

**MODEL 8143
SIGNAL SELECTOR
INSTALLATION AND
OPERATION MANUAL**

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*Part Number 8143-5000-0050
Manual Revision B
15 December 2006*

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1 Introduction

The Spectracom Model 8143 Signal Selector (Figure 1-1), provides failure detection and manual or automatic switchover between two 10-Mhz frequency standards. The selected input is fed through a frequency distribution amplifier to as many as twelve loads.

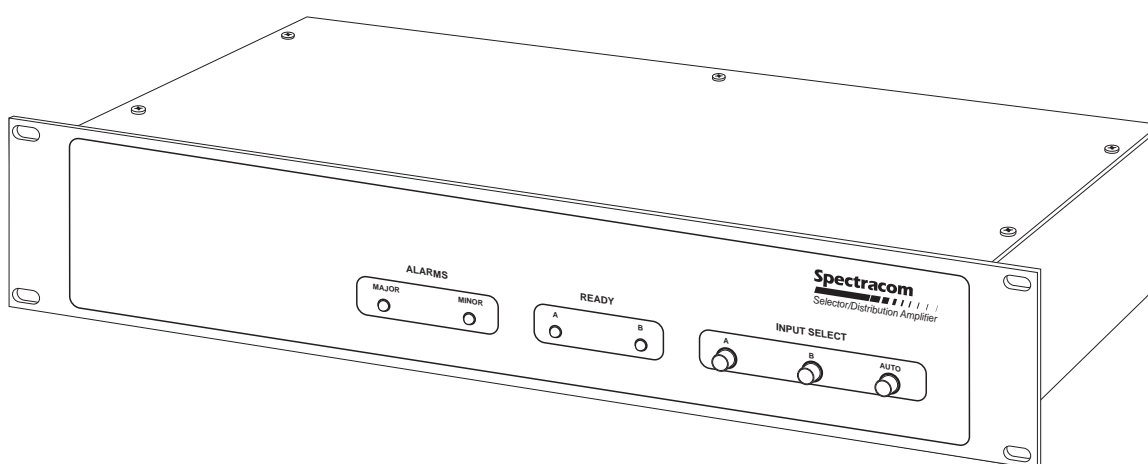


Figure 1-1: Model 8143 Signal Selector

The Model 8143 consists of a single printed circuit board assembly housed in a 3.50 inch high (two rack unit) chassis. Fourteen BNC connectors mounted on the rear of the chassis provide interface to the PCB assembly for the two reference input signals and the twelve outputs. Two six-pin and one seven-pin connector provide the interfaces for two alarm inputs and alarm relay contact outputs. A standard AC connector provides for the connection of the AC power source. A six-position terminal strip provides the interface for DC input power options.

A Minor Alarm occurs when either of the input reference signals is absent or when an alarm is received at one of the two alarm inputs. A Major Alarm occurs when both input reference signals are absent or when alarm signals are received at both alarm inputs. A Minor Alarm energizes the minor alarm relay. A Major Alarm de-energizes the major alarm relay. Both alarm relays are Form C, double-pole, double-throw (DPDT) relays with 2A, 30 VDC contacts.

The standard input power configuration for the Model 8143 is a 115 VAC $\pm 15\%$ 60-Hz power source. The unit can be configured with one of two DC input power options. Option 52 accepts an 11 to 32 VDC Input Power source, Option 54 a 48-VDC Input Power source.

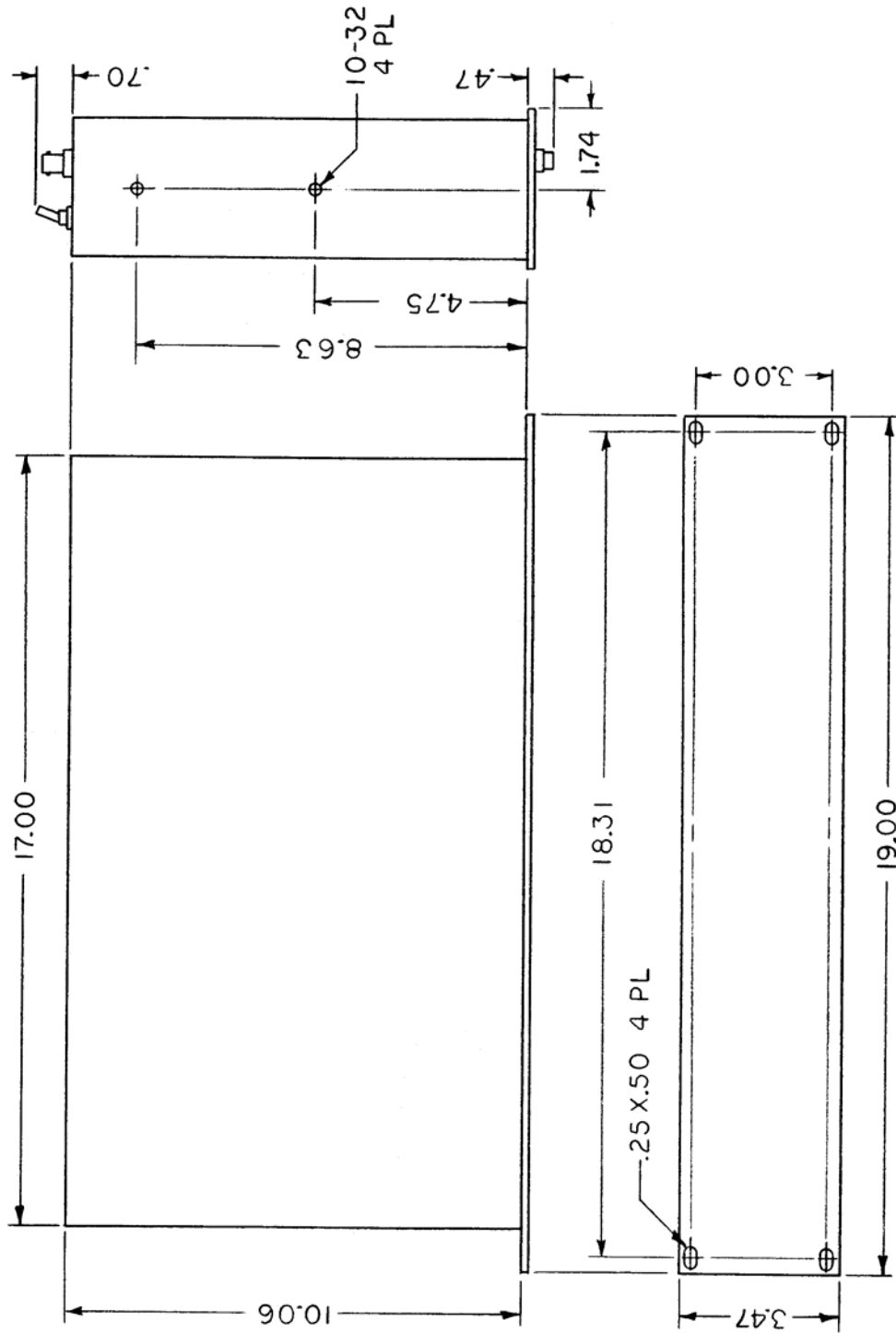


Figure 1-2: Model 8143 Outline Drawing

1.1 Specifications

The Model 8143 Signal Selector specifications are as follows:

1.1.1 Input Power

The Model 8143 is operated from 115 VAC power or one of the DC power options shown below. The DC inputs accept either positive or negative polarity and are isolated from chassis ground.

<u>CONFIGURATION</u>	<u>POWER</u>
Standard 8143	115 VAC \pm 15%, 60 Hz, 12 WATTS
Option 52	\pm 12-24 VDC, 10 WATTS
Option 54	\pm 48 VDC, 10 WATTS

1.1.2 Operating Environment

The equipment is designed for operation in a range of -30° to +60°C.

1.1.3 Physical Characteristics

The Model 8143 Signal Selector physical characteristics (Figure 1-2) are as follows:

Rack Space:	Two rack units (Height 3.50 inches)
Width:	19 inches
Depth:	10 inches
Weight:	6 pounds

1.2 Outputs

Twelve individually buffered outputs from the selected A or B input. Each output is a sine wave provided on a BNC connector at 500 mV rms into 50 ohms. The outputs are ground referenced. Transformer outputs may be isolated by removing a ground jumper at each output.

1.3 Inputs A & B

Two reference input signals are provided on BNC connectors labeled as the REF IN A and REF IN B signals, respectively. Each signal is a 10-MHz sine wave at 0.10 to 1.0 V rms into 50 ohms.

1.4 Signal Selection

With automatic selection activated, switchover occurs when the Ref A signal input is removed, or when an A Alarm input occurs. The unit returns to the Ref A signal input when the Ref A signal returns or the A Alarm input is removed. With automatic selection de-activated, switchover is operator-controlled. Switchover causes a momentary transient in the output reference signal.

1.4.1 Alarm Outputs and Inputs

The Model 8143 Signal Selector has two Alarm Outputs: the Major Alarm and the Minor Alarm. It has two Alarm Inputs, Input A and Input B.

1.4.1.1 Minor Alarm

A MINOR alarm is activated when either of the two input signals is removed or when an alarm is received at one of the two alarm inputs (ALARM INPUT A and ALARM INPUT B). A MINOR ALARM energizes the minor alarm relay completing contact between Pins 1 and 3. Pin 2 is open.

1.4.1.2 Major Alarm

A MAJOR alarm is activated when both input signals are removed or when alarms are received at both alarm inputs (ALARM INPUT A and ALARM INPUT B). A MAJOR alarm de-energizes the major alarm relay completing contact between Pins 4 and 6. Pin 5 is open.

1.4.2 Alarm Input A

The Alarm Input A is a detachable terminal strip that provides connection for RS-422 or ground-activated alarm inputs.

ALARM INPUT	ALARM CONDITION
Pin 1	A ground on this terminal activates an input alarm.
Pin2 Pin 3	RS-422 input signal levels. If Pin 2 is 0.2 volts less than Pin 3, an input alarm is activated. Input signal range is -12 to +12 volts.
Pin 4	Enables RS-422 input. To enable the RS-422 input connect Pin 4 to Pin 5 (+5 volts).
Pin 5	+5 volts.
Pin 6	Ground.

Table 1-1: Alarm Input A Conditions

1.4.2.1 Alarm Input A -Alternate implementation

Unit can be configured for normally grounded, open-activated alarm input by connecting a jumper between terminal Pins 4 and 5. Terminal Pin 3 then becomes the alarm input expecting to see a grounded signal. Terminal Pin 6 can be used as the ground source for normally closed contacts.

1.4.3 Alarm Input B

Alarm Input B is a detachable terminal strip that provides connection for RS-422 or ground-activated alarm inputs.

ALARM INPUT	ALARM CONDITION
Pin 1	A ground on this terminal activates an input alarm.
Pin 2 Pin 3	RS-422 input signal levels. If Pin 2 is 0.2 volts less than Pin 3, an input alarm is activated. Input signal range is -12 to +12 volts.
Pin 4	Enables RS-422 input. To enable the RS-422 input connect Pin 4 to Pin 5 (+5 volts).
Pin 5	+5 volts.
Pin 6	Ground.

Table 1-2: Alarm Input B Conditions

1.4.3.1 Alarm Input B -Alternate implementation

The unit can be configured for normally grounded, open-activated alarm input by connecting a jumper between terminal Pins 4 and 5. Terminal Pin 3 then becomes the alarm input expecting to see a grounded signal. Terminal Pin 6 can be used as the ground source for normally closed contacts.

1.4.4 Power

Standard Model 8143	115 VAC $\pm 15\%$, 12 watts, 60 Hz
Option 52	± 11 to 32 VDC $\pm 20\%$, 10 watts
Option 54	± 55.2 VDC $\pm 20\%$, 10 watts, (48 VDC)

Table 1-3: Power Options

Dual DC inputs at the rear terminal block are internally connected by diode OR. Reverse polarity will not harm the unit.

1.4.5 Mechanical Overview

Temperature	-30° to +60°C
Rack Space (Height)	3.50 inches
Width	19.0 inches, EIA 19" rack
Depth	10.0 inches
Weight	6.0 pounds

1.4.6 Options

Option 06	12.8-MHz Inputs/Outputs
Option 07	5-MHz Inputs/Outputs
Option 08	1-MHz Inputs/Outputs
Option 11	Rack Mount Slides
Option 52	12 to 24 VDC INPUT
Option 54	48 VDC INPUT

1.4.7 Ordering Information

1. If DC power input is required, specify Option 52 or 54.
2. If rack slides are required, specify Option 11.
3. Configuration is specified by including option numbers in the part number, as shown in the following examples:

8143	(No slide mount, AC power)
8143-52	(No slide mount, 12-24 VDC power)
8143-11-54	(Slide mount, 48 VDC power)

2 Installation

Install the unit as described herein. In all cases, if any problems occur during installation and configuration, please contact Spectracom Technical Support at US +1 585.321.5800.

CAUTION:

Electronic equipment is sensitive to Electrostatic Discharge (ESD). Observe all ESD precautions and safeguards when handling Spectracom equipment

NOTE: If equipment is returned to Spectracom, it must be shipped in its original packing material. Save all packaging material for this purpose.

2.1 Inventory

Before installing the unit, please verify that all material ordered has been received (Table 2-1). If there is a discrepancy, please contact Spectracom Customer Service at US +1.585.321.5800.

2.2 Inspection

Unpack the equipment and inspect it for damage. If any equipment has been damaged in transit, please contact Spectracom Customer Service at US +1.585.321.5800.

2.3 Rack Mount Installation

There are two methods of mounting the Model 8143 Signal Selector in a standard 19-inch EIA rack.

A. Rack Mount Installation Without Rack Mount Slide Option 11

Locate the desired position in a standard 19-inch EIA rack. Using standard hardware, attach the Model 8143 Signal Selector front panel to the rack mounting rails.

B. Rack Mount Installation With Rack Mount Slide Option 11

Refer to Section 4.4 and Figure 2-1 for more information:

1. Locate the package containing the Option 11 Rack Mount Slide.
2. Attach the right and left chassis section of the slides to the Model 8143 Signal Selector.
3. Assemble the right and left stationary slide sections to the right and left intermediate slide sections.
4. Locate the desired position in a standard 19-inch EIA rack and attach the assembled slides to the front and rear cabinet mounting rails.

5. Install the chassis-mounted slide sections on the Model 8143 Signal Selector into the cabinet-mounted slide sections, depressing the lock buttons as required.
6. Complete the installation of the Model 8143 by pushing the chassis all the way into the cabinet and fastening the front panel to the cabinet mounting rails.

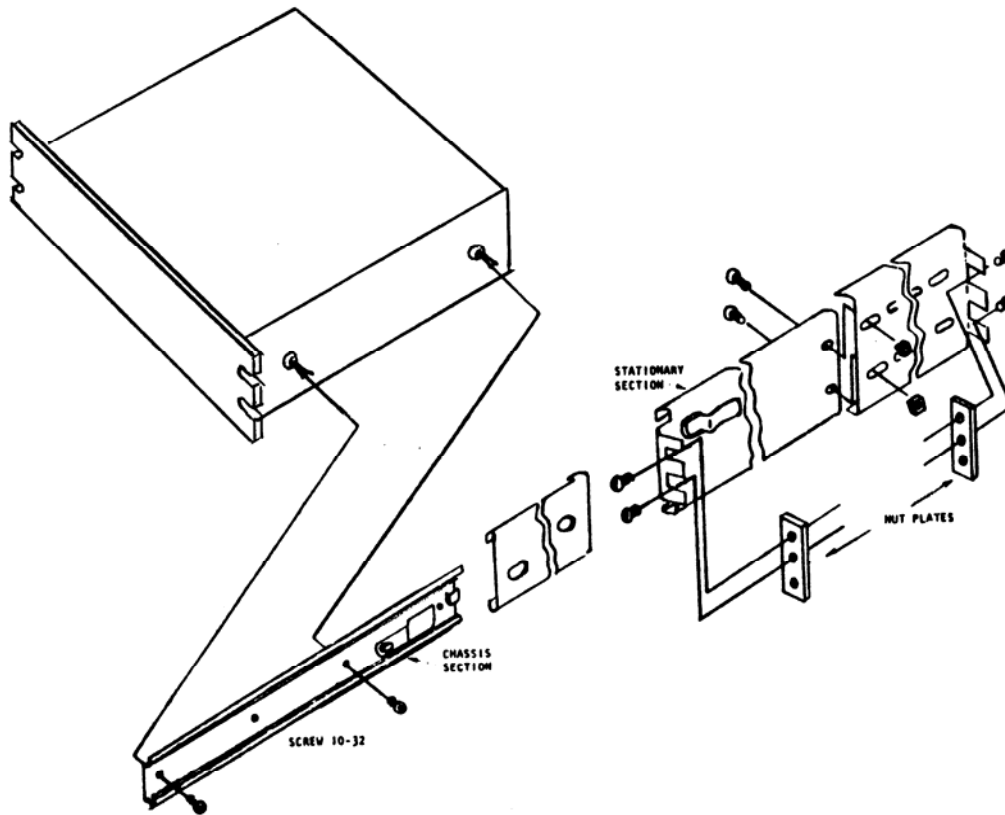


Figure 2-1: Slides (Option 11)

2.4 Equipment Interconnect

1. Make sure the **POWER** control locking toggle switch on the rear panel is in the **OFF** position (down).
2. Connect the **REF A INPUT** reference signal to the **REF A INPUT** BNC connector on the rear panel of the unit.
3. Connect the **REF B INPUT** reference signal to the **REF B INPUT** BNC connector on the rear panel of the unit.
4. Connect the **OUTPUTS** to their respective loads.
5. If this is a standard Model 8143, connect the furnished AC line cord from the three-prong **AC INPUT** connector on the rear of the unit to a 115 VAC $\pm 15\%$, 60 Hz power source.
6. If this Model 8143 is equipped with Option 52, 12-24 VDC INPUT, use the furnished mating connector to attach the unit to a $\pm 11-32$ VDC power source.
7. If this Model 8143 is equipped with Option 54, 48 VDC INPUT, use the furnished mating connector to attach the unit to a $\pm 44.2-66.2$ VDC power source.

Options 52 and 54 require the positive lead be connected to pin 2 and the negative lead to pin 3. A safety ground is provided on pin 1. To provide redundancy, two DC sources of the same polarity and voltage may be connected simultaneously to the Model 8143. The second power source is connected to pin 4 (GND), pin 5 (POS), and pin 6 (NEG).

3 Operation

This section describes the Model 8143 Signal Selector front and rear panel controls and indicators. It also describes the operation of the unit. The Model 8143 provides failure detection and manual or automatic switchover between two 10-MHz frequency standards. The selected input is routed through a frequency distribution amplifier to as many as twelve loads.

3.1 Front Panel Functions

Refer to Figure 3-1 and the following paragraphs for a description of the front panel controls and indicators.

MAJOR ALARM INDICATOR

A **MAJOR** alarm is activated when both of the input signals are removed or when alarms are received at both alarm inputs. A MAJOR alarm de-energizes the major alarm relay and illuminates the red Major Alarm indicator.

MINOR ALARM INDICATOR

A **MINOR** alarm is activated when either of the input signals is removed or when an alarm is received at one of the two alarm inputs. A MINOR alarm energizes the minor alarm relay and illuminates the yellow Minor Alarm indicator.

INPUT READY A INDICATOR

Indicates the REF A INPUT signal is present.

INPUT READY B INDICATOR

Indicates the REF B INPUT signal is present.

INPUT SELECT A INDICATOR

Indicates the REF A INPUT signal is selected.

INPUT SELECT B INDICATOR

Indicates the REF B INPUT signal is selected.

INPUT SELECT AUTO INDICATOR

Indicates automatic signal select is activated.

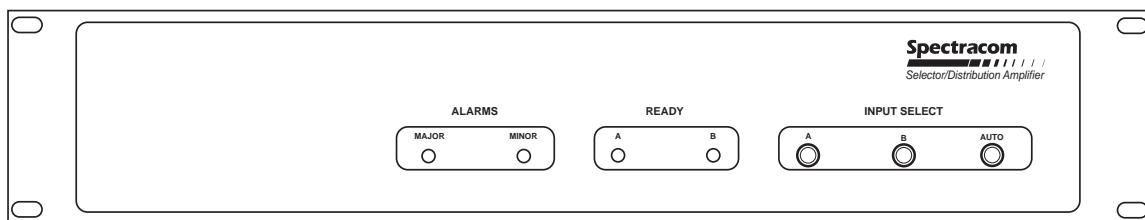


Figure 3-1: 8143 Front Panel

INPUT SELECT A SWITCH

Activates manual selection of the REF A INPUT signal.

INPUT SELECT B SWITCH

Activates manual selection of the REF B INPUT signal.

INPUT SELECT AUTO SWITCH

Activates automatic selection and Ref A Priority. Switchover occurs when the selected signal is removed, or when an alarm input occurs. With automatic selection not activated, switchover is operator-controlled.

3.2 Rear Panel Functions

Refer to Figure 3-2 MODEL 8143 REAR PANEL, to locate the following:

ALARM INPUT B

A detachable terminal strip provides external connections for RS-422 or ground-activated alarm inputs.

ALARM INPUT A

A detachable terminal strip provides external connections for RS-422 or ground-activated alarm inputs.

ALARM OUTPUTS

A detachable terminal strip provides external connections for the MAJOR and MINOR ALARM relay contacts.

REF IN B

This BNC connector is the external connection for the reference B input signal. The REF IN B signal is 10-MHz at 0.10 to 1.0 V rms into 50 ohms.

REF IN A

This BNC connector is the external connection for the reference A input signal. The REF IN A frequency signal is 10 MHz at 0.10 to 1.0 V rms into 50 ohms.

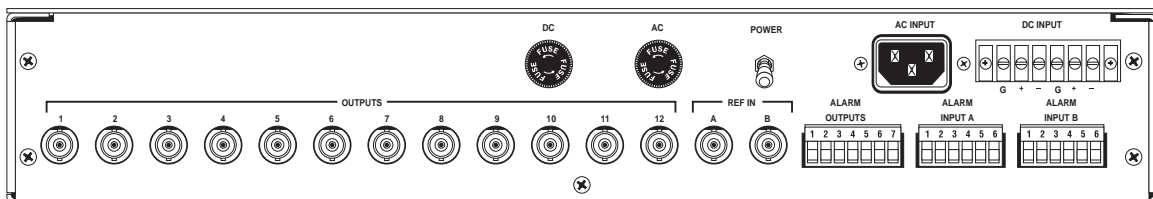


Figure 3-2: 8143 Rear Panel

OUTPUTS 1 through 12

These BNC connectors provide the selected reference signal to twelve separate loads. The output level of each OUTPUT is 500 mV rms into 50 ohms.

AC INPUT

A standard three-prong, male AC connector applies power to the unit from the AC line cord.

DC INPUT

This terminal strip is used to apply DC power for one of the two DC Power Options:

Option 52 - 12-24VDC (± 11 to 32 VDC), 10 WATTS

Option 54 - 48 VDC (± 44.2 to 66.2 VDC), 10 WATTS

3.3 Power On

Before applying power:

1. Make sure the REF A INPUT reference input signal (10-MHz) is connected to the **REF A IN** connector.
2. Make sure the REF B INPUT reference input signal (10-MHz) is connected to the **REF B IN** connector.
3. Make sure the proper power source for this Model 8143 Signal Selector is connected per the instructions in Section 1, Paragraph 1.7, Equipment Interconnect Procedure.
4. Terminate the outputs (in use) at the ends of the lines using the provided 50-ohm terminators. Unused terminators may also be placed on the ends of the lines for any unused outputs in order to retain the terminators for future use, but this is optional.
5. Turn the locking **POWER** toggle switch on the Model 8143 rear panel to the ON position (up).
6. The Model 8143 Signal Selector is now operational.

4 Options

This section describes the options and accessories available for the Model 8143 Signal Selector.

4.1 Option 06 12.8-mhz Inputs/Outputs

Model 8143 equipped with Option 06 operates at 12.8 MHz instead of 10 MHz. All other specifications are unchanged.

4.2 Option 07 5-mhz Inputs/Outputs

Model 8143 equipped with Option 07 operates at 5 MHz instead of 10 MHz. All other specifications are unchanged.

4.3 Option 08 1-mhz Inputs/Outputs

Model 8143 equipped with Option 08 operates at 1 MHz instead of 10 MHz. All other specifications are unchanged.

4.4 Option 11 Rack Mount with Slides

Both the right and left slides are assembled in the same manner:

1. Install the intermediate section of the slide assembly into the stationary section of the slide assembly as shown in the installation drawing.
2. Attach the end bracket to the stationary section of the slide assembly using the two screws and nut bar provided.
3. Attach the end bracket to the rear cabinet mounting rail using the two screws and nut bar provided.
4. Attach the front of the stationary section to the front cabinet mounting rail using the two screws and nut bar provided.
5. Attach the chassis section of the slide assembly to the chassis of the Model 8143 using the two screws provided.
6. Repeat the same procedure for the slide assembly on the opposite side of the Model 8143.
7. Attach the chassis sections of the slide assemblies into the intermediate sections of the slide assemblies until they lock.
8. Install the Model 8143 by releasing the lock buttons on the slide assemblies and pushing the unit all the way into the cabinet.
9. Attach the front panel of the Model 8143 to the cabinet mounting rails.

4.5 Option 52 - 12-24 VDC Input Power

Option 52, 12-24 VDC Input Power, is used in place of the standard 115 VAC power input. This option accepts a ± 11 to 32 VDC input and requires a 2.0 Amp 3AG fuse.

4.6 Option 54 - 48 VDC Input Power

Option 54, 48 VDC Input Power, is used in place of the standard 115 VAC power input. This option accepts a 55.2 VDC (48 VDC) input and requires a 1/2 Amp 3AG fuse.

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