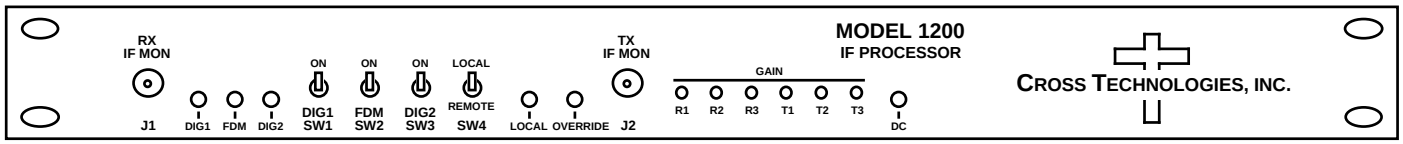
Instruction Manual

Model 1200-04
IF Processor

April 2010 Rev 0



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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INSTRUCTION MANUAL

MODEL 1200-04 IF PROCESSOR

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MODEL 1200-04 IF PROCESSOR

1.0 General

1.1 Equipment Description - The 1200-04 IF Processor consists of a transmit and receive side. The receive side consists of one IF signal passing through an Automatic Gain Control (AGC) amplifier and then split into three output signals each having variable attenuators to adjust their levels via front panel multi-turn potentiometers. The AGC amplifier adjusts a -95 to -15 dBm, 50 to 90 MHz IF input signal to a -30dBm, +5, -15 dB output. A front panel output port provides a monitor signal directly out of the AGC amplifier, and front panel potentiometers adjust the attenuation (between 0 and 20 dB) to each of the three output signals, DIG1RX, FDMRX, and DIG2RX.

The transmit side consists of three transmit IF signals combined into one. DIG1TX, FDMTX, and DIG2TX signals each pass through individual attenuators controlled via front panel potentiometers and a switch that is controlled remotely through a DB9 connector or locally with three SPDT switches located on the front panel. A SPDT switch on the front panel selects either REMOTE or LOCAL operation. A local override feature is included such that when the REMOTE/LOCAL switch is left in the LOCAL position, the override pin on the DB9 can be set to override the LOCAL control and allow for REMOTE control.

DIG1 and DIG2 on both transmit and receive sides are 75Ω in/out while FDM on both transmit and receive sides are 50Ω in/out. When power is removed from the 1200-04, the FDM TX and FDMRX signals pass through to the output. IF connectors are TNC female. The 1200-04 is housed in a 1RU x 14" deep chassis and powered by a 100-240 ±10% VAC, 47-63 HZ input power supply.

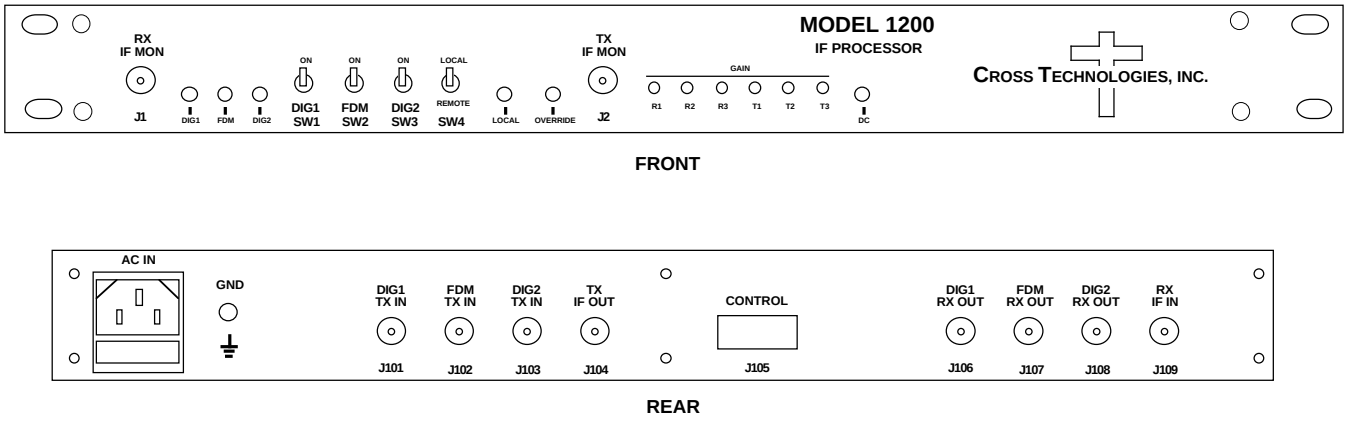

FIGURE 1.1 Model 1200-04 Front and Rear Panels

1.2 Technical Characteristics

TABLE 1.1 1200-04 IF Processor Specifications*

RX Input Characteristics	
Impedance/Return Loss	50 Ω /18 dB
Frequency	50 to 90 MHz
Level Range	-15 to -95 dBm
1dB compression	-10 dBm
RX Output Characteristics	
Output Impedance/RL	50Ω, 75Ω /18dB
Monitor/AGC Out Level	-30 dBm, +5, -15 dB
Level Range, Nominal	-30 to -50 dBm
RX Channel Characteristics	
Gain, AGC	-25 to +45 dB range
Gain Adjustment	0 to -20 dB
Frequency Response	±1.0 dB
TX Input Characteristics	
Impedance/Return Loss	50Ω, 75Ω /18dB
Input Level Range	50 to 90 dBm
Level Range	-20 to +5 dBm
TX Output Characteristics	
Impedance/Return Loss	50 Ω /18 dB
Output Level Range/1dB	+5 to -20 dBm
1dB compression	+10 dBm
TX Channel Characteristics	
Gain Adjustment	0 to -30 dB
Frequency Response	±1.0 dB
Group Delay	5 ns, max.
TX Switch Characteristics	
Isolation, Switch off	≥ 60 dB
Isolation, Port to Port	≥ 50 dB, all “ON”
Switch Time	≤ 10 milliseconds
Controls, Indicators	
DIG1TX, FDMTX, DIG2TX	Green LEDs and SPDT switches
LOCAL/REMOTE	Red LED and SPDT switches
OVERRIDE	Yellow LED
POWER	Green LED indicates power is supplied to the unit
Other	
IF Connectors	TNC (female)
Connector, DC, Control	DB9 (female)
Size	19 inch 1RU chassis x 14.0” deep
Power	100-240 ±10% VAC, 47 - 63 Hz, 30 watts max.

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

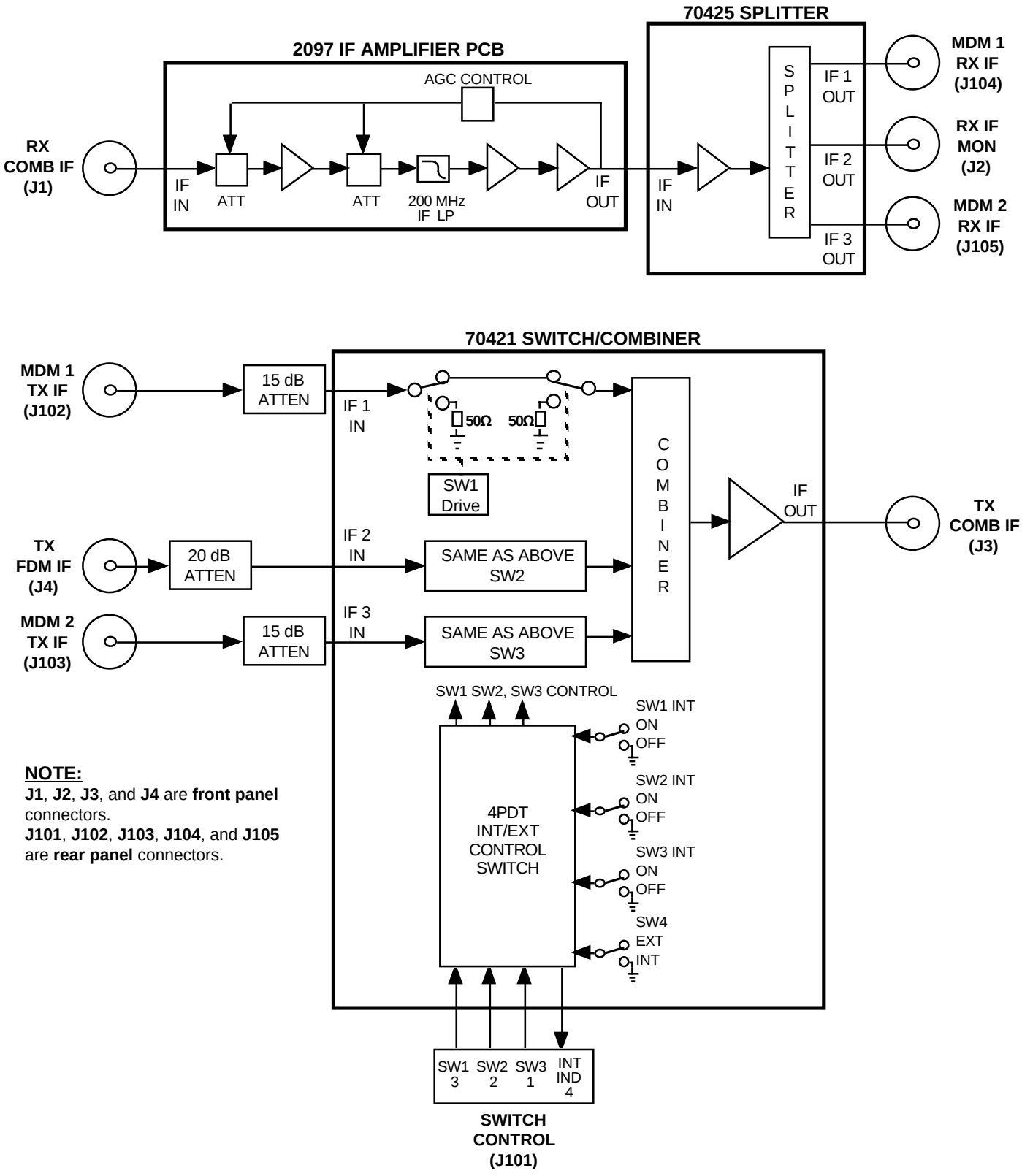

Figure 1:2 Model 1200 Block Diagram

1.3 Environmental Use Information

A. **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.

B. 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.

C. Mechanical loading - Mounting of equipment in a rack should be such that a hazardous condition does not exist due to uneven weight distribution.

D. 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.

E. 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).

F. Top Cover - There are no servicable 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 RE-INSTALLED 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 1200-04 consists of one PCB assembly and one power supply housed in a 1 RU (1 3/4 inch high) by 14 inch deep chassis. An AC power supply provides +15VDC and -15VDC to the PCB. The 1200-04 can be secured to a rack using the 4 holes on the front panel. Figure 2.1 shows how the 1200-04 is assembled.

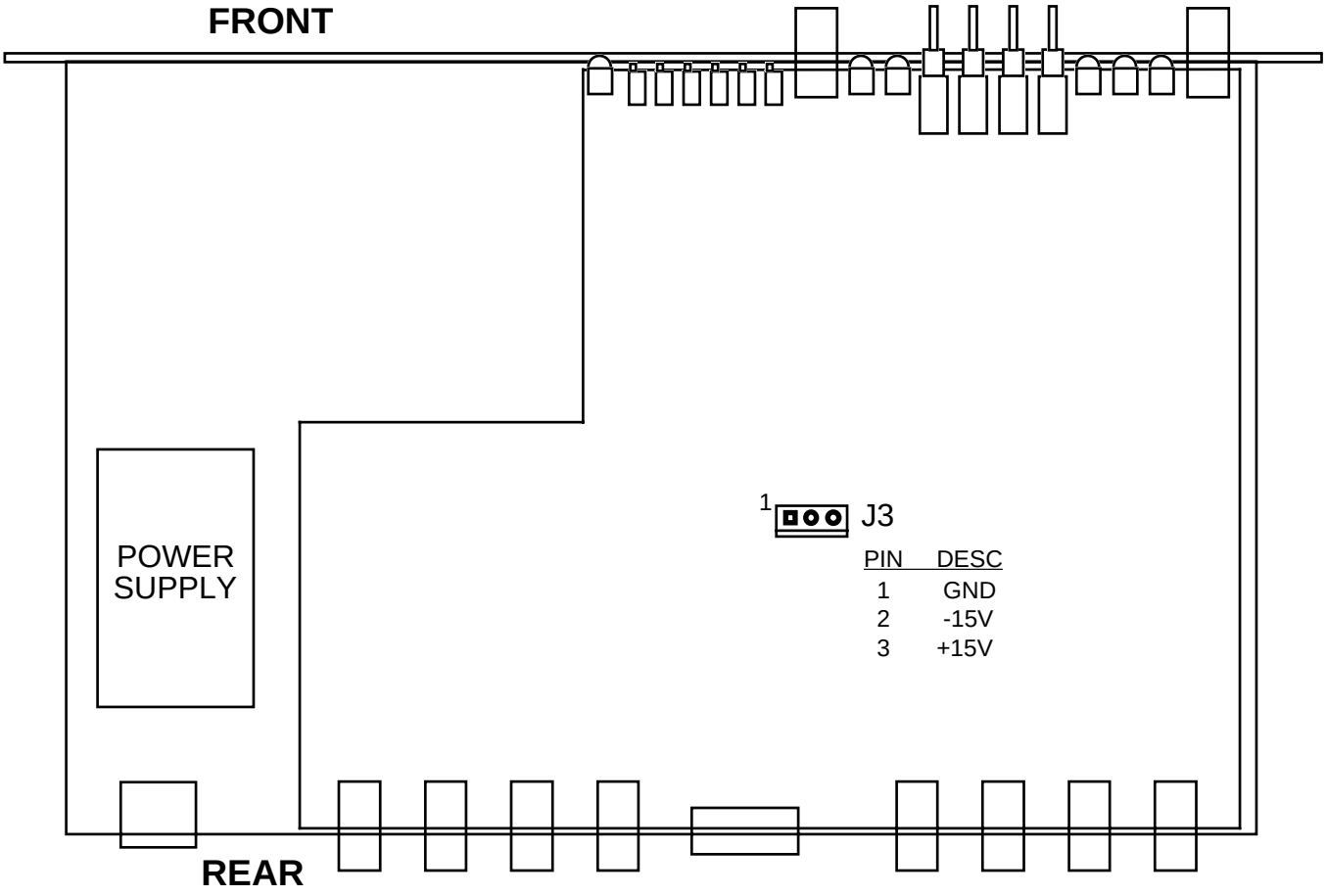

FIGURE 2.1 1200-04 Mechanical Assembly

2.2 Rear Panel Input/Output Signals and Controls - Figure 2.2 and Table 2.1 show the input, output. and control connectors on the rear panel.

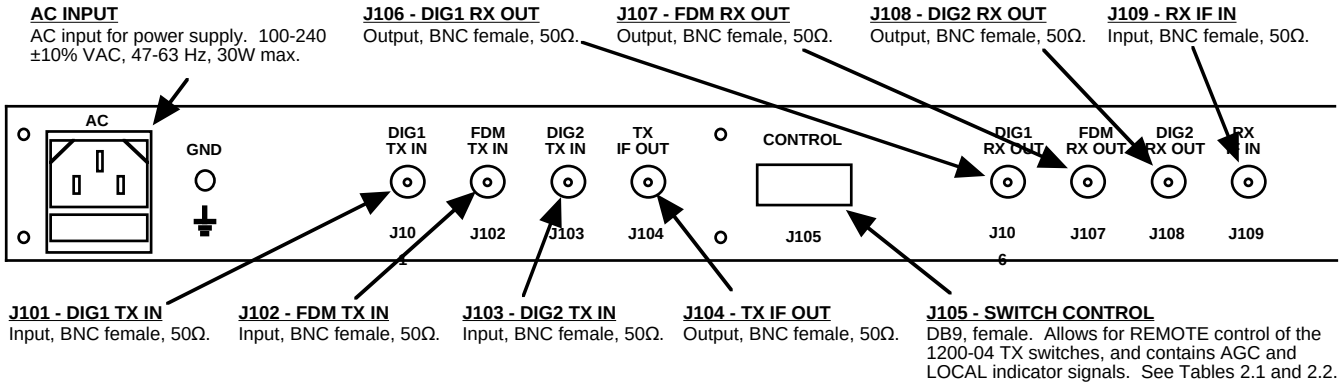

FIGURE 2.2 1200-04 Rear Panel I/Os and Control

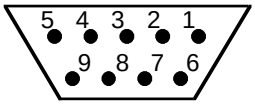

TABLE 2.1 - J105 (DB9) Control/Indicator Signals			
PIN	CONTROLS		
1	SELECT DIG1 TX IN	External Closure In	GND/Open OFF; +15 VDC(+V) ON
2	SELECT FDM TX IN	External Closure In	GND/Open OFF; +15 VDC(+V) ON
3	SELECT DIG2 TX IN	External Closure In	GND/Open OFF; +15 VDC(+V) ON
4	LOCAL Indicator OUT	Indicator Output	GND LOCAL Control; Open REMOTE Control
5 9	GND	Ground Reference	
6	OVERRIDE IN	Local Override Input	+15 VDC (+V) overrides LOCAL control and allows for REMOTE control
7	AGC OUT	AGC Voltage	Indicates current AGC gain (see Table 2.2)
8	+V	DC Voltage Reference	+15 VDC

2.3 Front Panel Controls and Indicators - The following are the front panel outputs, controls and indicators.

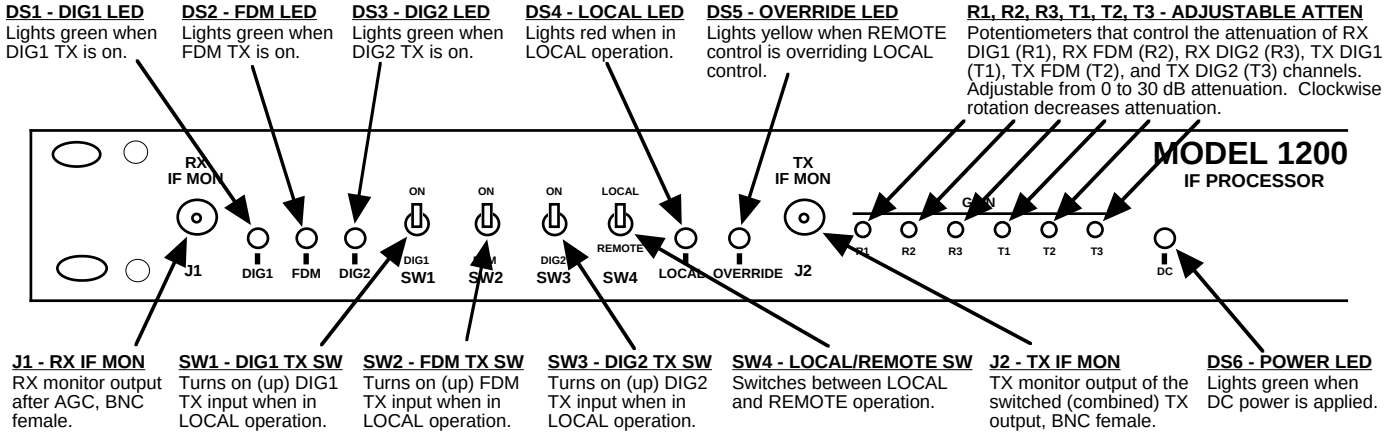

FIGURE 2.3 1200-04 Front Panel Controls and Indicators

2.4 Operation

2.4.1 Installing and Operating the 1200-04

1.) Install the 1200-04 in the equipment rack.

2.) Connect to signals on the CONTROL connector, J105, as desired (Figure 2.2).

3.) Connect 100-240 ±10% VAC, 47 - 63 Hz to AC IN on the back panel (Figure 2.2).

4.) Be sure the DC (power) LED, DS6, is on (Figure 2.3).

5.) Set SW4 for REMOTE or LOCAL operation (Figure 2.3).

6.) Choose the desired TX path(s) either remotely (J105, Figure 2.2) or locally using the front-panel switches (SW1 - SW3, Figure 2.3) and check for proper signal(s) at TX IF MON (J2, Figure 2.3) or TX IF OUT (J104, Figure 2.2) and that the appropriate LED(s) (DS1 - DS3, Figure 2.3) is lit.

7.) Adjust attenuator pots (R1, R2, R3, T1, T2, T3) as needed. Clockwise rotation provides increased output level (full clockwise = 0 dB atten, full counter-clockwise = 30 dB atten).

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 2.4. There is a spare fuse in the near slot. If a fuse continues to open, the power supply is most likely defective.

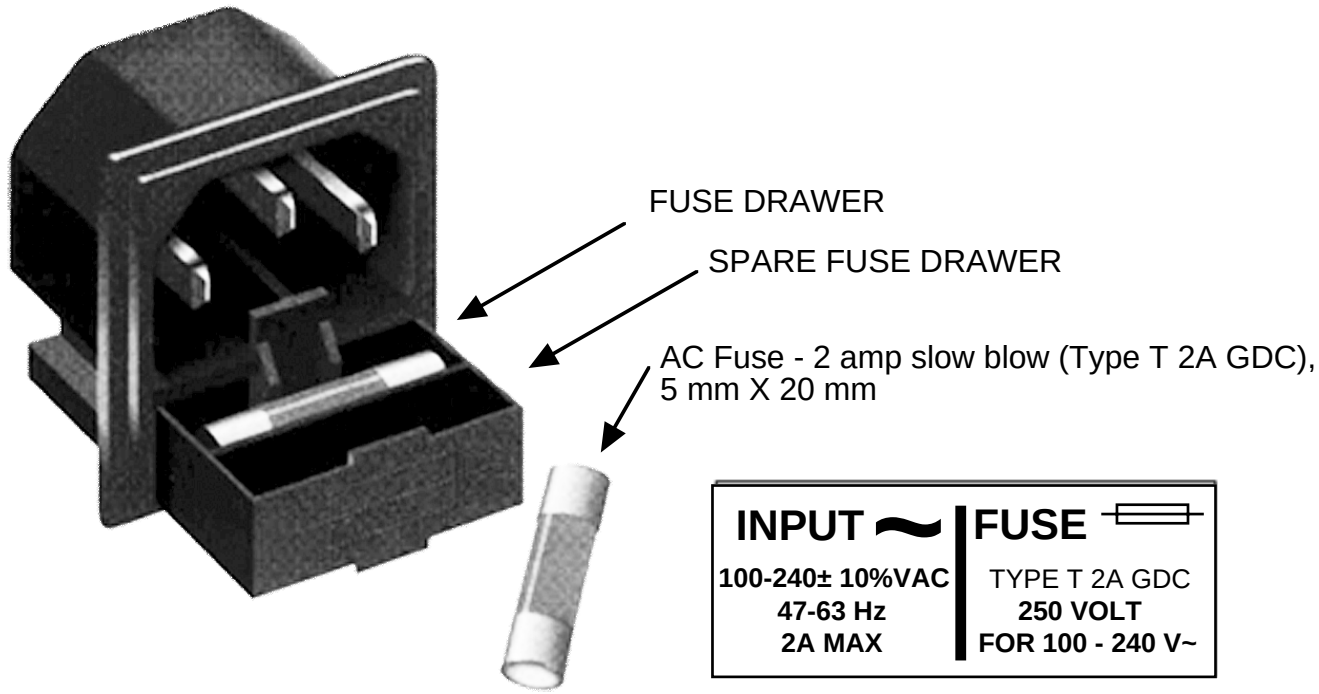

FIGURE 2.4 Fuse Location and Spare Fuse

2.4.2 AGC voltage relating to Gain - The 1200-04 IF Processor operates over a 0 to -80 dBm input range on the RX IF side. The Automatic Gain Control (AGC) provides a constant -30 dBm +5, -15 dBm output RX IF level over the entire input range. Pin 7 of the DB9 control connector, J105, can be monitored to determine the approximate input level (and corresponding gain) in AGC as Table 2.2 shows.

TABLE 2.2 - Approximate AGC Voltage vs Gain and Input Level

AGC Voltage (pin 7, J105)	AGC Gain	Input Level
-0.2 VDC	-14 dB	-10 dBm
-0.5 VDC	-10 dB	-20 dBm
-1.2 VDC	0 dB	-30 dBm
-1.6 VDC	+10 dB	-40 dBm
-1.8 VDC	+20 dB	-50 dBm
-2.0 VDC	+30 dB	-60 dBm
-2.2 VDC	+40 dB	-70 dBm
-2.3 VDC	+47 dB	-80 dBm
-2.4 VDC	+50 dB	-90 dBm

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