



MODEL 7417R
Single Channel DB25 A/B Auto
Fallback Switch,

Catalog# 307417R



Electro Standards Laboratories
ADVANCED SYSTEMS DESIGN & SERVICES

INFORMATION



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INTRODUCTION

The PathWay® Model 7417R Single Channel DB25 A/B Switch with Automatic Fallback allows the user the capability of sharing a single port interface device connected to the “MASTER” port among two other devices connected to the “PRIMARY” and “ALTERNATE” ports.

The switching may be accomplished manually or automatically. Three front panel pushbuttons allow mode selection or PRIMARY, ALTERNATE, or AUTO.

When in Auto Mode, the switch position is governed by the presence of CTS (pin 5) that is being monitored on ports A (PRIMARY) and B (ALTERNATE). Three front panel LED's indicate switch position and power status.

The PathWay® Model 7417R is enclosed in a 1U, full rack size, all metal, black chassis designed to provide EMI/RFI shielding and fit in a standard 19" rack.



FEATURES:

- The unit may be switched manually or automatically.
- The switch ports are transparent to all data.
- All pins of the DB25 interface are switched via break-before-make electromechanical relays.
- Protective ground Pin 1 is tied together between PRIMARY, ALTERNATE, and MASTER.
- Pins 2 through 6, 8, 15, 17, 20, and 24 are switched
- Signal ground Pin 7 on PRIMARY and ALTERNATE is tied to board ground for reference when monitoring signal.
- When in Auto Mode, the switch position is governed by the presence of CTS (pin 5) that is being monitored on ports A (PRIMARY) and B (ALTERNATE). Three front panel LED's indicate switch position and power status.
- All switched signals are passed via latching copper contact relays that maintain their position and continuity even in the event of a power loss or failure.
- When power is restored, unit loads previous position and mode of operation and checks DIP switch settings to determine the correct startup configuration.

MODEL 7417R SINGLE CHANNEL DB25 AUTO FALLBACK A/B SWITCH

- Front panel LED's display switch position, mode, and power status.
- RoHS Compliant

INSTALLATION

This section describes the physical connections required to start operating the Model 7417R.

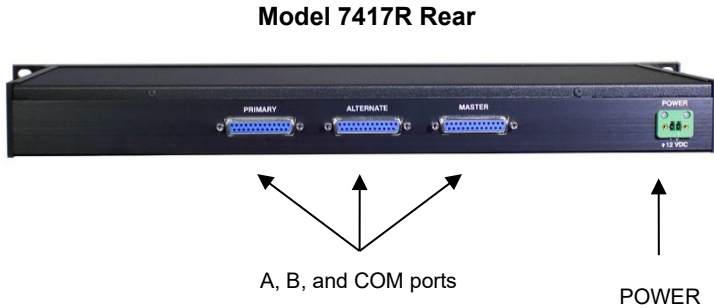


Figure 1: Model 7417R Rear Panel

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.
- **MASTER** – DB25 (F), connector, the “MASTER” or shared device port.
- **PRIMARY** – DB25 (F), connector, the “PRIMARY” device port.
- **ALTERNATE** – DB25 (F), connector, the “ALTERNATE” device port.

Power Supply

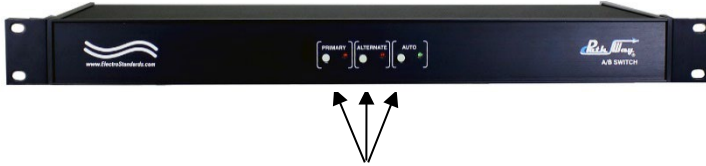
The Model 7417R is supplied with an external power supply (P/N 517277). After all the proper connections have been made to the unit, plug the output from the two-position rectangular connector at the end of the supply cable into the power connector located on the rear of the unit. Then plug one end of the appropriate country-specific power cord into the IEC 60320 C14 inlet of the supply and the other into a 100VAC-240VAC, 50Hz-60Hz receptacle. Power to the unit is supplied via the included wide range, 12VDC, 1.5A CE and UL listed tabletop power supply. At this point the unit is ready for operation.

Upon power up the Model 7417R 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.

OPERATION:

The Model 7417R can be operated via the front panel.

Model 7417R Front Panel



Pushbutton and LED's

Figure 2: Model 7417R 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:

- **PRIMARY, ALTERNATE INDICATORS** – Red LED's indicate the switch position of each channel.
 - Depending on the DIP switch settings, one of the LED's will either be lit solid or flashing to indicate both the present position and the present mode of operation.
 - The flashing or solid state of the LED will indicate the mode.
 - A solid LED indicates that the unit is set to Manual Mode and position has been selected by the front panel pushbutton.
 - A flashing LED indicates that the unit is set to Auto Mode and position has been selected by CTS presence.
 - The position of the switch is always indicated by the correct LED being lit solid or flashing.
- **AUTO MODE INDICATOR**– The Green LED indicates that the unit is in auto fallback mode.
 - This LED will remain lit solid whenever the unit is in auto fallback mode.
- **MANUAL PUSHBUTTON** – The front panel pushbutton allows the switch position and Mode of Operation to be changed.
 - Depressing, and releasing the pushbuttons allows the user to select switch position A (Primary), B (Alternate), or to change the Mode of Operation to Automatic Fallback mode.

Automatic Fallback Mode

When the switch is configured for Auto Fallback operation, the unit will automatically switch between the Primary and Alternate positions based on CTS presence on Pin 5 of the corresponding device port.

The unit will stay in the Primary position, as long as there is still CTS presence detected on the Primary port. If presence is lost on the Primary port for a specified, "Period of Time"; the unit will check for CTS presence on the Alternate port and if presence is detected then the unit will switch to the Alternate position. The unit will then stay in the Alternate position until CTS presence has been lost on the Alternate port for the specified, "Period of Time"; the unit will then check for CTS presence on the Primary port, and so on.

There is a "Time Value" associated with determining if CTS presence has been lost. This "Time Value" controls how long the CTS signal on the current port can remain "low" before the unit determines that CTS presence has been "lost". Once CTS presence has been lost on the current port, the unit checks the remaining port for CTS presence and switches if it is detected.

This "Time Value" is set by the external DIP switch located on the bottom of the unit.

DIP Switch Configuration

The external DIP switch can be used to change the *CTS Timeout Value* for the Auto Fallback Operation of the unit.



Figure 3: Dipswitch is located on the bottom panel of the unit.

DSW1		
Pole	Function	Description
1	CTS Timeout Bit 0	The least significant bit in determining the Base CTS Timeout Value. See Table Below
2	CTS Timeout Bit 1	The most significant bit in determining the Base CTS Timeout Value. See Table Below
3	CTS Timeout – Multiplication Factor	The final CTS Timeout Value will be the Base Timeout Value multiplied by 1 (OFF) or 2 (ON)
4	CTS Timeout – Addition Constant	The final CTS Timeout Value will be the result of the multiplied time from above with 0ms added (OFF) or 500ms added (ON)

Table 1: DIP Switch DSW1: Mode of Unit – Setup and Data Activity

DIP Switch Settings

Pole 2 – MSB	Pole 1 – LSB	Base Timeout Value
OFF	OFF	1 second
OFF	ON	4 seconds
ON	OFF	5 seconds
ON	ON	20 seconds.

Table 2: Dipswitch Settings for selecting Base CTS Timeout Value.

The “CTS Timeout Value” is based on the Base Timeout Value. The table below summarizes the formulas used to determine the Final Value based on the DIP switch settings.

Pole 3 – Multiplication	Pole 4 – Addition	CTS Timeout Value Calculation
OFF	OFF	(Base Timeout Value) seconds
OFF	ON	(Base Timeout Value) +0.5 seconds
ON	OFF	(Base Timeout Value) *2 seconds
ON	ON	((Base Timeout Value) *2) +0.5 seconds

Table 3: Summary of the formulas to determine the Final CTS Timeout Value based on Dipswitch Settings.

Switch Position on Power Down

If power to the Model 7417R is lost, the switch will maintain its position and continue to pass data.

Upon power restore, the unit will load the position and mode of operation that were set on power down as well as check the DIP switch settings for any changes that occurred during power down.

In Manual Mode the unit will always maintain its previous position on power up.

In Auto Fallback Mode the unit will check for CTS presence on both ports. If presence is detected on the current port or if presence is not detected on either port, the unit will maintain its position. If CTS presence is not detected on the current port but is detected on the other port, the unit will switch positions on startup.

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

Pressing and releasing the front panel pushbutton 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.
- When switching from Auto Fallback Mode to Manual Mode the unit will not switch relay ports if it was already in the appropriate position before, although LED's should still change to reflect the change in Operation Mode.

The unit changes positions automatically on power up.

- This is most likely the correct functioning by design. Remember that the position after power up in Auto Fallback Mode can change if CTS presence on the ports has changed while the unit was powered down. See section "Switch Position on Power Down" on page 9 for detailed information.

Automatic Fallback Issues

The unit is not automatically falling back.

- Check that the unit is in Automatic Fallback Mode. This will be indicated by the green front panel "Auto" LED being lit solid and the red position indicating LED blinking.
- Be sure to note how Auto Fallback operates: The unit will remain in the current position and only switch to the other position when CTS presence has been lost on the current port and then detected on the other port.
- Check the pinout of the device connected to the Primary and Alternate ports. They must conform to the monitored pin specified. See section "Automatic Fallback Mode" on page 7 for details on the signal pin monitored.
- Make sure that the devices on connected to the Primary and Alternate device ports are behaving properly.

The unit automatically switches to the Primary position when selecting Automatic Fallback Mode.

- This is most likely the correct functioning by design. Upon switching to Automatic Fallback Mode the unit will always check the Primary Port first.

Automatic switching is delayed / immediate.

- There is a DIP switch pole located on the bottom of the unit that controls how long the unit waits for CTS presence to return to the current port before determining that CTS has been “lost” and consequently allowing the unit to switch automatically. Check that this pole is set for what is needed as, depending on settings, the unit can require up to 40.5 seconds of continuous CTS absence before allowing automatic switching. See Table 1 for details on DSW1.
- Once the unit determines that a loss of CTS has occurred on the current port, it will remain in its current position and monitor both device ports for CTS presence. In this state, any CTS presence on the other port will cause the unit to switch to that port immediately. See section “Automatic Fallback Mode” on page 7 for details on how the unit determines that a loss of CTS presence has occurred.

SPECIFICATIONS

Size

Width: 19" [48.3 cm] (19" full rack size)

Height: 1.75" [4.5 cm] (1U)

Depth: 8.2" [20.9 cm]

Weight: 4.3 lbs [2.0 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: 200mA (peak), 100mA (nominal)

AC Power: 3.5W (peak), 2.5W (nominal)

Signal Port Ratings

Max Power: 60W, 125VA

Max Voltage: 220VDC, 250VAC

Max Current: 2A

Signal Port Interfaces

(3) DB25 (F) signal ports

Signal Port Channels

(1) Channel of DB25 PRIMARY/ALTERNATE/MASTER Auto Fallback ports

Signal Port Pins Switched

DB25: Pins 2-6, 8, 15, 17, 20-22, 24

Bussed/Special pins / Considerations

- DB25: Pin1 (protective ground) tied together between all ports
- DB25: Pin 5 (CTS) is monitored on the PRIMARY and ALTERNATE device ports
- DB25: Pin 7 (signal ground) of the PRIMARY and ALTERNATE device ports tied internally to board ground for reference when monitoring signal

Front Panel Control and Indicators

(2) Red LED's

(1) Green LED

(3) Pushbuttons

Power Supply 517277

Input: 100-240VAC, 50/60Hz, 0.5A

Output: 12VDC (regulated), 1.5A

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.