8 GHz TO 20 GHz ULTRA-BROADBAND DOWNCONVERTER

DC SERIES MODEL DC-8/20G

FEATURES

- 8 GHz to 20 GHz RF input
- 2 Hz tuning resolution
- Very low phase noise
- 1200 ±250 MHz L-Band output
- 70 ±20 MHz, 140 ±40 MHz, and 160 ±40 MHz selectable IF output
- Independent 42 dB gain programming in 1 dB step of L-Band and IF outputs
- Independent conversion sense programming of IF and L-Band outputs
- Output IP3 > 25 dBm
- Remote/local programming via full keypad entry
- System parameters programmable via continuous-turn rotary control with self-contained push button selection switch

OPTIONS

- Built in self-test and diagnostic features
- Combination of up to eight different bandwidth IF filters centered at 70 MHz, 140 MHz and 160 MHz
- Programmable 30 dB in 10 dB steps front-end attenuator for high-power input signals
- Ethernet programming

The Narda-MITEQ model DC-8/20G is a very high-performance, ultra-broadband 2 Hz step agile downconverter. This downconverter accepts RF signals from 8 GHz to 20 GHz and provides one selectable IF output of either 70 MHz, 140 MHz or 160 MHz and one L-Band output at 1200 MHz. The frequency conversion sense of both of outputs can be independently programmed as inverted or noninverted. Independent gain programming of 42 dB in 1 dB step is provided for both outputs. The superb phase noise makes this system ideal for most applications, including the stringent requirements of high-order QAM. All system parameters are locally programmable by the front panel keypad and rotary knob, or remotely programmable via RS-422/RS-485/RS-232.

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SPECIFICATIONS

Input characteristics		
Input frequency	8 GHz to 20 GHz	
Level	to -35 dBm fully compliant	
Impedance	50 ohms	
Input VSWR	2.5:1 maximum	
Noise figure	15 dB maximum at maximum gain	
Output characteristics		
IF output (selectable from these IF bands)		
IF center frequency	70 MHz	
3 dB bandwidth	±20 MHz minimum	
Gain flatness	±0.4 dB typical, ±0.7 dB maximum	
IF center frequency	140 MHz	
3 dB bandwidth	±40 MHz minimum	
Gain flatness	±0.6 dB typical, ±1.0 dB maximum	
IF center frequency	160 MHz	
3 dB bandwidth	±40 MHz minimum	
Gain flatness	±0.8 dB typical, ±1.0 dB maximum	
L-Band output	1200 MHz	
3 dB bandwidth	±250 MHz minimum	
Gain flatness	±0.9 dB typical, ±1.4 dB maximum	
Impedance	50 ohms	
Output VSWR	2:1 maximum	
Signal monitor	-20 dBc nominal	
Frequency sense	Programmable	
Transfer characteristics		
Conversion sense programming	Inverted or noninverted	
Fine tuning step size	2 Hz	
Tuning speed	< 100 ms	
Gain programming		
L-Band and IF outputs	42 dB	
Programming resolution	1 dB	
Level stability	< ±0.5 dB/day maximum at constant temperature	
Image rejection	60 dB minimum	
LO leakage at input	-90 dBm maximum	
Group delay variations	3 ns peak-to-peak, typical over 80% of 3 dB bandwidth, 6 ns peak-to-peak, maximum over 80% of 3 dB bandwidth (does not include group delay of the IF switchable filters)	
IP3 (output)	25 dBm minimum	
Spurious outputs		
Spurious-free dynamic range	60 dB two tones 2 MHz apart at -38 dBm at 30 dB gain	
LO spurious rejection	-80 dBm typical	
Independent spurs	> 60 dB	
Frequency stability	±2 x 10^{-8}, 0 °C to 50 °C fixed temperature after 24 hours power on	
Frequency reference		
Reference LO	Internal, external or auto-selectable	
External reference input	10 MHz, 0 dBm, ±2 dBm	
Internal reference output	10 MHz, 0 dBm, ±2 dBm	
Phase noise	Offset from carrier	dBc/Hz (typical)
	100 Hz	-68 dBc
	1 kHz	-90 dBc
	10 kHz	-96 dBc
	100 kHz	-104 dBc
	1000 kHz	-125 dBc

SPECIFICATIONS (CONTINUED)

Local Control
DC-8/20G ..... Via front-panel keypad, LCD display and continuous-turn rotary control with self-contained push button selection switch
Programmable settings ..... Stored in nonvolatile memory

Rotary Control ..... System parameters programmable via continuous-turn rotary control with self-contained push button selection switch

Local Alarms ..... Power supply status
Three LO lock status
Fan failure
Programmable temperature warning
Programmable over temperature trip point

Remote Interface ..... RS-422, RS-485 and RS-232, Ethernet programming (optional)

OPTIONS

Missing option numbers are not applicable for this product.

DC1. Up to six switchable IF filters at 70 MHz, 140 MHz or 160 MHz available

DC1A. Up to two additional filters

DC1B. Up to six additional filters

Filter Selection Chart

Select the letter code from the following table of available IF filter bandwidth to form part number with this option (see sample part number below)

Code	Bandwidth (MHz)	70 MHz	140 MHz	160 MHz
A	0.25		X	
B	0.50		X	
C	2.5		X	
D	5.0		X	
E	8.0		X	
F	20.0	X		X
G	24.0		X	
H	40.0	STD	X	
J	80.0		STD	STD

STD = Included in standard model: X = Available optional bandwidths for corresponding IF frequencies

DC2. Programmable front end 30 dB attenuator for high-power input signals (RF input up to -5 dBm)

DC3. Ethernet programming
- 10/100 mB 10 Base-T interface
- Web-browser-based configuration
- SNMP 1.0 configuration
- Alarm reporting via SNMP Trap
- Telnet access
- Password protection

DC4. DCBIT (Built-in-test): Built-in microwave self-test

ORDERING INFORMATION

Specify unit by its model number. Example of a full model number:
DC-8/20G-DC1B-70F140ABCD160F-DC2-DC4

This means base unit DC-8/20G features Option DC1B with IF filter bandwidth F available at 70 MHz and 160 MHz, and IF filter bandwidths A, B, C and D available at 140 MHz (in addition to the IF filter bandwidths included in the base model). The unit also features Options DC2 and DC4.

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GENERAL SPECIFICATIONS

PRIMARY POWER REQUIREMENTS

Voltage ..... 90 VAC to 250 VAC

Frequency ..... 47 Hz to 63 Hz

PHYSICAL

Weight ..... 33.1 lb. [15 kg] nominal

Overall dimensions ..... 19” [482.6 mm] x 3.5” [88.9 mm] (2RU) x 22” [558.8 mm] maximum

Rear panel connectors

- RF ..... SMA female
- L-Band output ..... SMA female
- IF ..... BNC female
- IF signal monitor ..... BNC female
- Remote interface ..... DEM-9S for RS-422/RS-485/RS-232
- Summary alarm DE-25P
- External reference input ..... BNC female
- Reference output ..... BNC female
- Ethernet ..... RJ-45 (optional)
- Opto interface to DC-20/26.5G ..... 10-pin header with ejector

ENVIRONMENTAL

Operating

- Temperature ..... 0°C to 50°C
- Full compliance temperature range ..... 10°C to 40°C
- Relative humidity ..... Up to 95% at 30°C, noncondensing
- Atmospheric pressure ..... Up to 10,000 feet (40,000 feet optional)

Nonoperating

- Temperature ..... -30°C to +70°C
- Relative humidity ..... Up to 95% at 40°C, noncondensing
- Atmospheric pressure ..... Up to 40,000 feet
- Shock and vibration ..... Rough handling

TYPICAL REAR-PANEL VIEW

D-349D/03.15.17

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