INSTRUCTION MANUAL

MODEL 2710 SUBCARRIER DEMODULATOR

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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TABLE OF CONTENTS **PAGE**

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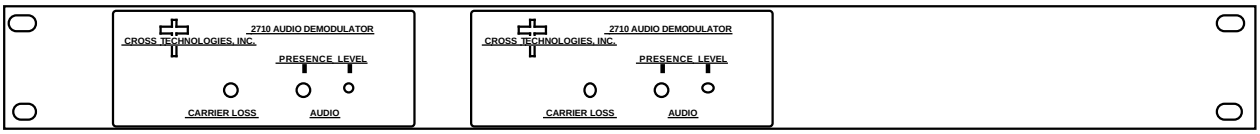
MODEL 2710 SUBCARRIER DEMODULATOR

SECTION 1 GENERAL

1.1 Equipment Description- The Model 2710 demodulates an FM modulated signal in the 5 to 8.5 MHz subcarrier band at a frequency set at the factory and specified by the customer. The 2710 provides 75 microseconds de-emphasized audio at a 0 to +18 dBm peak program level into a balanced 600 ohm output impedance for 50 to 150 kHz peak deviation (see model chart in section 1.2). Audio connectors are barrier strip and the subcarrier input connector is BNC female. The unit is mounted on a standard 19", 1 3/4 " high rack mount panel and DC power is supplied by a wall mount power supply.



Model 2779-XX Transmitter and Model 2710-XX Receiver - Dual

Model 2779-XX Transmitter and Model 2710-XX Receiver - Single

FIGURE 1.0 Model 2710 Subcarrier Demodulator

1.2 Technical Characteristics

TABLE 1.0 2710 DEMODULATOR SPECIFICATIONS

Characteristics	Specifications*
Audio Output Characteristics	
Impedance	600 ohms, balanced
Frequency	50 Hz or 15 kHz
Output Level	0 to +18 dBm at PPL (adjustable)
SC Input Characteristics	
Impedance	> 1.5K ohms (bridging)
Frequency range	4.5 - 8.5 MHz, factory set
Level	50 - 250 mVp-p into 75 Ω
Channel Characteristics	
Deviation	(see model chart below)
De-emphasis	75 usec
Frequency Response	≤ ±1.0 dB, 50 Hz - 15 kHz
Distortion	≤ 1 %, 1 kHz
Controls	
Output level adjust	10 turn pot adjusts the audio output over 0 to +18 dBm level
Indicators	
No Carrier Alarm	Red LED (with open collector out)
Audio Presence	Yellow Led, lights at > -10 dB below PPL audio level
Other	
DC Power, max.	+15VDC, 75 ma; -15VDC, 50ma; via wall power supply
RF, IF Connectors	BNC, female

MODELS

TX SINGLE	TX DUAL	RX SINGLE	RX DUAL	TX + RX	Peak Deviation	CH. Spacing	Threshold-C/No
2779-01	2779-21	2710-01	2710-21	2751-21	150 kHz	400 kHz	67
2779-02	2779-22	2710-02	2710-22	2751-22	75 kHz	250 kHz	64
2779-03	2779-23	2710-03	2710-23	2751-23	50 kHz	180 kHz	62

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

2.0 Installation

2.1 Mechanical - The 2710 Demodulator PCB is packaged in an aluminum extrusion. The 2710 is mounted on a 1 3/4" X 19" panel that can be mounted to a rack using the 4 holes at the ends. The unit derives ± 15V from the wall power supply. See Figure 2.1.

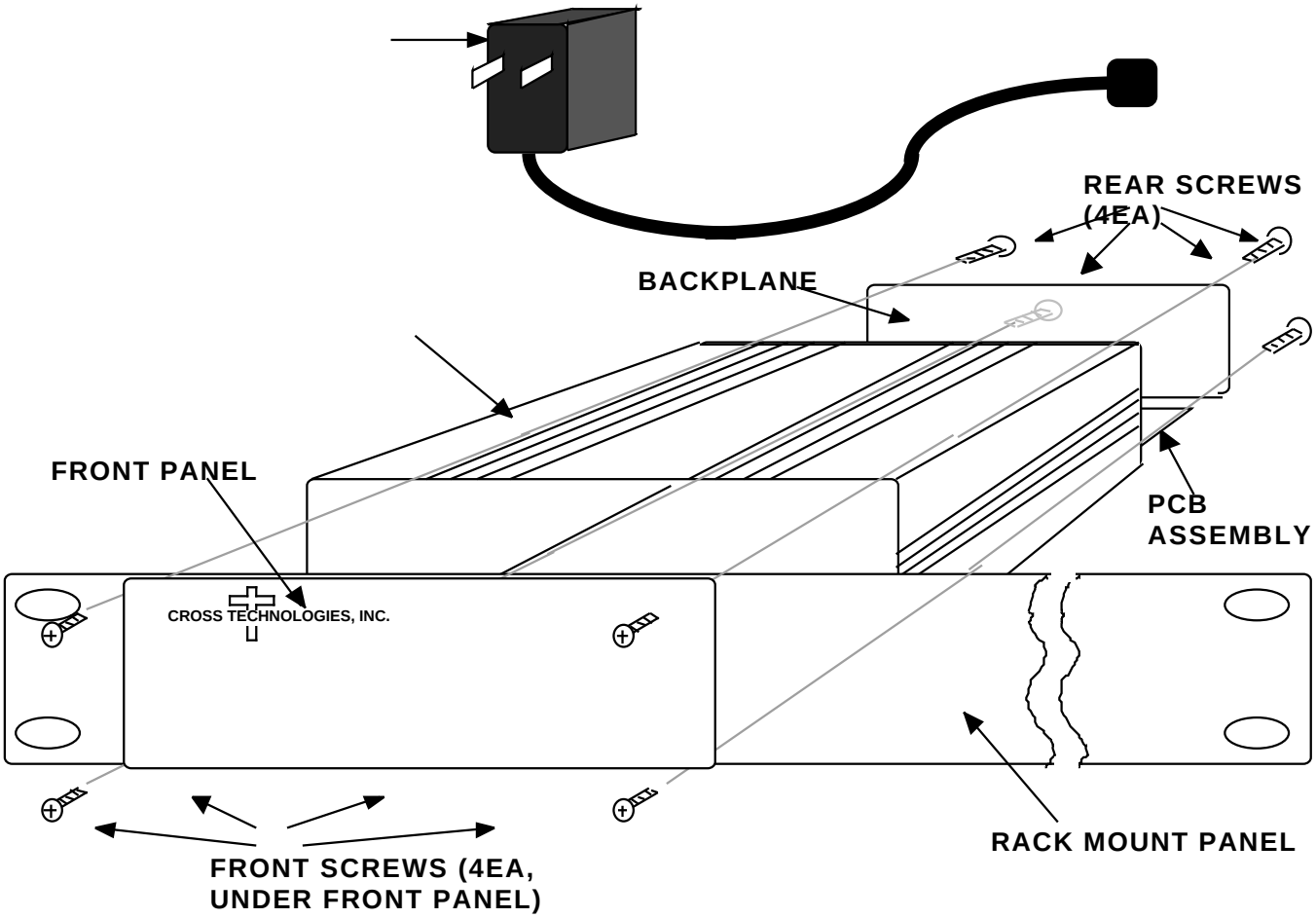


FIGURE 2.1 SERIES 2700 ASSEMBLY DRAWING

2.2 Controls and Indicators - Figure 2.2 shows front panel controls and indicators.

2.3 Input / Output Signals - Figure 2.3 shows the input and output signals to the 2710.

2.4 Removing the Printed Circuit Board (PCB) From the Extrusion - There are no on-card jumpers or other on-card controls. To remove the printed circuit board (PCB) from the extrusion:

1.) Remove four (4) **rear panel screws** (see Figure 2.1).

2.) **Gently** pull the backplane and PCB assembly completely out of the extrusion.

3.) **Always remove power** when removing or installing the PCB in to the extrusion. Make sure the shield goes in the lower channel and the PCB in the next channel above that in the extrusion.

4.) **Gently** push the backplane and PCB assembly completely in to the extrusion.

5.) Install four (4) **rear panel screws**.

2.5 Installation / Operation -

2.5.1 Operation -

1.) Connect the wall power supply to the 2710 and the wall power supply to 115 VAC, 60 Hz (Figure 2.1)

2) **AUDIO OUTPUT** - Pins 16 and 17 of J4 (terminal strip on the back panel, see Figure 2.3 and Table 2.1) are the balanced audio outputs. Pin 13 is an unbalanced audio output. Pin 18 is ground.

3) **SUBCARRIER INPUT** - The subcarrier input goes to J1, the BNC connector on the back panel (Figure 2.3). JP1 may be placed in the "TERM" position for a 75 ohm termination. If baseband is being looped through, this jumper it should be placed in "non-term" (JP1 pins 2 -3) position. Use a BNC "T" to loop the subcarrier input to other demodulators if using the high impedance loop through. Be sure a 75 Ω termination is provided at some point in the loop, preferably at the end.

4.) The audio output level is adjustable from 0 to +18 dBm at peak program level into a balanced 600 ohm output impedance with R74 (Figure 2.2).

5.) The alarm indicator DS1 (Figure 2.2) will illuminate when there is no carrier present.

6.) The audio presence indicator, DS2 (Figure 2.2) flashes on audio peaks greater than -10 dB below PPL.

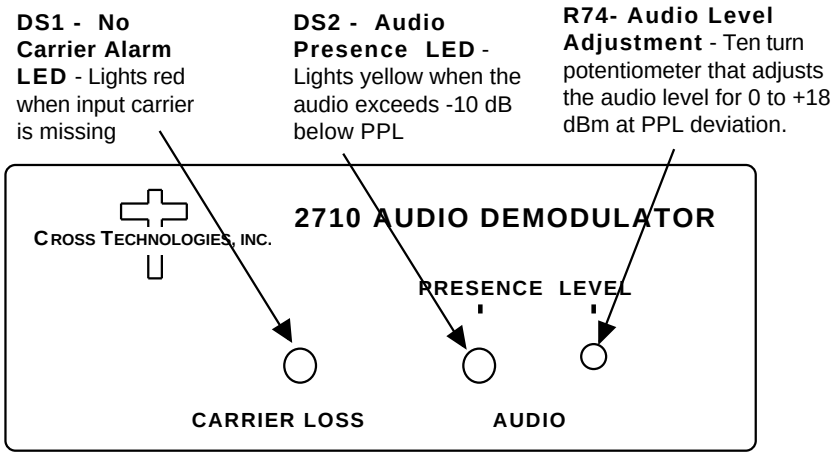


FIGURE 2.2 2710 Front Panel Controls and Indicators

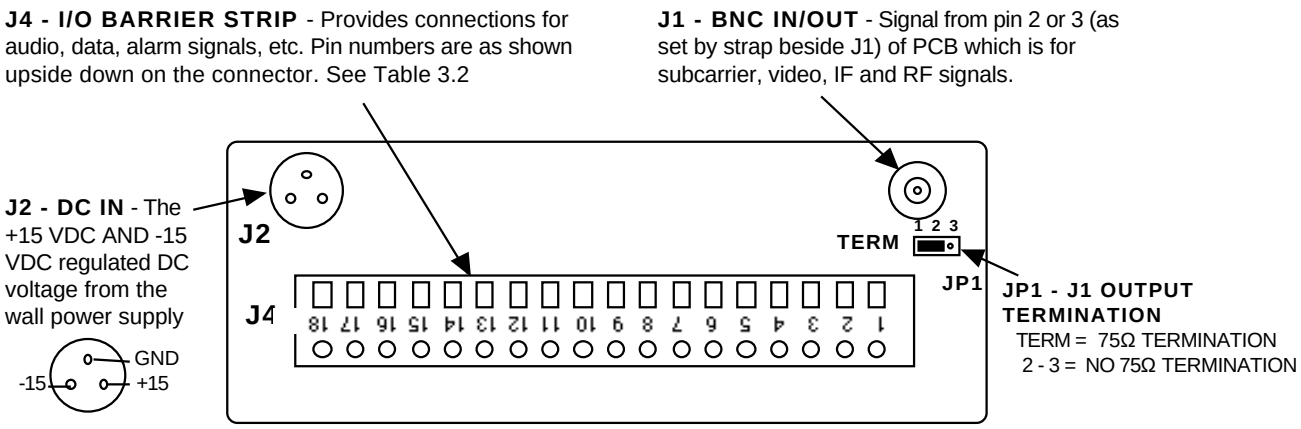
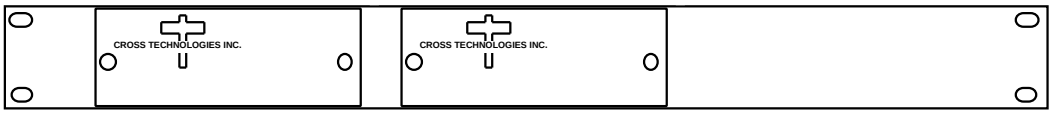


FIGURE 2.3 2710 Inputs and Outputs

TABLE 2.1 INPUT AND OUTPUT SIGNALS			
CONNECTOR	**GENERAL FUNCTION**	**2710 FUNCTION**	**COMMENTS**
J1	BNC IN/OUT	SUBCARRIER INPUT	50 TO 250 MV P-P
J2	DC IN	DC IN	± 15 VDC, 3PIN MINI-DIN
J3	PCB EDGE CONNECTOR	PCB EDGE CONNECTOR	INTERNAL USE
J4 - PIN			
1	GROUND	GROUND	
2	BB IN/OUT	NOT USED	
3	RF/IF OUT/IN.	NOT USED	
4	+AUDIO - L; +CLK	NOT USED	
5	-AUDIO - L; -CLK; RS232	NOT USED	
6	MISC; AGC; CC; BCD-0	NOT USED	
7	UNBAL AUDIO - L.	NOT USED	
8	MISC; CC; BCD-1	NOT USED	
9	+15 VOLTS.	+15 VOLTS.	
10	MISC; CC; BCD-2	NOT USED	
11	-15 VOLTS	-15 VOLTS	
12	MISC; CC; BCD-3	NOT USED	
13	UNBAL AUDIO - R.	UNBALANCED AUDIO	0 to +18 dBm PPL, 100Ω unbalanced
14	MISC; CC;	NOT USED	
15	ALARM; CC.	ALARM OPEN COLLECTOR	(+30 VDC, 30ma MAX).
16	+AUDIO - R ; +DATA.	+AUDIO IN	0 to +18 dBm PPL, 600Ω balanced
17	-AUDIO - R ; -DATA; RS232.	-AUDIO	0 to +18 dBm PPL, 600Ω balanced
18	GROUND	GROUND	

2.6 MODEL 27XX DUAL SYSTEMS

2.6.1 Equipment Description- The Model 2779 Subcarrier modulator and 2710 Subcarrier demodulator provides modulation and demodulation of an FM modulated signal in the 5 to 8.5 MHz subcarrier band at a frequency set at the factory and specified by the customer. The unit is mounted on a standard 19", 1 3/4 " high rack mount panel and DC power is supplied by a wall mount power supply. As the table of Figure 2.5 shows these are available as two units per standard 19", 1 3/4 " high rack mount panel. For the 2751-XX Series with one modulator and and demodulator the modulator is usually on the left as you face the front.



Model 2779-XX Transmitter and Model 2710-XX Receiver - Dual

FIGURE 2.4 Model 2779 Subcarrier Modulator

2.6.2 MODEL NUMBERS

DUAL MODEL CONFIGURATIONS						
	MODULES MAKING THIS					
MODEL	2710-01	2710-02	2710-03	2779-01	2779-02	2779-03
DUAL RX						
2710-21	2	-	-	-	-	-
2710-22	-	2	-	-	-	-
2710-23	-	-	2	-	-	-
DUAL TX						
2779-21	-	-	-	2	-	-
2779-22	-	-	-	-	2	-
2779-23	-	-	-	-	-	2
RX + TX						
2751-21	1	-	-	1	-	-
2751-22	-	1	-	-	1	-
2751-23	-	-	1	-	-	1

FIGURE 2.5 Model 27XX Model Numbers

2.6.3 DC POWER - Generally the 27XX series will have one wall power supply that can be connected to J2 of either module and have pins 9 (+15 Volts DC), pins 11 (-15 Volts DC) and pins 1 (ground) connected together as shown in Figure 2.6 below. You can power the modules from individual power supplies by ordering another one from Cross Technologies, Inc. and disconnecting the jumpers that connect these pins.

2.6.4 OPERATING INFORMATION - Refer to the individual module manuals for detailed operating instructions

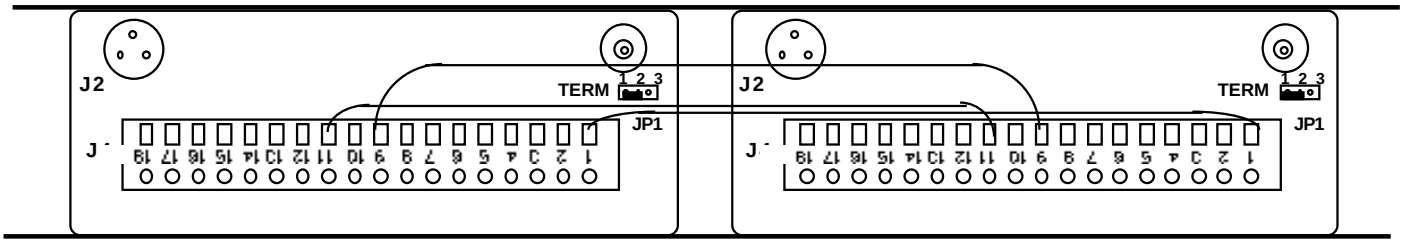


FIGURE 2.6 Model 27XX Rear Panels Showing DC wired together for Use With One Wall Power Supply