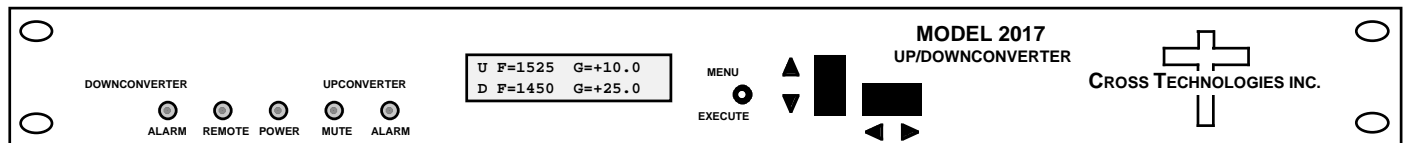


## 2017-02 Up/Downconverter, 950 - 2150 MHz

The 2017-02 L-band Up/Downconverter converts 70 MHz to 950-2150 MHz (Up) and 950-2150 MHz to 70 MHz (Down) in 1 MHz steps with low group delay and flat frequency response. Synthesized local oscillators (LO) provide 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 for up and downconverters (red), remote operation (yellow), and Upconverter mute (yellow). Gain can be manually controlled over a -10 to +30 dB range for the upconverter and over a 0 to +50 dB range for the downconverter 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 and the optional external reference input and output, and Type F female for RF. LNB or SSPB +24 VDC and 10 MHz reference can be inserted on the RF lines as added options. A high stability ( $\pm 0.01$ ppm) option is also available. It is powered by a 100-240  $\pm 10\%$  VAC power supply and housed in a 1.75" X 19" X 16" 1RU chassis.



**Front Panel**

### EQUIPMENT SPECIFICATIONS\*

#### -----UPCONVERTER-----

##### Input Characteristics (IF)

Impedance/Return Loss 75 $\Omega$ /18 dB  
Frequency 70  $\pm$  18 MHz  
Level -40 to -10 dBm

##### Output Characteristics (RF)

Impedance/Return Loss 75 $\Omega$ /12 dB  
Frequency 950 to 2150 MHz  
Level -20 to 0 dBm  
1dB compression +5 dBm

##### Channel Characteristics

Gain range (adjustable) -10 to +30 dB, 1dB steps  
Frequency Sense Non-inverting

#### -----UP and DOWNCONVERTER-----

##### Channel Characteristics

Frequency Response  $\pm 1.5$  dB, in band;  $\pm 0.5$  dB, 36 MHz BW  
Spurious Response  $< -50$  dBC  
Group Delay, max 0.01 ns/MHz<sup>2</sup> parabolic; 0.03 ns/MHz linear; 1 ns ripple

##### Synthesizer Characteristics

Frequency Accuracy  $\pm 1.0$  ppm internal reference ( $\pm 0.01$  ppm, **option H**)  
Frequency Step 1 MHz (125 kHz, **option X**)  
10 MHz In/Out Level 3 dBm  $\pm$  3 dB

Phase Noise @ F (Hz) >	100Hz	1kHz	10kHz	100kHz	1MHz
dBC/Hz	-70	-70	-80	-90	-100

##### Controls, Indicators

Freq/Gain Selection direct readout LCD; pushbutton switches or remote selection  
Power; Alarm; Remote Green LED; Red LED; Yellow LED  
Remote RS232C, 9600 baud

##### Other

RF Connector Type F (female)  
IF Connector BNC (female)  
10 MHz Connectors BNC (female), 50 $\Omega$ /75 $\Omega$   
Alarm/Remote Connector DB9 - 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 watts max

#### -----DOWNCONVERTER-----

##### Input Characteristics (RF)

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

##### Output Characteristics (IF)

Impedance/Return Loss 75 $\Omega$ /18 dB  
Frequency 70  $\pm$  18 MHz  
Level/Max Linear -20 dBm / -10 dBm  
1dB compression -5 dBm

##### Channel Characteristics

Gain range (adjustable) 0 to +50 dB, 1dB steps  
Image Rejection  $> 50$  dB, min  
Frequency Sense Inverting or Non-inverting (selectable)

##### Available Options

E - External 10 MHz ref with RF insertion  
H - High Stability ( $\pm 0.01$ ppm) internal ref  
L - LNB Voltage, +24VDC, 0.4 amps  
V - SSPB Voltage, +24VDC, 2.5 amps  
Q - RS485 Remote Interface  
T - Temperature Sensor  
W8 - Ethernet M&C Remote Interface  
X- 125 KHz frequency steps  
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)  
J - 75 $\Omega$  F-type (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