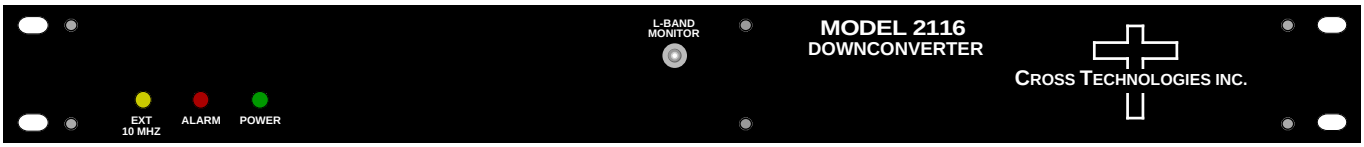
Instruction Manual

Model 2116-267#-1200

Block Downconverter

February 2014, Rev. 0



When ordering parts from Cross Technologies, Inc., be sure to include the equipment model number, equipment serial number, and a description of the part.

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INSTRUCTION MANUAL

MODEL 2116-267#-1200 Block Downconverter

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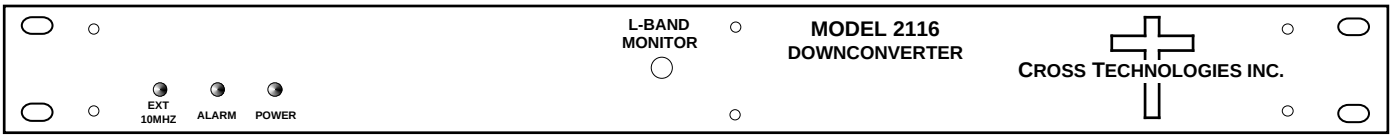
MODEL 2116-267#-1200 Block Downconverter

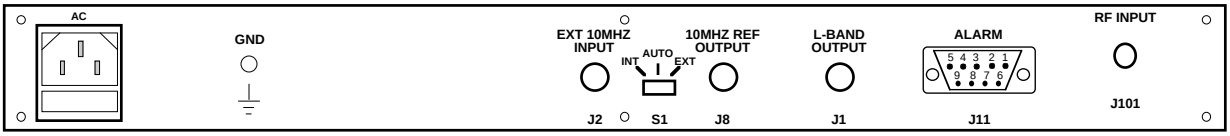
1.0 General

1.1 Equipment Description

The 2116-267#-1200 Block Downconverter converts 26.5534 - 26.8534 GHz to 1200 ± 150 MHz with a local oscillator at 25.5034 GHz. Front panel LEDs provide indication of DC power, external 10 MHz, and PLL alarm. The RF to L-band gain is -5 dB. Connectors are 2.92mm female for the RF and BNC female for the L-Band and external reference input and reference output. A three-way switch controls which 10 MHz reference is being used. In the INT position, the internal reference is used, in the EXT position, the external reference is used, and in the AUTO position, the internal reference is used unless a +3 dBm ± 3 dB, 10MHz reference signal is connected to the external reference input. It is powered by a 100-240 ±10% VAC power supply, and mounted in a 1 3/4" x 19" x 14" rack mount chassis.



Front Panel



Rear Panel

FIGURE 1.1 Model 2116-267#-1200 Front and Rear Panels

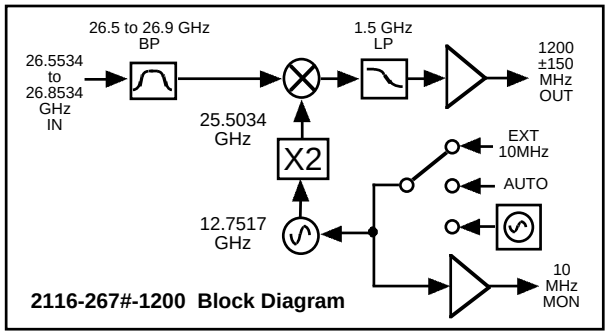


FIGURE 1.2 Model 2116-267#-1200 Downconverter Block Diagram

1.2 Technical Characteristics

TABLE 1.1 2116-267#-1200 Downconverter Specifications*

Input Characteristics	
Impedance / Return Loss	50Ω /14 dB
Frequency	26.5534 to 26.8534 GHz
Noise Figure, maximum	20 dB maximum gain
Input Level Range	-20 to -10 dBm
Output Characteristics	
Impedance / Return Loss	50Ω / 15 dB
Frequency	1200 ± 150 MHz
Output Level Range	-25 to -15 dBm
Output 1 dB Compression	-5 dBm
Channel Characteristics	
Gain at Fc	-5 dB ±2 dB
Image Rejection	> 60 dB, minimum
Spurious, Inband	SIGNAL RELATED <-50 dBc in band, -15 dBm out; SIGNAL INDEPENDENT, <-60 dBm
Spurious, Out of Band	<-50 dBm, (0.5 - 1.04 and 1.36 - 2.0 GHz Out)
Intermodulation	<-50 dBC for two carriers at 4 MHz spacing, each at -25 dBm out
Frequency Response	±1.5 dB, 1200 ± 150 MHz out; ± 0.5 dB, 40 MHz BW
Frequency Sense	Non-inverting
LO Characteristics	
LO Frequency	25.5034 GHz
Frequency Accuracy	± 0.01 ppm maximum over temp internal reference; external reference input
10 MHz Level	+3 dBm, ± 3 dB, 75 ohms, External In or Internal out

Phase Noise @ Frequency (Hz)	100	1kHz	10kHz	100kHz	1MHz
dBC/Hz	-60	-70	-80	-90	-100

Controls, Indicators	
External 10 MHz	Yellow LED, indicates ext. 10 MHz reference selected (rear panel DPDT switch)
PLL Alarm	Red LED; External Contact Closure
Power	Green LED
Other	
RF Connector	2.92 mm (female), 50Ω
L-Band Connector	BNC (female), 50Ω
10 MHz Connectors	BNC (female), 75Ω, works with 50 or 75 ohms
Alarm Connector	DB9 - NO or NC contact closure on Alarm
Size	19 inch, Standard Chassis 1.75” high x 14.0” deep
Power	100-240 ±10% VAC. 47 - 63 Hz. 25 watts maximum
Available Options	
- W71	IF Monitor Port (-20 dB, Front)
- W31	External Temperature 0C to +50C
Connector Options	See Table 2.2 - PG. 6

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

2.0 Installation

2.1 Mechanical

The 2116-267#-1200 consists of a PCB and an RF assembly housed in a 1 RU (1 3/4 inch high) by 12 inch deep chassis. A switching, ± 12, +24, +5 VDC power supply provides power for the assemblies. The 2116-267#-1200 can be secured to a rack using the 4 holes on the front panel. Figure 2.0 shows how the 2116-267#-1200 is assembled.

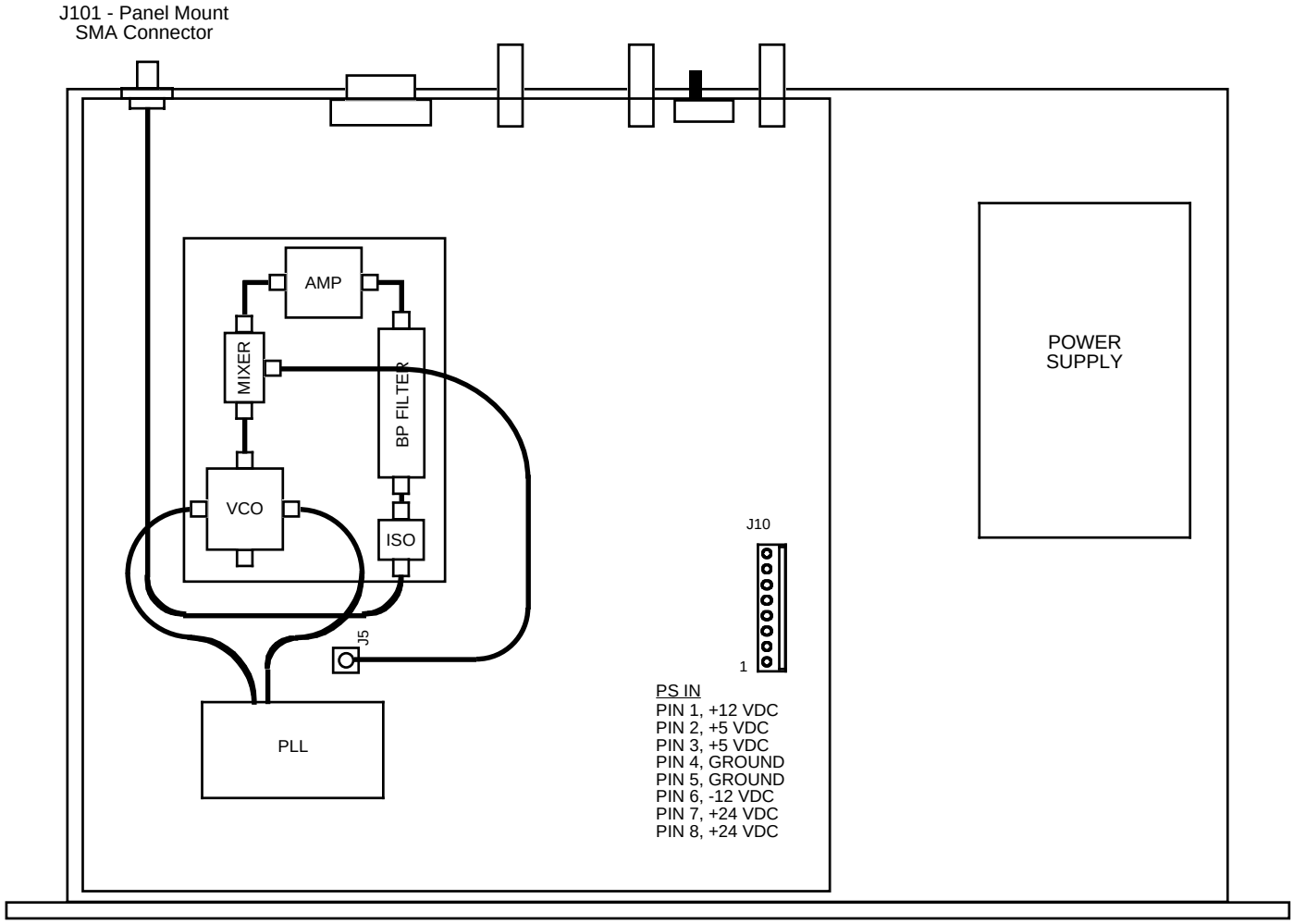


FIGURE 2.0 2116-267#-1200 Mechanical Assembly

2.2 Rear Panel Input/Output Signals

Figure 2.1 shows the input and output connectors on the rear panel.

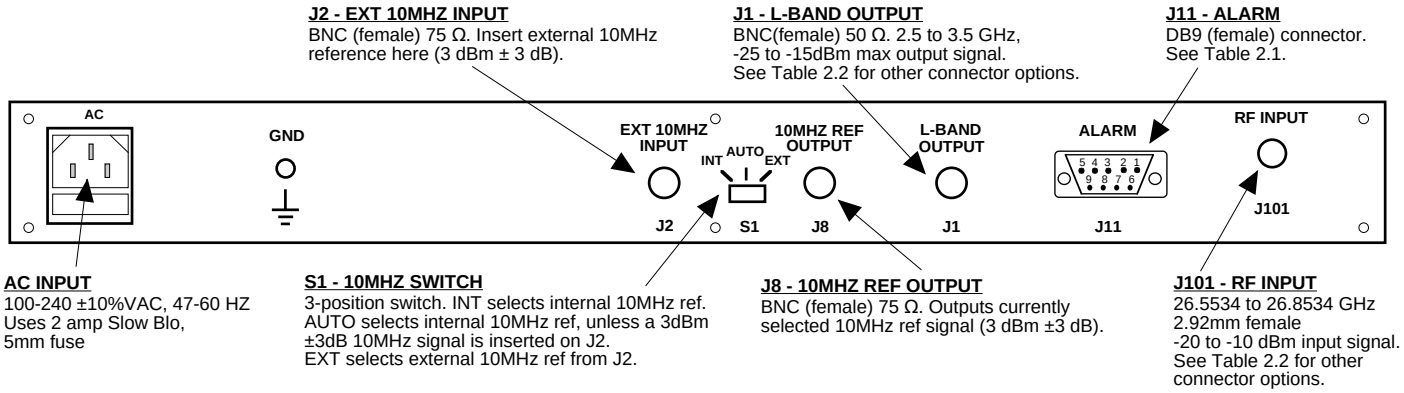


FIGURE 2.1 2116-267#-1200 Rear Panel I/O's

TABLE 2.1 J11 Pinouts (DB9)

Pin	Function
1	Not Used
2	Not Used
3	Not Used
4	Not Used
5	GND
6	Alarm Relay: Common
7	Alarm Relay: Normally Open
8	Not Used
9	Alarm Relay: Normally Closed

TABLE 2.2 Available Connector Options

Option	RF	L-Band
S27	50Ω 2.92mm	75Ω BNC
S2F	50Ω 2.92mm	75Ω F-Type
S2N	50Ω 2.92mm	50Ω N-Type
S2S	50Ω 2.92mm	50Ω SMA

2.3 Front Panel Indicators

Figure 2.2 shows the front panel indicators.

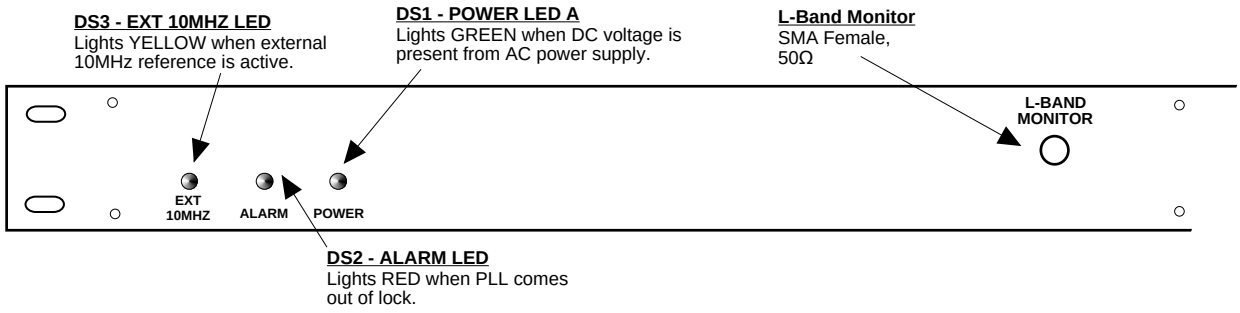


FIGURE 2.2 2116-267#-1200 Front Panel Controls and Indicators

2.4 Installation / Operation

2.4.1 Installing and Operating the 2116-267#-1200 Downconverter

1. Connect a -20 dBm to -10 dBm signal to RF INPUT, J101 (Figure 2.1).
2. Connect the L-Band OUTPUT (-25 to -15 dBm), J1, to the external equipment.
3. Connect 100-240 ±10% VAC, 47 - 63 Hz to AC connector on the back panel.
4. Be sure DS1 (green, DC Power) is on and DS2 (red, Alarm) is off (Figure 2.2).
5. Select either INT (for internal 10MHz ref), AUTO (for internal 10MHz ref UNLESS an external 10MHz, 3 dBm signal is connected to J2), or EXT (for external 10MHz, 3 dBm reference that is inserted at J2) on rear panel switch S1 (Figure 2.1).
6. If EXT is selected or AUTO is selected and there is a 10MHz, 3 dBm signal at J2, check that DS3 (yellow, Ext 10MHZ) is on (Figure 2.2).
7. Check that a 10MHz, 3 dBm ±3 dB signal is present at the 10MHZ REF OUTPUT (J8) (Figure 2.1).
8. <u>AC Fuse</u> - 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.

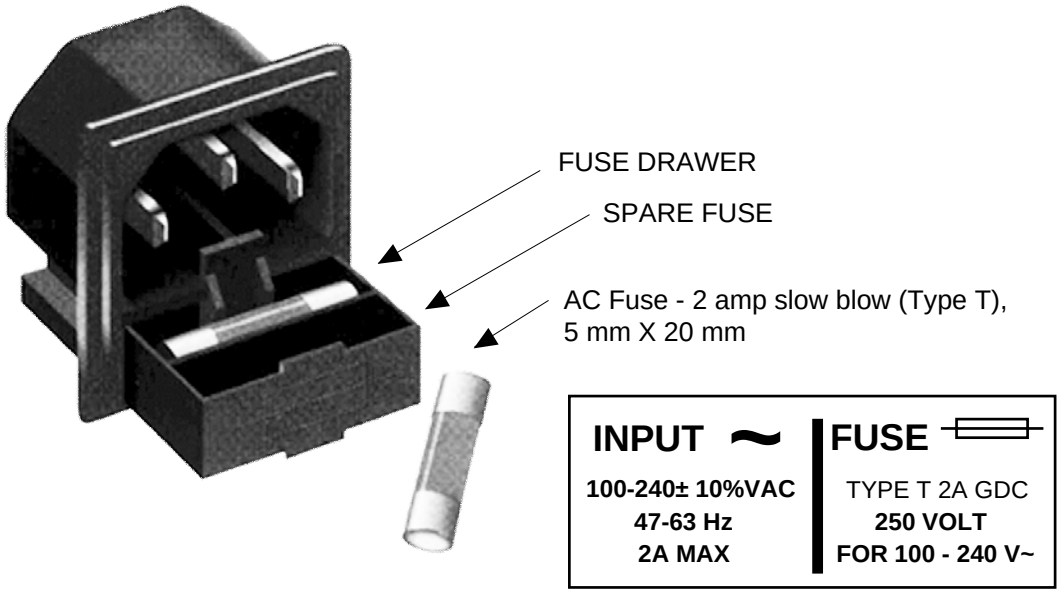


FIGURE 2.3 Fuse Location and Spare Fuse

2.5 Environmental Use Information

A. **Rack-Mounting** - To mount this equipment in a rack, please refer to the installation instructions located in the user manual furnished by the manufacturer of your equipment rack.

B. **Mechanical Loading** - Mounting of equipment in a rack should be such that a hazardous condition does not exist due to uneven weight distribution.

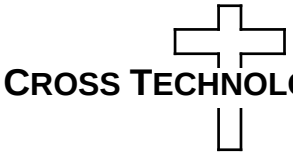
C. **Elevated Operating Ambient Temperature** - If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack may be greater than room ambient temperature. Therefore, consideration should be given to Tmra.

D. **Reduced Air Flow** - Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised. Additional space between units may be required.

E. **Circuit Overloading** - Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of circuits could have on over current protection and supply wiring. Appropriate consideration of equipment name plate rating should be used, when addressing this concern.

F. **Reliable Earthing** - Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connection to the Branch (use of power strips).

G. **Top Cover** - There are no serviceable parts inside the product so, the Top Cover should not be removed. If the Top Cover is removed the ground strap and associated screw MUST BE REINSTALLED prior to Top Cover screw replacement. FAILURE TO DO this may cause INGRESS and/or EGRESS emission problems.



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