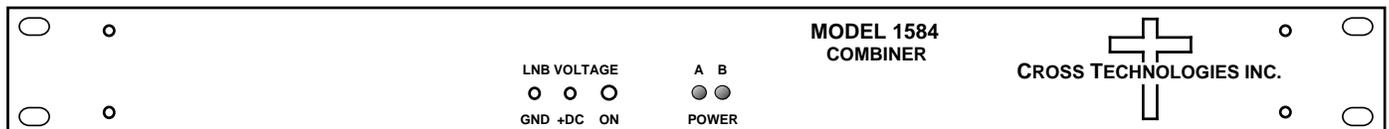


# Instruction Manual

# Model 1584-81 8-Way Combiner

March 2013, Rev. 0



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**INSTRUCTION MANUAL**  
**MODEL 1584-161, 8-Way Combiner**

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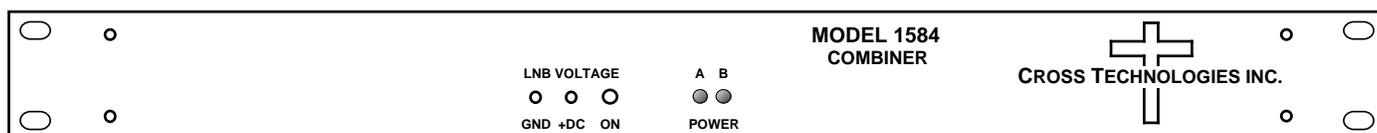
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## MODEL 1584-81, 8 Way Combiner

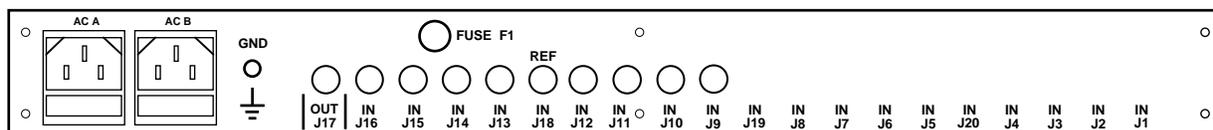
### 1.0 General

#### 1.1 Equipment Description

The Model 1584-8 is one eight-way, 0.95 - 2.05 GHz, 0 dB gain combiner in a 1RU rack mount chassis with redundant 100-240  $\pm$ 10% VAC power supplies. The combiner provides excellent RF characteristics. It has eight inputs and one output on the back panel. Two individual 100-240  $\pm$ 10% VAC input power supplies provide diode OR'd redundant power to the unit. A surge suppressor on the combiner output protects against high voltage transients. On the front panel, two green LED's indicate the presence of DC voltage from each of the two power supplies.

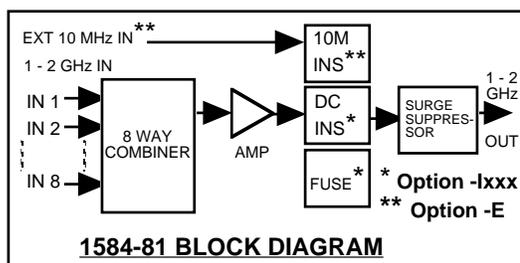


**1584-81 FRONT PANEL (SHOWN WITH OPTION -I)**



**REAR PANEL - Shown with Option -I(F1) and -E (J18)**

**FIGURE 1.1 MODEL 1584-81 FRONT AND REAR PANELS**



**FIGURE 1.2 MODEL 1584-81 BLOCK DIAGRAM**

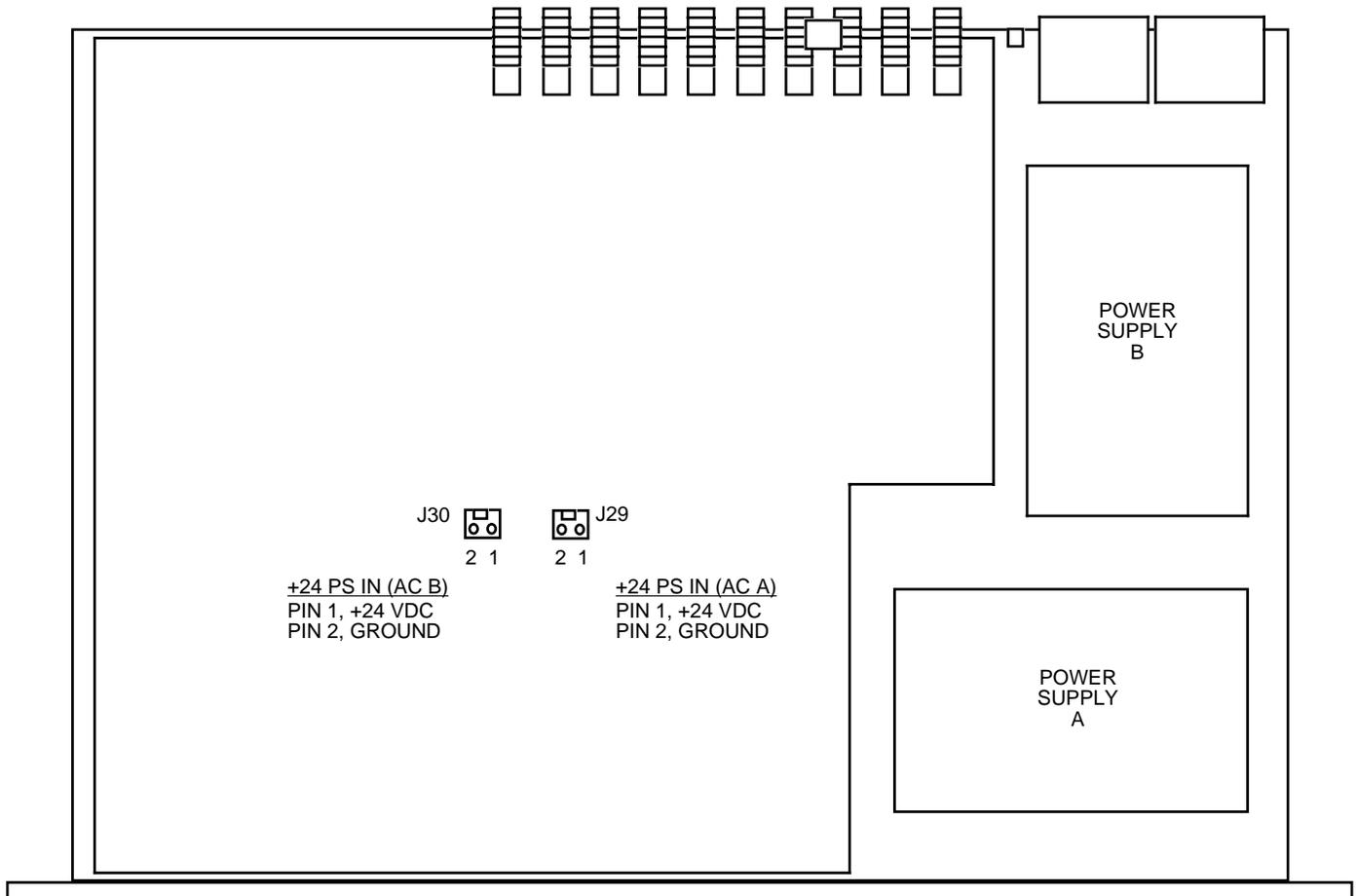
## 1.2 Technical Characteristics

**TABLE 1.0 1584-81 RF Combiner Specifications\*\***

<b>Input Characteristics</b>	
Input Impedance	75Ω, Type F Standard (See other options below)
Return Loss	12 dB min., 14 dB typical
Input Level	-15 dBm total maximum, each input
<b>Output Characteristics</b>	
Impedance	75Ω, Type F Standard (See other options below)
Return Loss	12 dB minimum, 14 dB typical
Output Level, maximum	-5 dBm combined output, minimum
Output Level, 1 dB	+5 dBm combined output, minimum
<b>In-Band Characteristics</b>	
Gain	0 dB ± 1.0 dB
Frequency Response	± 1.0 dB, 0.95 - 2.05 GHz; ± 0.5 dB, any 20 MHz increment
Port to Port Isolation	> 18 dB, 20 dB typical
<b>Indicators</b>	
AC Power (A&B)	Green LED indicates DC Voltage prior to diode OR'd and to amplifiers
LNB DC Voltage	Option -Ixxx only - Green LED indicates DC insertion on J17 Output; Front Panel Test Points for measuring the voltage with a VOM.
<b>Other</b>	
Surge Suppressor	SiDACTOR
RF Connectors	Type F (female) (See other options below)
AC Power	Redundant switching power supplies, 100-240 ±10% VAC, 47 - 63 Hz, 15 watts maximum (Option -I222, 65 watts).
Mechanical	19 inch Standard Chassis, 1.75" High x 12" Deep
<b>Options</b>	
-B	75Ω, BNC RF Connectors
-C	RF Out BNC 50Ω, RF In Type F, 75Ω
-D	50Ω, BNC RF Connectors
-E	External 10 MHz insertion (J18 IN to J17 Insertion Out) 1dB maximum insertion loss; 75 / 50 Ω).
-Ixxx	DC insertion on J17 OUT; -xxx number defines voltage and current I222 = 22 ±2 VDC at 2 amps.
-W9	10 MHz and DC Power (up to 28 VDC, 2.5 amps) Pass Through @ J16 IN to J17 OUT.
*10°C to 40°C; Specifications subject to change without notice	
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## 2.0 Installation

**2.1 Mechanical** - The 1584-81 consists of one RF printed circuit board (PCB) housed in a 1 RU (1.75 inch high) by 12 inch deep chassis. Redundant, switching, +24 VDC power supplies with the DC output diode OR'd provide redundant power for the internal and external amplifiers and LEDs. Connectors are type F, female for the RF connections (BNC, female option -B or -D). The 1584-81 can be secured to a rack using the 4 holes on the front panel. Figure 2.1 shows how the 1584-81 is assembled. J25 connects DC Power to the fuse as shown and J30 and J29 connect the DC voltage from the power supplies to the PCB as shown.

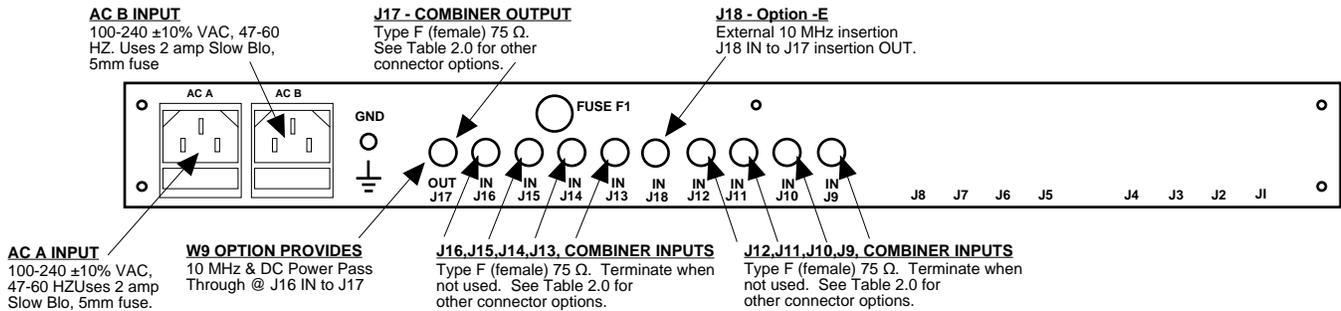


**FIGURE 2.0 1584-81 MECHANICAL ASSEMBLY**

## 2.2 Rear Panel Input/Output Connectors

The input and output connectors on the rear panel are shown in Figure 2.1.

**CAUTION!** IF A FUSE IS INSTALLED IN THE FUSE F1 HOLDER, +22 VDC WILL APPEAR ON THE COMBINER OUTPUT CONNECTOR (J17) CENTER PIN.

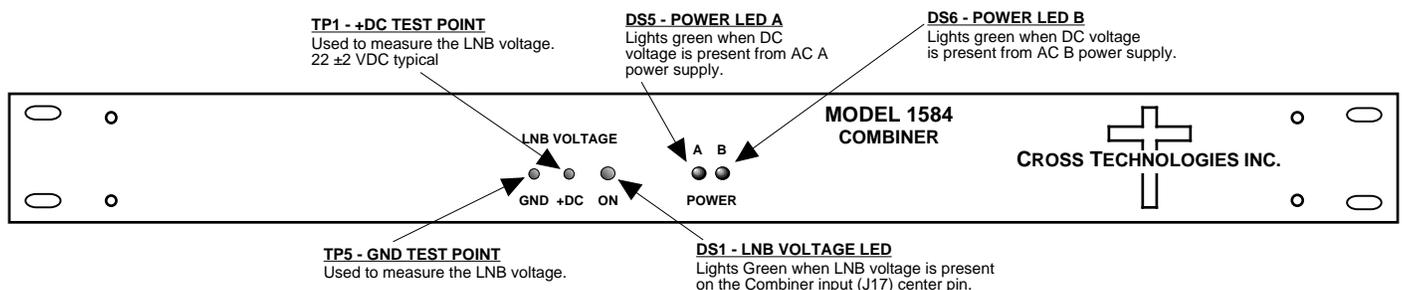


**FIGURE 2.1 1584-81 REAR PANEL**

TABLE 2.0 RF Connector Options	
Option	RF Connectors
STD	75Ω Type F Standard
-B	BNC, 75Ω
-C	RF Out BNC 50Ω, RF In Type F, 75Ω
-D	BNC, 50Ω
-E	External 10 MHz insertion (J18 In to J17 insertion Out)
-lxxx	DC insertion on J17 Out
-W9	10 MHz & DC Power Pass Through @ J16 In to J17 Out

## 2.3 Front Panel Monitors and Indicators

Figure 2.2 shows the front panel monitors and indicators.



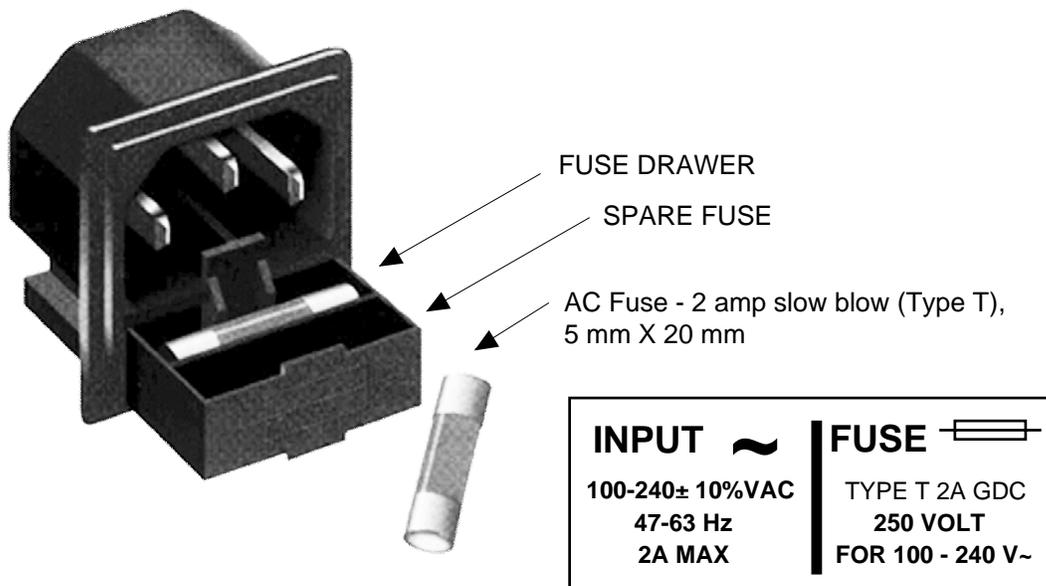
**FIGURE 2.2 1584-81 FRONT PANEL**

## 2.4 Operation

- 1.) Connect RF cables to the 1584-81 (Section 2.2).
- 2.) Connect 100-240  $\pm$ 10% VAC, 47 - 63 Hz to AC A and AC B on the back panel and observe A and B LEDs are lit on the front panel.

**NOTE:** FOR OPTIMUM PERFORMANCE, THE COMBINER PORTS SHOULD BE TERMINATED WITH 75 OHM TYPE F TERMINATIONS WHEN NOT USED.

- 3.) **AC Fuse** - The fuse is a 5mm, 2 amp slow blow and is inserted in the far slot in the drawer below the AC input as shown in Figure 2.6. There is a spare fuse in the near slot. If a fuse continues to open, the power supply is most likely defective. Note that each power supply module within the chassis also has a fuse but failure of this fuse indicates the power supply may be defective.



**FIGURE 2.6 FUSE LOCATION AND SPARE FUSE**

## 2.5 User Caution, Option W9 Information

**This message applies to the following model units:**

**1584-116 Splitter**

**1584-161, 8 Way Combiner**

**1584-81, 16 Way Combiner**

This unit is configured with the 10 MHz **and** 24 VDC power “pass-through’ capability, via **Option W9**.

**Option W9** - Provides one (1) 'pass-through' port (J16) to allow BOTH 10 MHz Reference AND/OR DC power (24 VDC /2.5 amps) to pass-through to input (splitter) or output (combiner) port (J17).

All three units also have the capability to provide LNB Power from an internal power source to input (splitter) or output (combiner) port (J17) through insertion of a fuse into fuse holder F1.

**Both of these 24 VDC powering capabilities CANNOT be operational at the same time!**

IF you are using **Option W9** to 'pass-through' DC power to J17 port - **DO NOT** insert the Fuse into F1.

IF you are using **Option W9** to ONLY 'pass-through' 10 MHz reference, AND you also need 24 VDC power out on J17 port - you may insert the Fuse into F1 and use the internal 24 VDC power source.

## 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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