Instruction Manual

Model 2115-286300

Block Upconverter

October 21, 2026 Rev. 0



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INSTRUCTION MANUAL

MODEL 2115-286300 Block Upconverter

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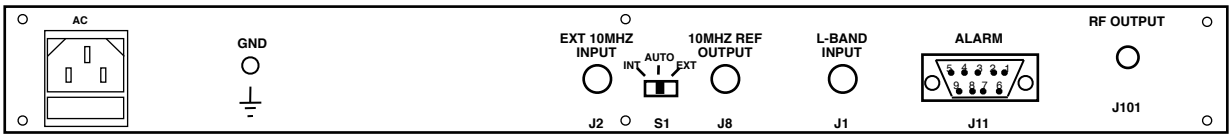
1.0 General

1.1 Equipment Description

The 2115-286300 Block Upconverter converts 1.70 - 3.10 GHz to 28.60- 30.00 GHz with a local oscillator at 26.90 GHz. Front panel LEDs provide indication of DC Power, External 10 MHz, and PLL Alarm. The gain is +20 dB. Connectors are 2.92 mm female for the RF out and BNC female for the RF in (designated L-Band) and external reference input and reference output. A three-way switch controls the 10 MHz reference 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, 10 MHz reference signal is connected to the external reference input. It is powered by a 100-240 ± 10% VAC power supply, and in a 1 3/4" X 19" X 14" rack mount chassis.



FRONT PANEL



REAR PANEL

FIGURE 1.1 Model 2115-286300 Front & Rear Panels

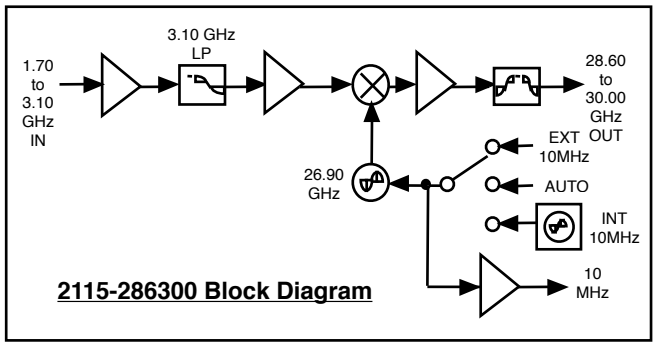


FIGURE 1.2 Model 2115-286300 Upconverter Block Diagram

1.2 Technical Characteristics

TABLE 1.1 2115-286300 Block Upconverter Specifications*					
Input Characteristics (designated L-Band)					
Impedance / Return Loss	50Ω / 14 dB				
Frequency	1.70 to 3.10 GHz				
Noise Figure, Maximum	20 dB maximum gain at Fc				
Input Level Range	-40 to -25 dBm at Fc				
Input 1 dB Compression	-15 dBm at Fc				
Output Characteristics (RF)					
Impedance / Return Loss	50Ω / 14 dB				
Frequency	28.60 to 30.00 GHz				
Output Level Range	-20 to -5 dBm at Fc				
Output 1 dB Compression	+5 dBm at Fc				
Phase Noise @ F (Hz) >	100 Hz	1kHz	10kHz	100kHz	1MHz
dBc/Hz	-70	-75	-80	-90	-110
Controls, Indicators					
INT / AUTO / EXT Switch	Selects Internal or External 10 MHz (Rear Panel DP3T Switch)				
External 10 MHz	Yellow LED, Indicates External 10 MHz Reference Selected				
PLL Alarm	Red LED, External Contact Closure				
Power	Green LED				

(Continued next page)

TABLE 1.1 2115-286300 Block Upconverter Specifications* (continued)	
Channel Characteristics	
Gain	+20 ±1 dB at Fc
Image Rejection	> 60 dB, minimum
Spurious, Inband	SIGNAL RELATED <-60 dBc in band, -5 dBm out; SIGNAL INDEPENDENT,<-60 dBm;
Spurious, Out of Band	<-50 dBm, 27.6-28.6 and 30.0-31.0 GHz out; LO, <-35 dBm, <-40 dBm typical
Intermodulation	< -55 dBc for two carriers at Fc ±2 MHz each at -10 dBm out
Frequency Response	±2.0 dB, 28.60- 30.00 GHz out; ± 0.5 dB, 40 MHz BW
Frequency Sense	Non-inverting
LO Characteristics	
LO Frequency	26.90 GHz
Frequency Accuracy	± 0.01 ppm maximum over temp internal reference; external reference input
10 MHz In/Out Level	3 dBm, ±3 dB
Other	
RF In Connector	BNC (female), 50Ω (designated L-Band)
RF Out Connector	2.92 mm (female), 50Ω
10 MHz Connectors	BNC (female), 75Ω Connector; Works for 50Ω or 75Ω
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	
-N	50Ω N-type (RF), 75Ω BNC (L-Band)
- NN	50Ω N-type (RF), 50Ω N-Type (L-Band)
- NS	50Ω sma (RF), 50Ω N-Type (L-Band)
*+0 to +40 degrees C; Specifications subject to change without notice.	© 2026 Cross Technologies, Inc.

2.0 Installation

2.1 Mechanical - The 2115-286300 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 2115-286300 can be secured to a rack using the 4 holes on the front panel. Figure 2.0 shows how the 2115-286300 is assembled.

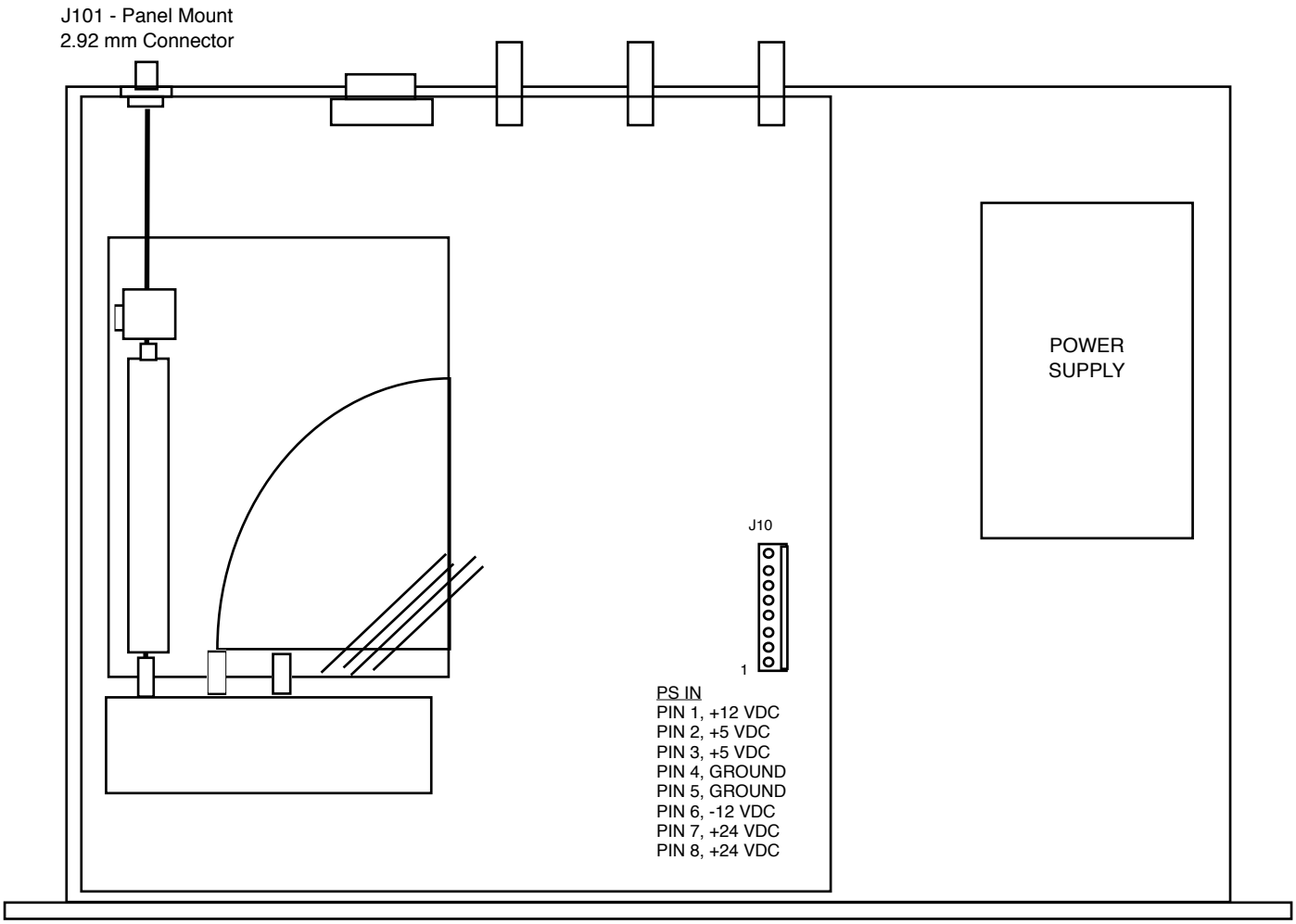


FIGURE 2.0 2115-286300 Mechanical Assembly

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

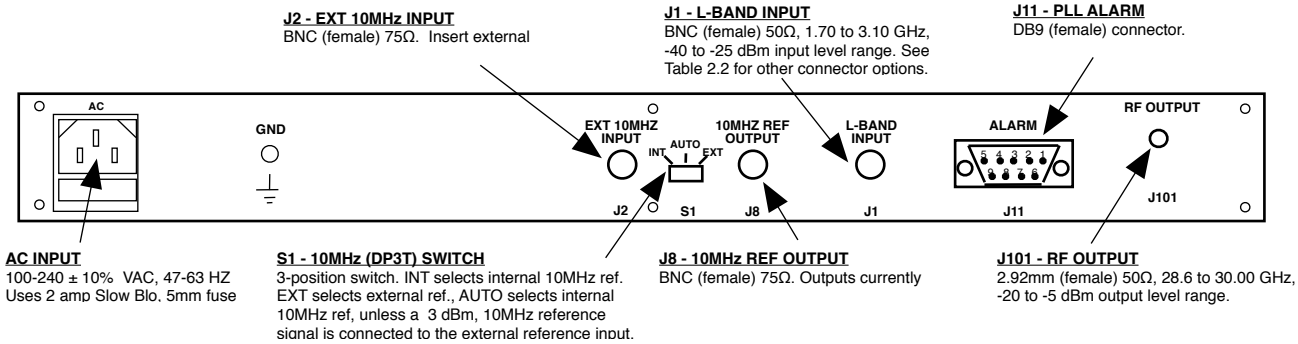


FIGURE 2.1 2115-286300 Rear Panel I/O's

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

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

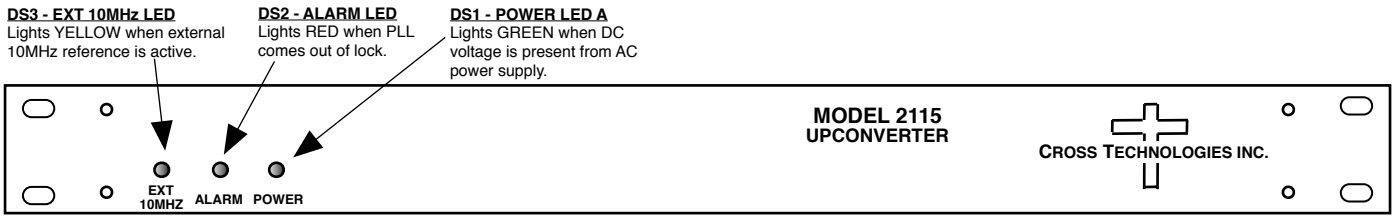


FIGURE 2.2 2115-286300 Front Panel Controls and Indicators

2.4 Installation / Operation

2.4.1 Installing and Operating the 2115-286300 Upconverter

1. Connect a -40 dBm to -25 dBm signal to L-BAND INPUT, J1 (Figure 2.1).
2. Connect the RF OUTPUT, J101, 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 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 ±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.

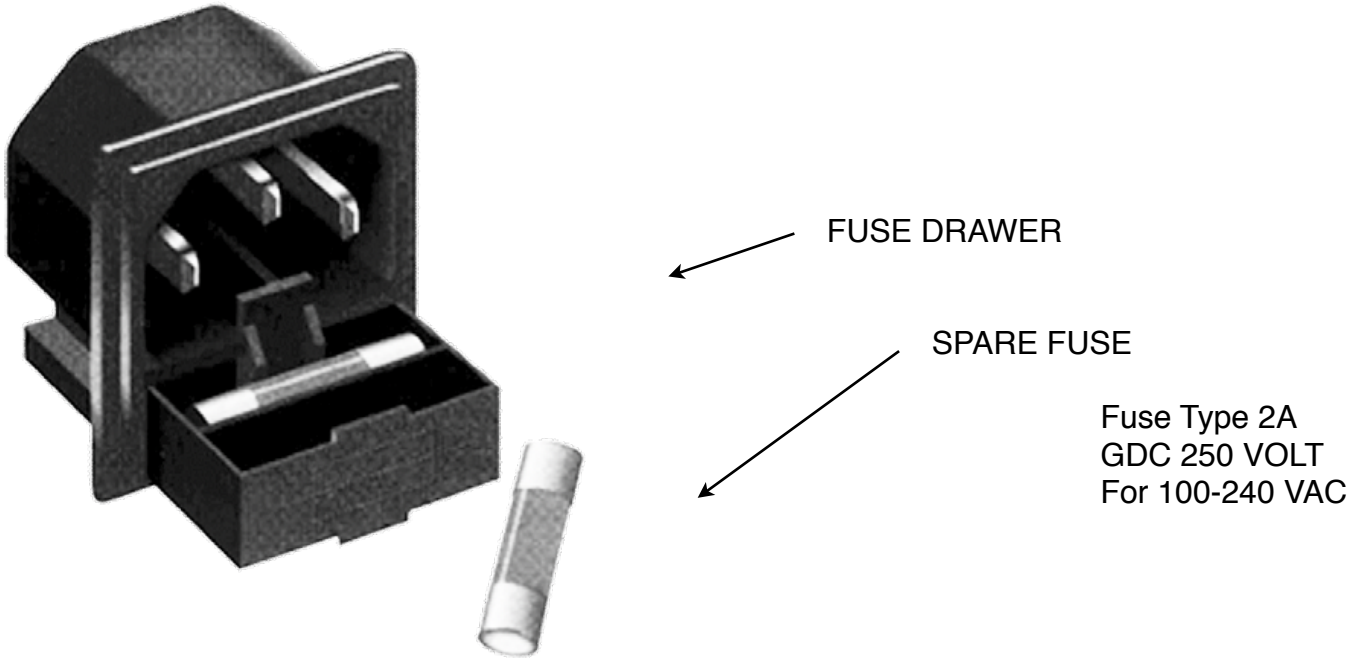


FIGURE 2.3 Fuse Location and Spare Fuse

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 (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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