R232/ R232-48VDC MultiPort RF Router

Installation Guide

Revision 1.0

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1 Product Overview

1.1 Introduction

The Model **R232** and Model **R232-48VDC** MultiPort RF Routers are patented[1] devices featuring several unique capabilities both in signal performance and overall functionality in a test selection environment. This switching system is controllable over a TCP/IP network using either a web-browser or Telnet interfaces under automated test instrument operation.

The difference in the two R232 models are their power supplies. The Model **R232** uses a standard 90 – 240 volts alternating current (AC) voltage supply, while the Model **R232-48VDC** uses a - 48-volt direct current (DC) input. For purposes of this document the term R232 will be used synonymously unless there is a need to differentiate the models.

The R232 front panel features a row of LED indicators to indicate the presence of power and which input is routed to a respective output. During operation a corresponding LED will light either green or amber indicating which output it is routed too. If the same input is selected by both outputs the indicator will alternate between green and amber.

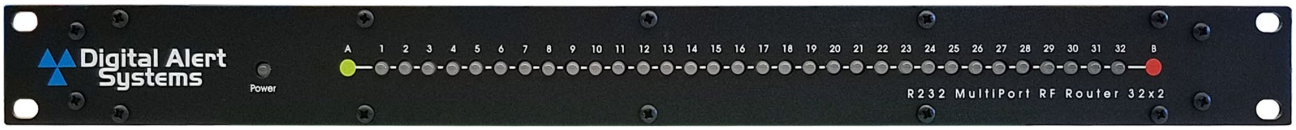

Figure 1: R232 front panel showing LED display of selected inputs.

The rear panel is densely populated with rows of precision “F” style connectors for the inputs and two outputs. The Ethernet control/management port is also located on the back.

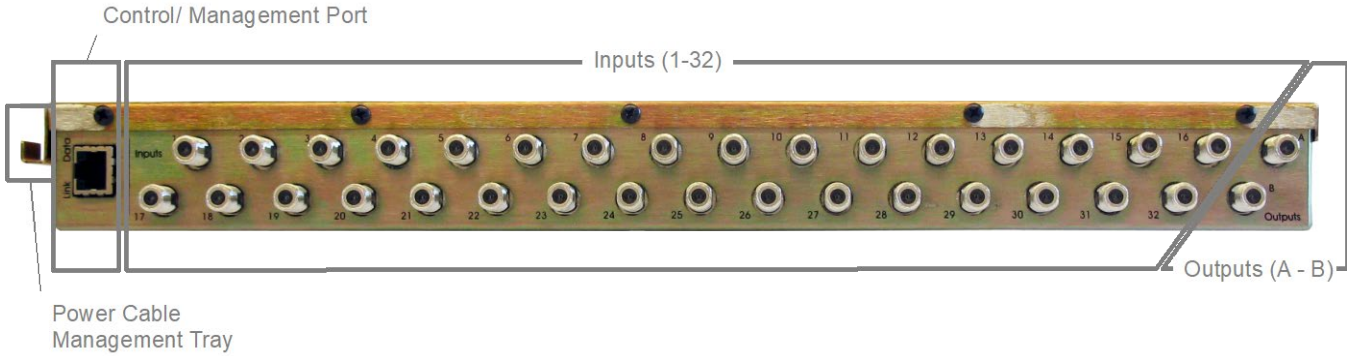

Figure 2: R232 Rear Panel connections. (Power cabling not shown)

[1] US Patent # 10,291,001

This document is intended to provide a brief product installation guideline. For more information on using and controlling the devices please refer to the document "***Monroe X-point Control Protocol MXCP™ R232 MultiPort RF Router Operation/Interface Manual***" which describes the data connection and interface parameters for each type of interface.

2 Power Connections

As mentioned above the R232 and R232-48VDC differ by their respective power supplies and therefore have different connection types reflective of the input style. Although the inputs differ the connection points and cable arrangements are the same.

Both models feature the patented Pocket Power Supply™ which is a unique opening on the right side of the chassis (facing the front) for power input. This is shown in Figure 3 below.

Figure 3: Position of Pocket Power Supply opening.

Along the same side of the chassis is the power cable management tray, this allows the power cable to be cleanly supported along the edge and toward the rear of the chassis.

2.1.1 R232 Power Connections - AC

The in the pocket power supply of the model R232 is an International Electrotechnical Commission (IEC) standard receptacle as shown in Figure 4 below.

Figure 4: R232 Pocket Power Supply with IEC receptacle for AC input.

The R232 ships with a right-angle IEC power cable similar to the one shown on the right.

The plug is inserted in the AC receptacle on in the Pocket Power Supply opening and the wire is routed along the cable management tray as shown in Figure 5.

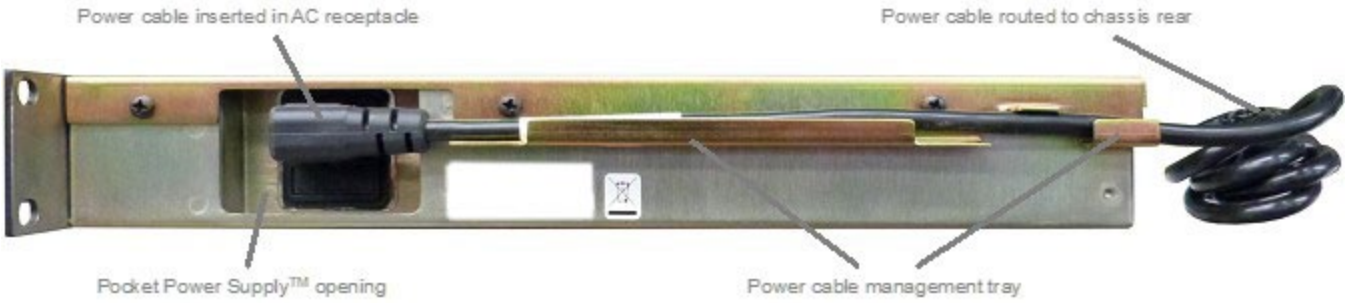

Figure 5: R232 side view with AC power cord installed and properly configured.

2.1.2 R232-48VDC Power Connections - DC

The model R232-48VDC uses a different connector in the Pocket Power Supply opening. This connector is a two-pin removeable terminal block where one side remains mounted to the chassis as shown in Figure 6, while the mating connector can be easily removed to facilitate installation of the power cabling.

IMPORTANT NOTE: CLOSELY OBSERVE THE CONNECTION POLARITY TO AVOID DAMAGE!

Figure 6: R232-48VDC Pocket Power Supply with removeable terminal receptacle for DC input (shown with mating connector removed)

Along the same side of the chassis is the power cable management tray which allows the power cable to be cleanly supported toward the rear of the chassis.

The R232-48VDC is not supplied with any power wiring. This is the sole responsibility of the customer. The terminal strip can accept wires up to 16 gauge.

Once the wires are attached to the removable terminal strip it can be connected to the mating connector in the Pocket Power Supply opening. There are two retention screws on the terminal strip to secure the connector to the device.

The wires can then be routed along the power cable management tray and toward the rear of the chassis. The completed connection and wire routing can be seen in Figure 7 below.

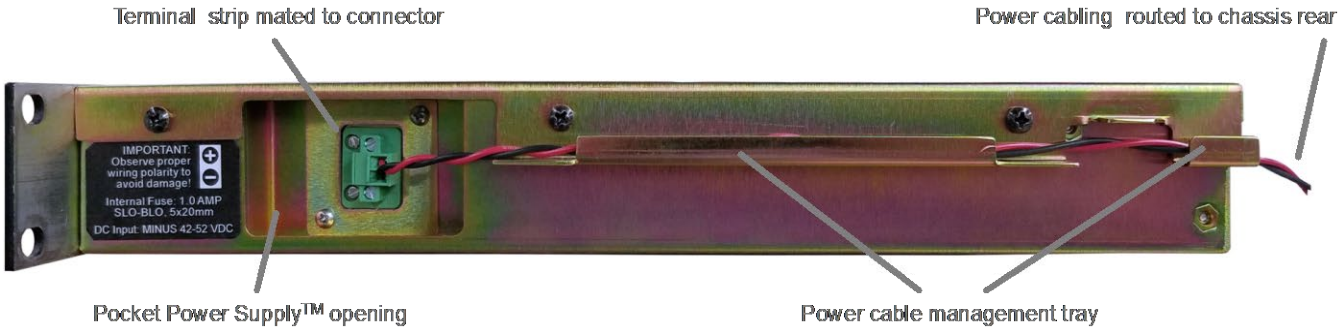

Figure 7: R232-48VDC side view with DC power cabling installed and properly configured.

Once power connections are made the unit is ready for mounting.

3 Mounting

The R232 is designed to be mounted in a standard Electronic Industries Alliance (EIA) 19" rack frame using the four mounting screw holes on the front of the chassis. The 1.75" high chassis is a uniform one rack unit (RU) height.

Figure 8: Front panel mounting holes

The 1.75" (4.45cm) high chassis fills a uniform one rack unit (RU) in height.

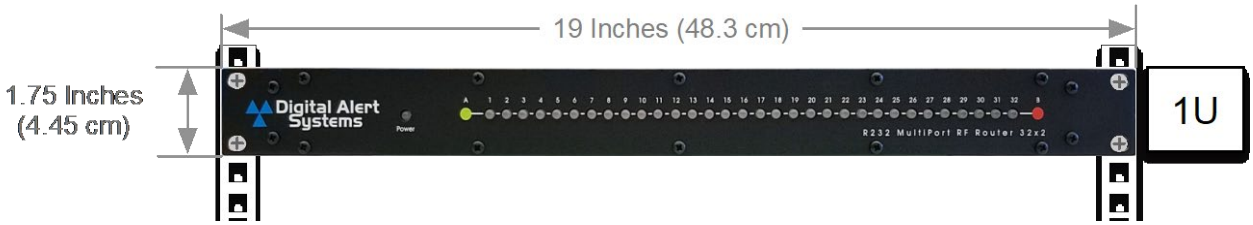

Figure 9: R232 rear panel layouts

The 1.75” (4.45cm) high chassis fills a uniform one rack unit (RU) in height.

IMPORTANT NOTE:
There can be a tremendous amount of weight applied to the face plate when the unit is fully cabled. Users are encouraged to provide a means of cable management at the rear of the rack to avoid excessive cable weight force on the unit.

Because the device consumes very little power (<25 Watts) there are no venting restrictions. This allows stacking devices without the need or provision for spacing in between units.

4 Test Cable Wiring

Much like the internal circuitry, the R232’s input and output connectors are a precision component and must be treated as such. Therefore, i**t is critical that NO EXCESSIVE FORCE BE APPLIED TO THE INPUT/OUTPUT CONNECTORS.**

CRITICAL NOTE:

Do not exceed 10 in/lbs. (1.12 N/m) of torque on any F-connector!

OVER TORQUING THE CONNECTORS MAY CAUSE IRREPARABLE INTERNAL DAMAGE AND IS NOT COVERED UNDER WARRANTY!

Please be aware that generally available cable F-connector torque wrenches are typically set for 20 in/lbs. used for outdoor connectors. Moreover, they are notoriously unreliable in delivering proper torque for these precision components and therefore it is strongly advised not to use them in this application.

4.1 F-Connection Rule of Thumb:

Finger tighten the cable to the F-connector, then tighten no more than a quarter (1/4) turn if at all. This should provide a secure connection without applying a damaging amount of torque to the connector.

5 SPECIFICATIONS

Model	R232	R232-48VDC
Input Ports	32 (labeled 1 – 32)	
Output Ports	2 (labeled A – B)	
Connectors	“F” Type 75Ω	
Operating Bandwidth	5 - 2.0GHz	
Flatness	± 1.5 dB Over operating bandwidth	
Input Signal Level	Maximum +15dBmV Minimum -11dBmV	
Gain:	+20 dB Input to Output	
Isolation (port – port)	-55 dB	
Return Loss	>15dB	
Routing	Non-blocking 32 x 2 matrix. Any input can be routed to either or both outputs.	
Front Panel Display	Output A - Green Output B - Amber Power– Blue	
LAN Interface	TCP/IP Ethernet 10/100 BASE-T Ethernet IEEE 802.3	
Network Connection	RJ-45 connectors suited for wiring CAT-5 or above	
Indicators	Green link & data indicators	
Chassis	19.0” W x 12.75” D x 1.75” H (48.3 cm W x 32.385 cm D x 4.45 cm H) 1RU EIA rackmount)	
Weight	8 lbs. (3.63 kg)	
Power Input	90-240 VAC, ± 2% 50-60Hz	42 – 52 VDC
Nominal Power Consumption	0.19 A @ 120VAC (22.5 Watts)	0.25A @ 48V (12 Watts)
Power Connection	Right-angle removable IEC power cord	Two-wire removable terminal strip with retaining screws Wire gauge max: 16
Power supply protection	Externally accessible fuse 2.5 A Slo-Blo 5 x 20 mm	Internal fuse 1A Slo-Blo 5 x 20mm
Operating temperature	-20 ~ +70°C	-10 ~ +60°C
Operating humidity	20 ~ 90% RH non-condensing	

Table 1 R232/R232-48VDC Specifications.