



MODEL 7309
Secure Single Channel
DB25 A/OFFLINE/B Switch,
with Telnet, Password Protected

Catalog# 307309



Electro Standards Laboratories
ADVANCED SYSTEMS DESIGN & SERVICES

INFORMATION



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INTRODUCTION

The PathWay® Model 7309 Secure Single Channel DB25 A/OFFLINE/B Switch with Telnet 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 7309 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.

Remote access can be accomplished using an Ethernet 10Base-T connection and Telnet.

Proper authentication is required for remote access via the 10Base-T connection. Users can then monitor status, lockout front panel pushbutton control, and control switch position.



Features:

- The switch ports are transparent to all data.
- All (25) pins of the DB25 interface are switched via break-before-make electromechanical relays.
- Unit switches to Offline position before switching to “A” or “B” position.
- The unit maintains last set position on power loss and continues to pass data.
- If the Model 7309 powers down in the OFFLINE position, upon power restore, the unit will flash both LEDs to indicate the OFFLINE position.
- Front panel pushbutton control.
- Control of the switch position from a 10Base-T LAN Ethernet environment. IP Addressable.
- Remote Control Telnet command interface that allows the user to control switch position, lockout front panel operations, and obtain switch status.
- Remote control of the switch is password protected.
- Front panel LED's display present position and power status.

- Front panel “STATUS” and “LINK” Led's display the 10-Base-T Control port connected to a network.

INSTALLATION

This section describes the physical connections required to start operation.

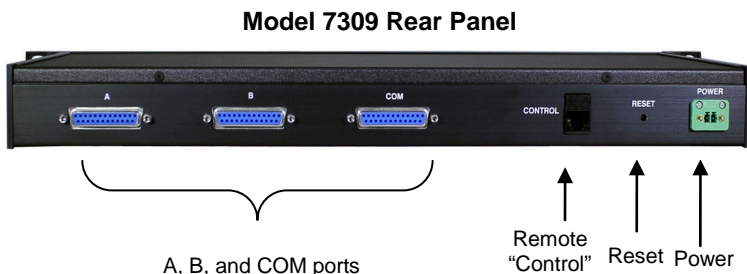


Figure 1: Model 7309 Rear Panel

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.
- **RESET** – Reset button for the 10Base-T LAN access Ethernet port.
- **REMOTE** – RJ45/F, 10BASE-T LAN access Ethernet Remote “CONTROL” port.
- **COM** – DB25 (F) connector, the “COMMON” or shared device port.
- **A** – DB25 (F) connector, the “A” device port.
- **B** – DB25 (F) connector, the “B” device port.

Power Supply

The Model 7309 is supplied with an external power supply (P/N 521895). After all of 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, 5VDC, 4A CE and UL listed tabletop power supply.

Upon power up the Model 7309 will process its power up routine. When the routine is done the front panel LED's will indicate the present switch position. At this point the unit is ready for operation.

Remote Ethernet Port Pinout

SIGNAL NAME	PIN #	DIRECTION
TRANSMIT DATA A (XMT-A)	1	OUTPUT
TRANSMIT DATA B (XMT-B)	2	OUTPUT
RECEIVE DATA A (RCV-A)	3	INPUT
RECEIVE DATA B (RCV-B)	6	INPUT

Table 1: Ethernet Remote Port Pinout

OPERATION

The Model 7309 can be operated either by the front panel or through its Remote port.

Model 7309 Front Panel



Pushbutton and LED's

Figure 2: Model 7309 Front Panel

Manual Control

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

- **A, B INDICATORS** – Red LED's indicate the switch position as well as the power status.
 - The LED in the steady state indicates the position of the switch.
 - If the front panel pushbutton is locked and the button is pressed, both LED's will light until the pushbutton is released.
 - The LED in a flashing state indicates the position of the next position of the switch while in OFFLINE position.
 - Both LEDs in a flashing state indicates the position is powered up to OFFLINE and needs to be switched to a position.
- **MANUAL PUSHBUTTON** – The front panel pushbutton allows the switch position to be changed.
 - Depressing and releasing the pushbutton allows the user to toggle the switch position.
 - Upon a position change, the unit will go into the OFFLINE position before switching to the next position.
 - Pushbutton control can be inhibited if locked out remotely.
- **STATUS Indicator** – The red LED "STATUS" indicates the status of the CONTROL port.

- If the switch is connected to a Network, the red LED will be blinking.
- **LINK Indicator** – The green LED “LINK” indicates the status of the CONTROL port.
 - If the switch is connected to a Network, the LED will be on steady.

Remote Control Commands

Commands are entered at the command prompt. There are two command prompts which correspond to the state of authentication. Command prompts are:

“>” Not logged in

“!>” Logged in

All switch commands start with a CONTROL code, either followed by nothing or as a 6 digit password. The factory default password is set to “111111”. No enter key is needed at the end of the command. See Table 2 below.

Command	Parameter	Function	Response	Comment
CTRL-A	N/A	Switch to A	POSITION: A or POSITION: A LOCKED	When logged in
CTRL-B	N/A	Switch to B	POSITION: B or POSITION: B LOCKED	When logged in
CTRL-P	N/A	Query for current status	Depends on the present status, of CTRL-A or CTRL B	When logged in
CTRL-L	N/A	Lockout pushbutton	POSITION: A LOCKED POSITION: B LOCKED	When logged in
CTRL-U	N/A	Unlock pushbutton	POSITION: A or POSITION: B	When logged in
CTRL-E	6 digit password	Login	WELCOME! or INVALID PASSWORD	
CTRL-X	N/A	Logout & end session	BYE!	When logged in
CTRL-N	6 digit password	New Password	PLEASE CONFIRM NEW PASSWORD	When logged in
CTRL-T	X: 1-9 time delay	Change the time delay	80X DELAY: X SECONDS	When logged in
CTRL-S	N/A	Query the time delay setting	80X DELAY: X SECONDS	When logged in
CTRL-M	6 digit password	Confirm new password	NEW PASSWORD ACCEPTED! or PASSWORD	When logged in

			MISMATCH	
CTRL-V	N/A	Firmware Version	M7309, Firmware Version X.X, Compiled <Date>	Works anytime

Table 2: Remote Control Commands

Error conditions not covered in Table 2:

- When the user inputs commands with passwords, the user has 2.5 seconds for each digit, otherwise a time out will occur and the user must start over.
- When the user inputs a CTRL-T command to change the time delay setting, the user has 2.5 seconds to enter the parameter, otherwise a time out will occur and the user must start over.
- The CTRL-T command parameter must be a character between 1 and 9, which will specify the time delay in seconds that the switch will stay in OFFLINE position before switching to the next position.
- Any login session will time out in about 2 minutes if inactive. If the login session times out, the user will see the statement "SESSION TIMED OUT!" on the Telnet Session Screen.

Username / Password

The default password to login to the switch is "111111". The password should be changed to something more secure as soon as the user first connects to the unit. Passwords must be 6 characters long.

To login as the administrator, the username "ADMIN" must be used by default. The default password for the administrator is "111111". Logging in as the administrator will allow access to the 'netconf' and 'reboot' commands.

Switch Position on Power Down

If power to the Model 7309 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.

If the Model 7309 powers down in the OFFLINE position, upon power restore, the unit will flash both LEDs to indicate the OFFLINE position. The user must press the position button to change the switch to position A or send the CTRL-A or CTRL-B command to change the switch position.

REMOTE ETHERNET CONNECTIONS

Verify the Hardware

Verify that the Model 7309 is currently powered. If the user needs to directly connect to the Model 7309 rather than through a LAN, a 10BASE-T crossover will be necessary (ESL can provide this – p/n 984228-006). This cable allows direct connection of the Model 7309 Remote LAN port to a computer with a network interface card (NIC).

If no LAN is available, use a Crossover Cable

If no LAN connection is available, the user can use a crossover cable. Plug one end of the cable into the RJ45 Remote port on the rear of the Model 7309 and the other end into the computer NIC as in Figure 3.

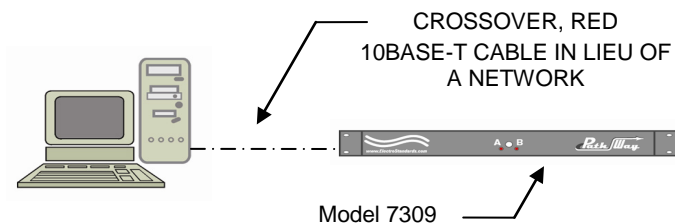


Figure 3: Crossover Cable connection for no LAN

If connecting to a LAN use 10Base-T Cable

Use a straight through 10BASE-T patch-cord from the Model 7309 LAN Remote port to a LAN connection, and likewise, reconnect the computer used to configure the system via a standard, straight through patch-cord to the LAN as in Figure 4. ESL can provide this cable (p/n 984231-006).

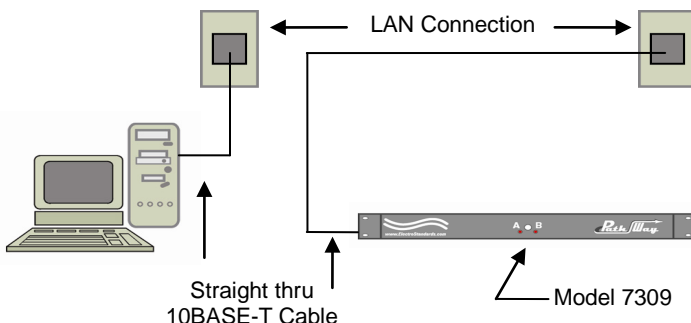


Figure 4: Connecting to a LAN with 10Base-T cable.

10BASE-T LAN SETUP

The Model 7309 A/B Switch System is configured with a default IP address. The unit must be configured for the LAN it will be connected to for Remote operation. The following steps will guide the user through the Remote access configuration:

Setup the Computer

Default network setting of the Model 7309

IP address: 10.0.0.233

Netmask: 255.255.255.0

Gateway: 10.0.0.223

Nameserver: 64.65.196.6

Computer configuration steps

If your internal network uses the “10.XXX.XXX.XXX” subnet private IP address, you can skip the steps below and connect the Model 7309 directly to your network using normal CAT 5 cable. Just make sure the IP address 10.0.0.233 was not used by any other computer on your network. If connecting directly to the network card of a PC, use a crossover cable to complete the configuration setup.

- On Windows 7/8 computers
 - Right click on the network symbol in the system tray and select “Open Network and Sharing Center”.
 - On the left side of the panel which appears please click on the “Change Adapter Settings” link.
 - Right click the icon for your NIC used to connect to the switch.
 - Select “Properties” to bring up the Local Area Connection Properties Panel.
 - Select “Internet Protocol Version 4 (TCP/IPv4)” and click the “Properties” button to bring up the panel allowing the user to specify their manual (static) IP configuration.
 - With the guidance of your IT department please enter the correct IP information.

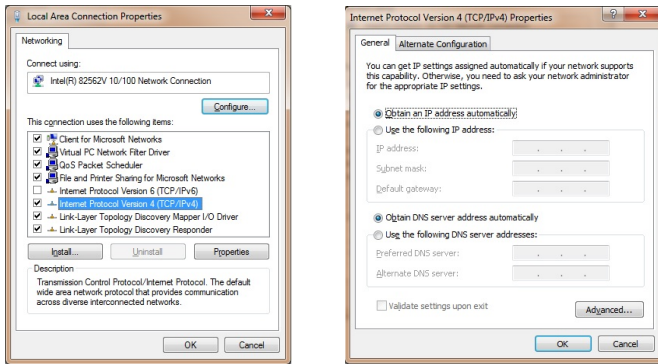


Figure 5: TCP/IP Settings in Windows 7/8

- On Windows XP/Vista computer:
 - Go to the “Control Panel” and select “Network Connections”,
 - Then right click the icon for your NIC used to connect to the switch.
 - Now select “Properties”. The following window on the left appears. Select “Internet Protocol (TCP/IP)” in the list and click “Properties” to bring up the right-hand window. Input the manual IP configuration and click OK.

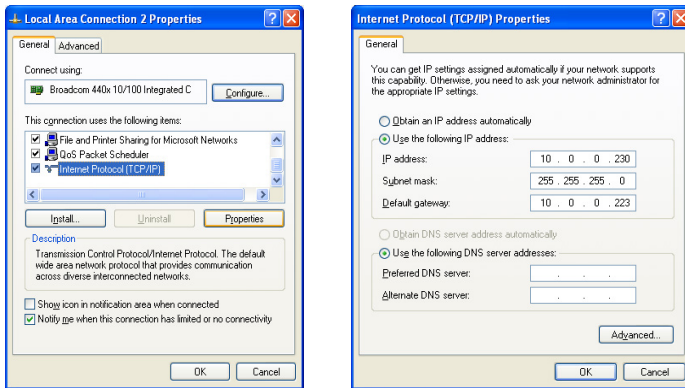


Figure 6: TCP/IP Settings in Windows XP

- On Windows 95/98 computers:
 - Go to the “Control Panel” and select “Network”.
 - Select the item “TCP/IP -> xxx”, where xxx refers to the NIC connected to the switch.
 - Click “Properties” and a window similar to the above right panel appears.
 - Input the manual IP configuration and click OK.
- Before changing any of the address information, it is advisable to write down the current settings so that you can return the computer to these settings after configuring the Switch.
- Once the original information has been recorded, enter the IP address within the same subnet of the Model 7309:
 - LAN, 10.0.0.233;
 - Subnet mask 255.255.255.0.
 - Click on “OK” to accept the changes.
 - The computer may have to be rebooted for the changes to take effect.
- After rebooting, plug in one end of a crossover network cable to the NIC port of the PC and the other end to the RJ45 10-Base-T Control port of the Model 7309.

Resetting the Remote Ethernet Port

The Remote Ethernet port can be Reset to factory defaults. This is especially useful in the event that an invalid IP address configuration is set and the unit becomes inaccessible through the Remote Ethernet port. To reset the IP address settings, the following steps must be performed.

- With the unit powered, press and hold the recessed push button on the rear panel labeled “Reset” for 6 seconds.
- The system will Reset to the default settings and reboot itself. If changes do not take effect, power cycling the unit may be necessary.

Network Command Set

The commands in Table 3 are normal commands in the Telnet Session, which need the user to press the ENTER key at the end of each command to be executed.

Command	Used To	Need Login	Need Confirm	Comments
CONN	Connect to the switch and issue command	No	No	Enter the switch command mode
QUIT	Close Connection	No	N/A	End the Telnet session
HELP	Print supported commands	No	N/A	Give some hint for available commands
USER	User login. Format: USER Username	No	N/A	Login for the following commands
NETCONF	Configure the IP parameters for the network connection	Yes	Yes	Be cautious! Invalid parameter will cause a network problem.
REBOOT	Remotely Reboot the switch	Yes	Yes	Only Reboot the network control port.

Table 3: Network Command Set

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 a 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.
- If all LED's light up while the pushbutton is held, front panel operation is locked out and must be unlocked through the Remote.

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

- Check that the Remote Connection is still active. In Telnet Sessions, query the unit to see if a response is received.
- Consider disconnecting and attempting to reconnect to ensure that the Remote Connection is still accessible.

Remote Connection Issues

A Telnet Session with the unit cannot be opened.

- Check that the physical connections are correct. See section "Remote Ethernet Connections" on page 11 for more information.
- Check that the IP address settings have been configured properly. See section "10BASE-T LAN Setup" on page 12 for more information.
- Ensure that the Telnet port being used is correct. Note that the default port number is 10001.
- Check that no other users are currently connected to the switch remotely. If another Telnet Session is active, new connections will not be established. Note that the unit will refuse the connection, causing the connection failure message to appear typically much sooner than if the connection attempt timed out from being unable to locate the unit on the network.

The IP address configuration of the unit is invalid and needs to be reset.

- The unit's IP address and security settings can be restored to factory defaults by following the procedure in the "Resetting the Remote Ethernet Port" section on page 14.

Remote Login Issues

The unit will not stay logged in.

- For security purposes, Remote Sessions are logged out automatically after a period of 2 minutes without any input from the user.
- If this unit is being controlled by an automated system that needs to stay logged in to monitor the unit for changes or any other reason, the system will need to send something at least once every 2 minutes. This can be a query of some sort, or it can simply be any 'dummy' character that is not a recognized command and will yield an "Invalid Command" error that can be ignored. This heartbeat scheme using "keep alive" dummy characters is the recommended approach. Another option is to disable password protection.

The password is not being accepted.

- Check that the correct password is being typed.
- Note that passwords are case-sensitive.

The password has been lost/forgotten.

- If the password has never been changed, the default password should still be the valid password. By default, the password is '111111'.
- If the password has been changed from the default and the new password has been lost, the password can be restored to the default through the use of the CTRL-R command. Please contact Electro Standards Laboratories for further assistance.

SPECIFICATIONS

Size

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

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

Depth: 8.17" [20.8 cm]

Weight: 4.5 lbs [2.1 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: 5VDC

DC Current: 360mA (peak), 72mA (nominal)

DC Power: 1.8W (peak), 0.36W (nominal)

Signal Port Ratings

Max Power: 60W

Max Voltage: 220VDC

Max Current: 2A

Signal Port Interfaces

(3) DB25 signal ports

Signal Port Channels

DB25 A/B/COM ports

Signal Port Pins Switched

DB25: Pins 1-25

Remote Port Interface

(1) RJ45 port (default IP Address: 10.0.0.233)

Front Panel Control and Indicators

(3) Red LED's

(1) Green LED

(1) Pushbutton

Power Supply 521895

Input: 100VAC-240VAC, 50/60Hz, 0.8A

Output: 5VDC (regulated), 4.0A

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.