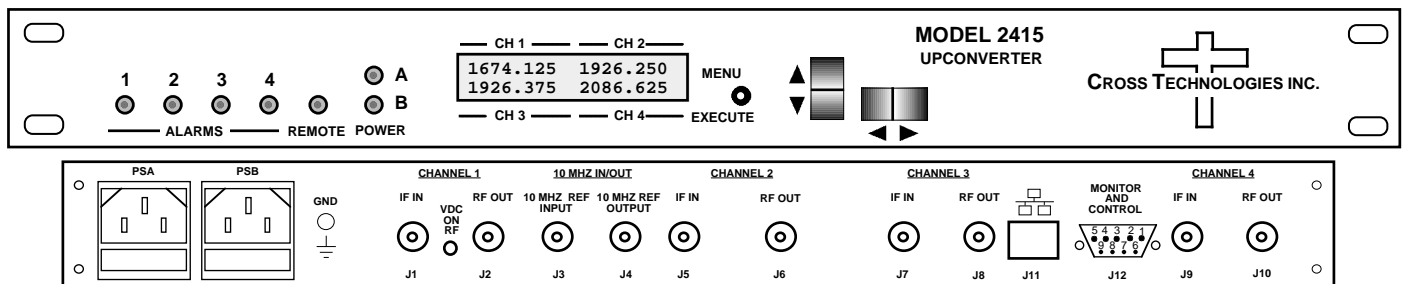


## 2415-402 Upconverter, 0.95 - 2.15 GHz, Four Channel

2415-302 Three Channel • 2415-202 Two Channel • 2415-102 One Channel

The 2415-402 Upconverter has four individual channels, each one converts 70 MHz to 950 to 2150 MHz in 125 kHz steps using PLL in “exact frequency mode” with low group delay and flat frequency response. Synthesized local oscillators (LO) provide frequency selection. Push button switches select the output frequency, gain, and other parameters. Front panel LEDs provide indication of DC power, PLL alarm or Remote operation. Gain is adjustable manually over a 0 to +30 dB range in 0.5 ± 0.5 dB steps. The frequency and gain of each channel are also remotely selectable. Parameter selection and frequency and gain settings appear on the LCD display. Connectors are Type F female for the RF, and BNC female for the IF and external 10 MHz reference input and output. The 10 MHz reference can be inserted on all RF lines. The table below shows available options. SSPB +24 VDC option V1, can be inserted only on the channel 1 RF line. The 2415-402 is powered by a 100-240 ±10% VAC, 47-63 Hz power supply, and is contained in a 1 3/4" X 19" X 16" rack mount chassis.



Front and Rear Panels (2415-402 Four Channel with Options V1, R, W28 shown)

### EQUIPMENT SPECIFICATIONS\*

#### Input Characteristics

Impedance/Return Loss 75Ω/18 dB  
Frequency 70 ± 18 MHz  
Input Level range -35 to -10 dBm

#### Output Characteristics

Impedance/Return Loss 75 Ω /12 dB  
Frequency 950 to 2150 MHz  
Output Level range -20 to 0 dBm  
Output 1 dB compression +10 dBm, max. gain

#### Channel Characteristics

Gain range (adjustable) 0 to +30 dB in 0.5 ± 0.5 dB steps  
Image Rejection > 50 dB, min.  
Frequency Response ±1.5 dB, 950 - 2150 MHz; ± 0.5 dB, 36 MHz BW; ±1.0 dB, 40 MHz BW  
Spurious Response < -50 dBC, in band  
Ch to Ch isolation < -60 dB typ., < -50 dB min.; G=30, -30 dBm input level  
Group Delay, max 0.015 ns/MHz<sup>2</sup> parabolic; 0.05 ns/MHz linear; 1 ns ripple  
Frequency Sense Non-inverting

#### Synthesizer Characteristics

Frequency Accuracy ± 1.0 ppm max over temp (± 0.01 ppm, option H)  
Frequency Step 125 kHz (as low as 1 kHz steps available)

Phase Noise @ Freq (Hz)	10	100	1k	10k	100k	1M
Specification dBC/Hz	-60	-65	-75	-80	-90	-110
Typical dBC/Hz	-67	-69	-77	-83	-97	-117

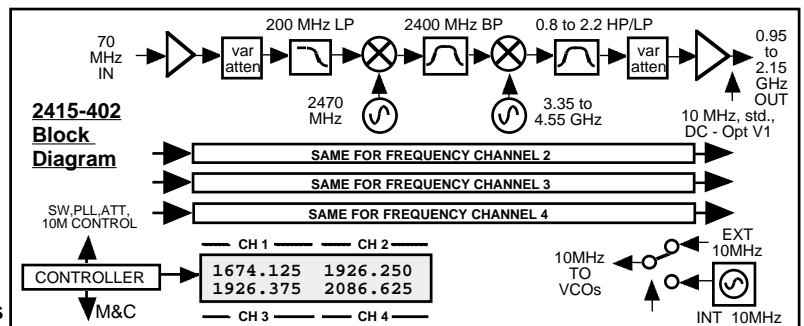
10 MHz Level (In or Out) 3 dBm, ± 3 dB, 75 ohms

#### Controls, Indicators

Freq/Gain Selection direct readout LCD; manual or remote selection  
Power; Alarm; Remote Green LED; Red LED; Yellow LED  
Remote RS232C/RS485 selectable, (Ethernet optional)

#### Other

RF Connector Type F (female)  
IF, 10 MHz Connectors 75Ω BNC (female), 75Ω BNC (female) works with 50 & 75 Ω  
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 ± 10% VAC, 47-63 Hz, 45 watts max



### Available Options

H - High Stability (±0.01ppm) Int Ref  
V1-SSPB DC, CH1(ONLY), +24VDC, 2.5 A  
R - Redundant Power Supply  
W8 - Ethernet; w/Web Browser (WB)  
W18 - Ethernet; w/WB & SNMP  
W28 - Ethernet; w/TCP/IP, Telnet  
W140-x- 140±36 MHz  
W140/70-x- 140±36/70±18 MHz Selectable  
X1002-x - 1 kHz Frequency Step Size

### Connectors/Impedance

STD - 75Ω Type F (RF), 75Ω BNC (IF)  
Bx - 75Ω BNC (RF), 75Ω BNC (IF)  
Cx - 50Ω BNC (RF), 75Ω BNC (IF)  
Dx - 50Ω BNC (RF), 50Ω BNC (IF)  
Jx - 75Ω Type F (RF), 50Ω BNC (IF)  
Kx - 75Ω BNC (RF), 50Ω BNC (IF)

x = # of Channels

Contact Cross for other options