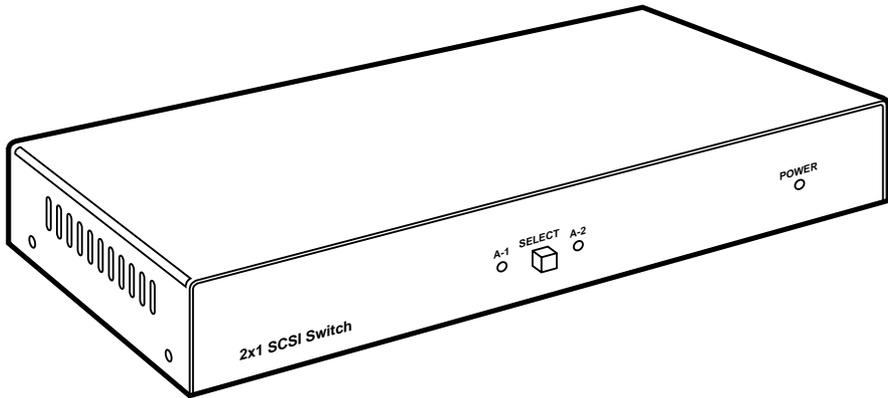




2 x 1 SCSI Switch—LVD/SE 2 x 1 SCSI Switch—Differential



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INSTRUCCIONES DE SEGURIDAD

1. Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.
2. Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.
3. Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.
4. Todas las instrucciones de operación y uso deben ser seguidas.
5. El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc..
6. El aparato eléctrico debe ser usado únicamente con carritos o pedestales que sean recomendados por el fabricante.
7. El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.
8. Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá a lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.
9. El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra o superficie similar puede bloquea la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.
10. El equipo eléctrico deber ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u otros aparatos (incluyendo amplificadores) que producen calor.
11. El aparato eléctrico deberá ser conectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.

12. Precaución debe ser tomada de tal manera que la tierra física y la polarización del equipo no sea eliminada.
13. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.
14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.
15. En caso de existir, una antena externa deberá ser localizada lejos de las líneas de energía.
16. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.
17. Cuidado debe ser tomado de tal manera que objetos líquidos no sean derramados sobre la cubierta u orificios de ventilación.
18. Servicio por personal calificado deberá ser provisto cuando:
 - A: El cable de poder o el contacto ha sido dañado; u
 - B: Objetos han caído o líquido ha sido derramado dentro del aparato; o
 - C: El aparato ha sido expuesto a la lluvia; o
 - D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o
 - E: El aparato ha sido tirado o su cubierta ha sido dañada.

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IMPORTANT NOTE

Throughout this manual and in the software screens, the SW488A is often referred to as the ACI-2102-CLW-U3. Also, the SW489A is often referred to as the ACI-2102-CDW.

Product Code	Alternate Product Code	Description
SW488A	ACI-2102-CLW-U3	2 x 1 SCSI Switch—LVD/SE
SW489A	ACI-2102-CDW	2 x 1 SCSI Switch—Differential

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1. Specifications

1.1 SCSI Interface

Maximum Port Switching Delay: 3 ns

Maximum Signal Skew: 2 ns

Terminator Power to SCSI Bus: 1 amp

SCSI Connectors: 68-pin VHDCI (Very High Density)

Standards: SCSI 1, SCSI 2, and SCSI 3 SP1-2 compatible; ANSI X3.131 and X3T9.2

Operation: Asynchronous or synchronous

1.2 Differential SCSI (DE)—SW489A

Maximum Data Rate (16-bit Wide): 40 MBytes per second

Maximum Data Rate (8-bit Narrow): 20 MBytes per second

Maximum SCSI Bus Cable Length: 82 ft. (25 m)

Internal Terminator Impedance: 110 ohms

Terminator Disconnect Capacitance: 5 pF

Internal Bus Termination: Passive

1.3 Low-Voltage SCSI (LVD/SE)—SW488A

Maximum Data Rate Ultra 160 (Wide): 160 MBytes per second

Maximum Data Rate Ultra2 (16-bit Wide): 80 MBytes per second

Maximum SCSI Bus Cable Length: 82 ft. (25 m)

Internal Terminator Impedance: 105 ohms

Terminator Disconnect Capacitance: 3 pF

Internal Bus Termination: Active

1.4 Serial Interface

Baud Rate: 9600/19,200 baud

Mode: No parity, 8 bits, 1 stop bit

Maximum Cable Length: 50 ft. (15.2 m)

Rear-Panel Connector: (1) DB9 female

1.5 LAN Port

Interface: Ethernet, 10BASE-T

Data Rate: 10 Mbps

Protocol: TCP/IP

Rear-Panel Connector: (1) RJ-45

1.6 Physical

Temperature Tolerance: 32 to 131°F (0 to 55°C)

Relative Humidity: Up to 90%, noncondensing

Power: 100–240 VAC \pm 10% autosensing, 20 watts

Size: 1.5"H x 9.2"W x 4.1"D (3.8 x 23.4 x 10.4 cm)

Weight: 2.5 lb. (1.1 kg)

2. Introduction

2.1 Description

The 2 x 1 SCSI Switch is a high-performance electronic crosspoint switch for use with the SCSI (Small Computer System Interface) bus. It enables three independent SCSI buses to be selected and electrically connected in various combinations via internal electronic switching circuits. This switch eliminates the need to swap and reconfigure SCSI cables and bus terminators when alternate system configurations are required.

A front-panel pushbutton lets you quickly and easily select the desired SCSI port configuration. The SCSI Switch provides automatic SCSI bus termination, ensuring that the internal SCSI terminators are always properly configured.

A Windows® based Graphical User Interface (GUI), in conjunction with the SCSI Switch's RS-232 serial interface or TCP/IP Ethernet LAN port, allows the system administrator to remotely operate and control SCSI port configuration and monitor SCSI bus activity. Command line configuration utilities for Windows and for UNIX® style operating systems are included. Standard DOS or modem software can also be used to control the switch using simple ASCII control commands.

2.2 Available Models

Two models are available:

- **2 x 1 SCSI Switch—LVD/SE (SW488A):** Single-Ended (SE)/Low-Voltage Differential (LVD), Ultra2/Ultra3 (80/160 MB per second) Wide
- **2 x 1 SCSI Switch—Differential (SW489A):** High-Voltage Differential (HVD) Wide

NOTE

Make sure that the SCSI Switch model being installed is used with the appropriate interface. Single-ended/LVD and Differential (HVD) SCSI devices cannot be installed on the same switch unless a SCSI differential converter is used.

2.3 What the Package Includes

Your package should include the following items:

- (1) 2 x 1 SCSI Switch.
- (1) 10-ft. (3-m) DB9-male-to-DB9-female RS-232 cable.
- (1) SCSI Switch Control Software CD-ROM.
- (1) AC power adapter.
- (1) AC power cable (110 V).
- This users' manual.

If anything is missing or damaged, please contact Black Box at 724-746-5500.

2.4 Features

- Switches three independent SCSI buses.
- Supports single-ended LVD or HVD SCSI.
- Ultra3, Ultra2, Ultra, Fast SCSI compatible.
- 160 MBytes per second throughput (LVD, Ultra3).
- Transparent electronic switching.
- Automatic SCSI bus termination.
- Does not require SCSI bus ID.
- Configurable front-panel pushbutton operation.
- RS-232 serial interface.
- 10BASE-T Ethernet LAN Port.
- Graphical User Interface (GUI).
- Share up to 15 SCSI peripherals.
- User installable.

2.5 About the Hardware

The SCSI Switch has three SCSI ports, which are identified as ports “A,” “1,” and “2.” Each port has one 68-pin VHDCI (Very High Density Connector Interface) connector mounted on the rear panel.

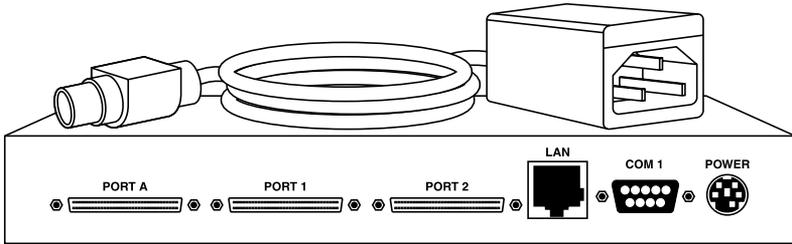


Figure 2-1. The SCSI Switch's rear panel.

Use the SCSI Switch to electrically connect port A to port 1, to connect port A to port 2, or to disconnect port A from both ports 1 and 2. All SCSI bus data and control signals are electronically switched between ports A, 1, and 2. All three ports are fully bi-directional—you have complete flexibility in determining where to connect computers, host adapters, and peripherals. The SCSI Switch does not require a device ID and is completely transparent to all computers and peripherals on the SCSI bus.

The SCSI Switch includes internal SCSI bus terminators for each of the three ports. These terminators are automatically enabled or disabled by the internal microprocessor, depending on the current port selection, to ensure that each port is terminated when it should be and is not terminated when it shouldn't be. The terminators may be configured via internal jumpers to get their power from the internal power supply (the factory-default setting) or from the SCSI bus TERMPWR signal.

The SCSI Switch drives the TERMPWR signals on each of the three SCSI connectors, providing power for external terminators. This feature may be disabled via internal jumpers. The source of power is protected by an internal self-resetting electronic fuse device.

The SCSI Switch's front panel includes a pushbutton for selecting the desired port configuration and LED indicators to display the current setting. Pushbutton operation may be customized or disabled completely using the GUI Control Software.

An RS-232 serial port and a 10BASE-T Ethernet TCP/IP LAN port allow all aspects of the SCSI Switch to be controlled and monitored by local or remote computers. Command-line software utilities are provided for a number of different operating systems, as well as the Windows based Control Software. The serial and LAN ports allow the SCSI Switch to be automatically controlled using the AUTOSWITCH task-automation and scheduling program or POWERSWITCH high-availability fail-over software. (Trial versions of both AUTOSWITCH and POWERSWITCH are included on the CD-ROM.)

An external universal switching power supply provides a source of low-voltage DC power (9-12 volts DC) for the SCSI Switch. This power supply uses auto-ranging input voltage circuitry, allowing it to operate at AC line voltages between 100 VAC and 240 VAC ($\pm 10\%$), 50/60 Hz, without the need for an AC voltage selector switch.

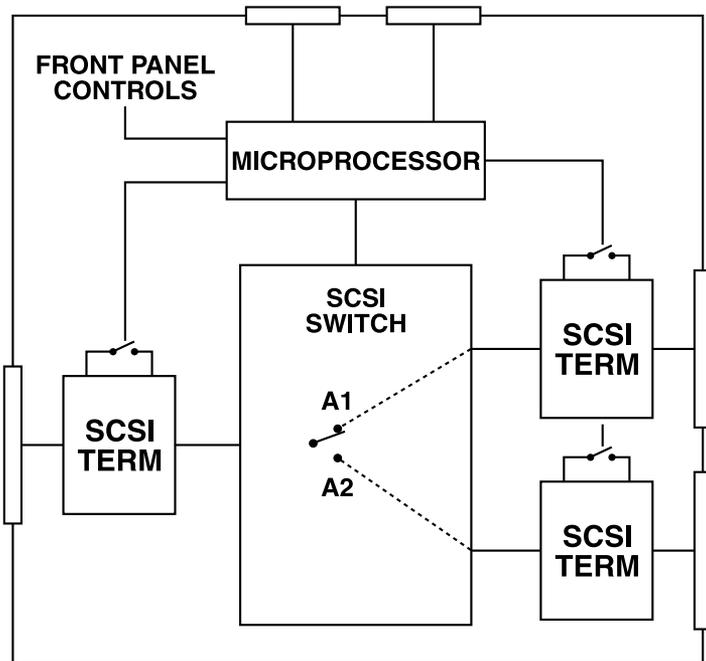


Figure 2-2. SCSI Switch block diagram.

2.6 Ultra3 SCSI Compatibility

The SCSI Switch supports Ultra3 SCSI, 160 MBps SCSI host adapters, computers, and peripherals in asynchronous and synchronous mode. The SCSI Switch conforms to ANSI X3.131 and X3T9.2 specifications for single-ended devices. Disconnect and reselect functions, as well as bus speed negotiation and domain validation, are fully supported for complete SCSI compatibility.

3. Installation

3.1 AC Power

The SCSI Switch can be externally connected to any AC input voltage between 100 and 240 volts ($\pm 10\%$). The Switch is shipped with a 110-volt power cord.

Connect the DC output from the external power adapter to the rear panel of the SCSI Switch. Then plug the power adapter into the AC power receptacle. The Switch consumes very little power, and is always “on” (there is no power switch).

3.2 Placing the Switch

Place the Switch in a convenient location near the host computer and/or peripherals. Make every attempt to minimize SCSI cable lengths to provide the best performance and reliability. Make sure that the ventilation slots on the Switch's sides are not blocked. Do not place the Switch on any devices that generate excessive heat.

3.3 Power Equipment Off

Power off all equipment and peripherals connected to the SCSI interface before installing cables or terminators.

3.4 SCSI Interface Cabling

The SCSI Switch has 68-pin VHDCI (very high density) connectors. Both Switch models can be connected with up to 82 feet (25 m) of cable.

Connect the host adapter or peripheral to the rear-panel connector using a proper SCSI cable. SCSI cables of various lengths and various connector combinations are available from Black Box. Call Technical Support at 724-746-5500 for details.

Make sure that *all* SCSI busses are properly terminated. The SCSI Switch has internal SCSI terminators which will automatically be turned on or off by the internal microprocessor to terminate the ends of the cables that plug into the SCSI Switch.

NOTE

Do not intermix single-ended and differential (HVD) devices on any SCSI chain unless a SCSI differential converter is used to convert from one bus type to the other.

Table 3-1 illustrates the relationship between the type of SCSI interface, the speed, the maximum number of devices, and the maximum cable length.

Table 3-1. SCSI speed and distance support map.

SCSI Trade Association (STA) Term	Maximum Bus Length (in meters)			
	SE	HVD	LVD	Maximum Devices
SCSI-1	6	25	—	8
Fast SCSI	—	—	—	—
Fast Wide SCSI	6	25	—	8
	6	25	—	16
Ultra SCSI	1.5	25	—	8
Ultra SCSI	3	—	—	4
Wide Ultra SCSI	—	25	—	16
Wide Ultra SCSI	1.5	—	—	8
Wide Ultra SCSI	3	—	—	4
Ultra2/Ultra3 SCSI	—	—	25	2
Ultra2/Ultra3 SCSI	—	—	12	8
Wide Ultra2/Ultra3 SCSI	—	—	25	2
Wide Ultra2/Ultra3 SCSI	—	—	12	16

3.5 RS-232 Serial Port Cabling

The SCSI Switch provides an RS-232 serial port that allows external control of the unit. The connector is compatible with standard RS-232 modem cables.

The serial port (COM1) is a 9-pin female connector that is wired so it can be connected directly to a PC-compatible serial port with a standard “straight” serial cable (9-conductor serial cable with a male connector on one end and a female connector on the other end, wired pin 1 to pin 1, pin 2 to pin 2, etc.). A suitable cable is provided with your SCSI Switch.

Table 3-2. RS-232 connector pinouts.

Pin	IBM® PC	SCSI Switch COM1
1	DCD Input	DCD Output
2	Receive Data Input	Transmit Data Output
3	Transmit Data Output	Receive Data Input
4	DTR Output	Connected to pin 8
5	Ground	Ground
6	DSR Input	DSR Output
7	RTS Output	No connection
8	CTS Input	Connected to pin 4
9	RI Input	No connection

3.6 Ethernet LAN Port Cabling

The SCSI Switch includes a 10BASE-T Ethernet interface, which uses an RJ-45 network connector. A standard Category 5 (CAT5) network cable may be used to connect the SCSI Switch to an Ethernet hub. If you want to make a direct connection from the Switch to the Ethernet port of your computer, you must use a crossover network cable.

4. Operation

4.1 Front-Panel Controls

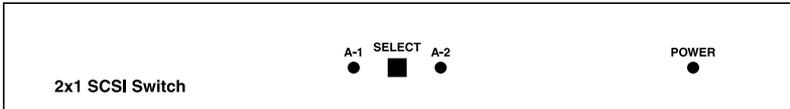


Figure 4-1. The SCSI Switch's front panel.

The front panel includes a pushbutton (for selecting the desired port configuration) and LED indicators (to display the current setting).

Pushbutton operation may be customized, or may be disabled completely, using the Control Software graphical user interface. With the factory-default setting, pressing the “Select” pushbutton will cycle through the following port configuration settings: “A-1,” “A-2,” “none.”

Normally the SCSI Switch will only change its port settings when the SCSI bus is idle. If you press Select to request a change to the port settings, the changes will be “held off” and not actually take effect until the SCSI bus is idle. During the time that the changes are being held off, the LEDs will blink to indicate that changes are pending.

Each time the port configuration is changed, the internal microprocessor automatically enables or disables the appropriate internal SCSI terminators. When “A-1” is selected, the terminators for ports A and 1 are disabled, and the terminator for port 2 is enabled. When “A-2” is selected, the terminators for ports A and 2 are disabled, and the terminator for port 1 is enabled. If neither “A-1” nor “A-2” are selected (if both are off), the terminators for all three ports are enabled.

4.2 Control Software

Your SCSI Switch is supplied with Control Software that is compatible with Windows 95, 98, 2000, XP, and Windows NT® operating systems. This software allows remote control of the switch. Follow the instructions on the CD-ROM to install the software.

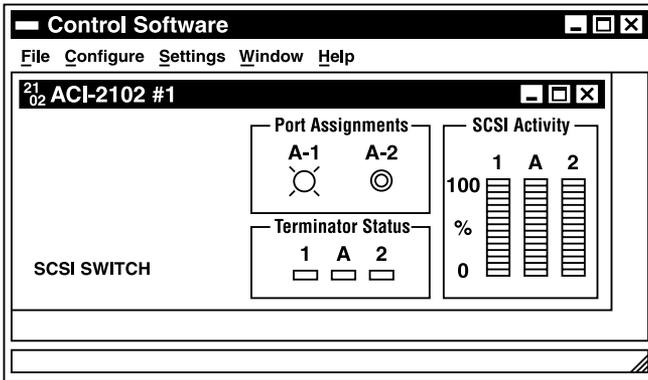


Figure 4-2. Control Software main screen.

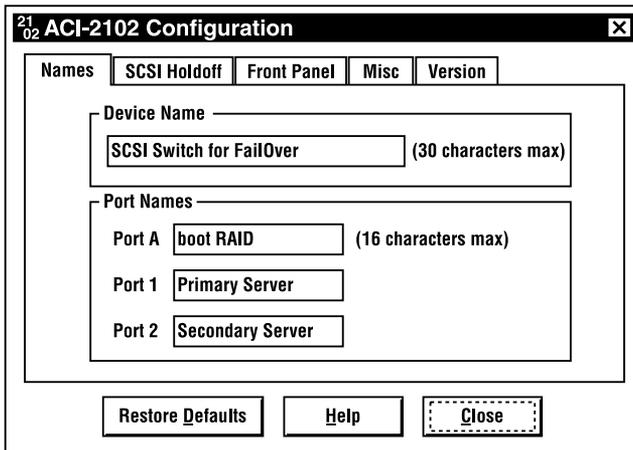


Figure 4-3. Device name and port name configuration screen.

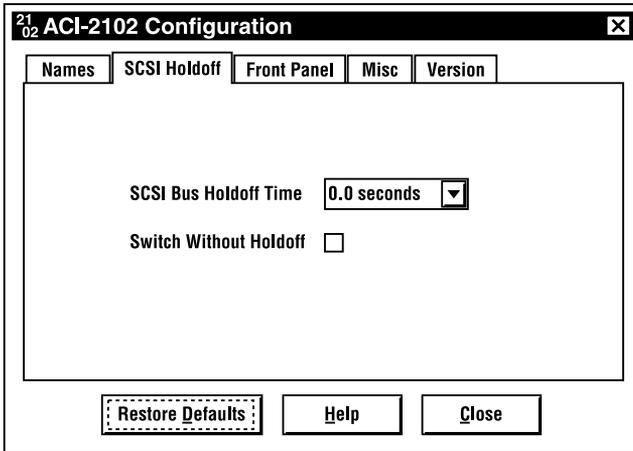


Figure 4-4. SCSI holdoff configuration screen.

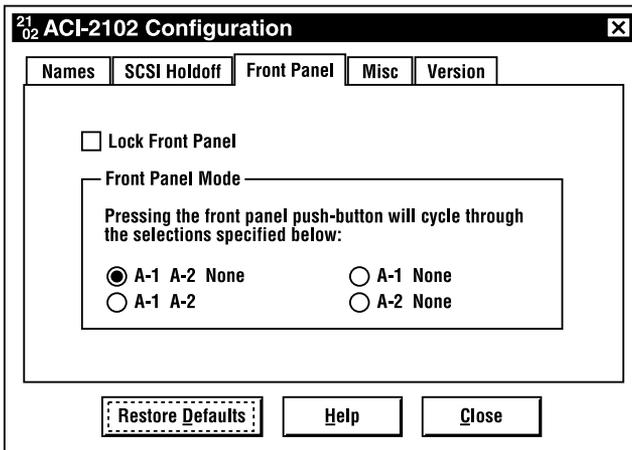


Figure 4-5. Front panel configuration screen.

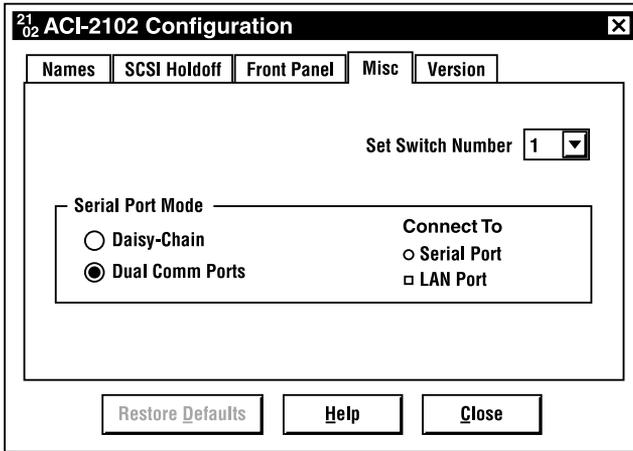


Figure 4-6. Miscellaneous configuration screen.

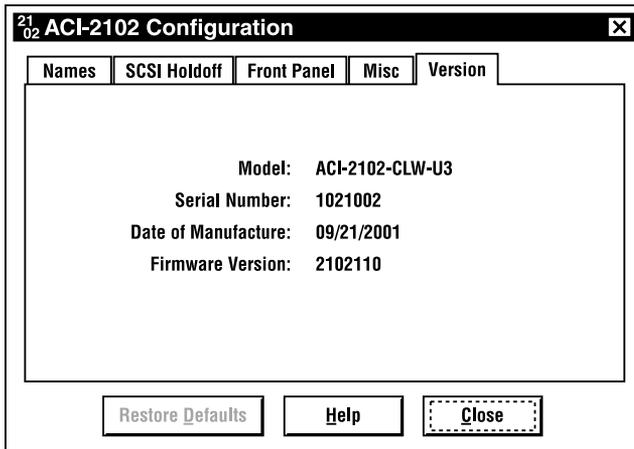


Figure 4-7. SCSI Switch version screen.

5. LAN Port Configuration

The SCSI Switch is equipped with a local area network (LAN) port that allows remote control of the unit via a standard 10-Mbps Ethernet connection running TCP/IP.

An IP address must be assigned to the SCSI Switch before the LAN port may be used. The IP address may be assigned by using the Control Software that is supplied with the unit. Select “Communications” on the Settings menu. Click on the “Assign IP Address to Network Device” button to invoke the IP configuration utility program. (This utility may also be directly executed by double-clicking on the “ApconCfg.exe” file, which can be found in the subdirectory in which the Control Software was installed—usually C:\Program Files\Apcon\ApconControl.)

Serial Port & LAN Configuration

Connect via RS-232 Serial Port

Port

COM1 COM2 COM3 COM4

Baud Rate

1200 2400 9600 19200

Connect via LAN

IP Address

Assign IP Address to Network Device...

Connect Now OK Cancel

Figure 5-1. Serial port and LAN configuration.

To initialize an IP address, enter the MAC address of the SCSI Switch's LAN interface (this can be found on a label on the bottom of the unit) and the desired IP address and subnet mask. Click on the "Configure" button. Make sure to enter an IP address and subnet mask that are compatible with your network; contact your network administrator if you need assistance. If you want to access the SCSI Switch from a separate network segment, you will also need to enter the IP address for your default gateway.

NOTE

The initial configuration of the LAN interface must be done from a workstation that is on the same network segment as the SCSI Switch.

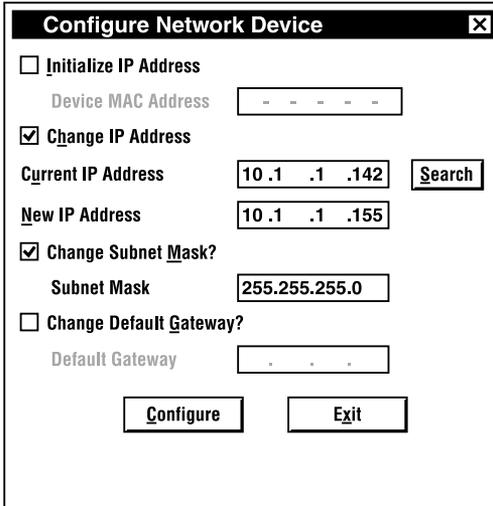
The screenshot shows a dialog box titled "Configure Network Device" with a close button (X) in the top right corner. The dialog contains several configuration options:

- Initialize IP Address
 - Device MAC Address: 00-20-41-54-12-34
- Change IP Address
 - Current IP Address: . . . (with a Search button to the right)
 - New IP Address: 10 .1 .1 .142
- Change Subnet Mask?
 - Subnet Mask: 255.255.255.0
- Change Default Gateway?
 - Default Gateway: . . .

At the bottom of the dialog are two buttons: "Configure" and "Exit".

Figure 5-2. Initializing an IP address.

If the LAN port has already had an IP address assigned to it and you want to change it to a different IP address, click on the “Change IP Address” checkbox and enter the current IP address and the desired new IP address. See Figure 5-3.



The screenshot shows a dialog box titled "Configure Network Device" with a close button (X) in the top right corner. The dialog contains several configuration options:

- Initialize IP Address
 - Device MAC Address: - - - - -
- Change IP Address
 - Current IP Address: 10 . 1 . 1 . 142 [Search]
 - New IP Address: 10 . 1 . 1 . 155
- Change Subnet Mask?
 - Subnet Mask: 255.255.255.0
- Change Default Gateway?
 - Default Gateway: . . .

At the bottom of the dialog are two buttons: "Configure" and "Exit".

Figure 5-3. Changing an IP address.

If you have already assigned an IP address but you have forgotten what it is, click on the “Search” button and enter a range of IP addresses to search through. The IP address and MAC address for each device found will be listed as shown in the example shown below.

Search for Network Devices [X]

Starting IP Address: 10.1.1.220

Ending IP Address: 10.1.1.250

Search

10.1.1.220	00-20-4a-54-17-26
10.1.1.221	00-20-4a-54-17-2b
10.1.1.222	00-20-4a-54-01-21
10.1.1.223	00-20-4a-54-02-54
10.1.1.224	00-20-4a-54-01-42
10.1.1.225	00-20-4a-54-0a-3d
10.1.1.226	00-20-4a-54-0a-44
10.1.1.227	00-80-a3-2b-9e-5a

OK Cancel

Figure 5-4. Searching for network devices.

6. Command Line Utility

The ApconCmd.exe Windows command line utility enables you to set SCSI Switch parameters by typing commands at the Windows DOS prompt. These commands may also be included in batch files or may be assigned to icons on the Windows desktop. The ApconCmd.exe utility is automatically copied to your disk drive when you install the Control Software and may be found in the same subdirectory as the Control Software (usually C:\Program Files\Apcon\ApconControl). UNIX versions of the program are also available.

Usage:

```
apconcmd [/?] [/i<IP Address>] [/c<Com Port>] [/b<baud rate>]
[/n<Switch Number>] [/h<holdoff>] [/x]
[/s]<Switch Settings> [/w<command>] [/r<command>]
```

Where:

/? = this message

/i <IPAddress> = The IP address of the network-enabled SCSI Switch

/c <Com Port> = The number of the Com Port to address (1-8; default=1)

/b <baud rate> = The baud rate for the com port (2400, 9600, 19200; default=9600)

/n <Switch Number> = The number of the switch to change (1-32; default=1)

/h <holdoff> = SCSI Bus holdoff, in seconds. The SCSI switch will not change the switch settings on a bus until there has been inactivity for the specified number of seconds. The valid range is 0–25 seconds.

/x = Ignore SCSI Bus activity. Switch settings will be changed immediately.

[/s]<Switch Settings> = The settings to be changed (/s is optional).

Example: "A1FA2N" disconnects ports A1 and connects ports A2.

[/w]<command> = <command> is sent to the switch with no parsing (parsing=information). Any response from the switch is ignored.

[/r]<command> = <command> is sent to the switch with no parsing (information). Any response from the switch is displayed on the console's error output.

7. Serial Port/LAN Port Commands

The SCSI Switch may be controlled using simple ASCII character strings via the RS-232 interface or via the Ethernet TCP/IP LAN port. The following information provides the parameters necessary to control the SCSI Switch using any standard serial interface:

- a. Baud rate set to 9600 or 19200 baud. (Factory default is 9600 baud.)
- b. Transmit and receive set for 8 data bits, 1 or 2 stop bits, no parity, no handshaking.

When communicating with the SCSI Switch using TCP/IP via the LAN port, you must specify port number 3001 in addition to the IP address when establishing the TCP/IP connection. Some versions of HyperTerminal allow connections to IP addresses. You may also use Telnet to send command strings to the SCSI Switch (but remember to specify 3001 as the port number). The command strings are the same regardless of whether you are communicating via a serial port or via the LAN port.

The SCSI Switch does not “echo” the characters it receives so you may want to configure your communications software (HyperTerminal or Telnet) to provide local echo; otherwise you will be typing “blind.” You may also want to configure your communications software to append an ASCII line feed character to incoming and/or outgoing ASCII carriage return characters.

NOTE

If you are typing in commands manually using software such as HyperTerminal or Telnet, be aware that the SCSI Switch does not allow line editing. If you type an incorrect character, you cannot press backspace to correct it—you must terminate the command prematurely by pressing the Enter key and then retyping the command.

2 X 1 SCSI SWITCHES

The sequence for communicating with the SCSI Switch is defined as:

a. Start sequence:

ASCII <cr>,”/”, “/“ (hex 0d, 2f, 2f)

b. SCSI Switch device number character:

Device	1	2	3	4	5	6	7	8
ascii		}	~	(del)	`	a	b	c
Device	9	10	11	12	13	14	15	16
ascii	d	e	f	g	h	i	j	k
Device	17	18	19	20	21	22	23	24
ascii	l	m	n	o	p	q	r	s
Device	25	26	27	28	29	30	31	32
ascii	t	u	v	w	x	y	z	{

c. Command character(s) and optional parameters:
(specific to each command)

d. End sequence:

ASCII <cr> (hex 0d)

NOTE

The purpose of the ASCII carriage return character <cr> at the start of the command is to flush out any stray characters that the SCSI Switch may have received since the last valid command. In most cases, this initial carriage return is not required.

Some commands will return a response, others won't. A response will always start with two ASCII forward slash characters (hex 2f) followed by the device number character. A response will always end with an ASCII carriage return character (hex 0d).

List of Commands

F	Turn OFF Matrix Switches (Ports)
H	Set SCSI Bus Holdoff Time
K	Set Matrix Switch (Port) On/Off Status
L	Lock Front Panel
N	Turn ON Matrix Switches (Ports)
OB	Set Serial Port Baud Rate
OC	Set Comm Port Mode
OD	Set Switch Device Number
OF	Set Unit to Factory Defaults
OL	Lock Serial or LAN Ports
OS	Get Serial or LAN Port Lock Status
OU	Unlock Serial or LAN Ports
Of	Get/Set Front Panel Mode
Om	Set Device Name
On	Get Device Name
P1	Report Performance
R	Report Firmware Revision Level
S	Report Matrix Switch (Port) On/Off Status
T	ReTrigger (restart) the Holdoff Timer(s)
U	Unlock Front Panel
W	Switch with Holdoff and Busy Detection
X	Switch without Holdoff and Busy Detection (ignore BSY)
a	Report Additional Miscellaneous Status
h	Report SCSI Bus Holdoff Time
s	Report Terminator On/Off Status
?	Get Model, Serial Number, Date of Manufacture

NOTE

All of the following examples assume that the device number is set to 1 (the device address character in the command string is the “vertical bar” or “pipe” character, 7C hex).

NOTE

In this document, <cr> represents the ASCII carriage return character (hex 0d).

2 X 1 SCSI SWITCHES

F—TURN OFF MATRIX SWITCHES (PORTS)

command string: <cr>///*xxxx*F<cr>

xxxx = a string of port letters and numbers. The specified ports are turned OFF.

Example: <cr>///*A1*F<cr> turns OFF port A1, other ports unaffected

Example: <cr>///*A2*F<cr> turns OFF port A2, other ports unaffected

Example: <cr>///*A12*F<cr> turns OFF ports A1 and A2

Example: <cr>///*A1A2*F<cr> turns OFF ports A1 and A2

NOTE

The **K**, **N**, and **F** commands may be mixed together in the same command string.

H—SET SCSI BUS HOLDOFF TIME

command string: <cr>///*Hxx*<cr>

xx = 2 hex digits (00 through FF) holdoff time, in $\frac{1}{10}$ -second increments

Example: <cr>///*H14*<cr> sets the holdoff time to 2 seconds

NOTE

This command does not enable or disable switching with holdoff and busy detection—it merely sets the holdoff time interval that will be used when holdoff is in effect (see the **X** and **W** commands).

K—SET MATRIX SWITCH (PORT) ON/OFF STATUS

command string: <cr>///*xxxx*K<cr>

xxxx = a string of port letters and numbers.

Example: <cr>///*A1*K<cr> turns A1 ON, all others (A2) OFF

Example: <cr>///*A2*K<cr> turns A2 ON, all others (A1) OFF

Example: <cr>///*AK*<cr> turns A1 and A2 both OFF

Example: <cr>///*A0*K<cr> turns A1 and A2 both OFF

NOTE

The **K**, **N**, and **F** commands may be mixed together in the same command string.

L—LOCK FRONT PANEL

command string: `<cr>||L<cr>`

N—TURN ON MATRIX SWITCHES (PORTS)

command string: `<cr>||xxxN<cr>`

xxx = a string of port letters and numbers. The specified port is turned ON.

Example: `<cr>||A1N<cr>` turns ON port A1

Example: `<cr>||A2N<cr>` turns ON port A2

NOTE

The **K**, **N**, and **F** commands may be mixed together in the same command string.

NOTE

If the **AutoToggle (Smart Port Switching)** mode is in effect (which it is by default), turning a port ON will cause the other port to turn OFF.

OB—SET SERIAL PORT BAUD RATE

command string: `<cr>||OB1y<cr>`

1 = ASCII character "1"

y = 0 for 9600 baud; 1 for 19200 baud

Example: `<cr>||OB10<cr>` set serial port COM1 to 9600 baud

Example: `<cr>||OB11<cr>` set serial port COM1 to 19200 baud

OC—SET COMM PORT MODE

command string: `<cr>||OCx<cr>`

x = 0 for daisychain mode; 1 for dual-comm-ports mode

Example: `<cr>||OC0<cr>` set daisychain mode

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Example: <cr>//OC1<cr> set dual-comm-ports mode

OD—SET SWITCH DEVICE NUMBER

command string: <cr>//|ODxx<cr>

xx = 2-digit decimal number, 01 through 32

Example: <cr>//|OD05<cr> tells device number 1 to change its device number to 5

OF—SET UNIT TO FACTORY DEFAULTS

command string: <cr>//|OF<cr>

NOTE

The OF command does not change the baud rate, comm port mode, device number, or (on early units) LAN port configuration. To reset these parameters to their factory defaults, add a “1” to the end of the command line <cr>//|OF1<cr>. Use this version of the command with caution.

OL—LOCK SERIAL OR LAN PORTS

command string: <cr>//|OLxxxx<cr>

xxxx = 4-digit password

response: //|OL0<cr> failed (syntax error or ports already locked)

//|OL1<cr> succeeded, serial/LAN ports now locked

NOTE

0000 is not a valid password.

OS—GET SERIAL OR LAN PORT LOCK STATUS

command string: <cr>//|OS<cr>

response: //|OS0<cr> serial/LAN ports are currently unlocked

//|OS1<cr> serial/LAN ports are currently locked

OU—UNLOCK SERIAL OR LAN PORTS

command string: <cr>||OUxxx<cr>

xxx = 4-digit password

response: ||OU0<cr> failed (syntax error or invalid password)

||OU1<cr> succeeded, serial/LAN ports now unlocked

OF—GET OR SET FRONT PANEL MODE

Get Front Panel Mode:

command string: <cr>||Of<cr>

response: ||Ofwx<cr>

if $w = 0$: front panel is currently unlocked

if $w = 8$: front panel is currently locked

x = front panel mode (see below for valid values)

Set Front Panel Mode:

command string: <cr>||Of0x<cr>

0 = ASCII "0" (zero) character

x = front panel mode:

0 = A-1, A-2, none

1 = A-1, A-2

2 = A-1, none

3 = A-2, none

4 = reserved, consult factory

OM—SET DEVICE NAME

command string: <cr>||Onxx...xx<cr>

xx...xx = ASCII character string, 30 characters maximum

2 X 1 SCSI SWITCHES

ON—GET DEVICE NAME

command string: <cr>||On<cr>

response: ||Onxx...xx<cr>

xx...xx = ASCII character string, 30 characters maximum

P1—REPORT PERFORMANCE

command string: <cr>||P1<cr>

response: ||Paa001122<cr>

aa = 2 hex digits (00 thru FF) indicating port A percent busy

00 = 2 ASCII "0" (zero) characters

11 = 2 hex digits (00 thru FF) indicating port 1 percent busy

22 = 2 hex digits (00 thru FF) indicating port 2 percent busy

(00 = 0% busy, FF = 100% busy during the last 100-msec time interval)

R—REPORT FIRMWARE REVISION LEVEL

command string: <cr>||R<cr>

response: ||R2102110<cr>

S—REPORT MATRIX SWITCH (PORT) ON/OFF STATUS

command string: <cr>||S<cr>

response: ||A1K<cr>

In this example, port A1 is on, all others are off.

T—RETRIGGER (RESTART) THE HOLDOFF TIMER(S)

command string: <cr>||xxxT<cr>

xxx = a string of port letters and/or numbers. The holdoff timer for each specified port is restarted (contact Tech Support for more details).

Example: <cr>||AT<cr> retrigger port A holdoff timer

Example: <cr>//|1T<cr> retrigger port 1 holdoff timer

Example: <cr>//|A12T<cr> retrigger all port holdoff timers

U—UNLOCK FRONT PANEL

command string: <cr>//|U<cr>

W—SWITCH WITH HOLDOFF AND BUSY DETECTION

command string: <cr>//|W<cr>

X—SWITCH WITHOUT HOLDOFF AND BUSY DETECTION (IGNORE BSY)

command string: <cr>//|X<cr>

NOTE

The device always powers up with holdoff and busy detection enabled.

A—REPORT ADDITIONAL MISCELLANEOUS STATUS

command string: <cr>//|a<cr>

response: //|a $wwxyzz$ <cr>

ww = 2 hex digits (00 thru FF):

- bit 0 = reserved for future use <LAN type>
- bit 1 = reserved for future use <LAN enabled>
- bit 2 = reserved for future use <Ethernet connection active>
- bit 3 = reserved for future use <has Boosters>
- bit 4 = front panel locked
- bit 5 = serial/LAN ports locked
- bit 6 = switch without busy detection and holdoff
- bit 7 = auto Termination mode

xx = 2 hex digits (00 thru FF):

- bit 0 = reserved for future use <allow "Y" in bus>
- bit 1 = SCSI bus mode (CLW [SW488A] - "1" = SE, CDW - "1" = not HVD)
- bit 2 = model ("0" means CLW [SW488A], "1" means CDW [SW489A])
- bit 3 = "1" = connected to LAN port, "0" = connected to serial port
- bit 4 = port A holdoff timer running
- bit 5 = port 1 holdoff timer running
- bit 6 = port 2 holdoff timer running
- bit 7 = SCSI bus is busy right now

2 X 1 SCSI SWITCHES

yy = 2 hex digits (00 thru FF):

- bit 0 = "1" = dual comm ports mode, "0" = daisychain mode
- bit 1 = "1" = serial port 19.2 k baud, "0" = 9600 baud
- bit 2 = reserved for future use <LAN port baud rate>
- bit 3 = Auto Toggle (Smart Switching) mode enabled
- bit 4 = reserved for future use
- bit 5 = reserved for future use
- bit 6 = reserved for future use
- bit 7 = reserved for future use

zz = 2 hex digits (00 thru FF): reserved for future use

H—REPORT SCSI BUS HOLDOFF TIME

command string: <cr>//|h<cr>

response: <cr>//|h*xx*<cr>

xx = 2 hex digits (00 thru FF) holdoff time, in 1/10-second increments

S—REPORT TERMINATOR ON/OFF STATUS

command string: <cr>//|s<cr>

response: //|1k<cr> terminator 1 is on, terminators A and 2 are off
//|2k<cr> terminator 2 is on, terminators A and 1 are off
//|A12k<cr> terminators A, 1, and 2 are all on

?—GET MODEL, SERIAL NUMBER, DATE OF MANUFACTURE

command string: <cr>//|?<cr>

response: //|?ACI-2102-CLW-U3 1021009 10/15/2001<cr>

In this example, the model is ACI-2102-CLW-U3, the serial number is 1021009 and the date of manufacture is October 15, 2001. Each field of the response is separated by one or more ASCII space characters (20 hex).

Appendix. Troubleshooting

A.1 Calling Black Box

If you determine that your 2 x 1 SCSI Switch is malfunctioning, do not attempt to alter or repair the unit. It contains no user-serviceable parts. Contact Black Box at 724-746-5500.

Before you do, make a record of the history of the problem. We will be able to provide more efficient and accurate assistance if you have a complete description, including:

- the nature and duration of the problem.
- when the problem occurs.
- the components involved in the problem.
- any particular application that, when used, appears to create the problem or make it worse.

A.2 Shipping and Packaging

If you need to transport or ship your 2 x 1 SCSI Switch:

- Package it carefully. We recommend that you use the original container.
- If you are shipping the 2 x 1 SCSI Switch for repair, make sure you include everything that came in the original package. Before you ship, contact Black Box to get a Return Authorization (RA) number.



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