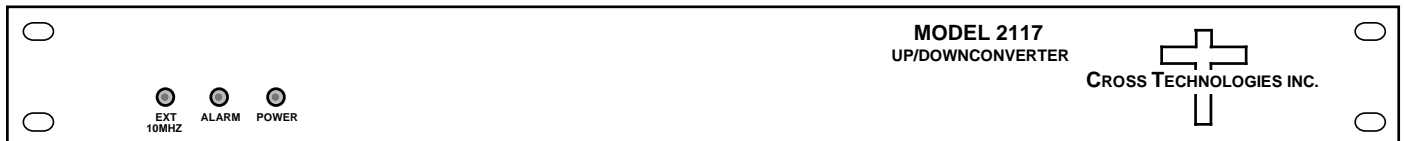


Instruction Manual

Model 2117-5842 Up/Downconverter

December 2020, Rev. O



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INSTRUCTION MANUAL

MODEL 2117-5842 Up/Downconverter

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MODEL 2117-5842 Up/Downconverter

1.0 General

The 2117-5842 Up/Downconverter converts 0.95 - 1.75 GHz to 3.40 - 4.20 GHz and 5.85-6.65 GHz to 0.95 - 1.75 GHz, with inverting spectrums. Front panel LEDs provide indication of DC Power, External 10 MHz, and PLL Alarm. The gain is +20 dB for the upconverter and +20 dB for the downconverter. Connectors are Type N female for the RF output and input, BNC female for the L-band input and output and external reference input and reference output. A three-way switch controls which 10 MHz reference is being used. In the AUTO position, the internal reference is used unless a +3 dBm \pm 3 dB, 10MHz reference signal is connected to the external reference input. The 2117 is powered by a 100-240 \pm 10% VAC power supply, and in a 1 3/4" X 19" X 14" rack mount chassis.

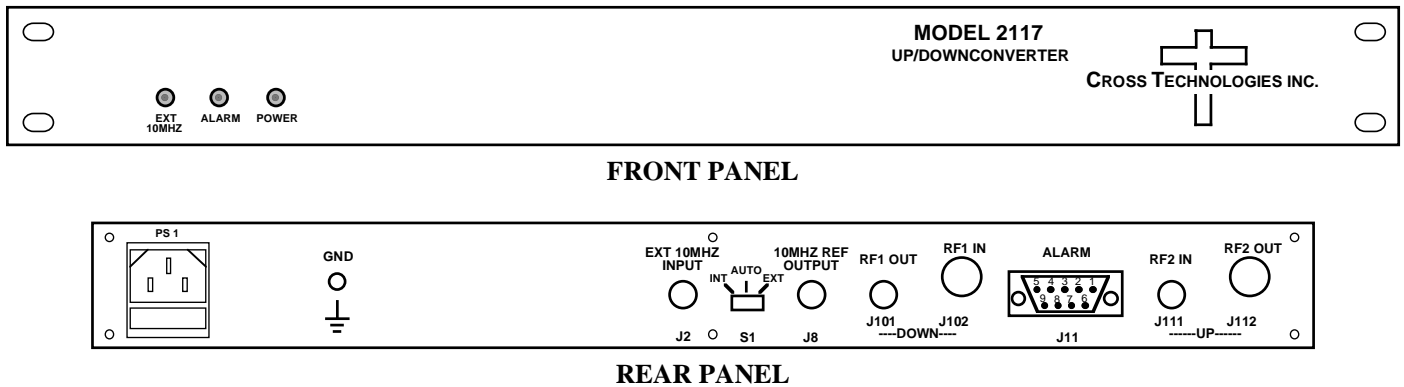


FIGURE 1.1 Model 2117-5842 Front and Rear Panels

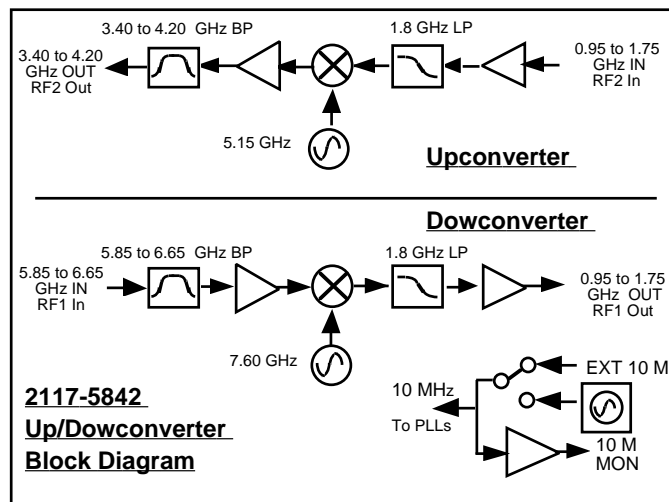


FIGURE 1.2 Model 2117-5842 Up/Downconverter Block Diagram

1.2 Technical Characteristics

TABLE 1.0 2117-5842 Up/Downconverter Specifications*

EQUIPMENT SPECIFICATIONS*		
Input Characteristics	UP, C	DOWN, C
Impedance/Return Loss	50Ω/14 dB	50Ω/14 dB
Frequency	0.95-1.75 GHz	5.85-6.65 GHz
Noise Figure, Max.	20 dB	12 dB
Input Level range	-40 to -20 dBm	-55 to -35 dBm
Output Characteristics		
Impedance/Return Loss	50 Ω /14 dB	50 Ω /14 dB
Frequency (GHz)	3.40-4.20 GHz	0.95-1.75 GHz
Output Level Range	-20 to 0 dBm	-35 to -15 dBm
1 dB comp, max gain	+10 dBm	-5 dBm
Mute @ 0 dBm out	>50 dB	N/A
Channel Characteristics		
Gain, at Fc	+20 ±1 dB	+20 ±1 dB
Image Rejection	>60 dBc	>60 dBc
Spurious, Inband, sig. rel.	<-50 dBc, 0dBm	<-50 dBc, -15dBm
Spurious, Inband, sig. ind.	<-50 dBc, 0dBm	<-50 dBc, -15dBm
Spurious, Out of band	<-50 dBm, 0dBm	<-60 dBm, -15dBm
2 tone 4MHz del, @>ea	<-50 dBc,@-10ea	<-50 dBc,@-25ea
Frequency Resp. band	±2 dB	±2 dB
Frequency Resp. 40 MHz	± 0.5 dB	± 0.5 dB
Frequency Sense	Inverting	Inverting

LO Characteristics

LO Frequency Downconverter - 7.60 GHz; Upconverter - 5.15 GHz
 Frequency Accuracy ± 0.01 ppm max over temp internal reference; ext. ref. input
 10 MHz level +3 dBm, ± 3 dB, 75 ohms, External In or Internal out

Phase Noise @ Freq (Hz)	100 MHz	1kHz	10kHz	100kHz	1MHz
dBC/Hz	-70	-80	-85	-100	-110

Controls, Indicators

INT/AUTO/EXT Switch Selects internal or external 10 Mhz 9 (rear panel DP3T switch)
 Ext 10 MHz Yellow LED, indicates external 10 MHz reference selected
 PLL Alarm Red LED, External contact closures for Band 1 & Band 2
 Power Green LED

Other

RF In/Out, L-BAND Con. N-type (female), 50Ω / BNC (female), 50Ω
 10 MHz connectors BNC (female), 75Ω connector; works with 50Ω or 75Ω
 Alarm Connector DB9 - NO or NC contact closure on Alarm
 Size 19 inch standard chassis 1.75" high X 14" deep
 Power 100-240 ± 10% VAC, 47 - 63 Hz, **50** watts maximum

Options

Connector Options See TABLE 2.2 (Page 7)

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

2.0 Installation

2.1 Mechanical - The 2117-5842 consists of one RF PCB housed in a 1 RU (1 3/4 inch high) by 14 inch deep chassis. A switching, ± 12 , +24, +5 VDC power supply provides power for the assemblies. The 2117-5842 can be secured to a rack using the 4 holes on the front panel. Figure 2.0 shows how the 2117-5842 is assembled.

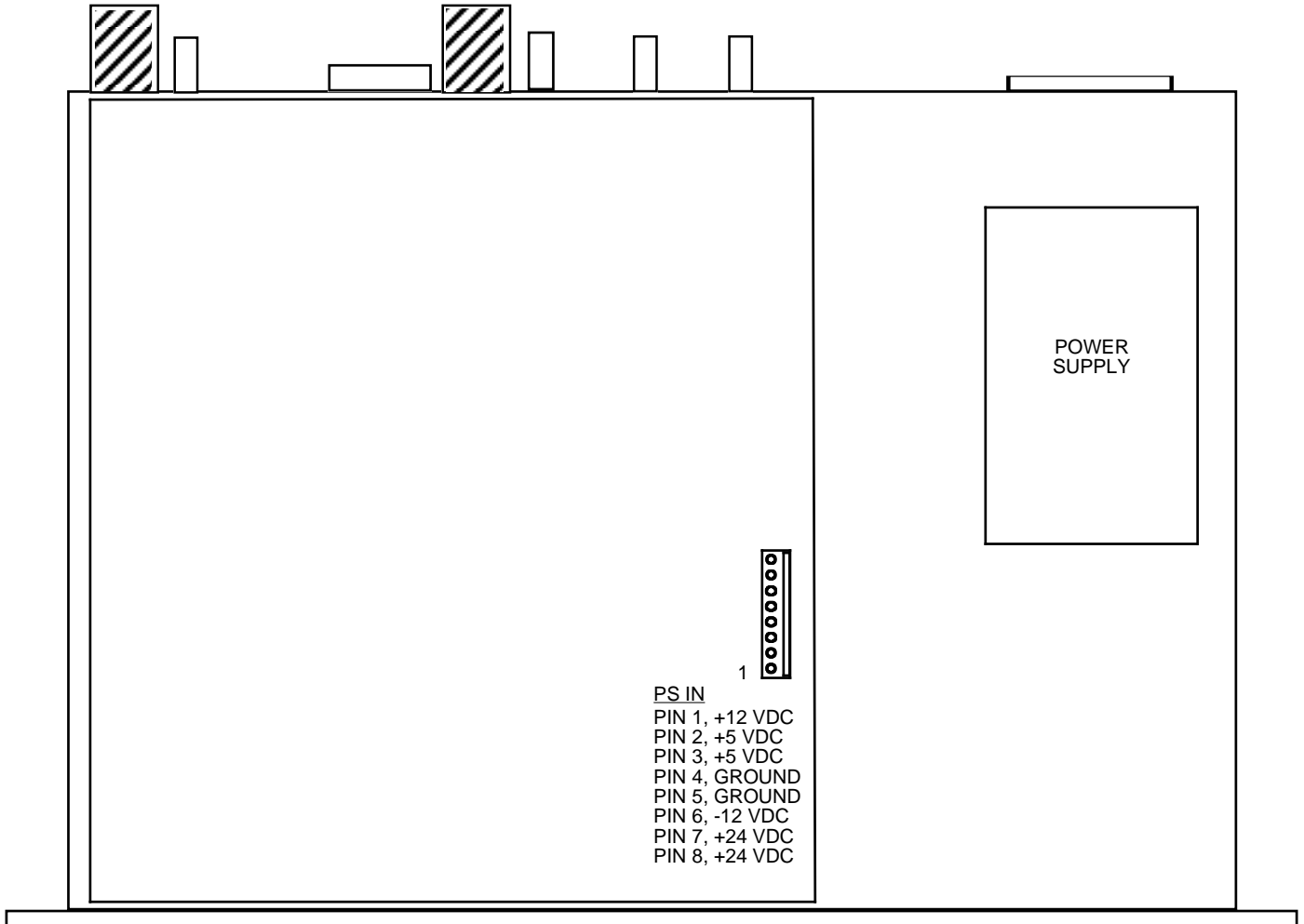


FIGURE 2.0 2117-5842 Mechanical Assembly

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

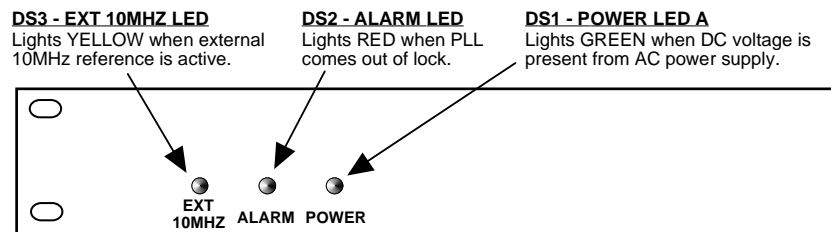
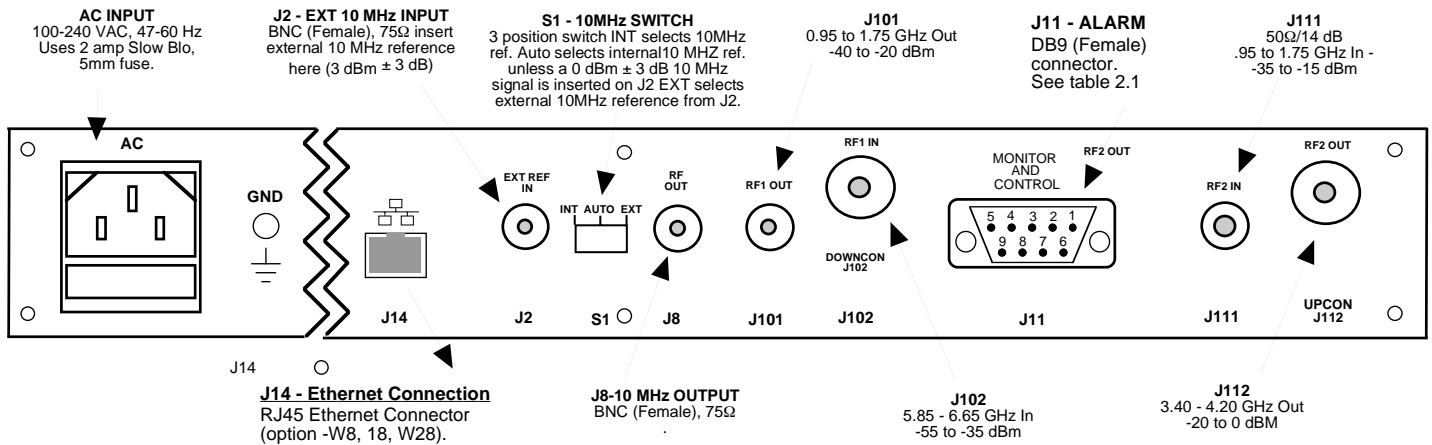


FIGURE 2.2 2117-5842 Front Panel Controls and Indicators

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

FIGURE 2.1 2117-5842 Rear Panel I/O's

Pin#	Function
1	DC input
2	NC
3	DC input
4	NC
Shell	Ground

FIGURE 2.3 2117-5842 DC1 Pinouts

TABLE 2.2	Available Options
	Available Connector Options
NF	50Ω N-Type (RF), 75Ω F-Type (L-Band)
N	50Ω N-Type (RF), 75Ω BNC (L-Band)
NN	50Ω N-Type (RF), 50Ω N-Type (L-Band)
SS	50Ω SMA (RF), 50Ω SMA (L-Band)

FIGURE 2.2 2117-5842 Available Options

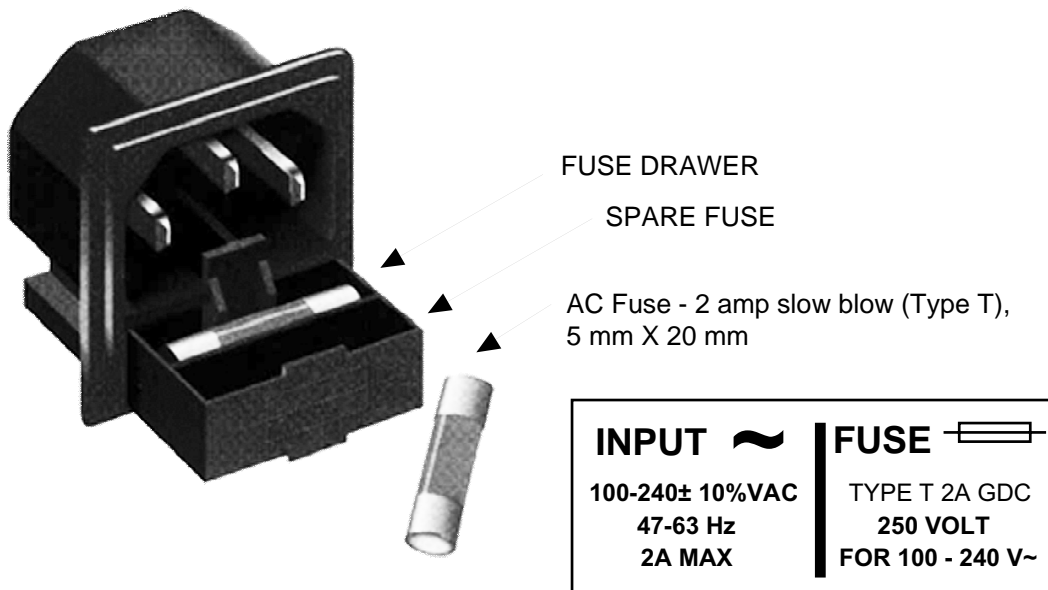


FIGURE 2.3 Fuse Location and Spare Fuse

2.4 Installation / Operation

2.4.2 Installing and Operating the 2117-5842 Downconverter

- 1.) Connect a -55 dBm to -35 dBm signal to RF INPUT, J102 (Figure 2.1).
- 2.) Connect the L-BAND OUTPUT, RF1 OUT, J101 to the external equipment.
- 3.) Connect 100-240 \pm 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 a external 10MHz, 0 dBm signal is connected to J2), or EXT (for external 10MHz, 0 dBm ref 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, 0 dBm signal at J2, check that DS3 (yellow, Ext 10 MHz) is on (Figure 2.2).
- 7.) Check that a 10MHz, 0 dBm \pm 3 dB signal is present at the 10 MHz REF OUTPUT (J8) (Figure 2.1).
- 8.) **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

2.4.3 Installing and Operating the 2117-5842 Upconverter

1. Connect a -35 dBm to -15 dBm signal to L-BAND INPUT, RF2 IN, J111 (Figure 2.1).
2. Connect the RF OUTPUT, J112, to the external equipment.
3. Connect 100-240 \pm 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 a external 10MHz, 3 dBm signal is connected to J2), or EXT (for external 10MHz, 3 dBm ref 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 \pm 3 dB signal is present at the 10MHZ REF OUTPUT (J8) (Figure 2.1).
8. **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.

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. (Maximum Recommended Ambient Temperature)
- 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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