

Instruction Manual

Model 2083-2114-01

Dual Translator, Non-Inverting

June 2018, Rev. 0



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INSTRUCTION MANUAL

MODEL 2083-2114-01 Dual Translator, Non-Inverting

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2083-2114-01 Dual Translator

1.0 General

1.1 Equipment Description

2083-2114-01 Dual Translator - Consists of two converters (non-inverted spectrums) each of which convert a 1.65 - 2.10 GHz signal to a 0.95 - 1.4 GHz (LO = 0.70 GHz). The two 1.65 - 2.10 GHz inputs are bandpass filtered and then mixed with a 0.70 GHz synthesized local oscillator (LO) signal to 0.95-1.4 GHz. The mixer output is applied to the output filters and amplifier.

The converters have a nominal gain of 0 dB. All connectors are 75 ohm BNC female. Front panel LEDs light when DC power is applied (green) and when a PLL alarm occurs (red). The 2083-2114-01 is powered by a 100-240 ± 10% VAC power supply and housed in a 1.75" X 19" X 16" 1RU chassis.

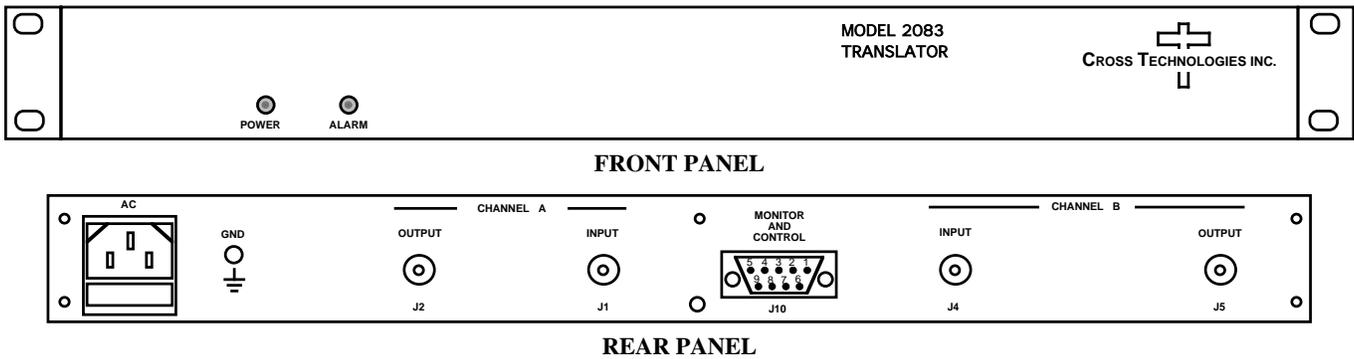


FIGURE 1.1 Front and Rear Panels

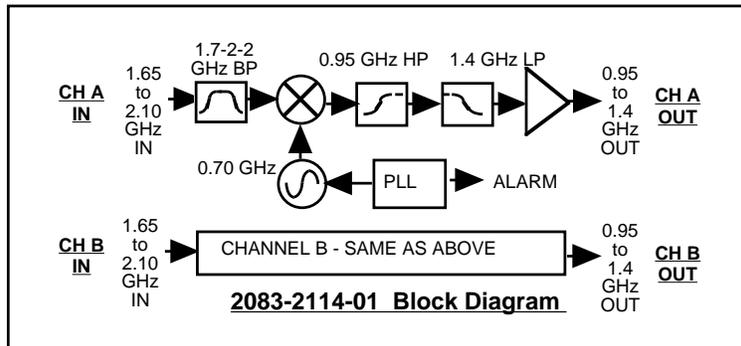


FIGURE 1.2 Block Diagram

1.2 Technical Characteristics

TABLE 1.0 2083-2114-01 Dual Translator Specifications**					
Input Characteristics					
Input Impedance/RL	75Ω / 12 dB				
Frequency	1.65 - 2.10 GHz				
Input Level	-20 to -40 dBm				
Input, 1 dB Compression	0 dBm				
Output Characteristics					
Impedance/RL	75Ω / 12 dB				
Output 1 dB Compression	0 dBm				
Output Level Range	-20 to -40 dBm				
Frequency	0.95 - 1.4 GHz				
Channel Characteristics					
Gain at Band Center	0 dBm ±2 dB, fixed				
Frequency Response	±1.5 dB, 0.95 - 1.4 GHz out; ±0.7 dB, any 36 MHz increment				
Frequency Sense	Non-inverting (1.65 GHz Translates to 0.95 GHz, 2.10 GHz Translates to 1.40 GHz)				
Intermodulation	<-50 dBC for two carriers each at -23 dBm out				
Spurious Response	< -25 dBC for 4XLO - Fin; < -12 dBC for 5XLO - Fin; <- 40 dBC typ. for other spurs, inband, (for 1.65-2.10 GHz input to 0.95 to 1.4 GHz out)				
0.95-1.4 GHz Feedthru	< -30 dBC, minimum, <-40 dBC, goal				
1.725-2.2 GHz Feedthru	< -10 dBC, minimum, <-20 dBC, goal				
LO Rejection	<-40 dBm, LO, 2XLO (1.4 GHz) at the output				
Synthesizer Characteristics					
LO Frequency	0.70 GHz				
Frequency Accuracy	±1.0 ppm maximum				
Phase Noise @ Frequency	100 MHz	1kHz	10kHz	100kHz	1MHz
dBC/Hz	-70	-80	-80	-95	-110
Indicators					
DC Power; PLL Alarm	Green LED; Red LED				
Other					
Connectors	RF in and RF Out, BNC, Female, 75 ohm				
Connector, Alarm	DB9 - 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, 15 watts maximum				
Connector Options	See Table 2.2 (Page 7)				
** +10 to +40 degrees C; 2000 meters max. elevation; 80% max. humidity; Specifications subject to change without notice					

1.3 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.

2.0 Installation

2.1 Mechanical

The 2083-2114-01 consists of one RF/Controller PCB housed in a 1 RU (1 3/4 inch high) by 16 inch deep chassis. A switching, ± 12 , $+24$, $+5$ VDC power supply provides power for the assemblies. The 2083-2114-01 can be secured to a rack using the 4 holes on the front panel. Figure 2.0 shows how the 2083-2114-01 is assembled.

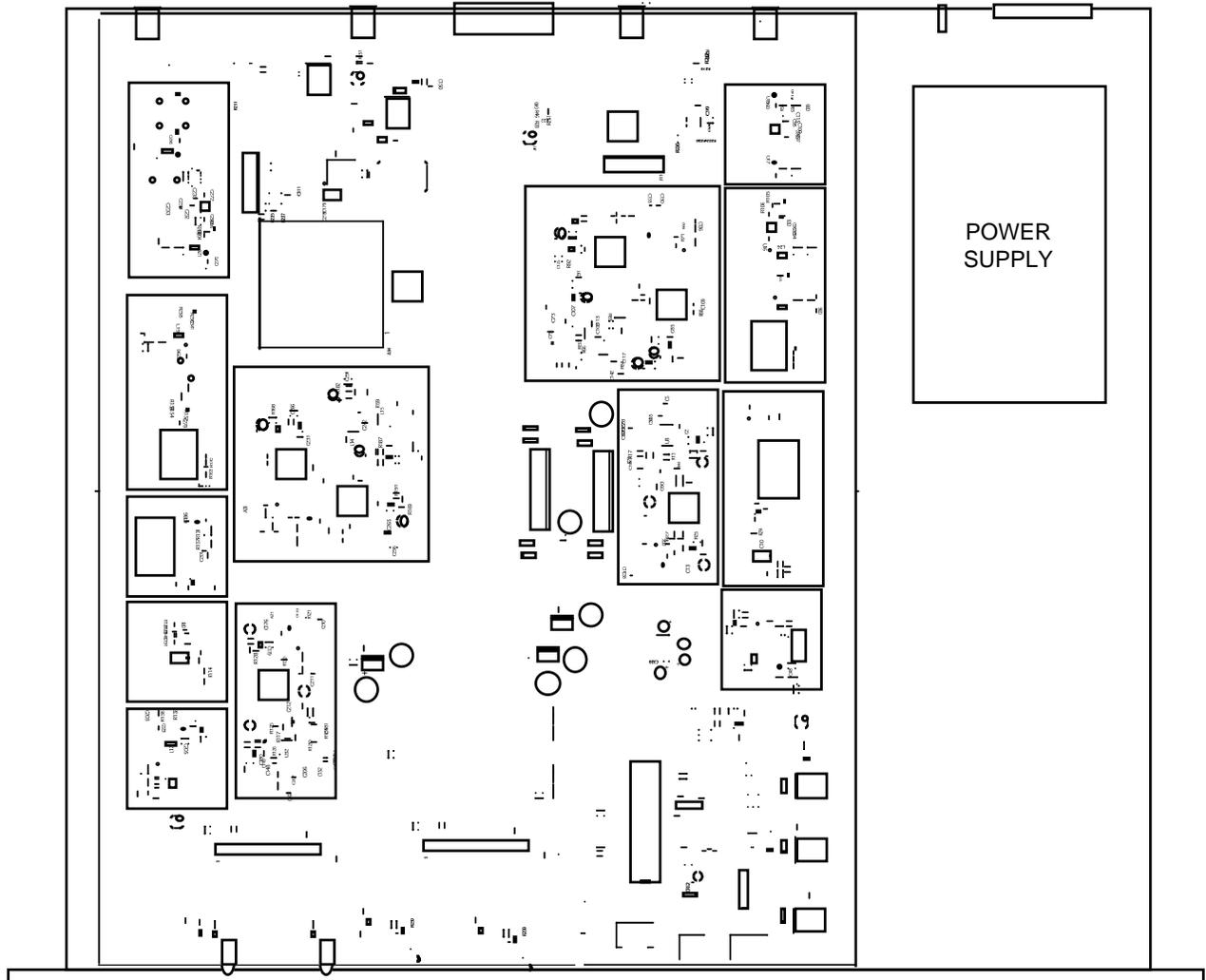


FIGURE 2.0 2083-2114-01 Mechanical Assembly

2.2 Rear Panel Input/Output Signals

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

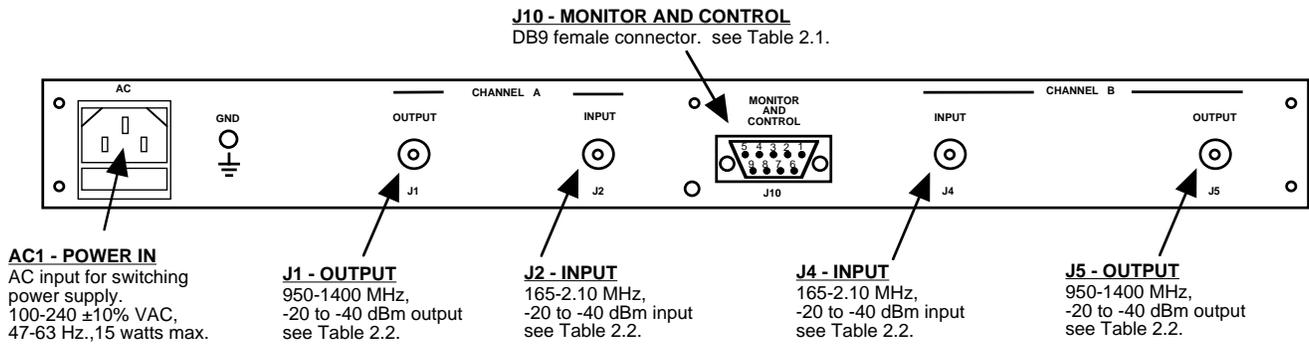


FIGURE 2.1 2083-2114-01 Rear Panel I/O's

TABLE 2.1 J10 Pinouts*	
Pin	Function
1	Rx-
2	Rx+ (RS-232C)
3	Tx+ (RS-232C)
4	Tx-
5	GND
6	Alarm Relay: Common
7	Alarm Relay: Normally Open
8	Not Used
9	Alarm Relay: Normally Closed

TABLE 2.2 Input/Output Connector Options		
Option	Input	Output
STD	BNC, 75 Ω	BNC, 75 Ω
D	BNC, 50 Ω	BNC, 50 Ω
F	Type F, 75 Ω	Type F, 75 Ω

*Remote Serial Interface

Interface: DB-9 Male

Protocol: RS-232C (RS-232C/422/485, **option Q**), 9600 baud rate,
no parity, 8 data bits, 1 start bit, 1 stop bit.

2.3 Front Panel Indicators

Figure 2.2 shows the front panel indicators.

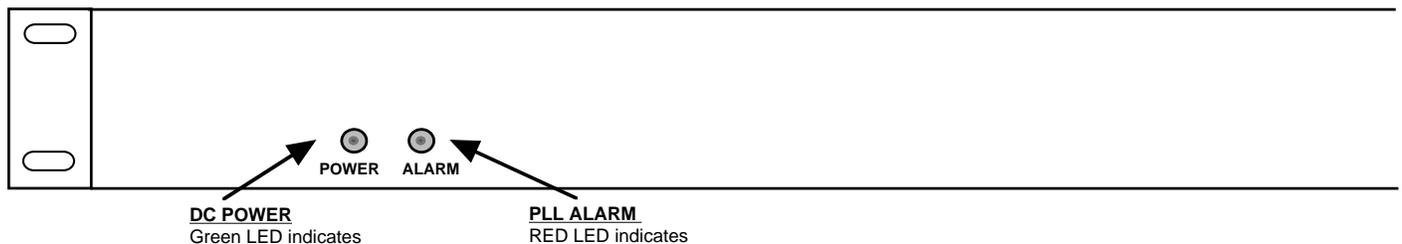


FIGURE 2.2 2083-2114-01 Front Panel Indicators

2.4 Installation / Operation

2.4.1 Installing and Operating the 2083-2114-01, Dual Translator Section

1. Connect a -20 dBm to -40 dBm signal to IN, J4 (Figure 2.1)
2. Connect the OUT, J5, to the external equipment
3. Connect 100-240 \pm 10% VAC, 47 - 63 Hz to AC on the back panel.
4. Set the desired output frequency band (See Section 2.5 Menu Settings).
5. Set the composite input level (See Section 2.5 Menu Settings).
6. Set the gain for 0 dB \pm 2 dB. Make sure the output stays within -20 to -40 dBm with the gain selected and the input level provided. The firmware will prevent setting gain and input level outside this range. (See Section 2.5 Menu Settings).
7. Be sure DS6 (green, DC Power) is on and DS2 (red, Alarm) is off (Figure 2.2).
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.

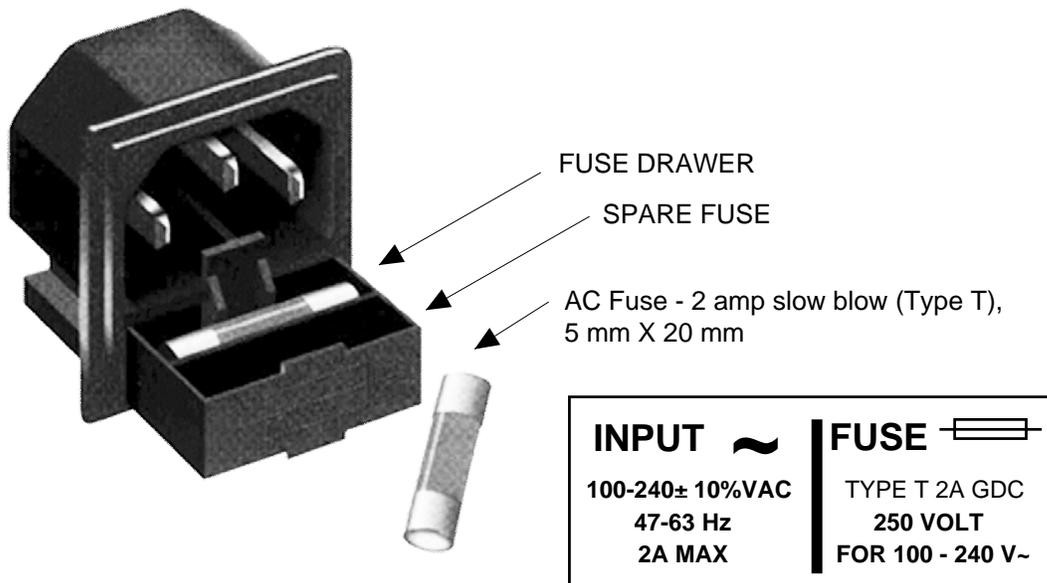


FIGURE 2.3 Fuse Location and Spare Fuse



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