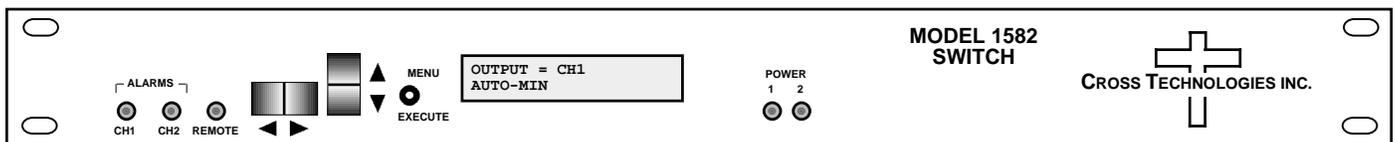


Instruction Manual

Model 1582-1001LB

1:1 Switch, 10 MHz + L-Band

April 2014, Rev. A



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INSTRUCTION MANUAL

Model 1582-1001LB, 1:1 Switch, 10 MHz + L-Band

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MODEL 1582-1001LB, 1:1 Switch, 10 MHz + L-Band

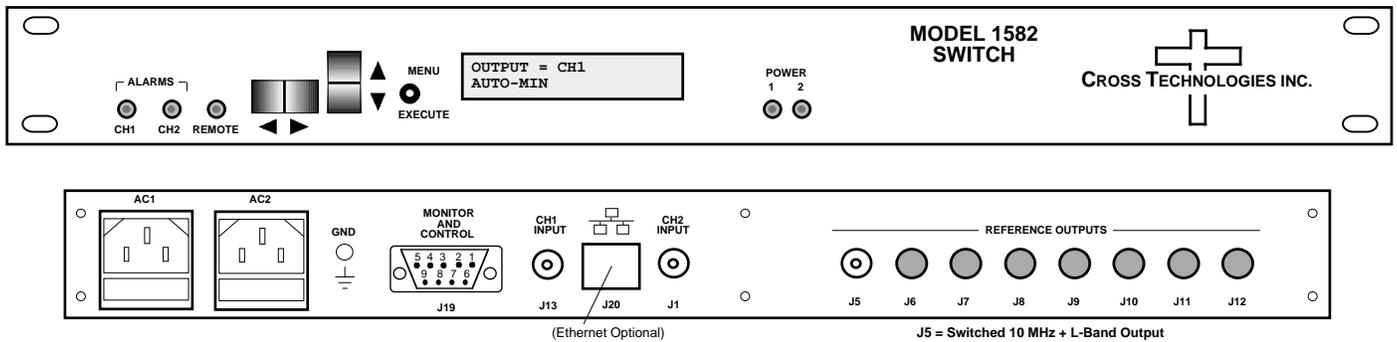
1.0 General

1.1 Equipment Description - The 1582-1001LB is a 1:1 Switch that provides Auto, Manual or Remote relay switching between CH1 and CH2 of 10 MHz + L-Band composite signals based on the presence of the 10 MHz signal. Alarm conditions on CH1 and CH2 are a level drop below -6 dBm of the 10 MHz signal. Switching logic can be selected as follows:

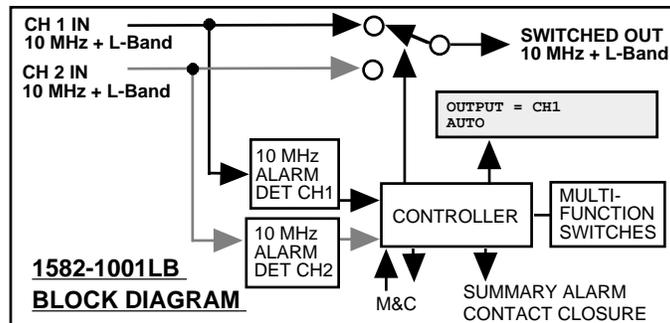
1) CH1 Prime Mode (1PRIME) - Switches from CH1 to the CH2 only if CH1 alarms and CH2 is good. Switches back when CH1 no longer is in alarm or both CH1 and CH2 are bad.

2) Minimum AUTO switching, Initial Channel Select (MIN) Mode - The switch stays on the channel last selected by Manual or Remote selection. When then in AUTO mode, switching occurs only if the selected channel alarms and the other channel is clear. After switching to the other channel, switching back occurs only if this channel then alarms and the other channel is clear.

When power is lost and when power is applied (as alarms at power up dictate), CH1 is selected. Front panel LEDs indicate CH1 and CH2 alarms, Remote mode (yellow), and redundant power supplies on (green). Multi-function push button switches select Auto, Local, or Remote operation and the signal path in the Manual mode. Remote operation via the RS232/RS485 (Ethernet Optional) M&C interface allows selection of CH1 or CH2 and indicates switch position and alarm status. A contact closure to ground indicates if either or both CH1, CH2 are in alarm. An LCD display shows Auto, Local or Remote operation and the signal path. Connectors are BNC, female for the 10 MHz + L-Band signals and DB9 for M&C and for the alarm contact closure output. The 1582-1001LB is a 1RU chassis with redundant power supplies fed by separate fused 100-240 ±10% VAC AC input connectors.



1582-1001LB FRONT AND REAR PANEL



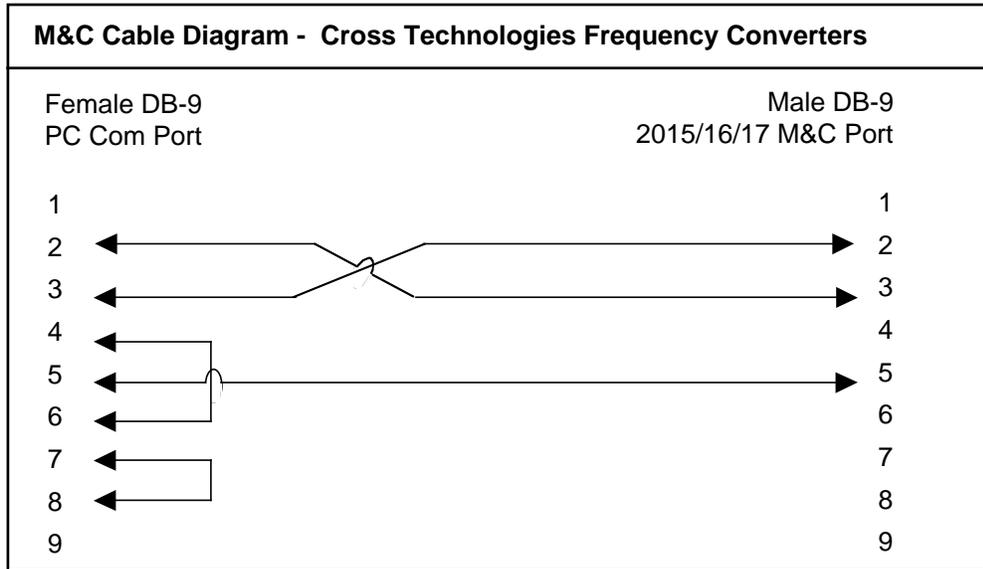
1.2 Technical Specifications

TABLE 1.0 1582-1001LB Switch Specifications*	
Switch Characteristics	
Impedance	75Ω
Type / Configuration	Non-latching Relay, SPDT
Insertion Loss	≤ 2 dB, at 10 MHz to 25 MHz
	Not Specified, 26 MHz to 0.9 GHz
	1.5 dB max., 0.95 to 1.5 GHz
	2.5 dB max., 1.5 to 2.15 GHz
Frequency Response	≤ ±1.5 dB, 0.95 to 2.15 GHz
Return Loss	≥ 12 dB max., 10 - 25 MHz
	≥ 10 dB max., 0.95 to 2.15 GHz
Isolation	≤ -50 dB, 10 - 25 MHz & 0.95 - 1.80 GHz
	≤ 45 dB, 1.8 to 2.15 GHz
Switch time	≤ 20 milliseconds
DC Switching	24 VDC @ 0.5 Amps, Maximum
Controls, Indicators	
Mode Select	Local/Remote, Auto/Manual - Front Panel Switches or M&C
Power; Alarm	Green LEDs, (PS1, PS2); Red LEDs, External Contact Closure
Remote	Yellow LED, RS232C or RS485, selectable, 9600 baud (Ethernet Optional)
Manual Select Status	Front Panel Switches or M&C
Alarm Status	Form C relay: 30VDC, 0.5A max. M&C Serial.
Connectors, Other	
External Alarm, M&C Conn.	DB9 (female)
10 MHz + L-Band In/Out	BNC, female, 75 ohm
Size	1 RU, 19 inch Standard Chassis, 1.75" high x 16.0" deep
Power	Redundant 100-240±10% VAC, 47-63 Hz., 20 watts maximum
Available Options	
W8	Ethernet with Web Browser
W18	Ethernet with Web Browser & SNMP
W28	Ethernet with TCP/IP & <i>Telnet</i> ® addressability
Connectors/Impedance	
D	50Ω BNC
*10°C to 40°C; Specifications subject to change without notice.	
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1.3 Monitor and Control Interface

A) Remote serial interface

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



Connector: Rear panel, DB-9 female

J10 Pinouts (RS-232C/422/485)	
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

1.4 M&C Commands

The following tables summarize the commands and status queries applicable to the 1582-1001LB Protection Switch.

* **PLEASE NOTE:** The two character {aa} prefix, shown in the table below, is present ONLY when RS485 is selected.

Table 2.0 Model 1582-1001LB - M&C Remote Commands

Table 2.0: Model 1582-1001LB M&C Remote Commands		
Commands	Syntax	Description
Remote Select	{aaCRx}	where:
		x = 0: clears remote selections
		x = 1: remote select CH1
		x = 2: remote select CH2
In Auto Switching Mode	{aaCMx}	where:
		x = 0: disables min. auto switching mode
		x = 1: enables min. auto switching mode

1.5 M&C Queries

Table 2.1 Model 1582-1001LB - M&C Status Commands

Table 2.1: Model 1582-1001LB M&C Status Commands		
Commands	Syntax	Description
Model # and firmware version	{aaSV}	returns: {aaSV 1582-1001LB v 400} model # & firmware version
Remote Select Status	{aaSR}	returns: {aaSAx} where: X = 0 if no remote selections X = 1 if CH1 is remotely selected X = 2 if CH2 is remotely selected
In Auto Switching Mode Status	{aaSM}	returns: {aaSMx} where: X = 0 if min. auto switching is disabled X = 1 if min. auto switching is enabled
Alarms Status	{aaSA}	returns: {aaSAxy} where: X = 0 if CH1 is not alarmed X = 1 if CH1 is alarmed y = 0 if CH2 is not alarmed y = 1 if CH2 is alarmed
Switch Position	{aaSP}	returns: {aaSPxy} where: X = 1 if CH1 is selected X = 2 if CH2 is selected y = 0 if switch mode is Auto y = 1 if switch mode is Remote y = 2 if switch mode is Manual

2.0 Installation

2.1 Mechanical - The 1582-1001LB is rack mounted by attaching the front panel to a rack through the four holes at the edges of the panel.

2.2 Front and Rear Panel Controls and Indicators - The following are the front and rear panel controls and indicators.

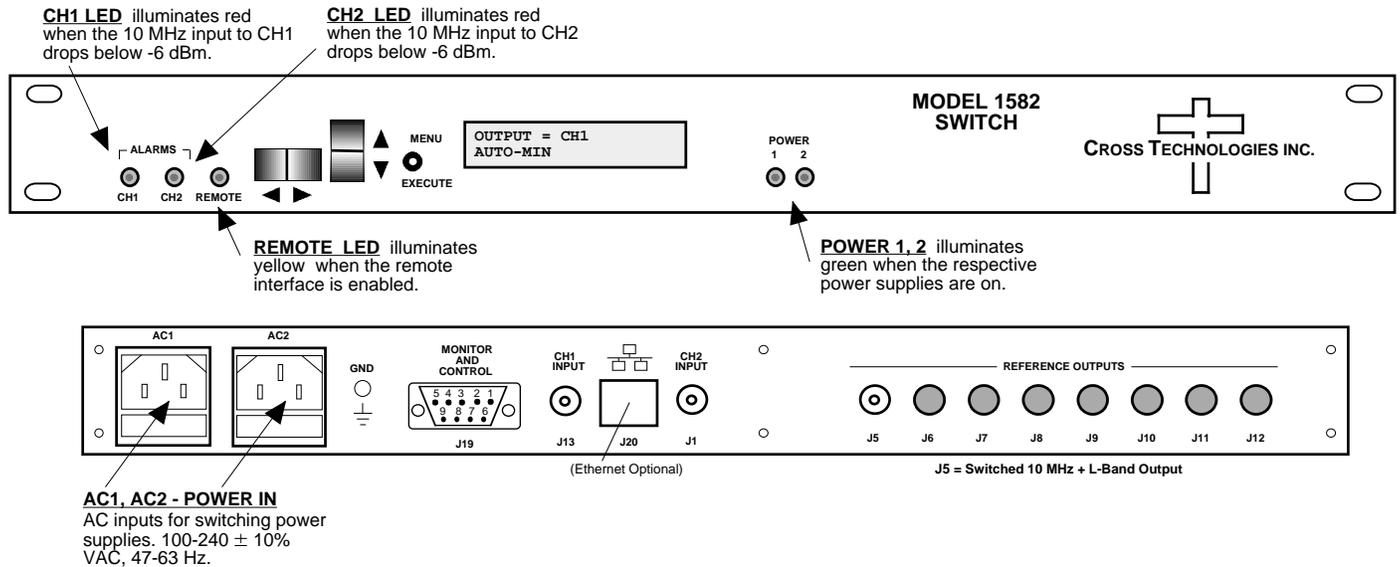


FIGURE 2.3 1582-1001LB Front AND REAR Panel Controls and Indicators

2.3 Installation / Operation

2.3.1 Installing and Operating the 1582-1001LB, 1:1 Switch

1. Connect primary 10 MHz +L-Band composite signal to CH1 In/out, J13
2. Connect backup 10 MHz +L-Band composite signal to CH2 In/out, J1
3. Connect selected 10 MHz +L-Band composite output signal, J5, to external equipment.
4. Connect primary 100-240 \pm 10% VAC, 47 - 63 Hz to AC1 on the back panel.
5. Connect secondary 100-240 \pm 10% VAC, 47 - 63 Hz to AC2 on the back panel.
6. Set the gain for -10 to +30 dB. Make sure the output stays within -20 to 0 dBm with the gain selected
7. 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.

NOTE: If a fuse continues to open, the power supply is most likely defective.

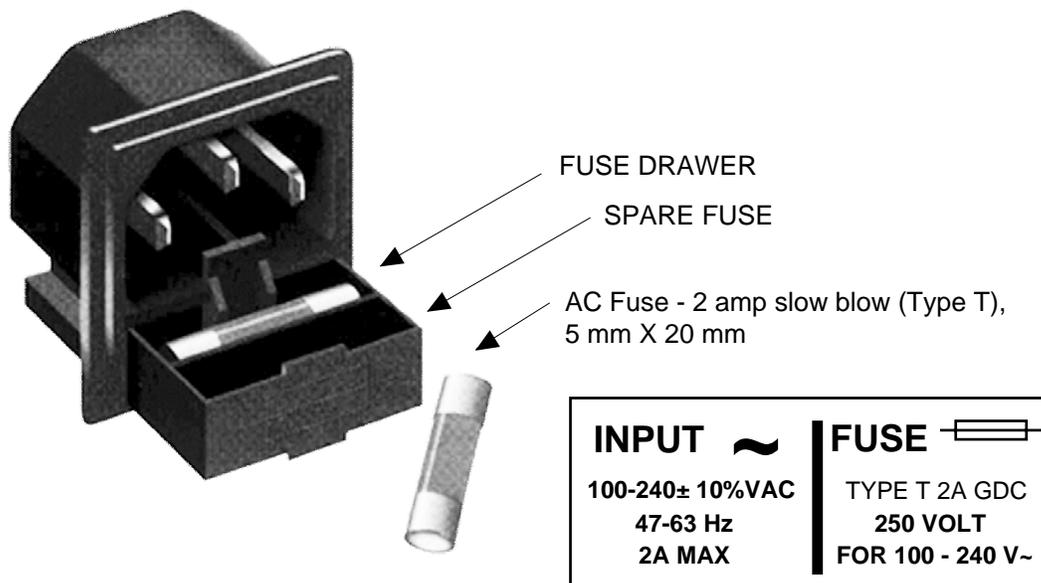


FIGURE 2.4 Fuse Location and Spare Fuse

2.4 Menu Settings

2.4.1 Functions

This section describes operation of the front panel controls. There are three operator switches, the LCD display and alarm indicator LEDs. All functions for the equipment are controlled by these components. The functions are (see Figure 2.3):

Power Up

Normal Display

Menu 1 Manual Select

Menu 2 Remote Enable

Menu 3 Interface

Menu 4 RS-485 Address

Menu 5 Minimum Auto Switching

Save Menu When “R” is selected in any above menu, or when the end is reached (after Menu 11)

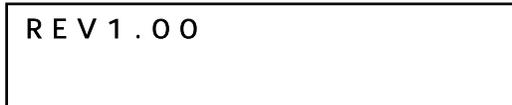
All program changes must start with the operation of the Menu/Execute switch and must also end with the operation of the Menu/Execute switch verified by the “Save Settings?” Menu. If this sequence is not followed, none of the changes will take effect. If programming is initiated and no operator action takes place for approximately 12 seconds (before the final press of the Menu/Execute switch) the display will revert to its previous status and you will need to start over.

2.5 Power On Settings

NOTE: THE LAST STATUS OF A UNIT IS RETAINED EVEN WHEN POWER IS REMOVED. WHEN POWER IS RESTORED, THE UNIT WILL RETURN TO IT'S PREVIOUS SETTINGS.

When power is first applied, the LCD display goes through three steps.

1. The LCD goes black to show all segments are functioning.
2. The software version will be displayed.



REV 1.00

3. The selected output of the switch is displayed.



OUTPUT = CH1

The unit is now operational and ready for any changes the operator may desire.

2.5.1 Control Switches

1. Menu/Execute - Any change to the programming of the unit must be initiated by pressing the Menu/Execute switch and completed by pressing the Menu/Execute switch.
2. Horizontal Switch - This switch is mounted so its movement is horizontal and moves the cursor left or right.
3. Vertical Switch - This switch is mounted so its movement is vertical and has two functions:
 - a. During frequency , gain changes, the vertical movement will raise or lower the number in the direction of the arrows.
 - b. For other functions such Mute on/off, the vertical switch will alternately turn the function on or off regardless of the direction operated.

2.5.2 Minimum Auto Switching

When minimum auto switching is enabled the switch will remain in its presently selected position unless the selected channel alarms AND the other channel is not alarmed. This mode may be desirable in situations where one of the channels is frequently coming in and out of alarm.

2.5.3 Alarm Indications

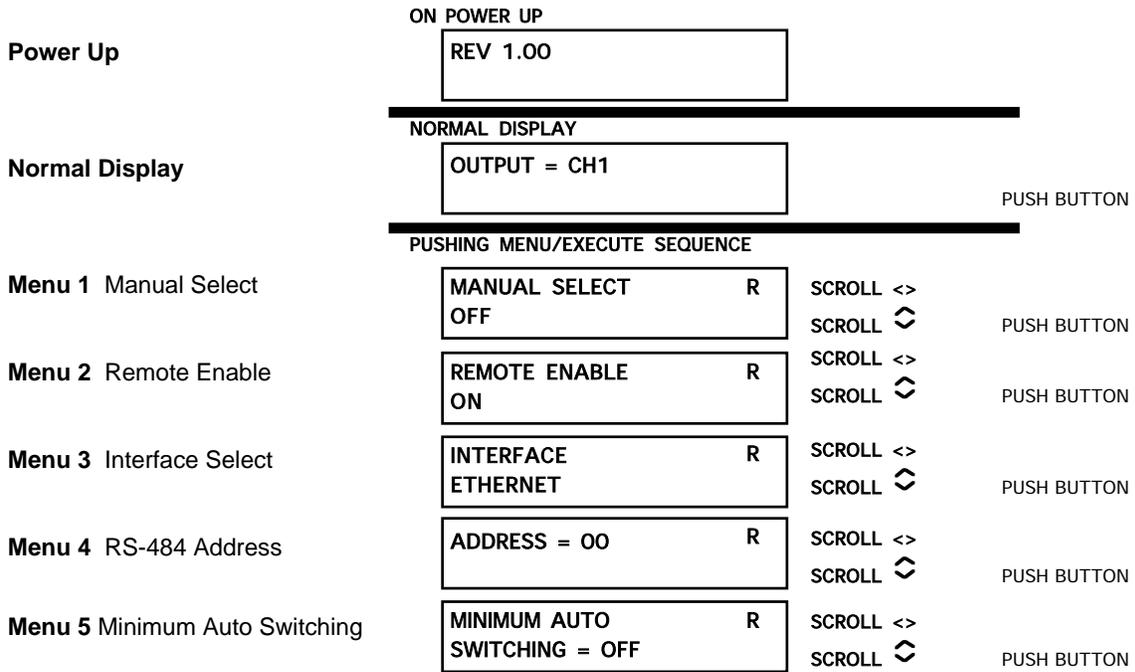


FIGURE 2.5 Menu Display and Sequences

2.6 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 T_{mra} .
- 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 units 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 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 RE-INSTALLED** prior to Top Cover screw replacement. **FAILURE TO DO** this may cause **INGRESS** and/or **EGRESS** emission problems.



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Printed in USA, 2012