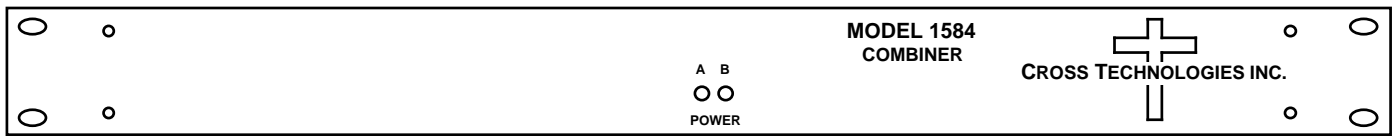


# Instruction Manual

# Model 1584-161 16-Way Combiner

August 2009 Rev. F



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**INSTRUCTION MANUAL**  
**MODEL 1584-161 Combiner**

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All Cross Technologies, Inc. products are warranted against defective materials and workmanship for a period of one year after shipment to customer. Cross Technologies, Inc.'s obligation under this warranty is limited to repairing or, at Cross Technologies, Inc.'s option, replacing parts, subassemblies, or entire assemblies. Cross Technologies, Inc. shall not be liable for any special, indirect, or consequential damages. This warranty does not cover parts or equipment which have been subject to misuse, negligence, or accident by the customer during use. All shipping costs for warranty repairs will be prepaid by the customer. There are no other warranties, express or implied, except as stated herein.



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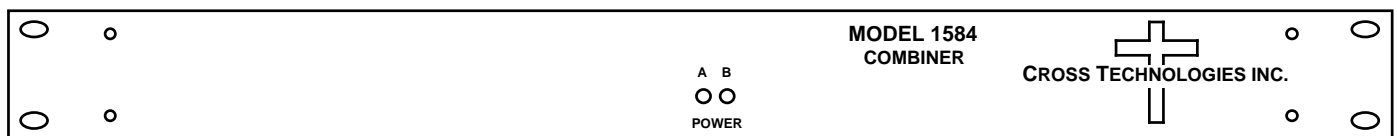
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# MODEL 1584-161 Combiner

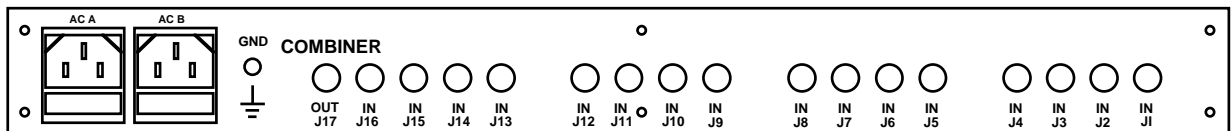
## 1.0 General

### 1.1 Equipment Description

The Model 1584-161 is one sixteen-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 sixteen 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.

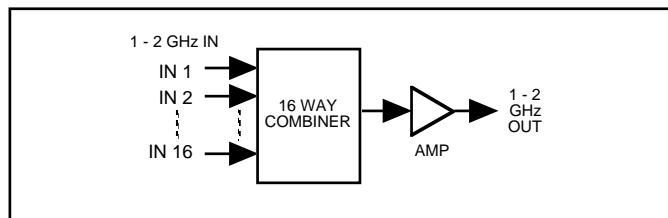


FRONT PANEL



REAR PANEL

**FIGURE 1.1 MODEL 1584-161 FRONT AND REAR PANELS**



**FIGURE 1.2 MODEL 1584-161 BLOCK DIAGRAM**

## 1.2 Technical Characteristics

**TABLE 1.0 1584-161 SPECIFICATIONS**

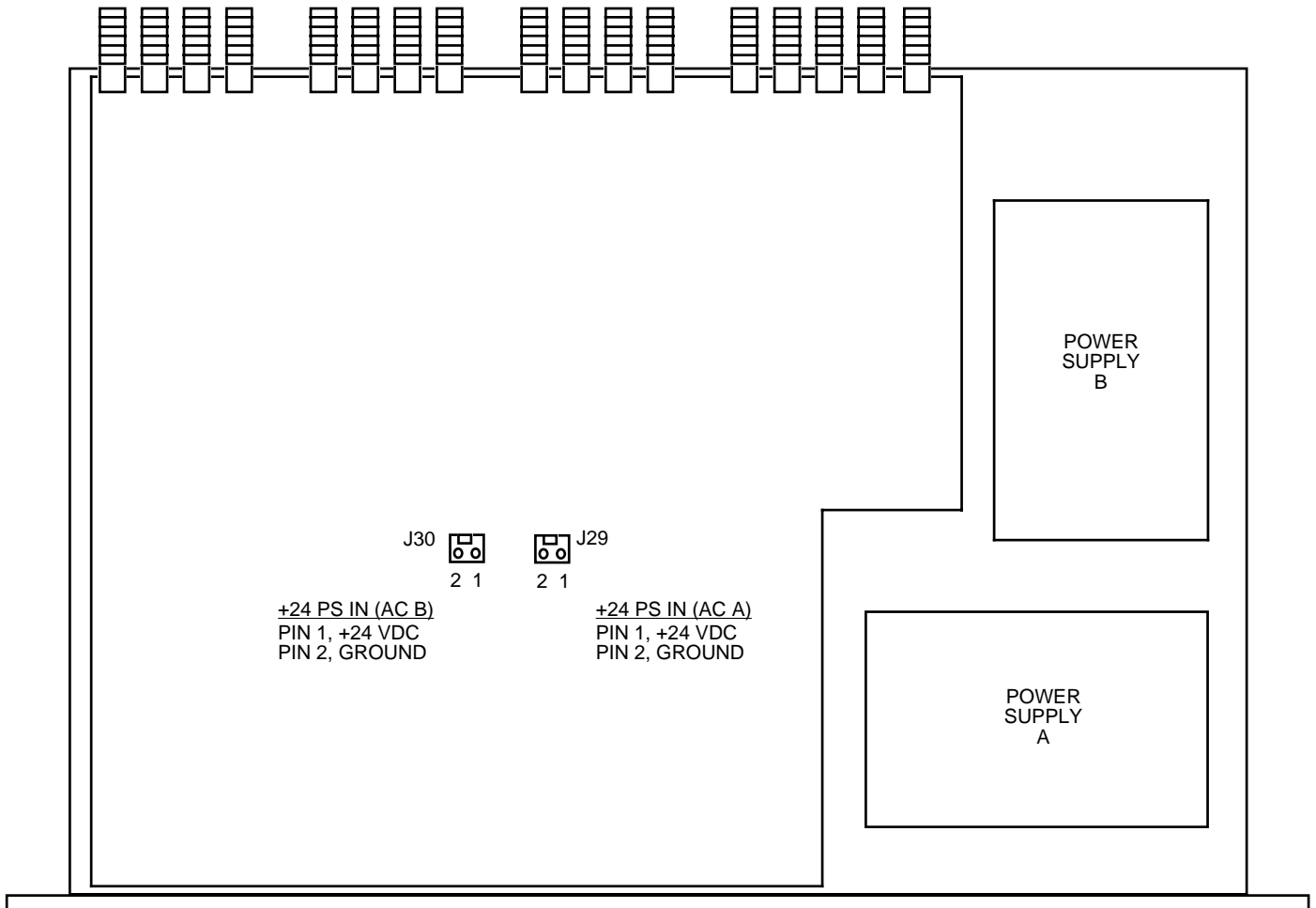
<b><u>Characteristics</u></b>	<b><u>Specifications*</u></b>
<b>Input Characteristics</b>	
Input Impedance	75Ω STD
Return Loss	12 dB min.; 14 dB typ.
Input Level	-20 dBm total maximum
<b>Output Characteristics</b>	
Impedance	75Ω STD
Return Loss	12 dB min.; 14 dB typ.
<b>In-Band Characteristics</b>	
Gain	+0 dB ± 1.0 dB
Frequency Response	± 1.0 dB; 0.95 to 2.05 GHz ± 0.5 dB, any 20 MHz incr.
Port to Port Isolation	> 18 dB, min., 20 dB typ.
<b>Indicators</b>	
AC Power (A & B)	Green LED indicates DC voltage prior to diode OR and to amplifiers
<b>Other</b>	
Surge Suppressor	SiDACTOR
RF connectors	Type F (female) STD
Fuses - AC	5mm, 2 amp, slow blo
AC Power	Redundant power supplies, 100-240 ±10% VAC, 47 -63 Hz, 30 watts max
Mechanical	19 inch standard chassis 1.75" high X 12" deep
<b>Options</b>	
B	75Ω, BNC RF connectors
C	RF out BCN 50Ω, RF in Type F, 75Ω
D	50Ω, BNC RF connectors
W9	10 MHz Pass Through @ J16, J17 (See caution note 2.5 - Page 8)

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

## 2.0 Installation

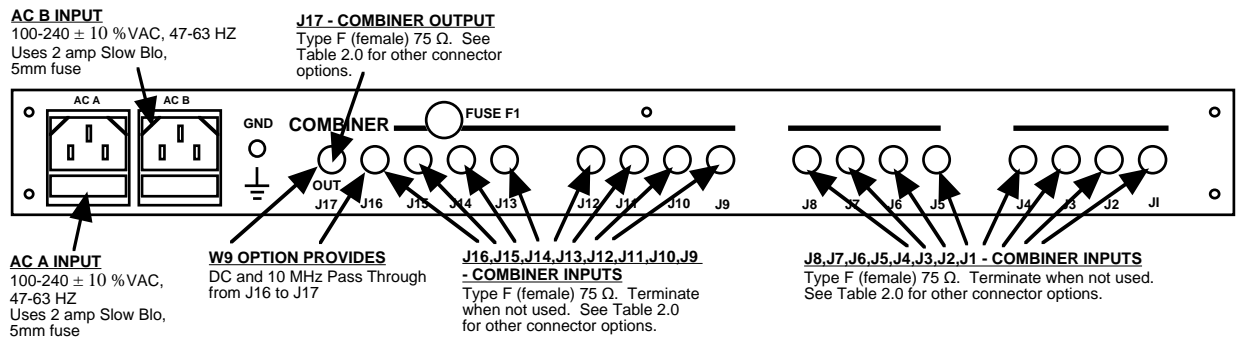
**2.1 Mechanical** - The 1584-161 consists of one RF printed circuit board (PCB) housed in a 1 RU (1 3/4 inch high) by 12 inch deep chassis. Redundant, switching, +24 VDC power supplies with the DC output diode OR'd provide redundant power for the internal and external amplifiers and LEDs. Connectors are type F, female for the RF connections (BNC, female option -B or -D). The 1584-161 can be secured to a rack using the 4 holes on the front panel. Figure 2.1 shows how the 1584-161 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 1584-161 MECHANICAL ASSEMBLY**

## 2.2 Rear Panel Input/Output Connectors

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

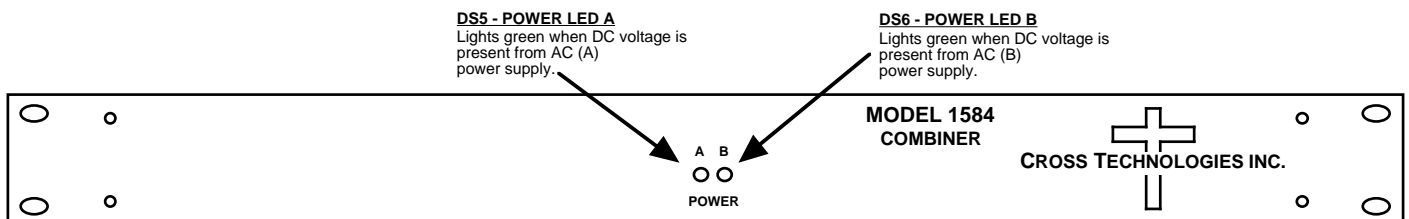


**FIGURE 2.1 1584-161 REAR PANEL**

TABLE 2.0 RF Connector Options	
Option	RF Connectors
STD	Type F, 75Ω
-C	RF out BNC 50Ω, RF in Type F, 75Ω
-B	BNC, 75Ω
-D	BNC, 50Ω
W9	10 MHz Pass Through @ J16, J17

## 2.3 Front Panel Monitors and Indicators

Figure 2.2 shows the front panel monitors and indicators.



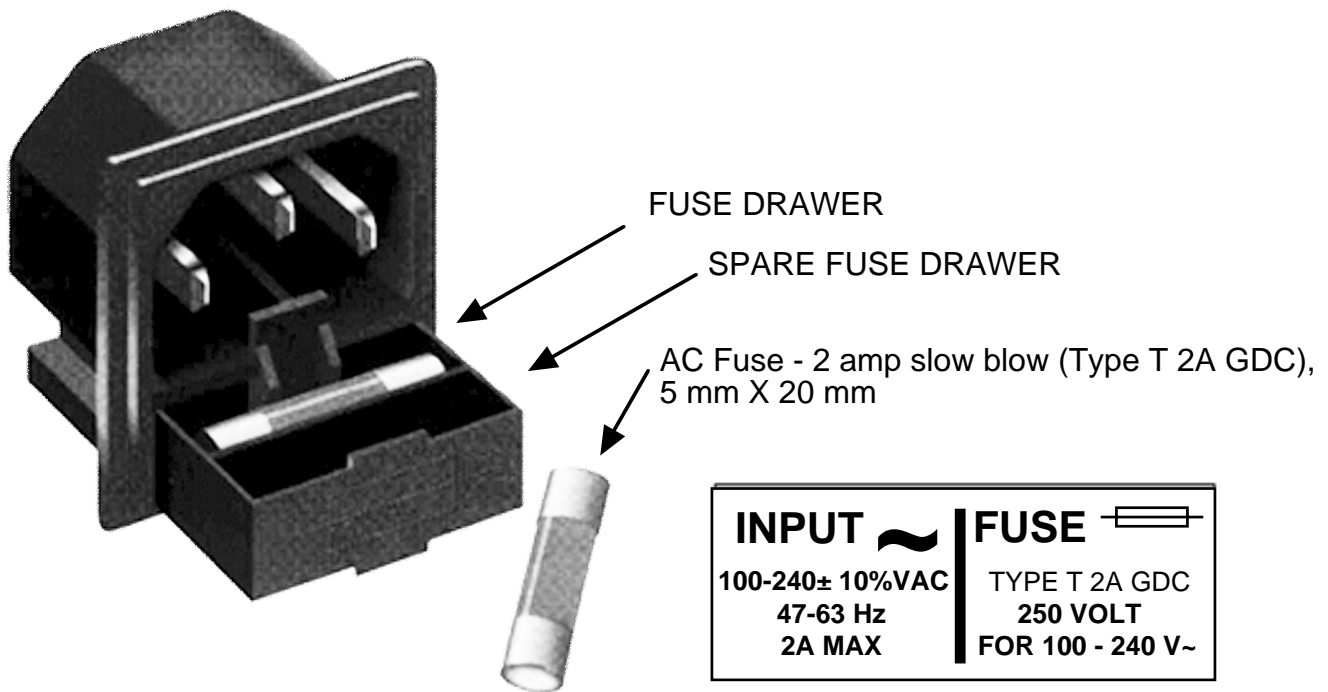
**FIGURE 2.2  
1584-161 FRONT PANEL**

## 2.4 Operation

- 1.) Connect RF cables to the 1584-161 (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 blo 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

This message applies to the following model units:

**1584-116 SPLITTER**

**1584-161 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).

These two units also BOTH 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.

### 3.0 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 unit 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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