

INSTRUCTION MANUAL

MODEL 2088-24 UPCONVERTER

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MODEL 2088-24 UP CONVERTER**

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MODEL 2088-24 UP CONVERTER

SECTION 1 GENERAL

1.1 Equipment Description - The 2088-24 Upconverter converts a 70 MHz IF signal to 2.0 to 2.4 GHz with no spectrum inversion, low group delay, and flat frequency response. The 70 MHz IF input is mixed with synthesized local oscillator (LO) signals, first to 700 MHz and finally to 2.0 to 2.4 GHz. The frequency is selected using four front panel BCD switches, and is selectable in 1 MHz increments. The reference oscillator is a 25 MHz internal oscillator. Front panel LEDs light when DC power is applied (green) or when a PLL alarm occurs (red). Gain is selectable to be +10 or 0 dB for -20 and -10 dBm in, respectively. Connectors are SMA female for the RF output and BNC female for the IF input. The 2088-24 Upconverter is housed in an 1 3/4" X 19" X 14" deep rack mount chassis.

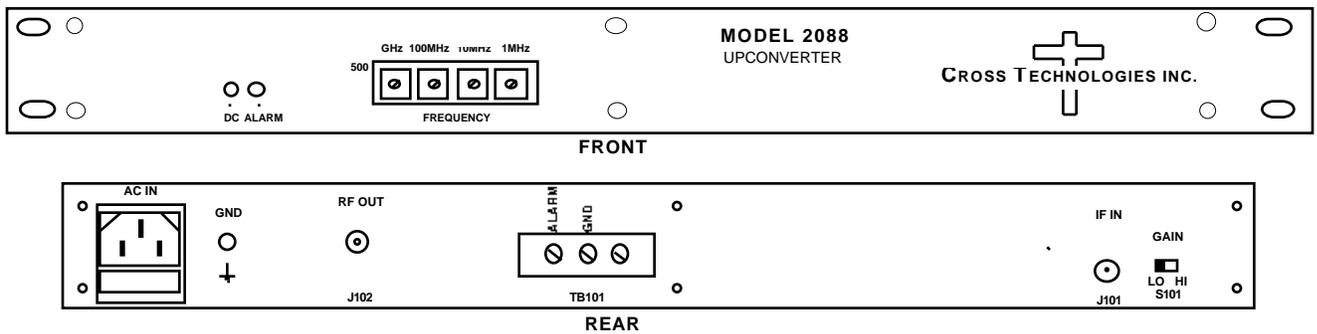


FIGURE 1.1 Model 2088-24 Front and Rear Panels

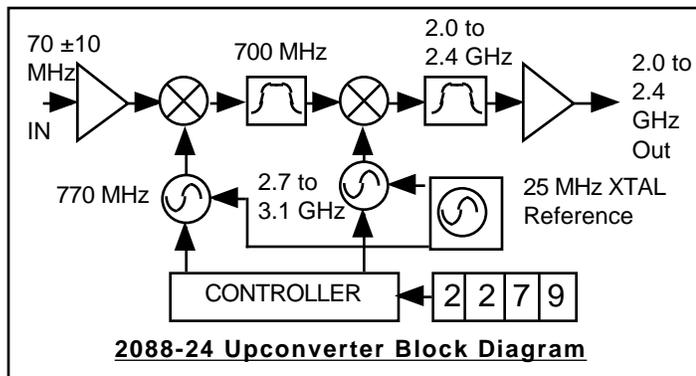


FIGURE 1.2 Model 2088-24 Block Diagram

1.2 Technical Characteristics

TABLE 1.0 2088-24 Upconverter SPECIFICATIONS*

Input Characteristics	
Impedance/RL	50 /18 dB
Frequency	70 ± 10 MHZ, minimum
Input Level range	-10 to -20 dBm (for 0, +10 dB gain, respectively)
Output Characteristics	
Impedance/RL	50 /12 dB
Frequency	2.0 to 2.4 GHZ
Output 1 dB compression	-5 dBm minimum
Channel Characteristics	
Gain	+10 or 0 dB (selectable by rear panel switch, for -20 and -10 dBm in, respectively)
Spurious Response	<-45dBC in band, < -45dBC out of band (at -10 ± 2 dBm output)
Frequency Response	± 1.0 dB, ± 10 MHz increment
Group Delay, max	± 5 ns, ± 6 MHz; ± 15 ns, ± 10 MHz
Synthesizer Characteristics	
Frequency Accuracy	±25 kHz max over temp
Tuning Steps	1.0 MHz
Phase Noise(dBC/Hz)	-75, 10 kHz; -90, 100 kHz; -100, 1 MHz
Controls	
Frequency	BCD Switches, adjustable with small blade screwdriver
Gain select	Rear Panel slide switch selects +10 or 0 dB gain
Indicators	
DC Power	Green LED
PLL Alarm	Red LED
Other	
Connectors, IF, RF	BNC, female, SMA, female
Connector, Alarm	Terminal Strip, Open collector to ground (30 ma, max) on alarm
Size	19 inch standard chassis 1.75"high X 14.0" deep
Power	90 - 260 VAC, 47 - 63 Hz, 40 watts max.

*+10 to +40 degrees C; Specifications subject to change without notice

2.0 Installation

2.1 Mechanical - The 2088-24 consists of two RF Assemblies, and one Controller/LO PCB housed in a 1 RU (1 3/4 inch high) by 14 inch deep chassis. A switching, ± 15 VDC power supply provides power for the assemblies. The 2088-24 can be secured to a rack using the 4 holes on the front panel. Figure 2.0 shows how the 2088-24 is assembled.

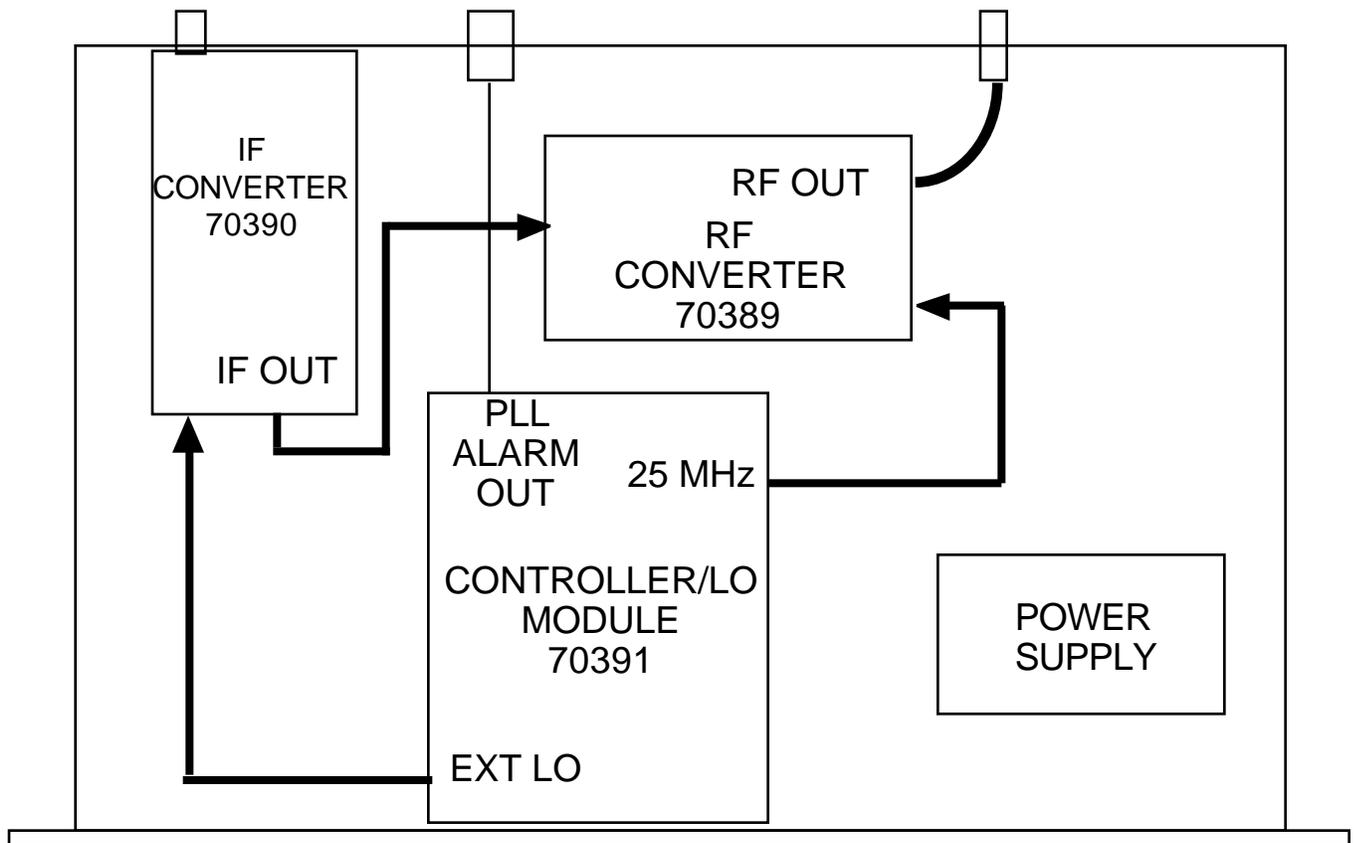


FIGURE 2.0 2088-24 Mechanical Assembly

2.2 Rear Panel Input/Output Signals and Level Control - Figure 2.1 shows the input and output connectors on the rear panel.

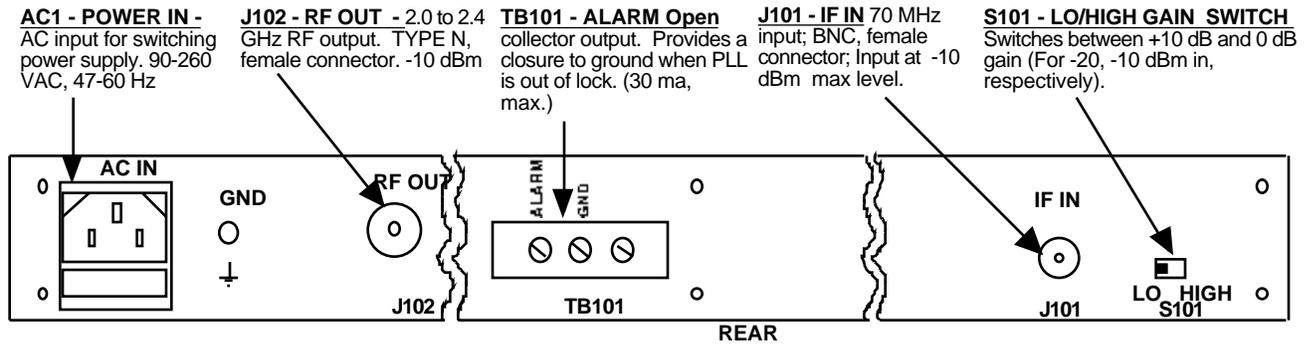


FIGURE 2.1 2088-24 Rear Panel I/Os and Level Control

2.3 Front Panel Controls and Indicators -The following are the front panel controls and indicators.

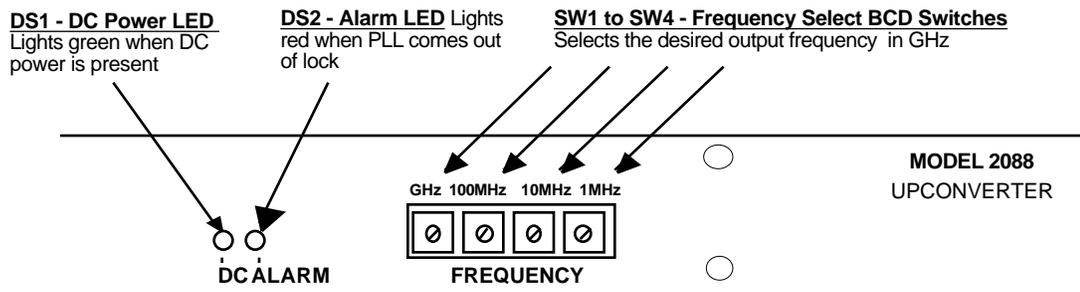


FIGURE 2.2 2088-24 Front Panel Controls and Indicators

2.4 Installation / Operation

2.4.1 Installing and Operating the 2088-24

- 1.) Connect a -10 dBm to -20 dBm signal to IF In, J101 (Figure 2.1).
- 2.) Select +10 (HI) for -20 dBm in or 0 (LO) for -10 dBm in gain with switch S101 (Figure 2.1).
- 3.) Connect the RF OUT, J102, to the external equipment (Figure 2.1).
- 4.) Set BCD switches SW1 to SW4 to the desired output frequency (Figure 2.2).

CAUTION!!! Be sure to set the BCD switches to a valid frequency from 2.000 to 2.400 GHz. If set to a frequency outside this range the LO will tune to either one end of the frequency range or the other but the alarm will NOT turn on.

- 5.) Connect 90 - 260 VAC, 47 - 63 Hz to AC1 on the back panel (Figure 2.1).
- 5.) Be sure DS1 (green, DC Power) is on and DS2 (red, Alarm) is off (Figure 2.2).
- 7.) **AC Fuse** - The fuse is a 5 mm X 20 mm, 2 amp slow blow (Type T) and is inserted in the far slot in the drawer below the AC input as shown in Figure 2.3. There is a spare fuse in the near slot. If a fuse continues to open, the power supply is most likely defective.

2.4.2 Frequency Setting, SW1 to SW5 - The RF output frequency is selected by setting the BCD switches (SW1 to SW4) using a small blade screwdriver on the front panel to the desired frequency. The frequency displayed on the BCD switches is the desired output frequency with 70 MHz IF center frequency input. There is no muting of the output carrier during frequency selection.

CAUTION!!! Be sure to set the BCD switches to a valid frequency from 2.000 to 2.400 GHz. If set to a frequency outside this range the LO will tune to either one end of the frequency range or the other but the alarm will NOT turn on.

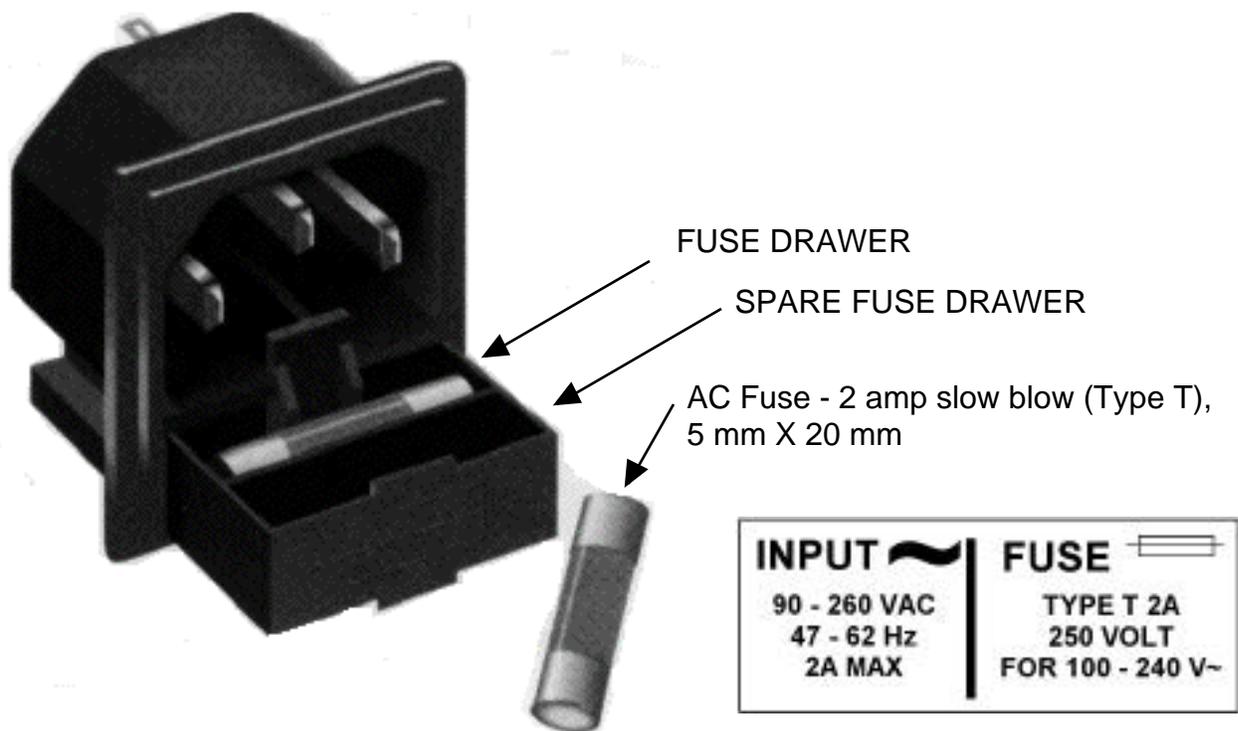


FIGURE 2.3 Fuse Location and Spare Fuse