2 to 22 GHz Downconverter With 1.2 GHz Instantaneous IF Bandwidth

DC-2/22G System

The DC-2/22G downconverter provides a broad instantaneous IF analysis bandwidth of 1200 MHz over the 2 to 22 GHz RF frequency range. The IF analysis frequency can be set in 2 kHz steps over the entire 2 to 22 GHz span either by front panel keypad entry or by using remote Ethernet control.

The DC-2/22G offers high spurious free dynamic range with the gain programmable over a 20 to 45 dB range. The low phase noise synthesizer assures accurate performance making the DC-2/22G ideal for downconversion of complex microwave signals to a broad band IF for further processing.

System Features

- **2 to 22 GHz RF input**
- **2 kHz tuning resolution**
- **1200 MHz instantaneous bandwidth**
- **45 dB programmable gain in 1 dB steps**
- **In-band carrier independent spurious rejection -80 dBm**
- **Output TOI >25 dBm**
- **Low phase noise**
- **10/100 Base-T Ethernet interface**

Specifications	DC-2/22G: 2 RU
Input characteristics	
Frequency	2–22 GHz
Frequency resolution/stepsize	2 kHz
Return loss	12 dB minimum (50 ohms, reference)
Total RF power	-35 dB maximum
10 MHz reference:	
Input power	0 dBm ±2 dB
Standard modes	External or internal reference, automatic selection of 10 MHz reference
IF output characteristics	
Center frequency	700 MHz nominal
3 dB bandwidth (BW)	1200 MHz minimum
Return loss	12 dB minimum (50 ohms, reference)
1 dB compression point	+15 dB minimum at maximum gain
Third order intercept point	+25 dB minimum at maximum gain
Phase noise	Offset from carrier dBc/Hz (maximum) 100 Hz -63 dBc 1 kHz -73 dBc 10 kHz -82 dBc 100 kHz -94 dBc 1 MHz -102 dBc 10 MHz -123 dBc
10 MHz reference output power	0 dBm ±2 dB
Inband spurious response (at -15 dBm output level)	
Carrier dependent	60 dBc typical, 50 dBc minimum
Carrier independent with 20 dB gain	-80 dBc typical, -65 dBc minimum
Transfer characteristics	
Conversion sense	Programmable, inverted or noninverted
Frequency conversion stability, 0 to 50°C	±0.5 ppm
Gain	
Programming range	20 to 45 dB minimum
Programming resolution	1 dB nominal
Amplitude response	
3 dB bandwidth	1200 MHz minimum
Slope over 80% of BW	<2.3 dB
Ripple over 3 dB BW	<±1.5 dB peak to peak
Noise figure	10 dB typical, 13 dB maximum at maximum gain
Group delay (over 80% of BW)	
Tilt	<4 nsec
Ripple	<± 1.5 nsec peak to peak
AM-to-PM conversion, at 0 dBm output	0.1°/dB
Image rejection	50 dBc typical, 45 dB minimum
Frequency stability	At a fixed temperature within 0 to 50°C, after 24 hours power-on: ±2 x 10^{-8}
Impedance	50 ohms, reference
Converter controls	Front panel parameters display & entry Programmable settings stored in non-volatile memory Front panel alarm reporting: Power supply status Fan failure Over-temperature fault
Remote control	Ethernet programming control Parameter interrogation Parameter programming Alarm reporting: Power supply status Fan failure Over-temperature fault

General Specifications

Primary Power Requirements

Voltage ..... 90–250 VAC
Frequency ..... 47–63 Hz
Power consumption..... 110-120 W nominal

Physical

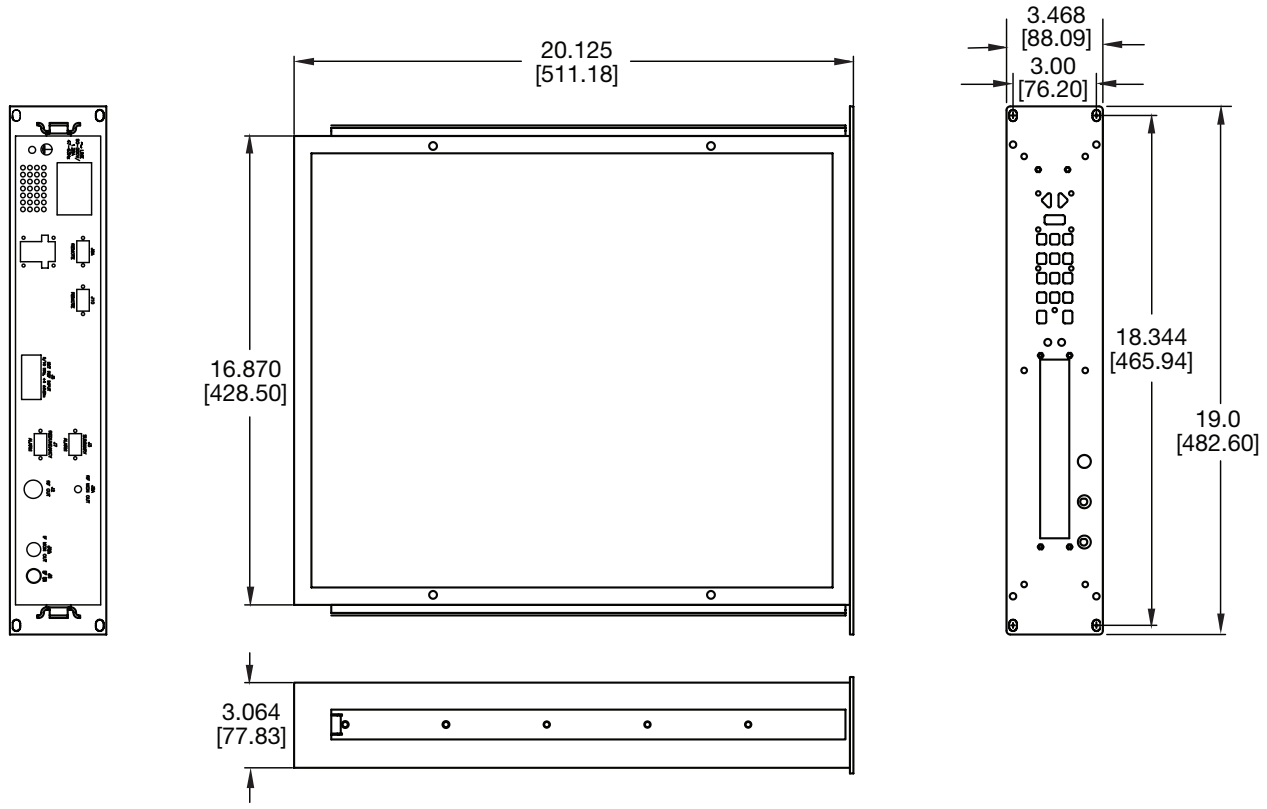
Weight..... 30 pounds (13.6 kg) nominal
Form factor..... 2 RU, 19" rack mount
Dimensions (typical)..... 19" [482.6mm] x 3.5" [88.9mm] (2RU) x 22" [558.8mm]
Rear panel connectors
- RF input ..... 2.9mm (K) female
- IF output..... SMA female
- External 10 MHz input ..... BNC female
- 10 MHz reference output ..... BNC female
- Ethernet ..... RJ-45 female

Environmental

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

Nonoperating
- Temperature..... -20 to +70°C
- Relative humidity ..... Up to 95% at 40°C, noncondensing
- Atmospheric pressure..... Up to 50,000 feet
- Shock and vibration ..... Nominal transportation shock and vibration

Outline Drawing



NOTE: Dimensions shown in brackets [ ] are in millimeters.

MITEQ Offers Additional Ultra-Broadband Solutions!

MITEQ Offers Two Ultra-Broadband 0.5 to 40 GHz Downconverter Systems

DC-0.5/40G System

System Features

- 2 Hz tuning resolution
- Excellent phase noise
- 1200 ±250 MHz L-band output
- Selectable IF output of 70 MHz, 140 MHz, and 160 MHz
- Gain of 42 dB adjustable in 1 dB steps
- Independent conversion gain and sense programming of IF and L-band outputs
- Noise figure 15 dB typical
- Output IP^3 +25 dBm minimum
- Remote/local programming via full keypad entry
- Ethernet programmable

Options

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

Patented 1/3 RU Space Saving Configuration! Available Only From MITEQ

This unique design allows expansion of up to two additional 1/3 RU modules in the same rack space. Select from MITEQ's full range of 1/3 RU, SATCOM high performance modules:

- Fiber Optic Transmitter
- Fiber Optic Receiver
- Redundant Switchover Unit
- Low Noise Wideband Amplifiers

* U.S. Patent #7,510,090

DC-0.5/40H System

For additional information, request datasheet D-366.

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