

# COMPACT, MODULAR BLOCK UPCONVERTERS



## C-, X-, Ku-, DBS-, AND Ka-BANDS



### FEATURES

- Small size: 3.5" [88.9 mm] x 5.0" [127 mm] x 1.36" [34.54 mm]
- 32 dB attenuation control
- 10 MHz reference input on RF input or external reference input connector
- Analog and RS-485 remote control
- RF output power detector
- Mute for external command or excess output power
- Low phase noise

This series of block upconverters are ideal for use in modular systems where small size and high performance are required. Status and control can be accomplished either by discrete lines for existing controllers or by RS-485.

INPUT FREQUENCY (GHz)	OUTPUT FREQUENCY (GHz)	LO FREQUENCY (GHz)	MODEL NUMBER
0.95 to 1.75	5.85 to 6.65	4.9	UPBA-6.25
0.95 to 1.45	7.9 to 8.4	6.95	UPBA-8.15
0.95 to 1.45	12.75 to 13.25	11.8	UPBA-13
0.95 to 1.45	14 to 14.5	13.05	UPBA-14.25-1
0.95 to 1.7	13.75 to 14.5	12.8	UPBA-14.125-1

### DBS- AND Ka-BAND MODELS

0.95 to 2.05	17.3 to 18.4	16.35	UPBA-17.85
0.95 to 1.2	28.35 to 28.6	27.4	UPBA-28.475-1
0.95 to 1.2	29.25 to 29.5	28.3	UPBA-29.375-1
1 to 2	29 to 30	28	UPBA-29.5-1
0.95 to 1.7	29.25 to 30	28.3	UPBA-29.625-1
0.95 to 1.45	29.5 to 30	28.55	UPBA-29.75-1
1 to 2	30 to 31	29	UPBA-30.5-1



# COMPACT, MODULAR BLOCK UPCONVERTERS

SPECIFICATIONS	BLOCK UPCONVERTER
Type	Single conversion
Frequency sense	No inversion
Input characteristics	
Impedance	50 ohms
VSWR	1.25:1 maximum
Non-damage	+15 dBm minimum
External reference characteristics	
Location	Input center conductor or reference connector
Frequency	10 MHz
Level	-5 dBm to +7 dBm
Output characteristics	
Impedance	50 ohms
VSWR	1.25:1 maximum
Power output (1 dB compression)	+13 dBm minimum at minimum attenuation
Ka-Band models	+15 dBm minimum at minimum attenuation
Transfer characteristics	
Noise figure	15 dB typical at minimum attenuation
Gain	26 ±1 dB at 23 °C
Gain flatness	±0.2 dB/any 40 MHz, ±0.25 dB/any 80 MHz, ±0.5 dB/RF-Band
Gain stability	
Constant temperature	±0.25 dB/24 hours
-40 °C to +80 °C	2 dB maximum after 1/2 hour warm-up
Attenuation control	32 dB/0.1 dB step remote control or 0 volts to 10 volts DC
Group delay	
Slope (any 80 MHz segment)	0.0125 ns/MHz
Parabolic (any 80 MHz segment)	0.000625 ns/MHz <sup>2</sup>
Ripple (any 80 MHz segment)	0.5 ns
Total	1 ns peak-to-peak over RF-Band
Spurious output	
Signal-related	65 dBc minimum
IF signal second harmonic (DBS- and Ka-Band models)	60 dBc maximum at 0 dBm output power
Signal-independent (in-band)	-100 dBm maximum
Signal-independent (out-of-band)	-70 dBm maximum
Image rejection	60 dB minimum
Second harmonic output (P1 dB)	-40 dBc maximum
Intermodulation distortion (third-order)	With two in-band output signals at 0 dBm, third-order intermodulation products are less than 46 dBc
Mute	60 dB minimum
Maximum phase noise	See table on the next page
Output power monitor	See table on the next page
Control/monitor	Discrete analog and RS-485 provided, refer to Narda-MITEQ Technical Note 25T058 for details.

Note: All specifications guaranteed at maximum gain unless otherwise noted.

**MAXIMUM PHASE NOISE**

**LOCAL OSCILLATOR (dBc/Hz)**

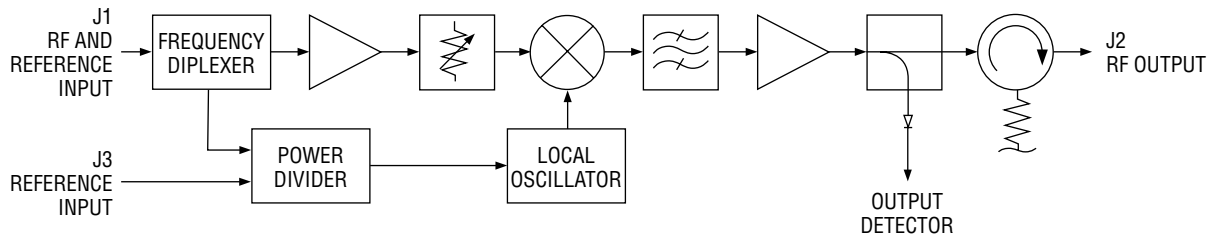
OFFSET (Hz)	10 MHz	BELOW 10 GHz	ABOVE 10 GHz	ABOVE 27 GHz
10	-113	-51	-45	-34
100	-135	-73	-67	-64
1K	-145	-83	-77	-74
10K	-150	-93	-87	-84
100K	-150	-103	-97	-94
1M	-150	-103	-97	-104

**OUTPUT POWER MONITOR**

**DC VOLTAGE BASED ON OUTPUT LEVEL TYPICAL**

Output Power (dBm)	Monitor Level (VDC)
13	0.85 to 1.50
10	0.60 to 0.84
7	0.38 to 0.59
3	0.12 to 0.28
No input signal	0.01 maximum

**REPRESENTATIVE BLOCK DIAGRAM**



**GENERAL SPECIFICATIONS**

**PRIMARY POWER REQUIREMENTS**

Voltage.....	12 VDC to 15 VDC
Voltage ripple/noise .....	50 mV peak-to-peak, typical (20 MHz BW)
Current.....	650 mA typical, 1A maximum
Ka-Band models.....	1.3A typical, 1.6A maximum

**PHYSICAL**

Weight.....	1.5 lb. [0.68 kg] nominal
Connectors	
RF .....	SMA female
RF (Ka-Band).....	2.92 mm female
Power/monitor and control interface.....	15 pin D-type male

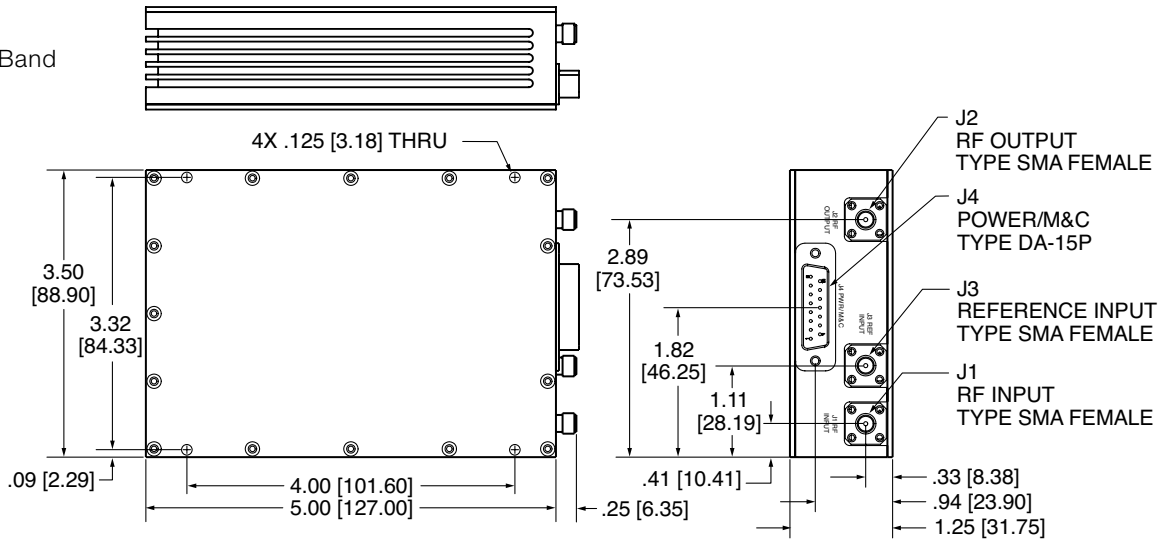
**ENVIRONMENTAL**

Operating	
Ambient temperature.....	-40 °C to +60 °C
Relative humidity.....	Up to 95% at 30 °C
Atmospheric pressure .....	Up to 10,000 feet
Nonoperating	
Ambient temperature.....	-40 °C to +85 °C
Relative humidity.....	Up to 95% at 40 °C
Atmospheric pressure .....	Up to 50,000 feet
Shock.....	30 g's, 10 rms
Vibration.....	20 Hz to 2000 Hz random to 0.04 G <sup>2</sup> /Hz

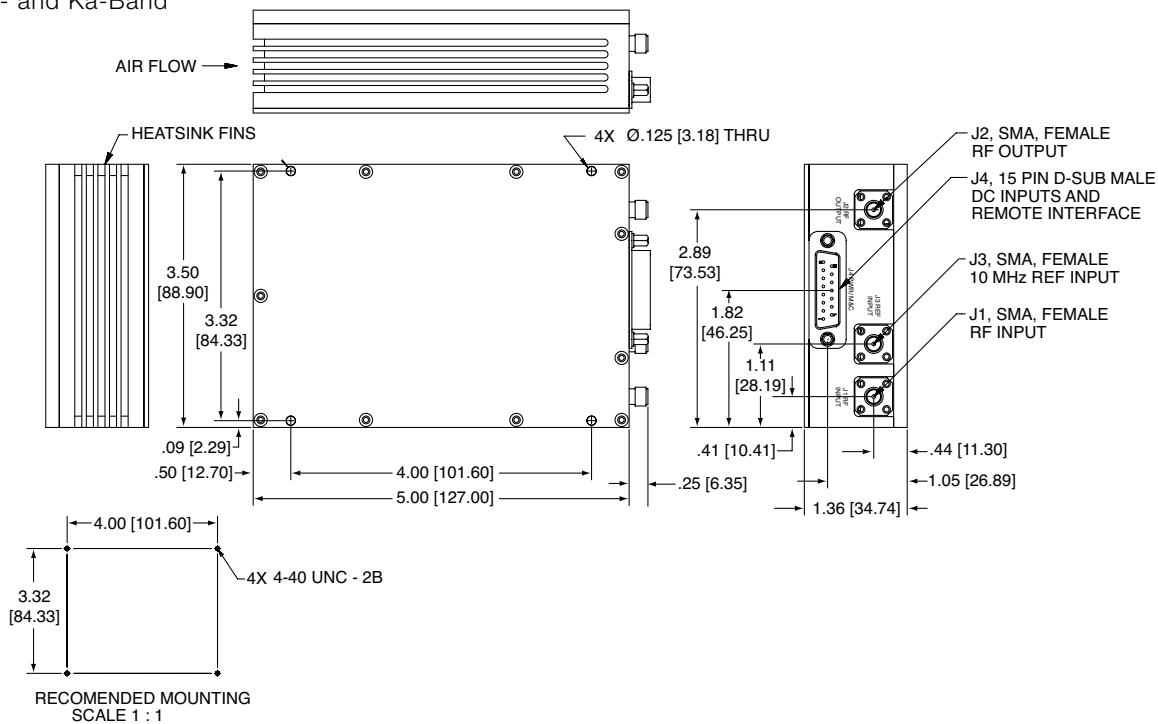
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## OUTLINE DRAWINGS

C- and X-Band



Ku-, DBS- and Ka-Band



Note: Dimensions shown are in inches and those shown in brackets [ ] are in millimeters.

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