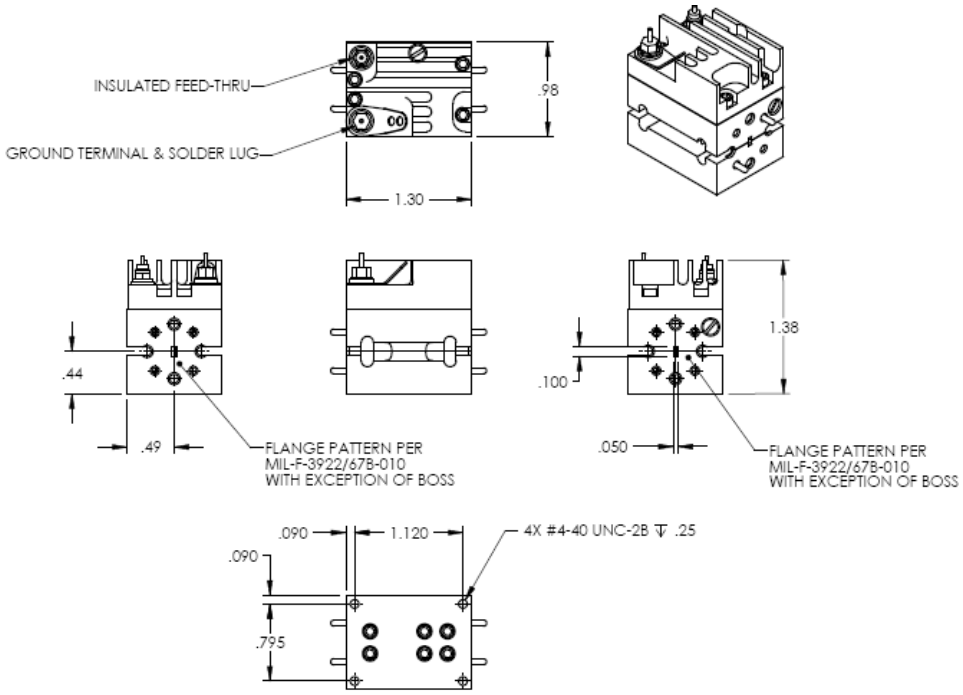


Figure 7

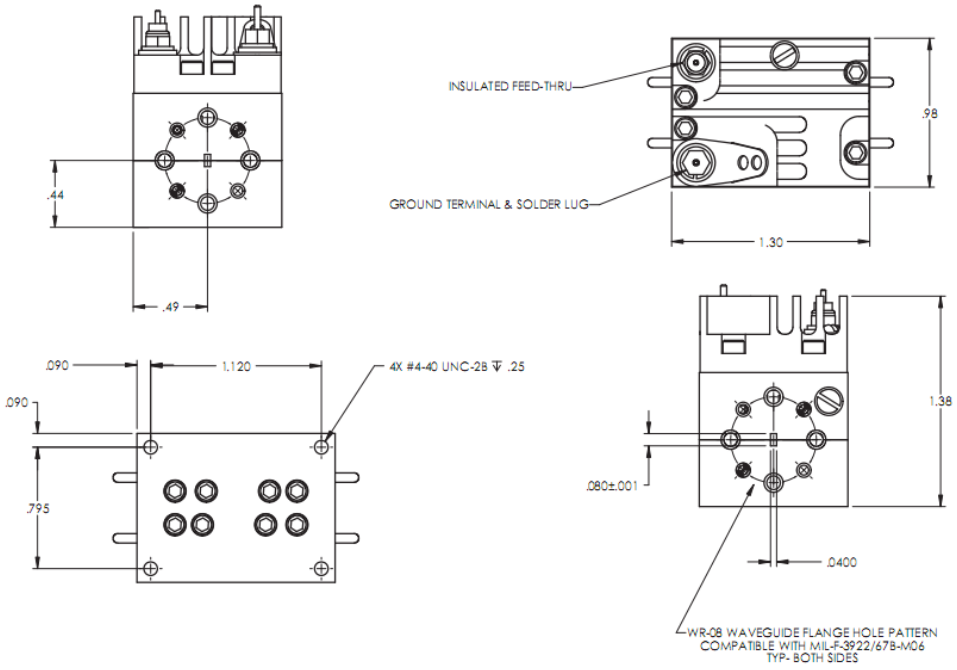


Figure 8

Note: Measurements are in inches

How To Order

Specify Model Number **LNA-XX-AAAAA**
XX = Standard Connector **KK** – 2.92 mm connector **QQ** – 2.4 mm connector **42** – WR-42 waveguide **28** – WR-28 waveguide **22** – WR-22 waveguide **15** – WR-15 waveguide **12** – WR-12 waveguide **10** – WR-10 waveguide **08** – WR-08 waveguide
AAAAA = Standard Model Number Choose a standard model number from our product list above. If none of these products meet your requirements, please feel free to contact Millitech for a special order.
Please specify frequency range for all narrowband units.