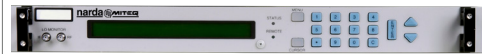


# 10000 SERIES FREQUENCY CONVERTERS

## L, C, X and Ku Bands

SPECIFICATION		
	10000 UPCONVERTER	10000 DOWNCONVERTER
Type	Dual conversion	Dual conversion
Frequency step size	1 kHz	1 kHz
Frequency sense	No inversion	No inversion
Input characteristics		
Input frequency	70 ± 20 MHz (140 ± 40 MHz Option 4)	Refer to model number table
Input impedance	75 ohms (50 ohms Option 15)	50 ohms
Input return Loss	20 dB minimum	18 dB minimum (16 dB minimum L-Band)
Signal monitor	-20 dBc nominal	-20 dBc nominal
Lo leakage at input	N/A	-70 dBm
Input level (non-damage)	+15 dBm maximum	+15 dBm maximum
Output characteristics		
Output frequency	Refer to model number table	70 ± 20 MHz (140 ± 40 MHz Option 4)
Output impedance	50 ohms	75 ohms (50 ohms Option 15)
Output return loss	18 dB minimum (16 dB minimum L-Band)	20 dB minimum
Signal monitor	-20 dBc nominal	-20 dBc nominal
Lo leakage at output	-75 dBm maximum	N/A
Power output (P1 dB)	15 dBm minimum	16 dBm minimum
Transfer characteristics		
Gain at 23°C	+30-35 dB at 23°C	+43-50 dB at 23°C
Noise figure at min. gain	16 dB maximum	14 dB
Noise power density	-123 dBm/Hz maximum	N/A
Image rejection	70 dB minimum (L-Band only)	80 dB
Level stability	±0.25 dB/day maximum/day at constant temperature ±0.5 dB typical from 0°C to 50°C	
Amplitude response		
70 MHz ± 0 MHz	±0.35 dB maximum/40 MHz	±0.35 dB maximum/40 MHz
140 MHz ± 40 MHz (Option 4)	±0.45 dB maximum/80 MHz	±0.45 dB maximum/80 MHz
RF band	N/A	±1 dB maximum/RF band (L-Band only)
Amplitude slope adjust	±1 dB typical in 0.2 dB steps	±1 dB typical in 0.2 dB steps
Group delay (70 ± 18 MHz) at 23 °C		
Linear	0.03 ns/MHz maximum	0.03 ns/MHz maximum
Parabolic	0.01 ns/MHz maximum	0.01 ns/MHz maximum
Ripple	1 ns peak-to-peak maximum	1 ns peak-to-peak maximum
Group delay (140 ± 36 MHz) at 23°C		
Linear	0.025 ns/MHz maximum	0.025 ns/MHz maximum
Parabolic	0.0035 ns/MHz maximum	0.0035 ns/MHz maximum
Ripple	1 ns peak-to-peak maximum	1 ns peak-to-peak maximum
Intermodulation distortion (third order)	52 dBc min. (26 dBm OIP3 pt) 44 dBc min. Ku-Band (22 dBm OIP3 pt)	60 dBc minimum (30 dBm OIP3 pt)
AM/PM conversion	0.1°/dB maximum to 0 dBm output	0.1°/dB maximum to 0 dBm output
Frequency stability	±2 x 10 <sup>-8</sup> , 0°C to 50°C (higher stability options available), ±5 x 10 <sup>-9</sup> /day typical (fixed temperature after 24 hour on time)	
Frequency accuracy	±25 Hz max. using external reference	±25 Hz max. using external reference
Spurious output (in band)		
Signal related	-60 dBc maximum up to 0 dBm output	-60 dBc maximum up to 0 dBm output
Signal independent	-70 dBm maximum	-70 dBm maximum
Gain adjustment	30 dB in 0.2 dB steps (55 dB in 0.2 dB steps at L-Band)	30 dB in 0.2 dB steps
Upconverter mute	60 dB minimum	N/A
External reference	5 or 10 MHz, +4 ± 3 dBm unit will automatically switch to internal reference if external reference level falls below +1 dBm nominal	
Phase noise	See chart	See chart



The Narda-MITEQ frequency converters are designed for advanced satellite communication systems and are available for a wide variety of frequency plans. Phase noise, amplitude flatness and spurious outputs have been optimized to provide the user with a transparent frequency conversion for all video and data applications.

A strong feature set of monitor and control functions supports powerful local and remote control. Among the features are control of frequency, attenuation and 64 memory locations for each converter where various setups can be stored and recalled.

A continuously updated log of time-stamped records of activity is also provided.

UPCONVERTERS	
RF FREQUENCY (GHz)	MODEL NUMBERS
0.95 – 2.15	U-10048-1-1K
2 – 2.4	U-10048-4-1K
5.725 – 6.725	U-10053-6-1K
7.9 – 8.4	U-10054-1K
12.75 – 14.5	U-10056-7-1K
13.75 – 14.8	U-10056-6-1K
10.7 – 12.75	U-10008R-6-1K
17.3 – 18.4	U-10057-2-1K

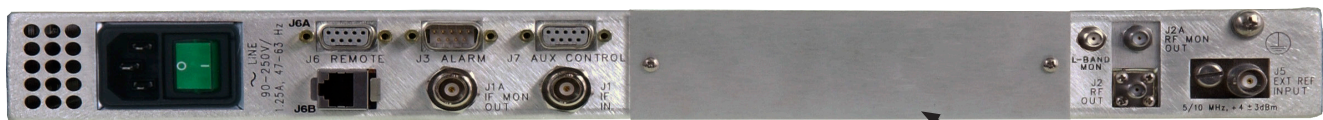
DOWNCONVERTERS	
RF FREQUENCY (GHz)	MODEL NUMBERS
0.95 – 2.15	D-10000-3-1K
2 – 2.4	D-10000-6-1K
3.4 – 4.2	D-10001-1-1K
7.25 – 7.75	D-10005-1K
10.7 – 12.75	D-10008-6-1K
12.75 – 14.5	D-10056R-7-1K
13.75 – 14.8	D-10056R-6-1K





GENERAL SPECIFICATIONS	
<b>PRIMARY POWER REQUIREMENTS</b>	
Voltage	100-240 VAC (-10%, +6%)
Frequency	47 – 63 Hz
Consumption	55 W typical, 65 W maximum
<b>PHYSICAL</b>	
Weight	12 pounds (5.4 kg) nominal
Chassis Dimensions	19" [482.6mm] x 175" [44.45mm] panel height x 22" [560mm] maximum (including connectors)
Connectors	
RF	SMA female (N female, Option NRF)
RF Monitor	SMA female
IF	BNC female
IF Monitor	BNC female
LO Monitors	SMA female
Alarm	DE-9P
External Reference	BNC female
Remote Interface	DE-9S for RS485, RS422 and RS232, RJ-45 female for Ethernet
Primary Power Input	IEC-320
Auxiliary Control Interface	DE-9S
<b>ENVIRONMENTAL</b>	
Operating	
Ambient Temperature	0°C to +50°C
Relative Humidity	Up to 95% at 30°C
Atmospheric Pressure	Up to 10,000 feet
Non-Operating	
Ambient Temperature	-50°C to +70°C
Relative Humidity	Up to 95% at 40°C
Atmospheric Pressure	Up to 40,000 feet
Shock and Vibration	Normal handling by commercial carriers

### TYPICAL REAR PANEL VIEW



RSM Switch Module Location  
(see D323 for more information)

### 10000 Series Frequency Converters

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Narda-MITEQ is an agile global aerospace and defense technology innovator, delivering end-to-end solutions that meet customers' mission-critical needs. The company provides advanced defense and commercial technologies across air, land, sea, space and cyber domains.



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