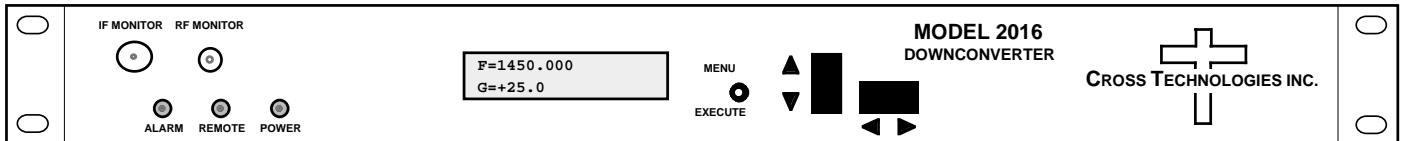


## 2016-22 Downconverter, 950 - 2150 MHz

The 2016-22 L-band Downconverter converts 950 to 2150 MHz in 1 kHz, 10 kHz, or 125 kHz steps (user selectable) to  $70 \pm 18$  MHz with low group delay and flat frequency response. Synthesized local oscillators (LO) provide very low phase noise and  $\pm 0.01$  ppm stability frequency selection. Multi-function push button switches select the RF frequency, gain, and other parameters. Front panel LEDs provide indication of DC power (green), PLL alarm (red), and remote operation (yellow). Gain is adjustable manually over a 0 to +50 dB range as adjusted by the front panel multi-function push-button switches. Remote operation allows selection of frequency and gain. Parameter selection and frequency and gain settings appear on the LCD display. Connectors are BNC female for IF output and the optional external reference input and output, and Type F female for the RF input. LNB +24 VDC, 0.4 Amps and 10 MHz reference can be inserted on the RF line as added options. The 10 MHz option also includes a 10 MHz output connector, which contains either the internal or external 10 MHz reference signal. The unit is powered by a 100-240  $\pm 10\%$  VAC power supply, and housed in a 1 3/4" X 19" X 16" rack mount chassis.



**Front Panel**

### EQUIPMENT SPECIFICATIONS\*

#### Input Characteristics (RF)

Impedance/Return Loss 75 $\Omega$  /12 dB  
 Frequency 950 to 2150 MHz  
 Noise Figure, max. 15 dB (max gain)  
 Input Level Range -70 to -20 dBm  
 Input 1dB compression -15 dBm

#### Output Characteristics (IF)

Impedance/Return Loss 75 $\Omega$ /18 dB  
 Frequency  $70 \pm 18$  MHz  
 Output level/max linear -20dBm / -10dBm  
 Output 1 dB compression -5 dBm

#### Channel Characteristics

Gain range (adjustable) 0.0 to +50.0 dB  
 Image Rejection > 50 dB, min.  
 Frequency Response  $\pm 1.5$  dB, 950 to 2150 MHz ;  $\pm 0.5$  dB, 36 MHz BW  
 Spurious Response < -50 dBc, in band  
 Group Delay, max 0.015 ns/MHz<sup>2</sup> parabolic; 0.05 ns/MHz linear; 1 ns ripple  
 Frequency Sense Inverting or Non-inverting, selectable

#### Synthesizer Characteristics

Frequency Accuracy  $\pm .01$  ppm internal reference  
 Frequency Step 1kHz, 10kHz, or 125kHz (user selectable)  
 10 MHz In/Out Level 3 dBm  $\pm$  3 dB (option E)

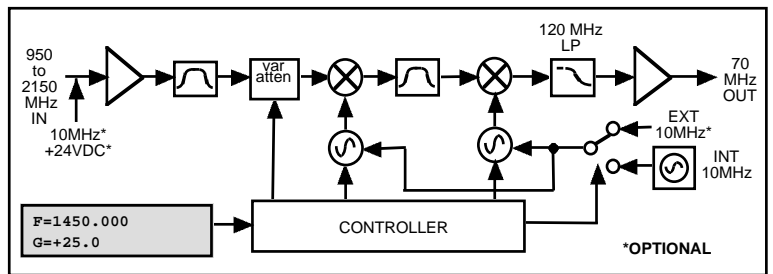
Phase Noise @ Freq	100 Hz	1kHz	10kHz	100kHz	1 MHz
dBC/Hz	-72	-85	-88	<b>-105</b>	-120

#### Controls, Indicators

Freq/Gain Selection Direct readout LCD; manual or remote selection  
 Pwr; Alarm; Rem; Mute Green LED; Red LED; Yellow LED; Red LED  
 Remote RS232C, 9600 baud (RS485, option Q)  
 (Ethernet Interface, option-W8/W18/W28)

#### Other

RF, IF Connectors Type F (female), BNC (female)  
 10MHz Connectors BNC (female), 50 $\Omega$ /75 $\Omega$  (option E)  
 Alarm/Remote Connector DB9 (female) - NO or NC contact closure on Alarm  
 Size 19 inch, 1RU standard chassis 1.75"high X 16.0" deep  
 Power 100-240  $\pm 10\%$  VAC, 47-63 Hz, 45 W max



**Block Diagram**

#### Available Options

- E - External 10 MHz ref input & output w/ RF insertion
- L - LNB Voltage, +24VDC, 0.4 amps
- Q - RS485 Remote Interface
- T - Temperature Sensor
- W7 - RF (SMA) and IF (BNC) 50 $\Omega$  Monitor Ports
- W8 - Ethernet M&C Remote Interface
- W18 - Ethernet M&C Remote Interface with SNMP
- W28 - Provides Web Browser; also allows direct TCP/IP and/or Telnet® addressability

#### Connectors/Impedance

- B - 75 $\Omega$  BNC (RF), 75 $\Omega$  BNC (IF)
- C - 50 $\Omega$  BNC (RF), 75 $\Omega$  BNC (IF)
- D - 50 $\Omega$  BNC (RF), 50 $\Omega$  BNC (IF)
- N - 50 $\Omega$  N-type (RF), 75 $\Omega$  BNC (IF)
- M - 50 $\Omega$  N-type (RF), 50 $\Omega$  BNC (IF)

\*10°C to 40°C; Specifications subject to change without notice