MODEL 7224
X.21 DB15 A/B Switch, with RS-232 Remote

Catalog# 305969

Electro Standards Laboratories

ADVANCED SYSTEMS DESIGN & SERVICES

INFORMATION

Electro Standards Laboratories
36 Western Industrial Drive
Cranston, RI 02921 – USA
Tel: 401.943.1164 Fax: 401.946.5790

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INTRODUCTION

The PathWay® Model 7224 Single Channel DB15 X.21 Interface A/B Switch allows the user the capability of sharing a single port interface device, connected to the “COMMON” port, among two other devices, connected to the “A” and “B” ports, with remote access functionality. The Model 7224 is enclosed in a slim desktop enclosure.

The switch may be controlled locally by manually operating the front panel pushbutton or remotely from a DB9 (female) Serial Interface Remote port located on the rear of the unit.

Features:

- The switch ports are transparent to all data.
- All (15) pins are switched, which included (12) pins 1-6, 8-13 of the DB15 X.21 interface. All are switched via break-before-make electromechanical relays.
- The unit maintains last set position on power loss and continues to pass data.
- Front panel pushbutton control.
- Remote RS-232 ASCII commands that allow the user to control switch position, obtain switch status, as well as query firmware version number, query serial number and enable/disable autosend of switch positions.
- Front panel LED’s display present position and power status.
- The unit maintains last set position on power loss and continues to pass data.

INSTALLATION

This section describes the physical connections required to start operating the Model 7224 switch.

Model 7224 Rear Panel

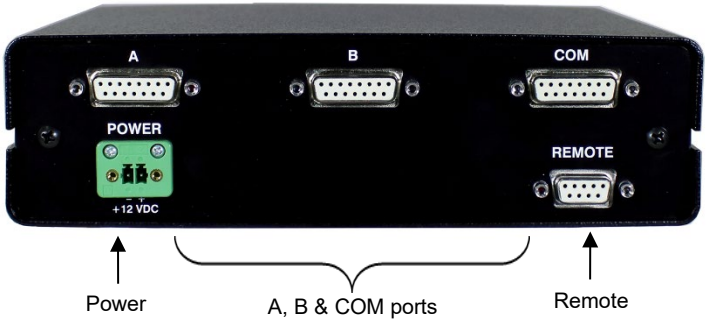

Figure 1: Model 7224 Rear Panel

The rear panel view of the switch is shown in the above figure. On the rear of the switch are the following ports:

- **POWER** – Phoenix (F), External Power Supply Input connector.
- **REMOTE** – DB9 (F), the Remote Serial port.
- **COM** –DB15 X.21 (F), the "COMMON" or shared device port of the switch.
- **A** –DB15 X.21 (F), the "A" device port of the switch.
- **B** –DB15 X.21 (F), the "B" device port of the switch.

Power Supply

After all the proper connections have been made, plug the Model 7224 into a 100VAC-240VAC, 50Hz-60Hz wall receptacle using the supplied 12VDC, 500mA, UL listed and LPS approved, 2-prong US non-polarized NEMA 1-15P plug wall mount power supply, P/N 516682.

Option: Wide Range Power Module, (Cat. No. 517277), 100VAC-240VAC, 50Hz-60Hz, IEC 60320 C14 inlet, can be ordered for use in place of the standard NEMA 1-15P plug power module that is included with the unit. Ideal for international applications.

Upon power up the Model 7224 will process its power up routine. When the routine is done the front panel LED's will indicate the present position of the unit. At this point the unit is ready for operation.

Serial Remote Port Pinout

Connect the Remote DB9 Female Serial Remote-Control port, located on the rear of the Model 7224, to a serial port located on the back of a computer. The name, direction, and pin designation of the signals supported on the Remote-Control port are as indicated in Table 1. Remote control port cable supplied on request, call Electro Standards Laboratories phone #: (401) 943-1164.

SIGNAL NAME	PIN #	DIRECTION
TRANSMIT DATA (TD)	3	INPUT
RECEIVE DATA (RD)	2	OUTPUT
SIGNAL GND (SD)	5	----------

Table 1: Serial Remote Port Pinout

DTE and DCE

The individual signals on a serial port are unidirectional and when connecting two devices the outputs of one device must be connected to the inputs of the other. Devices are divided into two categories “Data Terminal Equipment” (DTE) and “Data Circuit-terminating Equipment” (DCE). A line that is an output on a DTE device is an input on a DCE device and vice versa, so a DCE device can be connected to a DTE device with a straight wired cable. Conventionally, computers and terminals are DTE, while modems and peripherals are DCE.

In this circumstance, the Model 7224 is a DCE device. Computers are typically DTE devices.

USB Driver (for USB to DB9 Serial Converter Cables Only)

If only USB ports are available on the computer or if a USB port is chosen to be used for any reason, a USB to DB9 serial converter cable will be needed. This cable can be provided by ESL under part number 528693.

If a converter cable is being used for control and the computer is not communicating with the unit, download and install the USB driver from http://www.ftdichip.com/Drivers/VCP.htm. You need to download and install the appropriate latest driver version for the operating system and processor architecture in use on the computer.

OPERATION

The Model 7224 can be operated either by the front panel or through its Remote port.

Model 7224 Front Panel

Figure 2: Model 7224 Front Panel

Manual Control

The front panel view of the switch is shown in the above figure. On the front of the switch are the following controls and indicators:

- **A, B, Indicators** – Red LED's indicate the switch position.
  - The LED in the steady state indicates the position of the switch.
  - Either the A or B red LED will be lit when the unit has power.

Remote Control Setup

Remote switching of the unit is accomplished through the RS-232 (DB9 Female) Serial Remote Control port located on the rear of the Model 7224. This port may be connected to the RS-232 port on a computer or any other device capable of sending ASCII characters. (See installation section for cable information.) Use a terminal emulation software program, such as Hyperterminal, with the following configuration to connect to the Model 7224:

Parameter	**Value**
Baud rate	9600
Data bits	8
Parity	None
Stop bits	1
Flow control	None

Table 2: Serial Communication Configuration

Remote Control Commands

All commands are ASCII Control commands. A Control command is created by pressing and holding the [CTRL] key and the designated character key simultaneously. For example, to create the CTRL-A command, simply press the [CTRL] and [A] keys on the keyboard simultaneously then release both.

Do not press the enter key at the end of a command. See Table 3 for details. All responses are terminated with a carriage return (‘\r’) followed by a new line feed (‘\n’).

A note to those programming their own systems to control this switch automatically: The ASCII Control commands are represented as the decimal equivalent of the numerical position of that letter in the alphabet, which can then be translated to hex. For example, CTRL-A translates to ‘1’ in decimal or 0x01 in hex, since A is the 1st letter of the alphabet. CTRL-V, on the other hand, translates to ‘22’ in decimal, and 0x16 in hex since it is the 22nd letter of the alphabet.

Command	Function	Response
CTRL-A	Switch to the A position	XXXX POSITION: A <un/locked>
CTRL-B	Switch to the B position	XXXX POSITION: B <un/locked>
CTRL-P	Query position/status	XXXX POSITION: <A/B>, <un/locked>
CTRL-N	Query for serial number	XXXX M7224 Serial Number: XXXXX
CTRL-V	Query firmware version number	9010 M7224, firmware ver x.x, Compiled <Date>
CTRL-L	Lock out front panel push button	XXXX Position: <A/B>, Locked
CTRL-U	Unlock push button	XXXX Position: <A/B>, Unlocked
CTRL-I	Enable/Disable Auto-Send	XXX Autosend of updates to all serial and LAN interfaces has been enabled/disabled.

Table 3: Remote Control Commands

Error conditions not covered in Table 3:

- Issuing a command not found in Table 3 will respond with the error message: “5010 INVALID COMMAND.” and no switching will occur.

Switch Position on Power Down

If power to the Model 7224 is lost, the switch will maintain its present position and continue to pass data. Upon power restore, the unit will remain in the position it was in at power down.

TROUBLESHOOTING

Described below are some common troubleshooting steps and solutions. If following the troubleshooting guide does not solve the problem, please contact Technical Support for further assistance.

Switching Issues

Commanding the unit remotely to switch does not cause the unit to switch.

- Check that the unit is properly powered and that the front panel LED's indicate the present position.
- Check that the Remote Connection is still active. Check if any response to commands is received. If no response is received, troubleshoot the Remote Connection.

Remote Issues

The switch does not accept Remote Commands.

- Check that the physical connections and pinouts are correct. Conventionally, PC serial ports are configured as DTE devices, meaning that a straight thru cable should be used, not a null modem cable.
- Check that the unit is powered on and ready to operate.
- Ensure that the terminal software is configured with the correct parameters. See Table 2 on page **Error! Bookmark not defined.**.

The switch accepts commands and can switch, but no response is received.

- Check that the transmit line of the unit is connected to the receive line of the communicating device. See Table 1 on page **Error! Bookmark not defined.** for pinout information.

The switch does not operate correctly by Remote and responds with garbled text.

- Ensure that the correct baud rate and other serial communication parameters are correct. See Table 2 on page **Error! Bookmark not defined.**.

SPECIFICATIONS

Size
Width: 8.10” [20.6 cm]
Height: 2.40” [6.1 cm]
Depth: 7.30” [18.6 cm]
Weight: 1.8 lbs. [0.8 kg]

Environment
Operation Temperature: 0°C to 50°C
Storage Temperature: -40°C to 85°C
Humidity: 10% to 90% without condensation

Power Requirements
DC Voltage: 12VDC
DC Current: 180mA (peak), 30mA (nominal)
DC Power: 2.16W (peak), 0.36W (nominal)

Signal Port Ratings
Max Power: 60W, 125VA
Max Voltage: 220VDC, 250VAC
Max Current: 2A

Signal Port Interfaces
(3) DB15 X.21 (F) Signal ports

Signal Port Channels
(1) Channel of DB15 X.21 A/B/COM ports

Signal Port Pins Switched
DB15 X.21: Pins (15) which includes (12) pins 1-6, 8-13, of the DB15 X.21 interface. All are switched via break-before-make electromechanical relays.

Remote Port Interface
(1) DB9 (F) RS-232 Serial Port. 9600-8-N-1-N

Front Panel Control and Indicators
(2) Red LED’s

Power Supply 516682
Input: 100-240VAC, 50/60Hz, 0.2A
Output: 12VDC (regulated), 0.5A

CUSTOMER & TECHNICAL SUPPORT

Customer Support

For customer assistance, ordering assistance, or communications cables of any length or configuration, please contact Electro Standards Laboratories, (877) 943-1164 and ask for sales/customer support.

Technical Support

For technical support with unit operation, cable configuration, etc., please contact Electro Standards Laboratories, (877) 943-1164 and ask for technical support. Please have the unit model number and serial number available when you call.