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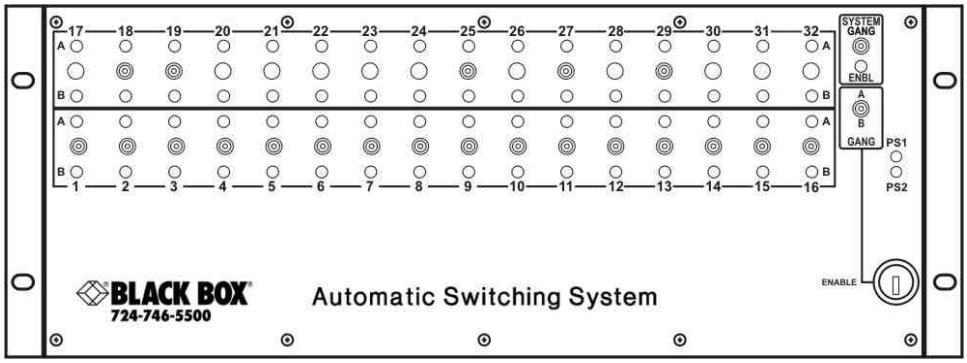
Automatic Switching System
SM500A



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AND

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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.

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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 connectado 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 fisica 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 lineas de energia.

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 objectos liquidos 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: Objectos 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.

Contents

1 General Description....8
1.1 Introduction....8
1.2 User Interfaces....8
1.3 System Switching Functions....8
2 Components....10
2.1 Rack Mount Chassis....10
2.2 Control Cards....11
2.3 Software Applications....14
2.4 Switching Interface Cards....14
2.5 System Cables....15
2.6 AC Redundant Power Supply....15
2.6.1 Description....15
2.6.2 Components....16
2.6.3 Installation Procedure....17
2.6.4 Maintenance....17
3 Installation....19
3.1 Installation Procedure....19
4 User Interfaces (Using Advanced Control Cards SM533-C and SM534-C)....29
4.1 General Description....29
4.2 System Diagram....29
5 Control via ASCII....31
5.1 DIP Switch (S1) Setting....31
5.2 ASCII Local Configuration....31
5.3 ASCII Commands....32
5.3.1 HELP....32
5.3.2 HELP GET....32
5.3.3 HELP SET....33
5.3.4 GET RACK n CARDS....33
5.3.5 GET RACK n CHANNEL NAME....33
5.3.6 GET RACK n CHANNEL STATUS....34
5.3.7 GET RACK n DIPSW STATUS....34
5.3.8 GET RACK n NETWORK CONFIGURATION....35
5.3.9 GET RACK n SNMP CONFIGURATION....35
5.3.10 GET RACK n TIME....35
5.3.11 GET RACK n VERSION....35
5.3.12 SET RACK n CHANNEL c COM|A|B [name]....36
5.3.13 SET RACK n CHANNEL c PORT A|B....36
5.3.14 SET RACK n ECHO ON|OFF....36
5.3.15 SET RACK n FACTORY DEFAULTS....36
5.3.16 SET RACK n GROUP m PORT A|B....36
5.3.17 SET RACK n GANG PORT A|B....36
5.3.18 SET RACK n SYSGANG PORT A|B....36
5.3.19 SET RACK n IP ADDRESS x.x.x.x....37
5.3.20 SET RACK n NAME [name]....37
5.3.21 SET RACK n SNMP MANAGER x.x.x.x....37
5.3.22 SET RACK n SNMP READ COMMUNITY NAME name....37
5.3.23 SET RACK n SNMP WRITE COMMUNITY NAME name....37
5.3.24 SET RACK n SNMP TRAPS ON|OFF....37
5.3.25 SET RACK n SUBNET MASK x.x.x.x....37
5.3.26 SET RACK n SYSGANG ENABLE|DISABLE....37
5.3.27 SET RACK n TELNET IDLE TIMEOUT m....37

5.3.28 SET RACK n TIME mm/dd/yyyy hh:mm 37
5.3.29 SET RACK n WEB PW old new 38
5.3.30 RESET RACK n 38
5.4 ASCII Error Messages 38
6 Control via SNMP 39
6.1 DIP Switch (S1) Setting 39
6.2 SNMP Network Configuration 39
6.2.1 Setting the IP Address and SNMP Configuration 39
6.2.2 SNMP and System Gang (Optional) Connections 41
6.3 SNMP MIB 43
6.3.1 Description 43
6.3.2 SNMP Version and Settings 43
6.3.3 MIB File (RSS500.mib) 43
6.3.3.1 Version and Enterprise Number 43
6.3.3.2 Rack Information 44
6.3.3.2.1 rackRTCDate 44
6.3.3.2.2 rackRTCTime 44
6.3.3.2.3 rackSwitchKey 44
6.3.3.2.4 rackGangSwitch 44
6.3.3.2.5 rackSysGangSwitch 44
6.3.3.3 Channel Information 45
6.3.3.3.1 ch1 45
6.3.3.3.2 ch2 45
6.3.3.3.3 ch3 45
6.3.3.3.4 ch4 45
6.3.3.3.5 ch5 45
6.3.3.3.6 ch6 46
6.3.3.3.7 ch7 46
6.3.3.3.8 ch8 46
6.3.3.3.9 ch9 46
6.3.3.3.10 ch10 46
6.3.3.3.11 ch11 46
6.3.3.3.12 ch12 47
6.3.3.3.13 ch13 47
6.3.3.3.14 ch14 47
6.3.3.3.15 ch15 47
6.3.3.3.16 ch16 47
6.3.3.3.17 ch17 47
6.3.3.3.18 ch18 48
6.3.3.3.19 ch19 48
6.3.3.3.20 ch20 48
6.3.3.3.21 ch21 48
6.3.3.3.22 ch22 48
6.3.3.3.23 ch23 48
6.3.3.3.24 ch24 49
6.3.3.3.25 ch25 49
6.3.3.3.26 ch26 49
6.3.3.3.27 ch27 49
6.3.3.3.28 ch28 49
6.3.3.3.29 ch29 50
6.3.3.3.30 ch30 50
6.3.3.3.31 ch31 50
6.3.3.3.32 ch32 50
6.3.3.4 Traps 50

6.3.3.4.1 chStatusChange 50
6.3.3.4.2 keyStatusChange 50
7 Control via Web Browser 52
7.1 DIP Switch (S1) Setting 52
7.2 Web Browser Configuration 52
7.2.1 Setting the IP Address 52
7.2.2 Web Browser and System Gang (Optional) Connections 54
7.3 Status Window 55
7.4 Switch Operation Window 56
7.5 Name Window 57
8 Control via Advanced GUI Based Management (SM540A) 59
8.1 General Description 59
8.2 Installation 59
8.2.1 DIP Switch (S1) Setting 59
8.2.2 Software Installation 59
8.2.3 Setting the IP Address 60
8.2.4 Software Application and System Gang (Optional) Connections 61
8.3 Primary Windows 62
8.3.1 Main Window 62
8.3.2 Chassis Status Window 63
8.3.3 Chassis Connection Status Window 64
8.4 System Setup 65
8.4.1 Add/Delete/Rename Rack (Chassis) 65
8.4.2 Name Ports 66
8.4.3 Define Groups 66
8.5 Connecting to Chassis (Rack) 68
8.6 Switching (Individual, Gang, System Gang) 68
8.7 Switching (User Defined) 69
8.7.1 Defining a Group Switch 69
8.7.2 Defining a System Switch 69
8.7.3 Performing a System Switch 70
8.8 Errors 71
9 System Specifications 72
9.1 Automatic Switching System SM500A 72
9.2 AC Redundant Power Supply 72

1 General Description

1.1 Introduction

The Automatic Switching System SM500A provides an efficient, reliable means of switching different interfaces between “active” and “fallback” positions.

The SM500A can perform switching at the channel, chassis, or system level. At the system level, up to 64 chassis can be ganged together. Each chassis accommodates one Power Supply/Control Card or Advanced Control Card and up to 16 Switching Interface Cards with up to 32 switching channels, for a system maximum of 2048 switching channels.

Switching Interface Cards are transparent to all communication formats and speeds. For switching, they use magnetic latching relays, which remain in the last switched position in the event of power loss. A wide variety of Switching Interface Cards—RS-232/V.24, EIA-530, Coax, RJ-11, RJ-45, V.35, and others—can be mixed within the same chassis, affording maximum flexibility to the user.

For additional reliability, two Power Modules (SM514-A-PS or SM514-A-PS-E) per chassis or an AC Redundant Power Supply (SM535A) may be used with the Automatic Switching System SM500A. The SM500A also has options to operate with -48VDC.

1.2 User Interfaces

This documentation describes five types of control for the SM500A Automatic Switching System—control via manual switching, SNMP protocol, ASCII commands, Web browser and GUI based software. For manual control, the following Power Supply/Control Cards may be used: SM531 C (12VAC) or SM532 C (-48VDC). For SNMP, ASCII, Web browser or GUI based software, the following Advanced Control Cards may be used: SM533 C (12VAC) or SM534 C (-48VDC).

1.3 System Switching Functions

The Automatic Switching System SM500A provides the following switching functions:

Individual card switching—this function applies only to a single channel and is triggered by the toggle switch located on the front of the corresponding Switching Interface Card. For cards with double channels, two toggle switches (one per channel) are available. The two toggle switches may be connected in parallel (via jumper selection) to perform simultaneous switching of the two channels, if required. The switching is enabled/disabled by turning the key-activated switch on the chassis front panel.

Group gang switching—this function applies to a selected group of Switching Interface Cards that simultaneously switch within one chassis. The group is defined by assigning a number (via jumper selection) to each card in the group. Up to four groups may be defined. Switching of the group is performed by any one of the toggle switches of the cards that belong to the group. The switching is enabled/disabled by turning the key-activated switch on the chassis front panel.

Chassis gang switching— this function simultaneously switches all Switching Interface Cards within one chassis. It is performed by toggling the GANG switch located on the chassis front panel. GANG switching is enabled/disabled by turning the key-activated switch on the chassis front panel.

System gang switching— this function switches simultaneously all the chassis in a system and is enabled via jumpers on the Power Supply/Control Card. It is performed by toggling the GANG switch while pressing the SYSTEM GANG button on the chassis front panel. System gang switching can be initiated from multiple chassis and is enabled/disabled by turning the key-activated switch on the front panel of the chassis that is initiating the switching. The key-operated switch positions on the remaining interconnected chassis are disregarded.

Remote system gang switching—this switching function is initiated from a contact closure applied to the CONTACT CLOSURE SWITCHING connector located on the Power Supply/Control Card or Advanced Control Card. It will simultaneously switch an entire system. This function is independent of the key-activated switch position on the front panel of all chassis.

2 Components

A standard Automatic Switching System SM500A consists of a Rack Mount Chassis, a Power Supply/Control Card or Advanced Control Card, one or two Power Modules, and selected Switching Interface Cards.

2.1 Rack Mount Chassis

The Rack Mount Chassis has 17 slots numbered 1 through 17 (refer to figure 2.2). A Power Supply/Control Card or Advanced Control Card must be inserted into slot 17. Up to 16 Switching Interface Cards may be inserted into slots 1 through 16.

Model	Description
SM500A	Rack Mount Chassis with 17 slots—16 slots for Switching Interface Cards, one slot for Power Supply/Control Card or Advanced Control Card. A key-operated switch on the front panel enables/disables all local switching functions. Two LEDs (PS1 and PS2) indicate power-on condition. If a Power Module (SM514-A-PS or SM514-A-PS-E) is connected, PS1 will illuminate. If an AC Redundant Power Supply (SM535A) or second Power Module is connected, PS1 and PS2 will illuminate. If an outside voltage source, -48VDC, is connected, PS1 will illuminate.

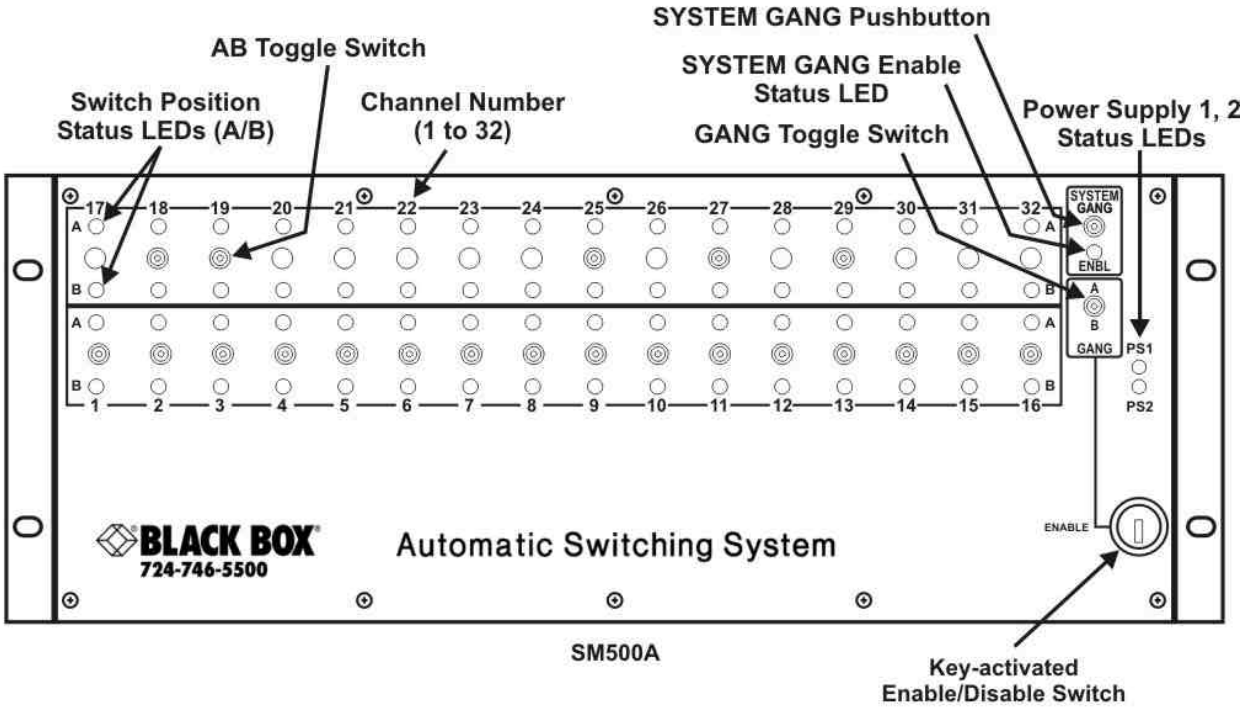


Figure 2.1. Front view of SM500A chassis.

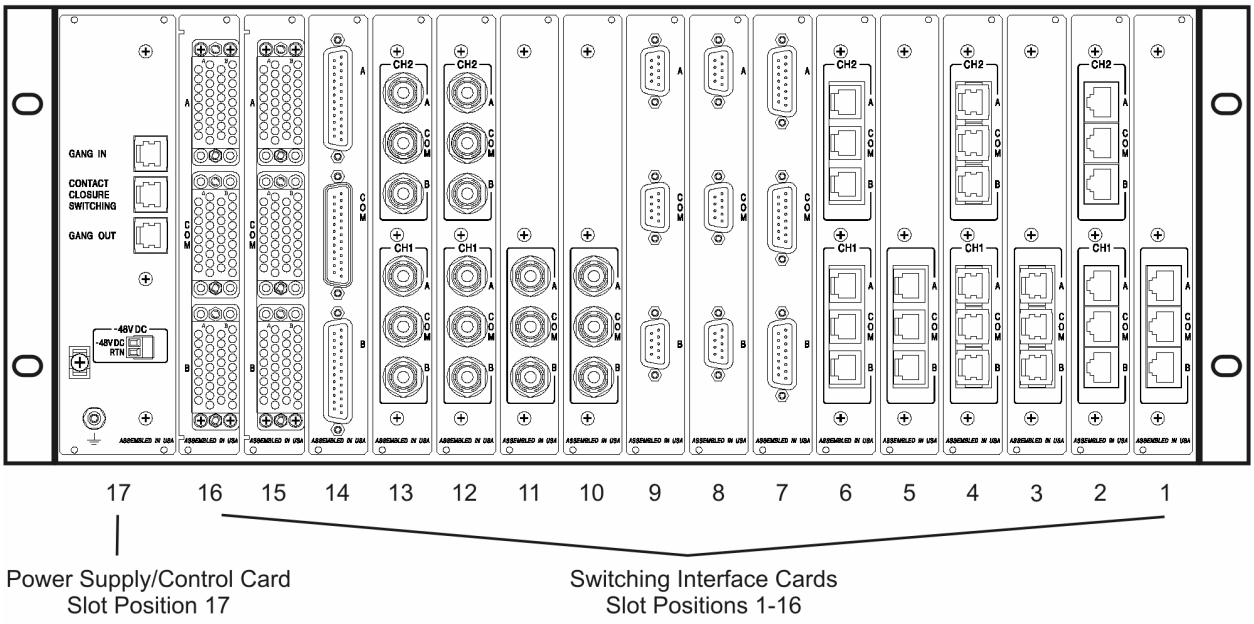


Figure 2.2. Rear view of SM500A chassis with cards inserted. Cards will vary according to application. Slots 1-16 reserved for Switching Interface Cards. Slot 17 reserved for Power Supply/Control Card or Advanced Control Card.

2.2 Control Cards

A Power Supply/Control Card or Advanced Control Card (figure 2.3) must be inserted into slot 17 of the SM500A chassis. This card provides power and control to one chassis. Two types of cards are available—one using 12VAC that can be also used with one or two Power Modules if power redundancy is required or with the AC Redundant Power Supply; the other type is used with -48VDC.

Model	Description
SM531-C	Power Supply/Control Card, 12VAC. Three types of control configuration are available for this card, depending on one of the following applications in which the SM500A chassis is used: **1. Chassis gang switching.** A toggle switch on the SM500A chassis front panel, labeled "GANG", provides the capability to perform gang switching on chassis level. To perform local switching functions, the key-operated switch on the chassis must be in the ENABLE position. **2. System gang switching.** By pressing and holding the "SYSTEM GANG" pushbutton while toggling the "GANG" switch, switching is extended to the entire system. All Power Supply/Control Cards must be interconnected via RJ-11 cables using "GANG IN/GANG OUT" ports to perform system gang switching. To perform local switching functions, the key-operated switch on the *initiating* chassis must be in the ENABLE position. This overrides the key-operated switch positions on the remaining interconnected chassis.

3. Remote system gang switching via contact closure. This card has an additional capability of performing system gang switching activated by an external control voltage. This functionality is available through the "CONTACT CLOSURE SWITCHING" port. The controlling voltage can be supplied from an RS232 control lead or any other source switched between +12V and -12V or from an external relay or switch contact using +12V and -12V available at the "CONTACT CLOSURE SWITCHING" connector through a 1K ohm resistor. Switching to "A" requires +12V. Switching to "B" requires -12V. For setup, refer to the installation procedures. This function is independent of the key-operated switch position. This function can be extended to the entire system by interconnecting all the Power Supply/Control Cards using RJ-11 cables at the "GANG IN/GANG OUT" ports. System gang switching is available as described in item 2.

NOTE: The position of the key-activated switch on the chassis front panel affects only local switching. The position is disregarded for all remote switching. Interconnected chassis will follow the key position of the chassis that is initiating the local switching.

Connecting Power Module SM514-A-PS or SM514-A-PS-E to "12VAC1" connector will power the SM500A chassis and illuminate the PS1 LED on the chassis front panel.

Connecting Power Module SM514-A-PS or SM514-A-PS-E to "12VAC2" connector will power the SM500A chassis and illuminate the PS2 LED on the chassis front panel.

If power redundancy is needed, two Power Modules can be connected or the AC Redundant Power Supply (SM537) can be used.

SM532-C Power Supply/Control Card, -48VDC. Same as SM531-C, but powered from an external -48VDC using the "-48VDC" connector. The PS1 LED on SM500A chassis front panel is illuminated when card is powered.

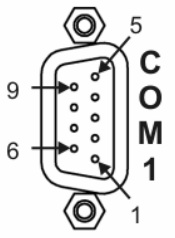
SM533-C Advanced Control Card, 12VAC. Provides local control as SM531-C with addition of SNMP, Telnet, Web browser and RS-232 control. A GUI based software (SM540A) can be also used with the Advanced Control Card.

Note that the COM1 port is a DCE configuration. Pin 2 is TDX, pin 3 is RDX, pin 5 is SIG GND. All other pins are not used. COM2 port is not used.

SM534-C Advanced Control Card, -48 VDC. Same as SM533-C, except for -48VDC.

NOTE: Control Cards SM532-C and SM534-C are protected from overload by an internal fuse.

Pin Assignments–COM1 (DB9 Female)
DCE Configuration



Pin	Signal
1	Not Used
2	TDX
3	RDX
4	Not Used
5	Signal GND
6	Not Used
7	Not Used
8	Not Used
9	Not Used

Figure 2.2a. Pin assignments for COM1 (DB9 female)

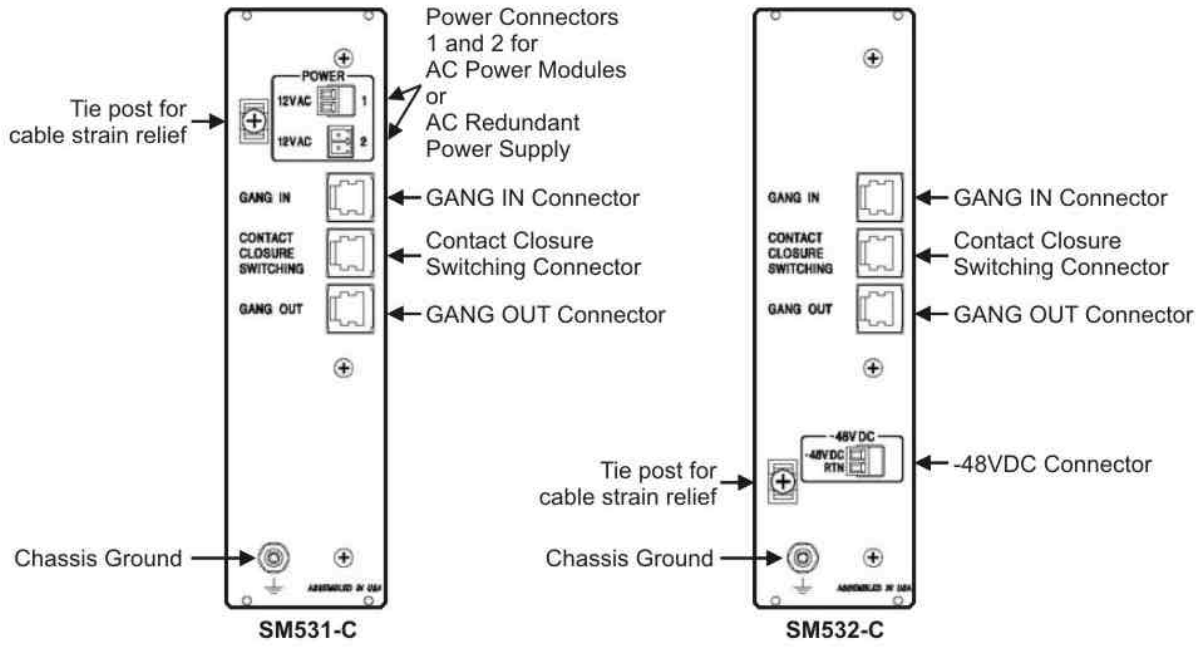


Figure 2.3. From left to right, Power Supply/Control Cards SM531-C (12VAC) and SM532-C (-48VDC)

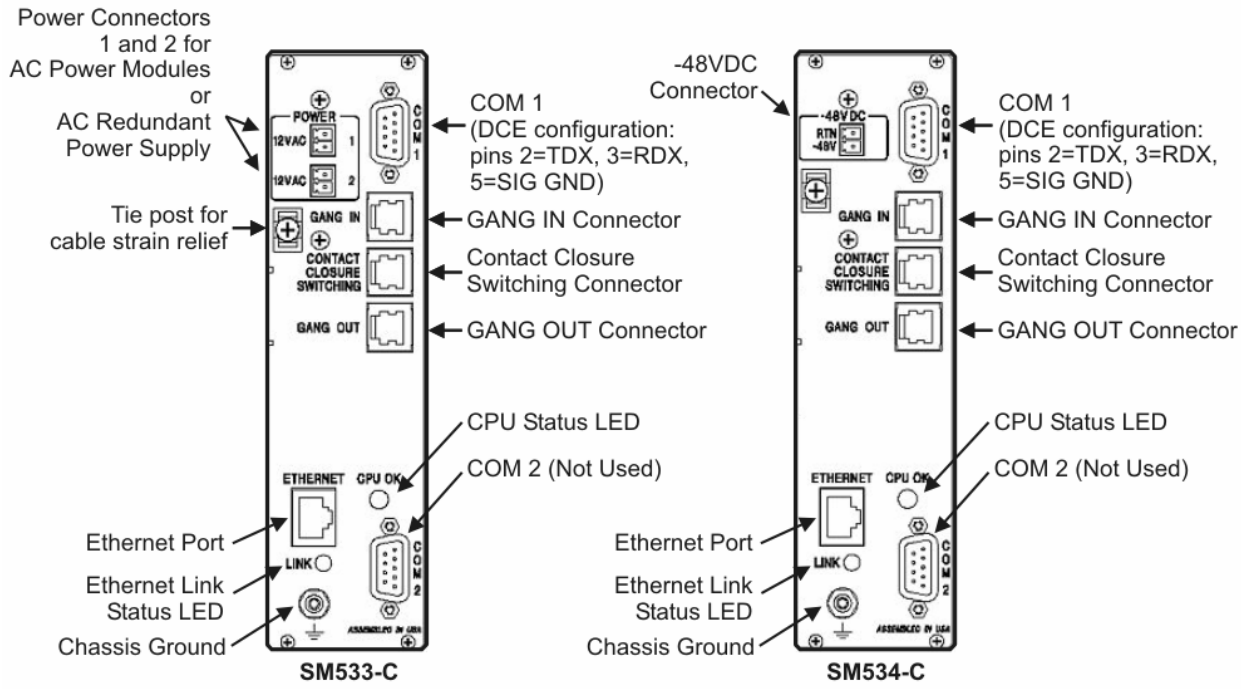


Figure 2.3a. From left to right, Advanced Control Cards SM533-C (12VAC) and SM534-C (-48VDC)

Model	Description
SM514-A-PS	Power Module 115VAC/12VAC. Used for 115VAC application. Provides power to a fully loaded SM500A chassis. For applications where redundant power is required, the use of two Power Modules is needed.
SM514-A-PS-E	Power Module 230VAC/12VAC. Used for 230VAC application. Provides power to a fully loaded SM500A chassis. For applications where redundant power is required, the use of two Power Modules is needed.
SM535A	AC Redundant Power Supply. rack mount unit 19" (48.26 cm) wide, 3.5" (8.89 cm) high, 6.25" (15.87 cm) deep. Provides redundant power to up to eight SM500A fully loaded chassis. It has two main power feeds that can be connected to 115VAC or 230VAC.

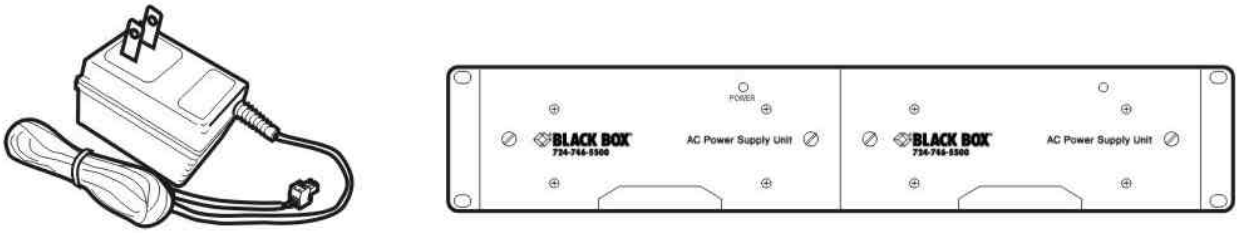


Figure 2.4. Left to right, Power Module SM514-A-PS/SM514-A-PS-E and AC Redundant Power Supply SM535A (front view)

2.3 Software Applications

Provides a user interface to enable remote operations on one or multiple chassis in an Automatic Switching System.

Model	Description
SM540A	GUI based management software application for PC. Requires Advanced Control Cards SM533-C or SM534-C.

2.4 Switching Interface Cards

Model	Description
SM501-C	AB V.35 21-Conductor Card F/F. Switches 19 conductors: A and B are common, C, D, E, F, H, J, K, L, P, R, S, T, U, V, W, X, AA, BB are switched.
SM503-C	AB RS-232/V.24/EIA-530 DB-25. 25-Conductor Card F/F. Switches 25 conductors. A, B, and Common: female.
SM503-C-FM	AB RS-232/V.24/EIA-530 DB-25. 25-Conductor Card, F/M. Switches 25 conductors. A and B: female; Common: male.
SM504-C	AB Coax BNC Card, 75 ohm

SM507-C	AB Double Channel Coax, 75 ohm
SM508-C	AB RJ-11 Card
SM508-C-2	Double RJ-11 Card
SM509-C	AB RJ-45 Cat-5 Card
SM509-C-2	Double RJ-45 Cat-5 Card
SM511-C	AB DB-9 Card F/F
SM512-C	AB DB-15 (T-1) Card F/F
SM518	Blank panel, 7" high

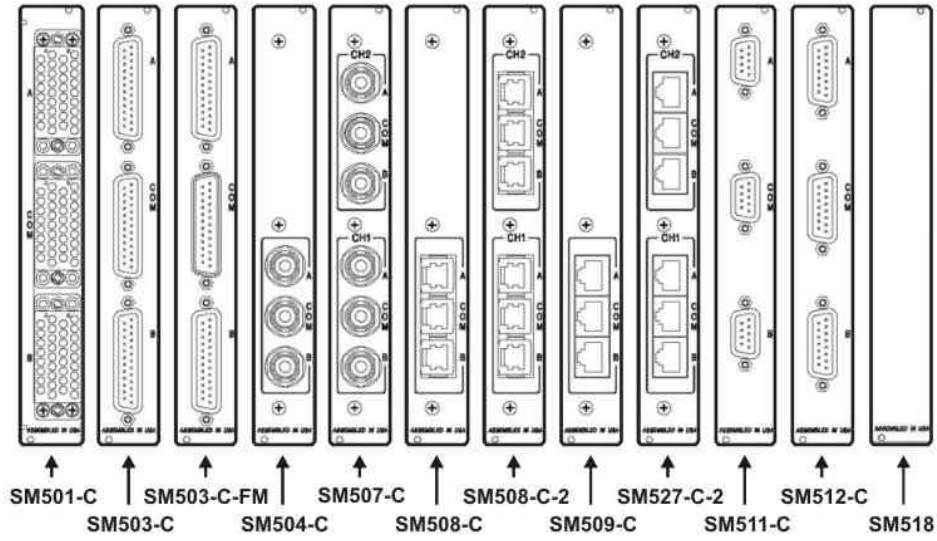


Figure 2.5. Switching Interface Cards

2.5 System Cables

Model	Description
EL04M-04	Interconnecting cable for system gang switching, RJ-11 type, 3 ft
EL04M-14	Interconnecting cable for system gang switching, RJ-11 type, 15 ft

2.6 AC Redundant Power Supply

2.6.1 Description

The AC Redundant Power Supply is composed of two plug-in Power Supply Units, normally operating in a “load-sharing” mode but each capable of operating independently. It can provide power for up to eight fully loaded chassis and replaces the Power Module (wall unit), (SM514-A-PS, SM514-A-PS-E) in each of the eight chassis.

Each plug-in Power Supply Unit has its own voltage selection switch (115/230VAC), fuses, and AC supply input. Connecting each Power Supply Unit to a different power line improves

reliability of the connected systems. There is a POWER LED on the front panel of each unit. Refer to Figure 2.6.

The AC Redundant Power Supply has eight output connectors on the rear panel to provide power to the selected chassis. Eight 6-foot supply cables (SM539) are provided with each unit for connection to the chassis. Refer to Figure 2.7.

2.6.2 Components

The AC Redundant Power Supply SM535A assembly consists of the following components:

Qty	Model	Description
1	**SM538A**	Rack Mount Chassis
2	**SM537**	Plug-in Power Supply Unit
2	**EPWR08**	Six-foot AC Cord
8	**SM539**	Eight-foot Interconnecting Low Voltage Power Cable

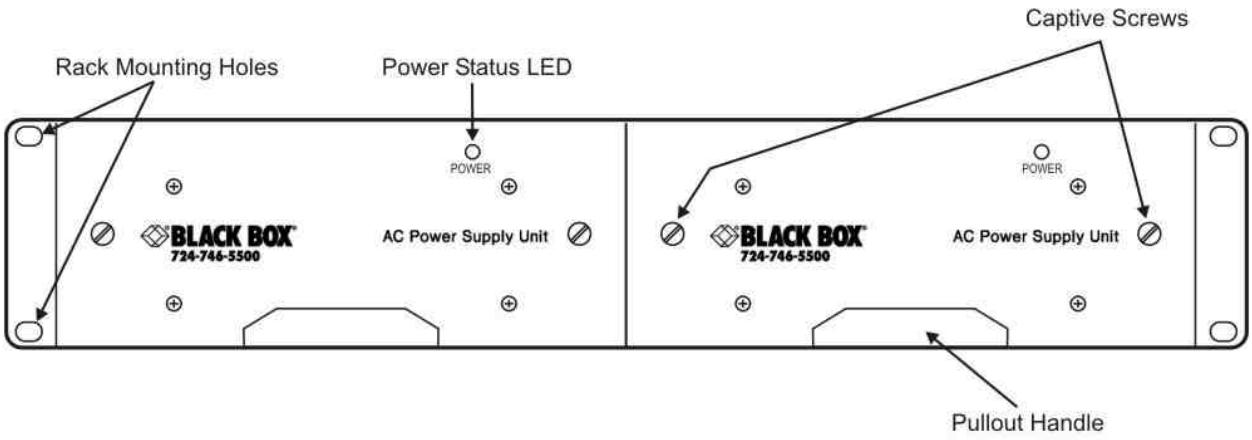


Figure 2.6. AC Redundant Power Supply unit (SM535A) front panel.

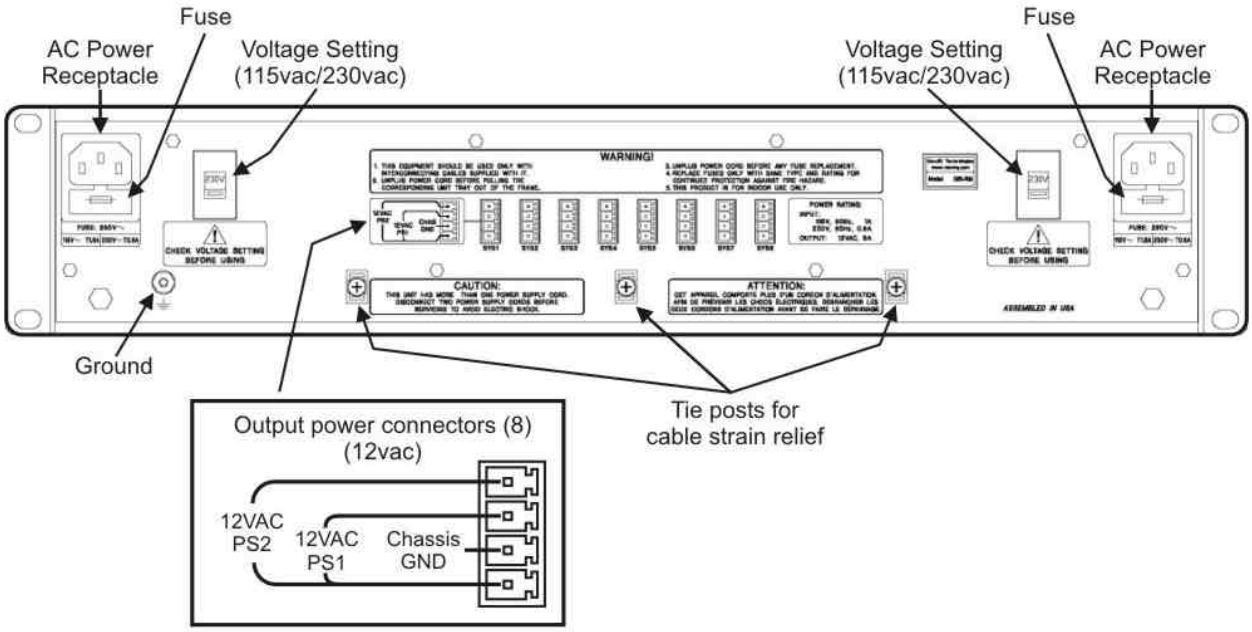


Figure 2.7. AC Redundant Power Supply unit (SM535A) rear panel

2.6.3 Installation Procedure

Mount the Chassis (SM535A), in the communication cabinet.

1. Check the slide switches located on the rear panel of each Power Supply Unit for proper AC voltage selection—that is, 115 V (factory set) or 230 V. This procedure must be followed to avoid damage to the Power Supply Unit.

2. Connect the two AC cords to the RS500 chassis. Verify that the two power indicator LEDs are illuminated.

3. Connect up to eight supply cables (SM539) from the rear connectors on the AC Redundant Power Supply chassis labeled SYS 1, . . . , SYS 8 to the corresponding chassis.

CAUTION BEFORE POWERING THE AC REDUNDANT POWER SUPPLY UNIT: The AC Redundant Power Supply unit is factory set to 115VAC at both power inputs. For 230VAC operation, move the desired slide switch to the 230VAC setting and replace the fuses with the ones supplied for use with 230VAC (.8A SB 230VAC).

2.6.4 Maintenance

No preventive or routine maintenance is required for the AC Redundant Power Supply. An LED will indicate when one of the plug-in Power Supply Units is not functioning and replacement is therefore necessary.

To replace plug-in Power Supply Unit (SM537):

1. Unplug the AC cord from power source.

2. Unscrew captive screws and remove the plug-in Power Supply Unit.

3. Slide in replacement unit and tighten the screws.
4. Connect the AC cord to the power source.
5. Check the POWER indicator LEDs on the front panel. The LED for each power unit should be on.

3 Installation

CAUTION: Electrostatic Discharge (ESD): Cards are ESD-sensitive. To prevent ESD damage, always wear grounding wrist straps when touching, removing, or inserting cards. Store and transport cards in sealed, static-shielding bags.

3.1 Installation Procedure

1. **Before installation, jumpers on Switching Interface Cards must be set:**

   Prepare cards for group switching and double channel individual gang switching:

   To set up a group of cards to switch simultaneously within one chassis, all participating cards must be assigned a unique group jumper number, either GROUP 1, 2, 3 or 4 (figure 3.1). Each card can participate only in one group. Up to four groups per chassis are available. For cards with double channels, two sets of group jumpers are available, one for each channel. Cards that do not participate in any groups must be set to NEUTRAL (default position).

   To provide simultaneous switching between the two channels within a double channel card, set the jumper from INDIVIDUAL (default) to GANG position (figure 3.2). Either of the two toggle switches will trigger this switching.

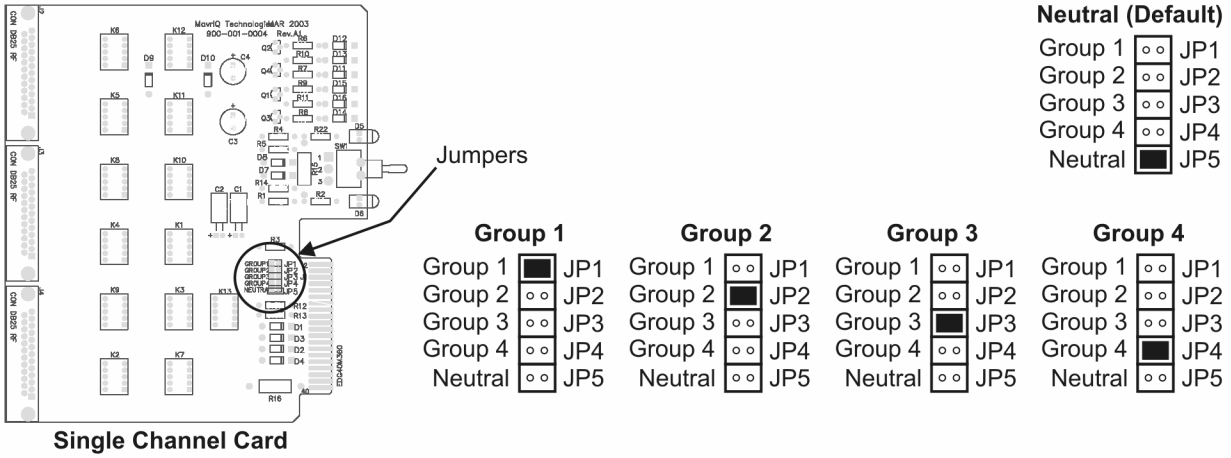


Figure 3.1. Jumpers on Switching Interface Cards, Single Channel

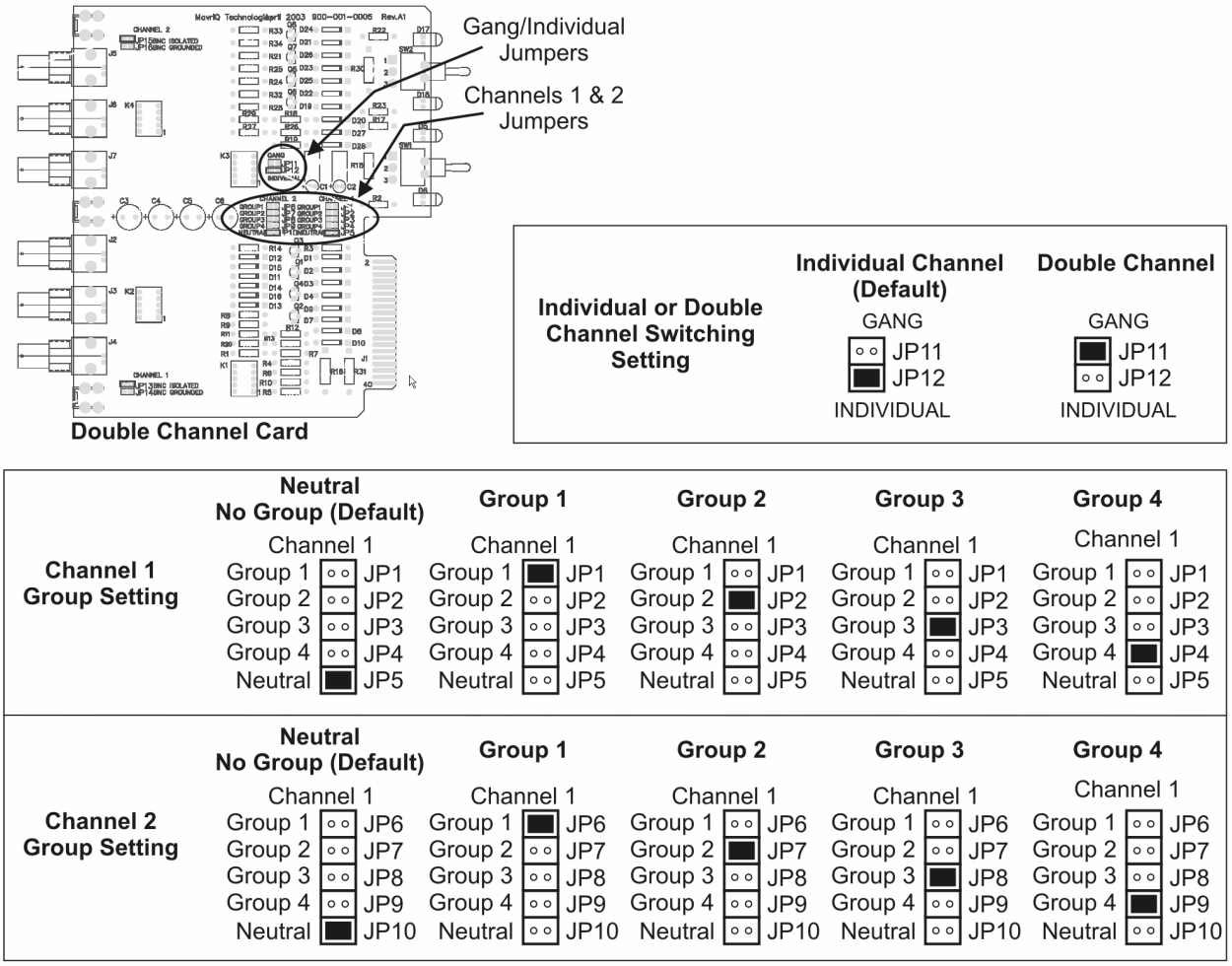


Figure 3.2. Jumpers on Switching Interface Cards, Double Channel

2. Install Switching Interface Cards in Chassis(s):

Install the Interface Cards into the chassis, slots 1-16, fastening each card into place with the supplied screws (figure 2.2).

3. Power Supply/Control Card setup (applicable to SM531-C and SM532-C)

Using the bank of jumpers (figure 3.3), set up the Power Supply/Control Card to perform one of the following three types of control:

1. Chassis gang switch control—JP1 to JP5 in position 1-2. The "GANG" toggle switch provides the capability to perform gang switching on chassis level.

NOTE: To perform any local switching functions, the key-operated switch must be in the ENABLE position.

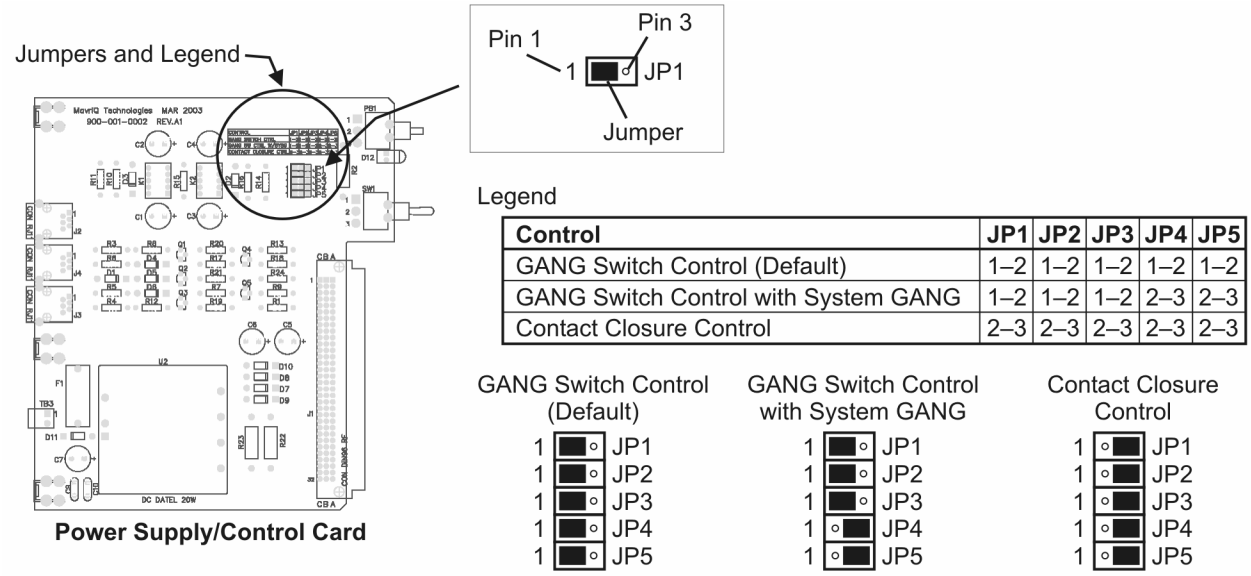
2. Chassis and system gang switching—JP1 to JP3 in position 1-2, JP4 to JP5 in position 2-3. While pressing and holding "SYSTEM GANG" pushbutton and then toggling the "GANG" switch, switching is extended to the entire system. All the Power Supply/Control Cards must be interconnected using RJ-11 cables at the "GANG IN/GANG OUT" ports to perform system gang switching.

NOTE: The yellow LED, labeled "ENBL", is illuminated to indicate that the "SYSTEM GANG" function is active. To perform any local switching functions, the key-operated switch must be in the ENABLE position.

3. Remote system gang switching via contact closure—JP1 to JP5 in position 2-3. This card has an additional capability of performing system gang switching activated by an external control voltage. This functionality is available through the "CONTACT CLOSURE SWITCHING" port. The controlling voltage can be supplied from an RS232 control lead or any other source switched between +12v and -12v or from an external relay or switch contact using +12v and -12v available at the "CONTACT CLOSURE SWITCHING" connector through a 1K ohm resistor. Switching to "A" requires +12v. Switching to "B" requires -12v (refer to figure 3.5). This function can be extended to the entire system by interconnecting all the Power Supply/Control Cards using RJ-11 cables at the "GANG IN/GANG OUT" ports.

NOTE: A card with this configuration must first be in the interconnecting chain.

NOTE: The key-operated switch position on all chassis has no effect on the remote system gang switching function.



Control	JP1	JP2	JP3	JP4	JP5
GANG Switch Control (Default)	1–2	1–2	1–2	1–2	1–2
GANG Switch Control with System GANG	1–2	1–2	1–2	2–3	2–3
Contact Closure Control	2–3	2–3	2–3	2–3	2–3

Figure 3.3. Jumper settings on Power Supply/Control Card

	Line Switching	Chassic Gang	System Gang (with daisy chaining)	System Gang LED ON	Enable Key Effect—Initiating Chassis	Enable Key Effect—Other Chassis
Gang Switch Control (default)	X	X			yes	
Gang Switch Control + System Gang	X	X	X	X	yes	no
Contact Closure	X	X	X	X	no	no

Table 3.1. Switching functionality as function of Power Supply/Control Card jumper settings

4. Install Power Supply/Control Card in Chassis

Install the Power Supply/Control Card in the SM500A chassis, slot 17, fastening it into place with the supplied screws (figure 2.2).

5. Install Chassis in Cabinet

Mount the SM500A chassis within the communication cabinet.

6. Install the Power Supply

You may use for each chassis either one or two Power Modules SM531-C (115VAC) or SM532-C (230VAC), a supply cable from an AC Redundant Power Supply SM535A, or a supply cable from an outside supply, -48VDC per Power Supply/Control Card SM532-C.

a. Single Power Module

Insert the Power Module connector into the power connector 1 input on the Power Supply/Control Card for each chassis. Supply power to the chassis by plugging the module into a power outlet. The PS1 LED is illuminated.

b. Dual Power Modules (Redundant Operation)

Insert the Power Module connectors into the power connector 1 and 2 inputs on the Power Supply/Control Card for each chassis. Supply power to the chassis by plugging each module into a power outlet. The PS1 and PS2 LEDs are illuminated.

c. AC Redundant Power Supply

You can connect up to eight SM500A chassis to an AC Redundant Power Supply (SM535A).

CAUTION: Do not attempt to connect the AC Redundant Power Supply until you have read the installation instructions below.

AC Redundant Power Supply Connection (see figures 3.3A)

1. Mount the AC Redundant Power Supply in the communication cabinet.
2. Check the slide switch located on each plug-in power unit for proper AC voltage selection, 115 V (factory set) or 230 V. This procedure must be followed to avoid damage to the power unit. For 230VAC application, install the supplied fuses.
3. Slide in the two plug-in Power Supply Units (SM537) and secure them by tightening the screws.
4. Connect AC cords to the Power Supply Units. Do not connect the AC cords yet to power sources.
5. Connect cables (SM539) from the rear connectors on the AC Redundant Power Supply labeled SYS 1, . . . , SYS 8, to the corresponding chassis. The POWER connectors are located in the rear of the Power Supply/Control Card.
6. Plug the two power cords from the AC Redundant Power Supply into different AC sources. Make sure that the two POWER indicator LEDs, located on the AC Redundant Power Supply front panel, light up. Also, see that the PS1 and PS2 LEDs on the SM500A chassis front panel are illuminated.

NOTE: For enhanced redundancy, the AC Redundant Power Supply may be fed from a 115VAC source at one power input and a 230VAC source at the other power input.

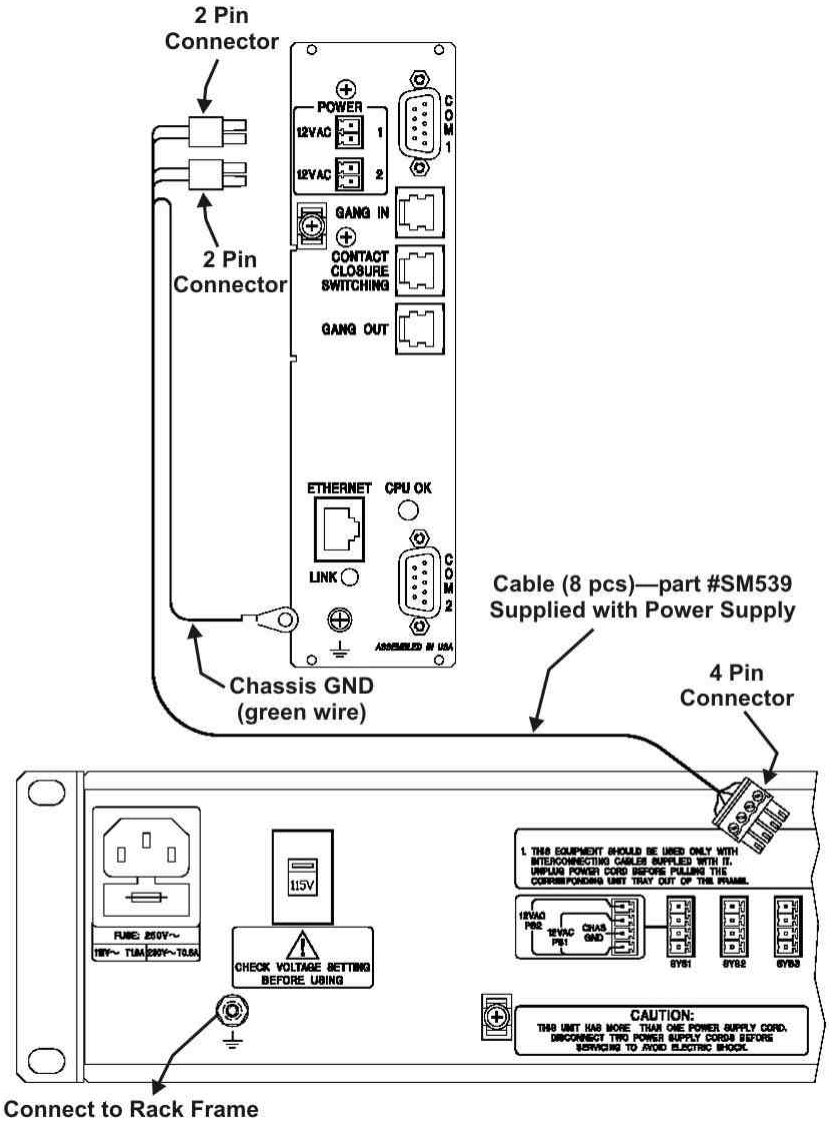


Figure 3.3A. Connecting the AC Redundant Power Supply (SM535A) to the power inputs on the Control Card.

d. Outside Power Source, -48VDC at 1A DC

Use an outside source for Power Supply/Control Card SM532-C and Advanced Control Card SM534-C. Connect leads from the outside power source to the control card two-pin terminal strip connector, which is provided with the card (figure 3.3B). Also, verify that the PS1 LED on the SM500A chassis front panel is illuminated.

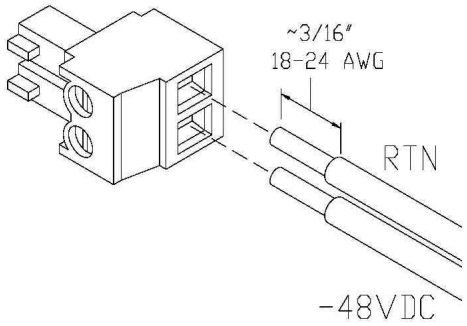


Figure 3.3B. Connection of wires to -48V terminal block connector. Connector is provided with the control card.

7. Connect Ground

Establish ground between the chassis and office ground. A frame grounding screw is located on the control card. This and all other grounding connections must be established to comply with all local and national electrical codes.

1. Obtain a ground braid and connect one end to the ground screw on the control card.

2. Connect the other end of the ground braid to the office ground conductor.

8. Interconnecting Chassis for Gang Switching

Select the appropriate installation procedure, (a), (b), or (c), as described below, according to system gang switching requirements.

a. One-chassis system requiring only chassis-level gang switching (no interconnection needed)

1. Turn the key-operated switch to the horizontal position and remove the key.
2. Toggle the channel switches. Then toggle the Gang Switch. No switching should be performed.
3. Reinsert the key and turn the switch to the Enable position.
4. Toggle the channel switches. Each channel should switch to the required position, and the LED should provide a visual indication of the switched position.
5. Toggle the Gang Switch. All channels within the chassis should switch to the A or B position.
6. Connect all interface cables to the system.

b. Multiple-chassis system requiring manual chassis gang switching and system gang switching (see figure 3.4)

NOTE: For all chassis with system gang, "ENBL" LED should be illuminated.

1. All the Power Supply/Control Cards must be interconnected via RJ-11 cables (EL04M-04 or EL04M-14). Connection is from the GANG OUT connector on the first chassis to the GANG IN connector on the succeeding chassis. This procedure is continued until all the chassis in the system (up to 64) are interconnected.
2. Turn the key-operated switch on all chassis to the horizontal position and remove keys.

3. Toggle the channel switches. Then toggle the Gang Switch. No switching should be performed.
4. Push the SYSTEM GANG button and toggle the GANG switch simultaneously to A or B. No switching should occur.
5. Reinsert key into the chassis and turn to the ENABLE position.
6. Toggle the channel switches in that particular chassis. Each channel should switch to the required position, and the LED should indicate the switched position.
7. Toggle the GANG switch to the A or B position. All channels within the chassis should be switched to the A or B position.
8. Push the SYSTEM GANG button and toggle the GANG switch simultaneously to the A or B position. All chassis within the system should switch to the A or B position.
9. Reinsert keys into all chassis and turn each one to the Enable position. For each chassis, perform the following steps:

   (a) Toggle the channel switches. Each channel should switch to the required position, and the LED should indicate the switched position.

   (b) Toggle the Gang Switch. All channels within the chassis should switch to the A or B position.
10. Connect all interface cables to the system. Connect all interface cables to the system

c. Multiple-chassis system requiring manual and remote system gang switching (figures 3.4 and 3.5)

NOTE: A chassis with remote system gang switching must be first in the interconnecting chain.

All the Power Supply/Control Cards must be interconnected via RJ-11 cables (EL04M-04 or EL04M-14). Connection is from the GANG-OUT connector on this card to the GANG-IN connector on the succeeding chassis. This procedure is continued until all the chassis in the system are interconnected. Up to 64 chassis may be connected in this manner. The chassis with the remote system gang switching option must be first in the interconnecting chain.

1. Turn the key-operated switch on all chassis in the system to the horizontal position and remove the keys.
2. Toggle the channel switches. No switching should be performed.
3. Push the SYSTEM GANG button and toggle the GANG switch simultaneously to A or B. No switching should occur.
4. Connect control line to the rear contact closure switching connector, following Figure 2.3. Apply -12 volts. All channels within the system should switch to position B.

NOTE: +12V and -12V can be supplied from the card itself (see figure 3.5).

5. Apply +12 volts. All channels within the system should switch to position A.
6. Reinsert key into the chassis and turn it to the Enable position.

7. Toggle the channel switches in that particular chassis. Each channel should switch to the required position, and the LEDs should provide a visual indication of the switched position.
8. Toggle the GANG switch to the A or B position. All channels within the chassis should switch to the required position.
9. Push the SYSTEM GANG button and toggle the GANG switch simultaneously to the A or B position. All chassis within the system should switch to the A or B position.
10. Reinsert keys into all chassis and turn each one to the Enable position. For each chassis, perform the following steps:

    (a) Toggle the channel switches. Each channel should switch to the required position, and the LEDs should provide a visual indication of the switched position.

    (b) Toggle the Gang Switch. All channels within the chassis should switch to the A or B position.
11. Connect all interface cables to the system.

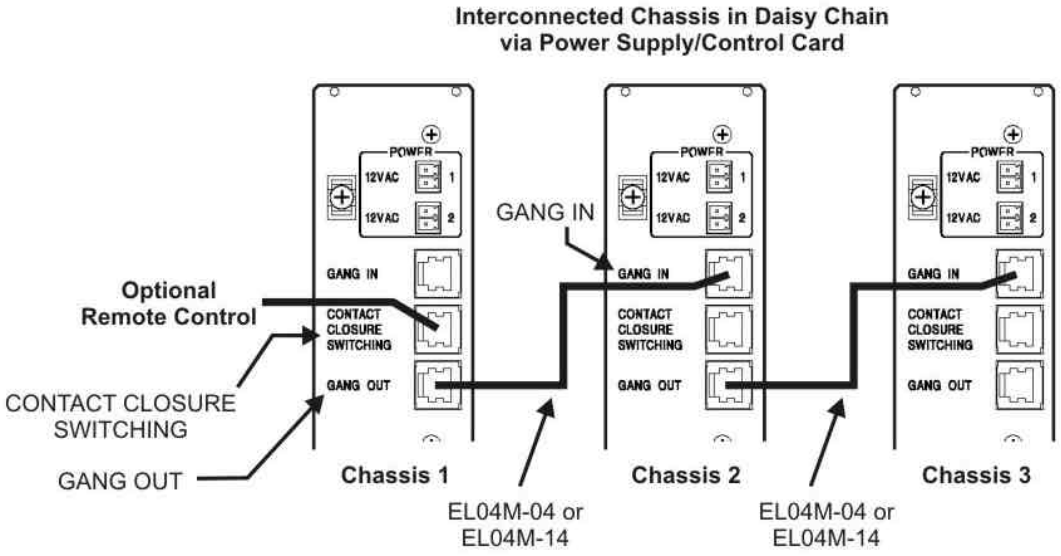


Figure 3.4. System gang connection. Power Supply/Control Card SM531-C shown. Applicable also to Power Supply/Control Card SM532-C. GANG OUT/GANG IN cables used are EL04M-04 or EL04M-14. For optional remote control, see figure 3.5 for pin configuration of cable requirements.

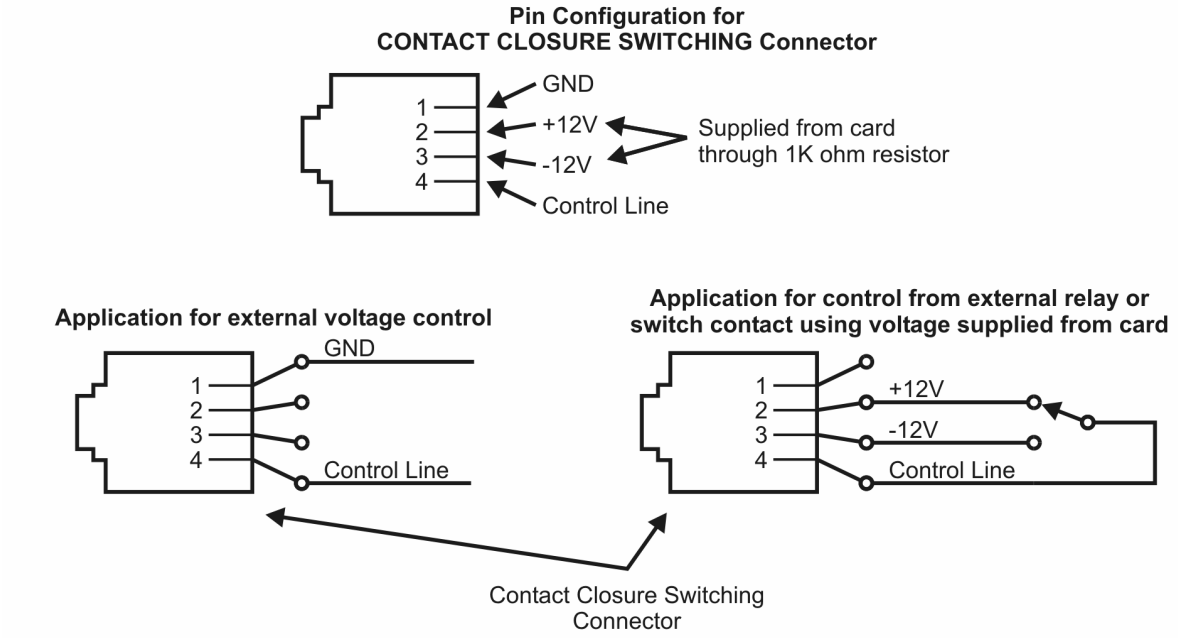


Figure 3.5. Power Supply/Control Card pin configuration and control applications

4 User Interfaces (Using Advanced Control Cards SM533-C and SM534-C)

4.1 General Description

This documentation describes the following types of control (using Advanced Control Cards SM533-C (12VAC) and SM534-C (-48VDC)) for the Automatic Switching System:

1. Control via ASCII commands requires text entry of commands. Communication with the SM500A chassis is via local connection (COM port) or Ethernet/Telnet session.
2. Control via SNMP protocol requires use of an SNMP manager, which uses a Management Information Base (MIB) and a set of commands to exchange information between the SM500A chassis and manager.
3. Control via Web browser uses a standard browser interface for performing switch operations with the SM500A chassis. The browser shows a graphical view of the chassis and provides point and click operation.
4. Control via Advanced GUI Based Management uses proprietary software. Similar to the Web browser interface, the program provides a graphical view of the SM500A chassis and provides point and click operation.

The following chapters will describe in detail each control configuration.

4.2 System Diagram

Figure 4.1 shows a typical system diagram of the Automatic Switching System SM500A with the following setups:

1. Remote control—Each chassis is connected to an Ethernet hub via an Ethernet port located on the Advanced Control Card. Users may access each chassis from a remote computer by using SNMP protocol or by issuing ASCII commands via Telnet. Each chassis is identified via IP address.

2. Local control—The top chassis is locally connected to a computer or terminal via the chassis COM1 serial port. Users may access the connected chassis using ASCII commands. Additionally, a local connection to each chassis is required to set their IP addresses prior to remote access.

3. System gang switching connection (optional)—Cable connections at the GANG IN/GANG ports of the chassis enable system gang switching. The connections allow the initiating chassis to simultaneously switch itself and all daisy chained chassis below it.

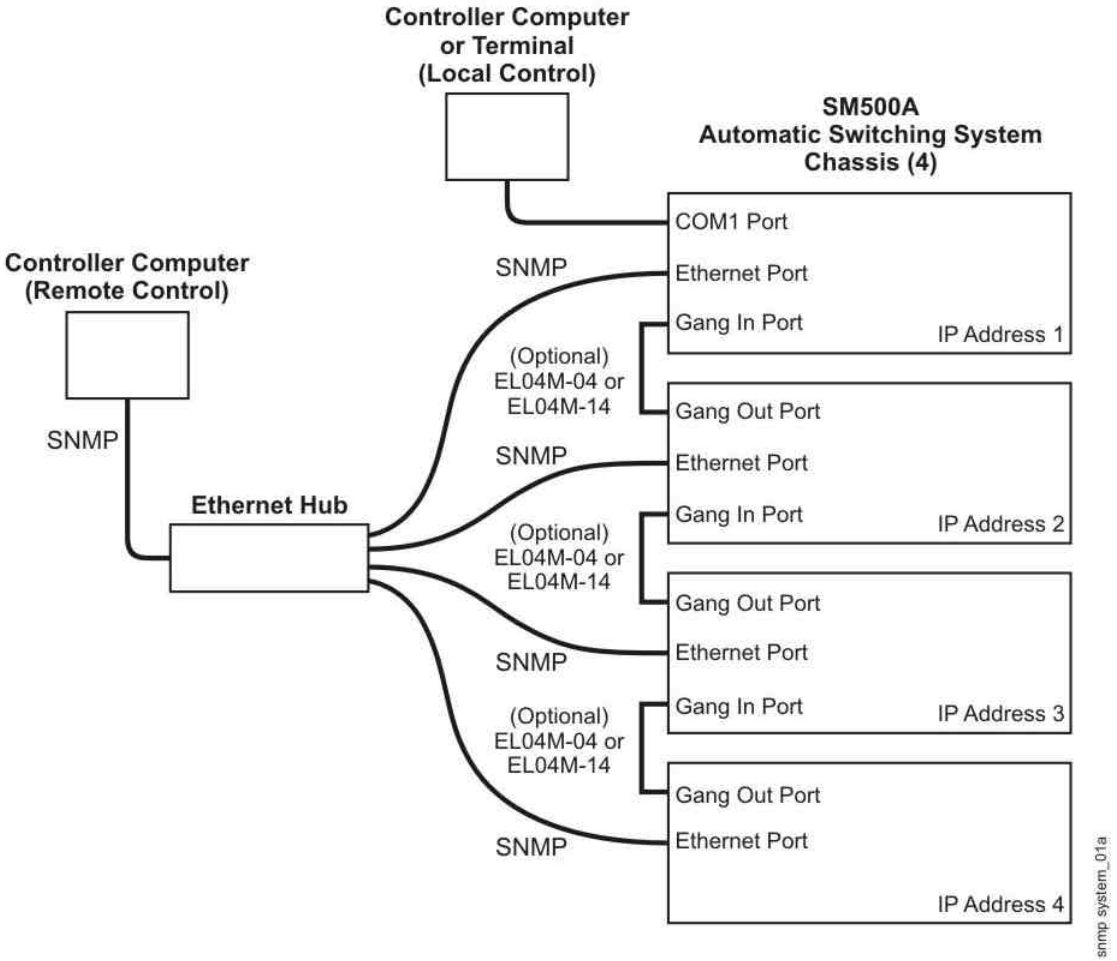


Figure 4.1. Typical Configuration

5 Control via ASCII

5.1 DIP Switch (S1) Setting

Control via ASCII requires setting the toggles on DIP switch S1 located on the Advanced Control Card (SM533-C or SM534-C). Figure 5.1 shows the location of DIP switch S1.

To enable ASCII control:

1. Set the toggles on DIP Switch S1 on the Advanced Control Card to the following positions:

   S1, toggles 3: Set to ON.

   S1, toggles 1, 4 to 8: Set to OFF.

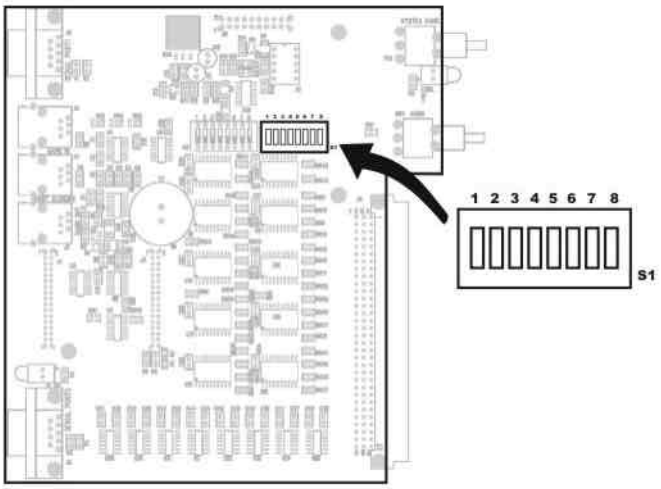


Figure 5.1. DIP Switch (S1) location on Advanced Control Cards SM533-C and SM534-C

5.2 ASCII Local Configuration

Connect the COM1 port

1. Using a terminal or terminal emulation program on a PC (HyperTerminal, for example), configure the terminal communication settings as follows.

   Baud rate: 19200
   Data bits: 8
   Parity: None
   Stop bits: 1
   Flow control: None

2. Connect a straight DB9 cable (serial RS232) from the terminal or PC to the COM1 port on the Advanced Control Card (figure 5.2).

3. Verify proper communication by pressing “Enter” on your keyboard. The chassis should respond with “1:OK” or similar.

4. Set the echo using the command, “SET RACK 1 ECHO ON”.

5. Enter the desired ASCII commands as stated in the ASCII command section.

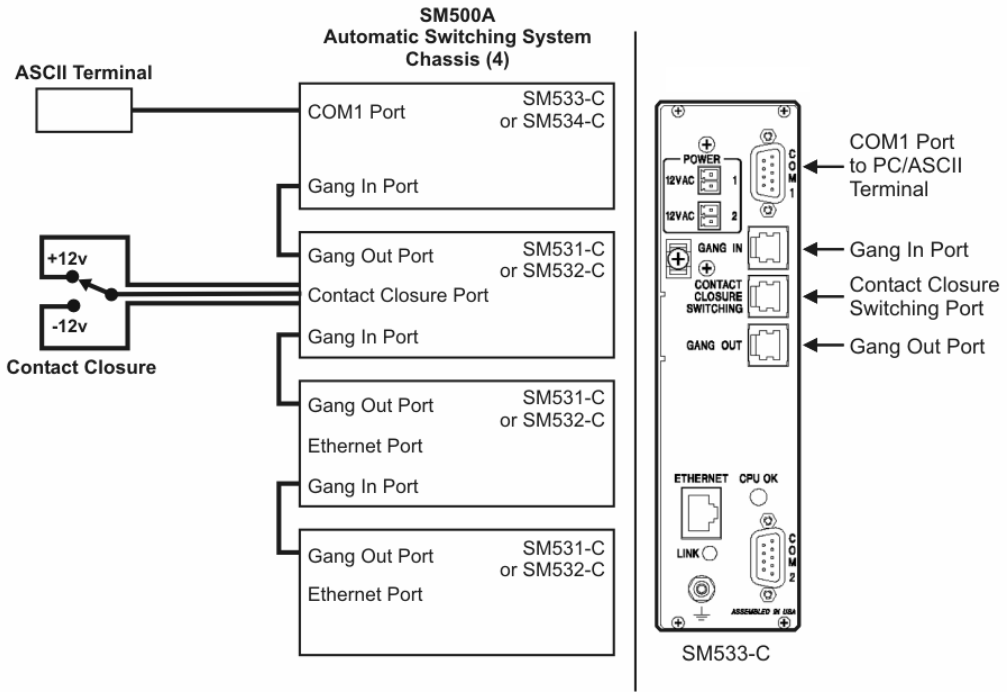


Figure 5.2. Typical connection for ASCII control. ASCII control for this configuration can access only the first chassis in the system. System gang switching can be performed on all chassis.

5.3 ASCII Commands

This section describes the ASCII command grammar for managing the Automatic Switching System SM500A via local control (COM1 serial port on the Advanced Control Card) or via remote control/Telnet session (via Ethernet port on the Advanced Control Card).

Note: For all n variables, use RACK n = 1.

5.3.1 HELP

```
CONVENTIONS
  [optional item]        Optional items are enclosed in brackets
  choice_1 | choice_2    Selections are separated by a vertical bar
HELP SUB-MENUS
  HELP GET
  HELP SET
OTHER COMMANDS
  RESET RACK n
```

5.3.2 HELP GET

```
GET COMMANDS
   GET RACK n CARDS
   GET RACK n CHANNEL NAME
   GET RACK n CHANNEL STATUS
   GET RACK n DIPSW STATUS
   GET RACK n NETWORK|SNMP CONFIGURATION
```

```
      GET RACK n TIME
      GET RACK n VERSION


   GET COMMANDS
      GET RACK n NETWORK|SNMP CONFIGURATION
```

5.3.3 HELP SET

```
SET COMMANDS
   SET RACK n CHANNEL c COM|A|B [name]
   SET RACK n CHANNEL c PORT A|B
   SET RACK n ECHO ON|OFF
   SET RACK n FACTORY DEFAULTS
   SET RACK n GROUP m PORT A|B
   SET RACK n GANG|SYSGANG PORT A|B
   SET RACK n IP ADDRESS x.x.x.x
   SET RACK n NAME [name]
   SET RACK n SNMP MANAGER x.x.x.x
   SET RACK n SNMP READ|WRITE COMMUNITY NAME name
   SET RACK n SNMP TRAPS ON|OFF
   SET RACK n SUBNET MASK x.x.x.x
   SET RACK n SYSGANG ENABLE|DISABLE
   SET RACK n TELNET IDLE TIMEOUT m
   SET RACK n TIME mm/dd/yyyy hh:mm
   SET RACK n WEB PW old new
```

```
SET COMMANDS

   SET RACK n SNMP MANAGER x.x.x.x
   SET RACK n SNMP READ|WRITE COMMUNITY NAME name
   SET RACK n SNMP TRAPS ON|OFF
   SET RACK n TELNET IDLE TIMEOUT m
   SET RACK n WEB PW old new
```

5.3.4 GET RACK n CARDS

Retrieves the cards that are installed. The number of channels per card is shown with a -1 for one channel cards and –2 for two channel cards.

```
1:  CARDS
1-1 2-1 4-2 6-1 11-2 13-2 16-2
```

5.3.5 GET RACK n CHANNEL NAME

Retrieves channel names for ports COM, A, and B.

```
1:  CHANNEL NAME SCREEN
RACK 1: _____________________________________  IP: 192.168.0.1
                                               SW KEY: ENABLE
CHN COM      A         B          CHN COM      A         B
 1  _________ _________ _________   17 _________ _________ _________
 2  _________ _________ _________   18 _________ _________ _________
 3  _________ _________ _________   19 _________ _________ _________
 4  _________ _________ _________   20 _________ _________ _________
 5  _________ _________ _________   21 _________ _________ _________
 6  _________ _________ _________   22 _________ _________ _________
```

```
 7 _________ _________ _________   23 _________ _________ _________
 8 _________ _________ _________   24 _________ _________ _________
 9 _________ _________ _________   25 _________ _________ _________
10 _________ _________ _________   26 _________ _________ _________
11 _________ _________ _________   27 _________ _________ _________
12 _________ _________ _________   28 _________ _________ _________
13 _________ _________ _________   29 _________ _________ _________
14 _________ _________ _________   30 _________ _________ _________
15 _________ _________ _________   31 _________ _________ _________
16 _________ _________ _________   32 _________ _________ _________
```

5.3.6 GET RACK n CHANNEL STATUS

Retrieves the channel status. Channels are displayed together with their port identifiers and the current selected port is highlighted. If a channel is not present, it is indicated as Not Available (-NA-).

```
CHANNEL STATUS SCREEN
RACK 1: _____________________________________  IP: 192.168.0.1
                                               SW KEY: ENABLE
 1 _________: A _________ B _________   17 _________: -NA-
 2 _________: A _________ B _________   18 _________: A _________ B _________
 3 _________: A _________ B _________   19 _________: A _________ B _________
 4 _________: A _________ B _________   20 _________: A _________ B _________
 5 _________: A _________ B _________   21 _________: -NA-
 6 _________: -NA-                      22 _________: -NA-
 7 _________: A _________ B _________   23 _________: A _________ B _________
 8 _________: A _________ B _________   24 _________: A _________ B _________
 9 _________: A _________ B _________   25 _________: A _________ B _________
10 _________: A _________ B _________   26 _________: A _________ B _________
11 _________: A _________ B _________   27 _________: A _________ B _________
12 _________: A _________ B _________   28 _________: A _________ B _________
13 _________: A _________ B _________   29 _________: A _________ B _________
14 _________: -NA-                      30 _________: -NA-
15 _________: A _________ B _________   31 _________: A _________ B _________
16 _________: A _________ B _________   32 _________: A _________ B _________
```

5.3.7 GET RACK n DIPSW STATUS

Retrieves DIP switch settings.

DIPSW1

1 Hide

Set this switch to ON to hide operator ASCII control over serial and Ethernet.

ON The Help command displays a limited set of ASCII commands.
OFF The Help command displays the entire set of ASCII commands.

2 Application

This switch selects an application.
ON Web enabled
OFF SNMP enabled

3
ON Must be in ON position

4-8
OFF Must be in OFF position

DIPSW2

1-8 (Not Used)

```
1:  DIPSW
DIPSW-1
1   2   3   4   5   6   7   8
OFF ON  ON  OFF OFF OFF OFF OFF

DIPSW-2
1   2   3   4   5   6   7   8
OFF OFF OFF OFF OFF OFF OFF OFF
```

5.3.8 GET RACK n NETWORK CONFIGURATION

Retrieves network configuration parameters.

```
1:  NETWORK CONFIGURATION
IP ADDRESS          SUBNET MASK
192.168.0.1         0.0.0.0

Telnet Idle Timeout: 5 min
```

5.3.9 GET RACK n SNMP CONFIGURATION

Retrieves SNMP configuration parameters

```
1:  SNMP CONFIGURATION

Read Community Name:  public
Write Community Name: private

SNMP TRAPS: DISABLE
SNMP MANAGER
0.0.0.0
```

5.3.10 GET RACK n TIME

Retrieves the date and time settings.

```
1: TIME
01/19/2004  13:24
```

5.3.11 GET RACK n VERSION

Retrieves the controller's firmware version number and part number.

```
1:  VERSION
MavriQ Technologies
Recovery Switching System 500
```

```
PART NUMBER       VERSION NUMBER
981-000-0001       1.0 (Build 01)
```

5.3.12 SET RACK n CHANNEL c COM|A|B [name]

Use this command to set a label identifier to a port (COM, A, B) on a channel c.

Channels are identified by channel *c* (1-32).

The port identifier name has a maximum length of 8 characters. When the parameter *name* is omitted the specified port label is cleared.

5.3.13 SET RACK n CHANNEL c PORT A|B

Switches channel *c* (1-32) to either port A or B

5.3.14 SET RACK n ECHO ON|OFF

Sets the echo on or off.

5.3.15 SET RACK n FACTORY DEFAULTS

Disables the SYSTEM GANG switching feature.

Clears all port identifiers for each channel.

Clears the rack identifier.

Sets the network configuration parameters to their default values:

```
IP ADDRESS        192.168.0.1
SUBNET MASK 0.0.0.0
Telnet Idle Timeout     5 minutes
```

Sets the SNMP configuration parameters to their default values:

```
SNMP TRAPS              DISABLE
SNMP MANAGER            0.0.0.0
Read Community Name     public
Write Community Name    private
```

5.3.16 SET RACK n GROUP m PORT A|B

Performs group switching on the rack.

A group is defined to be a set of 4 adjacent cards. The maximum number of groups on a rack is 4. Values for parameter **m** will be 1 – 4.

The result of this command is that all channels in the group will switch to the specified port. If any channel in the group failed to switch to the specified port, a SWITCH error is returned.

An invalid group is one that fails to have 4 adjacent cards. No channels are switched for invalid groups, and a GROUP error message will be reported.

5.3.17 SET RACK n GANG PORT A|B

Requests a gang switch to port A or B.

5.3.18 SET RACK n SYSGANG PORT A|B

Requests a system gang switch to port A or B.

5.3.19 SET RACK n IP ADDRESS x.x.x.x

Sets the rack IP address. Defaults to 192.168.0.1

5.3.20 SET RACK n NAME [name]

Sets the identifier *name* for rack *n*. The identifier *name* has a maximum length of 31 characters.

5.3.21 SET RACK n SNMP MANAGER x.x.x.x

Sets the IP address of the SNMP manager. SNMP traps are sent to this address.

Defaults to 0.0.0.0

5.3.22 SET RACK n SNMP READ COMMUNITY NAME name

Sets the Read Community Name to the string specified by the parameter *name*. The Read Community Name defaults to *public*, and has a maximum length of 15 characters.

5.3.23 SET RACK n SNMP WRITE COMMUNITY NAME name

Sets the Write Community Name to the string specified by the parameter *name*. The Write Community Name defaults to *private*, and has a maximum length of 15 characters.

5.3.24 SET RACK n SNMP TRAPS ON|OFF

Set trap transmission to be ENABLE or DISABLE. Defaults to DISABLE.

5.3.25 SET RACK n SUBNET MASK x.x.x.x

Sets the rack subnet mask. Defaults to 0.0.0.0.

5.3.26 SET RACK n SYSGANG ENABLE|DISABLE

This command is used to enable or disable the manual 'SYSTEM GANG' switching feature.

The 'SYSTEM GANG ENABLE' LED on the unit indicates the current state. When this LED is ON, the system gang switching is enabled. To perform a system gang switch press the SYSTEM GANG push button, and toggle the A/B GANG switch. When the LED is OFF system gang switching is disabled.

Note: This command turns the manual system gang switch functionality on and off. However, it has no effect on a system gang switch performed via the command 'SET RACK n SYSGANG PORT A|B'.

5.3.27 SET RACK n TELNET IDLE TIMEOUT m

Defines the idle timeout, in minutes, for a telnet session. Parameter m has a range of 0-60 minutes, with 0 being defined as NO TIMEOUT. The default is set to 5 minutes.

5.3.28 SET RACK n TIME mm/dd/yyyy hh:mm

Used to set the date and time on the rack.

```
The date has the mm/dd/yyyy format, with
   mm:   1 – 12
   dd:   1 – 31
   yyyy: 1980 – 2047
```

The time has the *hh:mm* format, with
hh: 0 – 23
mm: 0 – 59

If the unit fails to set the time on the rack, a RTC error message is returned.

5.3.29 SET RACK n WEB PW old new

Sets a password for the web submit pages. Used for local password setup. The password is case sensitive and has a maximum length of 8 characters. The default password is set to *admin.*

5.3.30 RESET RACK n

Resets the rack.

5.4 ASCII Error Messages

The format of the error response is as follows

n:ERROR
MESSAGE

With MESSAGE describing the error type.

SYNTAX	Syntax Error
RACK ADDRESS	Rack Address Error
CARD	Card Missing
CHANNEL	Channel Error
PORT	Port Error
PARAMETER	Parameter Error
GROUP	Group Error
SWITCH	Switch Error
RTC	RTC Error

6 Control via SNMP

6.1 DIP Switch (S1) Setting

Control via SNMP requires setting the toggles on DIP switch S1 located on the Advanced Control Card (SM533-C or SM534-C). Figure 6.1 shows the location of DIP switch S1.

To enable SNMP control:

1. Set the toggles on DIP Switch S1 on the Advanced Control Card to the following positions:

   S1, toggle 2: Set to OFF to enable SNMP control.

   S1, toggles 3: Set to ON.

   S1, toggles 1, 4 to 8: Set to OFF.

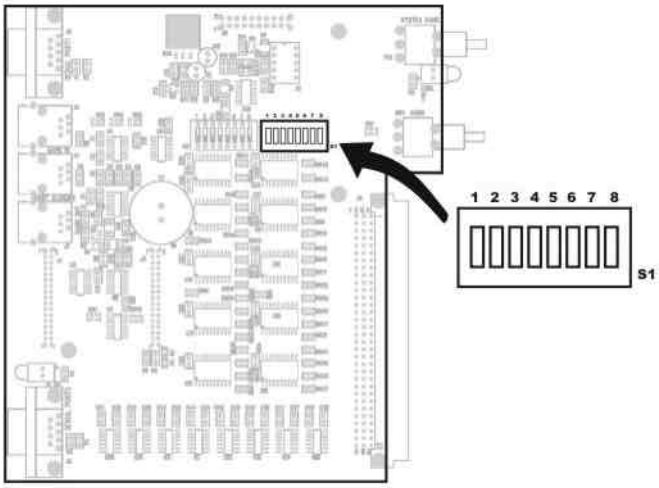


Figure 6.1. DIP Switch (S1) location on Advanced Control Cards SM533-C and SM534-C

6.2 SNMP Network Configuration

6.2.1 Setting the IP Address and SNMP Configuration

Note: The IP address MUST LOCALLY be configured into the SM500A chassis in order to establish an Ethernet connection. Use the COM1 port on the Advanced Control Card for the local connection.

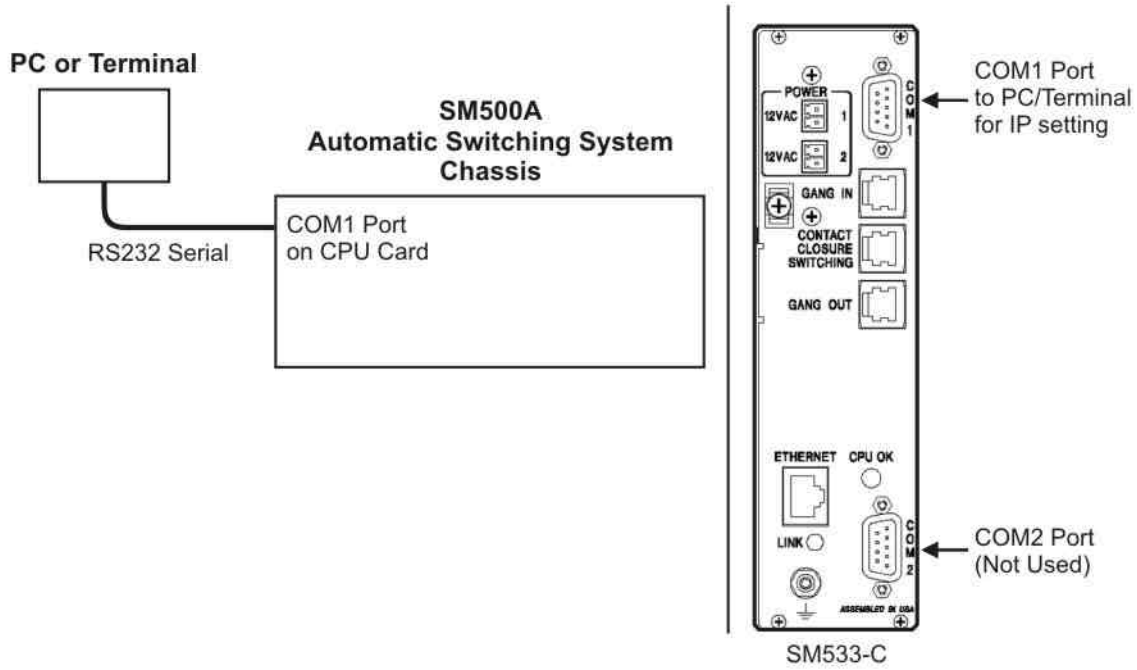


Figure 6.2. Local RS232 connection via COM1 on the Advanced Control Card (SM533-C) for chassis IP configuration

Configure the IP address of each chassis

1. Using a terminal or terminal emulation program on a PC (HyperTerminal, for example), configure the terminal communication settings as follows.

   Baud rate: 19200
   Data bits: 8
   Parity: None
   Stop bits: 1
   Flow control: None

2. Connect a straight DB9 cable (serial RS232) from the terminal or PC to the COM1 port on the Advanced Control Card (figure 6.2).
3. Verify proper communication by pressing “Enter” on your keyboard. The chassis should respond with “1:OK” or similar.
4. Set the echo using the command, “SET RACK 1 ECHO ON”.
5. Enter the IP address for the chassis using the command “SET RACK 1 IP ADRESS x.x.x.x”, where x.x.x.x is replaced by the IP address.
6. Enter the subnet mask for the chassis using the command “SET RACK 1 SUBNET MASK, 0.0.0.0”, in case of local network configuration.
7. Verify the settings by using the command “GET RACK 1 NETWORK CONFIGURATION”.
8. Reset the chassis using the command “RESET RACK 1”.
9. Repeat this procedure for all chassis.

Configure the chassis for SNMP

1. Retrieve the SNMP configuration by executing the command:

   GET RACK 1 SNMP CONFIGURATION

   The chassis responds with:

   1: SNMP CONFIGURATION
   Read Community Name: public
   Write Community Name: private
   SNMP TRAPS: DISABLE
   SNMP MANAGER
   0.0.0.0

   The example response above is the default configuration.

2. Configure the IP address of the SNMP Manager. The SNMP Manager is the PC running the SNMP management software. The SM500A will send the traps to this SNMP Manager. Enter its IP address by executing the command:

   SET RACK 1 SNMP MANAGER x.x.x.x

   Where x.x.x.x is the IP address.

   The chassis responds with:

   1:OK

3. Choose whether or not the SM500A transmits the traps to the SNMP Manager by executing the command:

   SET RACK 1 SNMP TRAPS ON|OFF

   The chassis responds with:

   1:OK

4. The Read and Write community names can be configured on the agent or on the management PC. To change the community names on the agent, execute the commands:

   SET RACK 1 SNMP READ COMMUNITY NAME name

   SET RACK 1 SNMP WRITE COMMUNITY NAME name

   The chassis responds with:

   1:OK

6.2.2 SNMP and System Gang (Optional) Connections

Connect the Ethernet cable

1. Connect Ethernet cables from the Ethernet port on the Advanced Control Card from each chassis to an Ethernet hub (figure 6.3) or similar functioning network device.

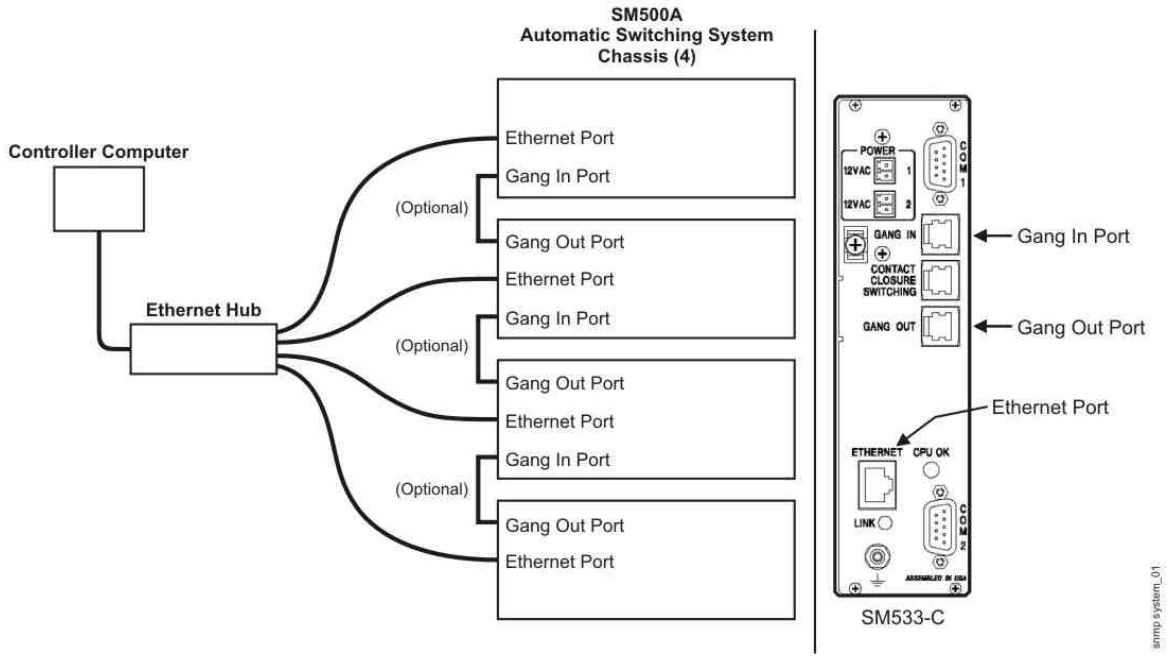


Figure 6.3. Typical connection and daisy chain Gang In/Gang Out connections on the Advanced Control Card. SNMP can access every chassis in the system.

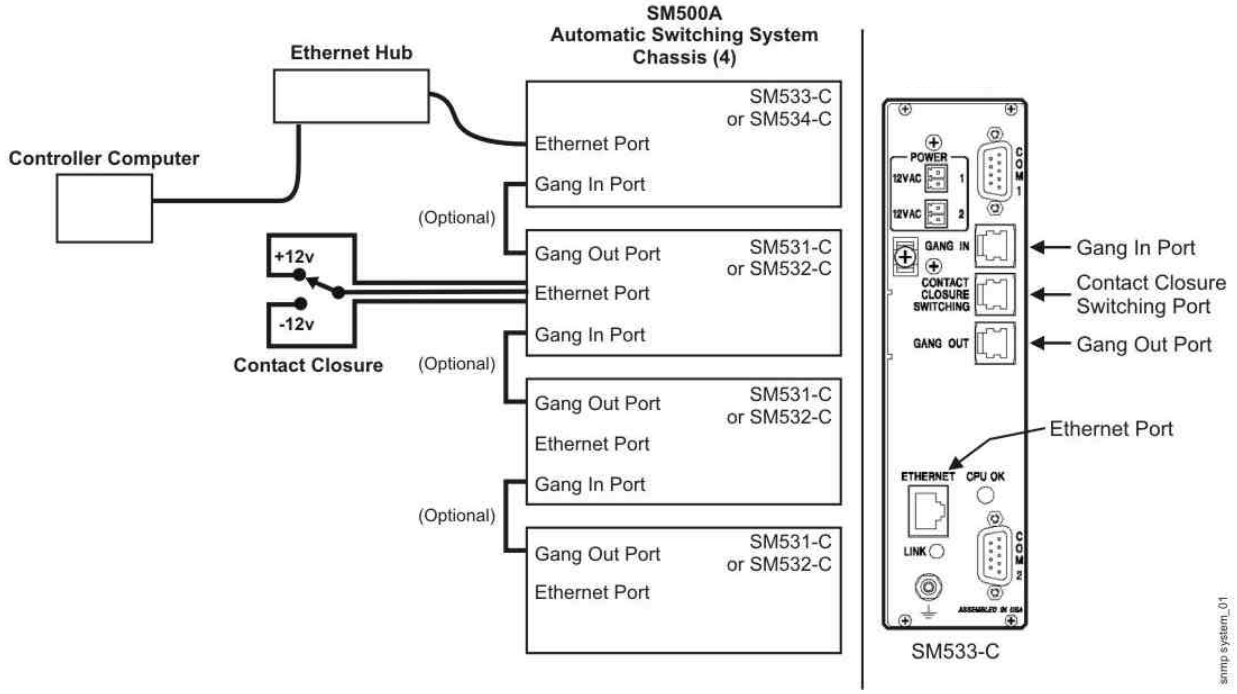


Figure 6.4. Typical setup for combined SNMP and manual control using various control cards. SNMP can access only the first chassis in the system. System gang switching can be performed on all chassis.

Connect the System Gang cables (optional)

This optional cable connection is applicable to system gang switching and remote system gang switching. Both of these switching functions will switch simultaneously all the chassis in a system, from the initiating chassis downward to daisy chained chassis.

1. Connect RJ11 cables from the GANG OUT port on one Advanced Control Card to the GANG IN port on the next Advanced Control Card.
2. Repeat this procedure in daisy chain fashion for all chassis.

6.3 SNMP MIB

6.3.1 Description

This section describes control of the Automatic Switching System SM500A via SNMP protocol and lists the private (local) Management Information Base (MIB).

A MIB is a file that describes the objects that an SNMP program can handle. The MIB file may be loaded into a Network Manager program such as HP OpenView or similar. There, the variables may be set or read to provide information on system objects.

The MIB provides a set of variables that are private extensions to internet standard MIBs. Its variables may be set or read to provide information particular to the SM500A chassis.

6.3.2 SNMP Version and Settings

The SNMP agent on the SM500A implements SNMP v1, and allows the user to access the unit using SNMP management software.

The community names for the SNMP agent are defined as follows:

Read Community Name: public
Write Community Name: private

The file RSS500.mib implements the RSS500 MIB.

The enterprise number is 18755.

6.3.3 MIB File (RSS500.mib)

```
****************************************************************
-- MavriQ Technologies
-- Copyright (c) 2004. All rights reserved.
-- RSS500.mib: MIB module for the Recovery Switching System Series
500
****************************************************************
```

6.3.3.1 Version and Enterprise Number

```
-- RSS500 MIB Version History n
--
-- Version 1.1       Initial release
RSS500-MIB DEFINITIONS ::= BEGIN
MavriQ         OBJECT IDENTIFIER ::= { enterprises 18755 }
RSS500         OBJECT IDENTIFIER ::= { MavriQ 1 }
```

6.3.3.2 Rack Information

```
-- the rack info
rack           OBJECT IDENTIFIER ::= { RSS500 1 }
```

6.3.3.2.1 rackRTCDate

```
rackRTCDate OBJECT-TYPE
   SYNTAX DisplayString (SIZE (0..10))
   ACCESS read-write
   STATUS mandatory  DESCRIPTION
   "The current date for the unit. The format is: MM/DD/YYYY"
   ::= { rack 1 }
```

6.3.3.2.2 rackRTCTime

```
rackRTCTime OBJECT-TYPE
   SYNTAX DisplayString (SIZE (0..5))
   ACCESS read-write
   STATUS mandatory
   DESCRIPTION
   "The current time for the unit. The format is: HH:MM"
   ::= { rack 2 }
```

6.3.3.2.3 rackSwitchKey

```
rackSwitchKey OBJECT-TYPE
   SYNTAX INTEGER { ENABLE(0), DISABLE(1) }
   ACCESS read-only
   STATUS mandatory
   DESCRIPTION
   "The security switch key status of the unit.
   When the key is in the ENABLE position, manual switching is
   allowed
   When the key is in the DISABLE position, manual switching is
   blocked"
   ::= { rack 3 }
```

6.3.3.2.4 rackGangSwitch

```
rackGangSwitch OBJECT-TYPE
   SYNTAX INTEGER { A(1), B(2) }
   ACCESS read-write
   STATUS mandatory
   DESCRIPTION
   "The Gang Switch Operation.
   Forces all channels on the rack to switch to the selected port."
   ::= { rack 4 }
```

6.3.3.2.5 rackSysGangSwitch

Note: For this variable to be applicable, the GANG IN/ GANG OUT ports on all RS500 chassis must be interconnected in daisy chain fashion.

```
rackSysGangSwitch OBJECT-TYPE
   SYNTAX INTEGER { A(1), B(2) }
   ACCESS read-write
   STATUS mandatory
   DESCRIPTION
```

```
   "The System Gang Switch Operation.
   Forces all channels on the daisy-chained system (via cable
   connections on GANG IN/GANG OUT ports) to switch to the selected
   port."
   ::= { rack 5 }
```

6.3.3.3 Channel Information

```
-- the channel info
channel        OBJECT IDENTIFIER ::= { RSS500 2 }
```

6.3.3.3.1 ch1

```
ch1 OBJECT-TYPE
   SYNTAX INTEGER { NA(0), A(1), B(2) }
   ACCESS read-write
   STATUS mandatory
   DESCRIPTION
   "The channel 1 status."
   ::= { channel 1 }
```

6.3.3.3.2 ch2

```
ch2 OBJECT-TYPE
   SYNTAX INTEGER { NA(0), A(1), B(2) }
   ACCESS read-write
   STATUS mandatory
   DESCRIPTION
   "The channel 2 status."
   ::= { channel 2 }
```

6.3.3.3.3 ch3

```
ch3 OBJECT-TYPE
   SYNTAX INTEGER { NA(0), A(1), B(2) }
   ACCESS read-write
   STATUS mandatory
   DESCRIPTION
   "The channel 3 status."
   ::= { channel 3 }
```

6.3.3.3.4 ch4

```
ch4 OBJECT-TYPE
   SYNTAX INTEGER { NA(0), A(1), B(2) }
   ACCESS read-write
   STATUS mandatory
   DESCRIPTION
   "The channel 4 status."
   ::= { channel 4 }
```

6.3.3.3.5 ch5

```
ch5 OBJECT-TYPE
   SYNTAX INTEGER { NA(0), A(1), B(2) }
   ACCESS read-write
   STATUS mandatory
   DESCRIPTION
```

```
            "The channel 5 status."
```

6.3.3.3.6 ch6

```
            ::= { channel 5 }
         ch6 OBJECT-TYPE
            SYNTAX INTEGER { NA(0), A(1), B(2) }
            ACCESS read-write
            STATUS mandatory
            DESCRIPTION
            "The channel 6 status."
```

6.3.3.3.7 ch7

```
            ::= { channel 6 }
         ch7 OBJECT-TYPE
            SYNTAX INTEGER { NA(0), A(1), B(2) }
            ACCESS read-write
            STATUS mandatory
            DESCRIPTION
            "The channel 7 status."
            ::= { channel 7 }
```

6.3.3.3.8 ch8

```
         ch8 OBJECT-TYPE
            SYNTAX INTEGER { NA(0), A(1), B(2) }
            ACCESS read-write
            STATUS mandatory
            DESCRIPTION
            "The channel 8 status."
            ::= { channel 8 }
```

6.3.3.3.9 ch9

```
         ch9 OBJECT-TYPE
            SYNTAX INTEGER { NA(0), A(1), B(2) }
            ACCESS read-write
            STATUS mandatory
            DESCRIPTION
            "The channel 9 status."
```

6.3.3.3.10 ch10

```
            ::= { channel 9 }
         ch10 OBJECT-TYPE
            SYNTAX INTEGER { NA(0), A(1), B(2) }
            ACCESS read-write
            STATUS mandatory
            DESCRIPTION
            "The channel 10 status."
```

6.3.3.3.11 ch11

```
            ::= { channel 10 }
         ch11 OBJECT-TYPE
            SYNTAX INTEGER { NA(0), A(1), B(2) }
            ACCESS read-write
```

```
      STATUS mandatory
      DESCRIPTION
      "The channel 11 status."
      ::= { channel 11 }
```

6.3.3.3.12 ch12

```
ch12 OBJECT-TYPE
      SYNTAX INTEGER { NA(0), A(1), B(2) }
      ACCESS read-write
      STATUS mandatory
      DESCRIPTION
      "The channel 12 status."
      ::= { channel 12 }
```

6.3.3.3.13 ch13

```
ch13 OBJECT-TYPE
      SYNTAX INTEGER { NA(0), A(1), B(2) }
      ACCESS read-write
      STATUS mandatory
      DESCRIPTION
      "The channel 13 status."
      ::= { channel 13 }
```

6.3.3.3.14 ch14

```
ch14 OBJECT-TYPE
      SYNTAX INTEGER { NA(0), A(1), B(2) }
      ACCESS read-write
      STATUS mandatory
      DESCRIPTION
      "The channel 14 status."
      ::= { channel 14 }
```

6.3.3.3.15 ch15

```
ch15 OBJECT-TYPE
      SYNTAX INTEGER { NA(0), A(1), B(2) }
      ACCESS read-write
      STATUS mandatory
      DESCRIPTION
      "The channel 15 status."
      ::= { channel 15 }
```

6.3.3.3.16 ch16

```
ch16 OBJECT-TYPE
      SYNTAX INTEGER { NA(0), A(1), B(2) }
      ACCESS read-write
      STATUS mandatory
      DESCRIPTION
      "The channel 16 status."
```

6.3.3.3.17 ch17

```
      ::= { channel 16 }
ch17 OBJECT-TYPE
```

```
      SYNTAX INTEGER { NA(0), A(1), B(2) }
      ACCESS read-write
      STATUS mandatory
      DESCRIPTION
      "The channel 17 status."
```

6.3.3.3.18 ch18

```
      ::= { channel 17 }
   ch18 OBJECT-TYPE
      SYNTAX INTEGER { NA(0), A(1), B(2) }
      ACCESS read-write
      STATUS mandatory
      DESCRIPTION
      "The channel 18 status."
      ::= { channel 18 }
```

6.3.3.3.19 ch19

```
   ch19 OBJECT-TYPE
      SYNTAX INTEGER { NA(0), A(1), B(2) }
      ACCESS read-write
      STATUS mandatory
      DESCRIPTION
      "The channel 19 status."
      ::= { channel 19 }
```

6.3.3.3.20 ch20

```
   ch20 OBJECT-TYPE
      SYNTAX INTEGER { NA(0), A(1), B(2) }
      ACCESS read-write
      STATUS mandatory
      DESCRIPTION
      "The channel 20 status."
      ::= { channel 20 }
```

6.3.3.3.21 ch21

```
   ch21 OBJECT-TYPE
      SYNTAX INTEGER { NA(0), A(1), B(2) }
      ACCESS read-write
      STATUS mandatory
      DESCRIPTION
      "The channel 21 status."
      ::= { channel 21 }
```

6.3.3.3.22 ch22

```
   ch22 OBJECT-TYPE
      SYNTAX INTEGER { NA(0), A(1), B(2) }
      ACCESS read-write
      STATUS mandatory
      DESCRIPTION
      "The channel 22 status."
```

6.3.3.3.23 ch23

```
      ::= { channel 22 }
   ch23 OBJECT-TYPE
      SYNTAX INTEGER { NA(0), A(1), B(2) }
      ACCESS read-write
      STATUS mandatory
      DESCRIPTION
      "The channel 23 status."
      ::= { channel 23 }
```

6.3.3.3.24 ch24

```
   ch24 OBJECT-TYPE
      SYNTAX INTEGER { NA(0), A(1), B(2) }
      ACCESS read-write
      STATUS mandatory
      DESCRIPTION
      "The channel 24 status."
      ::= { channel 24 }
```

6.3.3.3.25 ch25

```
   ch25 OBJECT-TYPE
      SYNTAX INTEGER { NA(0), A(1), B(2) }
      ACCESS read-write
      STATUS mandatory
      DESCRIPTION
      "The channel 25 status."
      ::= { channel 25 }
```

6.3.3.3.26 ch26

```
   ch26 OBJECT-TYPE
      SYNTAX INTEGER { NA(0), A(1), B(2) }
      ACCESS read-write
      STATUS mandatory
      DESCRIPTION
      "The channel 26 status."
      ::= { channel 26 }
```

6.3.3.3.27 ch27

```
   ch27 OBJECT-TYPE
      SYNTAX INTEGER { NA(0), A(1), B(2) }
      ACCESS read-write
      STATUS mandatory
      DESCRIPTION
      "The channel 27 status."
      ::= { channel 27 }
```

6.3.3.3.28 ch28

```
   ch28 OBJECT-TYPE
      SYNTAX INTEGER { NA(0), A(1), B(2) }
      ACCESS read-write
      STATUS mandatory
      DESCRIPTION
      "The channel 28 status."
      ::= { channel 28 }
```

6.3.3.3.29 ch29

```
ch29 OBJECT-TYPE
   SYNTAX INTEGER { NA(0), A(1), B(2) }
   ACCESS read-write
   STATUS mandatory
   DESCRIPTION
   "The channel 29 status."
   ::= { channel 29 }
```

6.3.3.3.30 ch30

```
ch30 OBJECT-TYPE
   SYNTAX INTEGER { NA(0), A(1), B(2) }
   ACCESS read-write
   STATUS mandatory
   DESCRIPTION
   "The channel 30 status."
```

6.3.3.3.31 ch31

```
   ::= { channel 30 }
ch31 OBJECT-TYPE
   SYNTAX INTEGER { NA(0), A(1), B(2) }
   ACCESS read-write
   STATUS mandatory
   DESCRIPTION
   "The channel 31 status."
```

6.3.3.3.32 ch32

```
   ::= { channel 31 }
ch32 OBJECT-TYPE
   SYNTAX INTEGER { NA(0), A(1), B(2) }
   ACCESS read-write
   STATUS mandatory
   DESCRIPTION
   "The channel 32 status."
   ::= { channel 32 }
END
```

6.3.3.4 Traps

```
--
-- Trap generated by the unit
--
```

6.3.3.4.1 chStatusChange

```
chStatusChange TRAP-TYPE
   ENTERPRISE RSS500
   DESCRIPTION
   "This trap is generated when a change in status on a channel is
detected."
   ::= 1
```

6.3.3.4.2 keyStatusChange

```
keyStatusChange TRAP-TYPE
```

```
   ENTERPRISE RSS500
   VARIABLES { rackSwitchKey }
   DESCRIPTION
   "This trap is generated when a change in status on the security
switch key is detected."
   ::= 2
```

7 Control via Web Browser

The embedded web server on the SM500A allows network management of the unit over a web browser. To access the SM500A, use your web browser and, set the address field on the browser to point to the configured IP address of the rack. For example, for a rack with the default IP address you would enter http://192.168.0.1

7.1 DIP Switch (S1) Setting

Control via Web browser requires setting the toggles on DIP switch S1 located on the Advanced Control Card (SM533-C or SM534-C). Figure 7.1 shows the location of DIP switch S1.

To enable Web browser control:

1. Set the toggles on DIP Switch S1 on the Advanced Control Card to the following positions:

   S1, toggle 2: Set to ON to enable Web browser control.

   S1, toggles 3: Set to ON.

   S1, toggles 1, 4 to 8: Set to OFF.

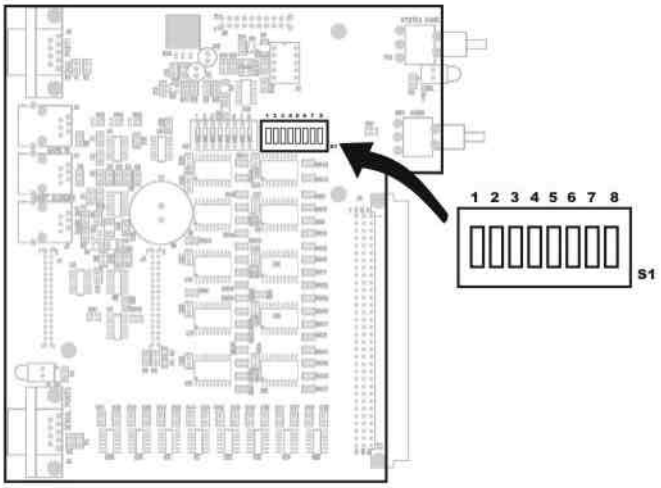


Figure 7.1. DIP Switch (S1) location on Advanced Control Cards SM533-C and SM534-C

7.2 Web Browser Configuration

7.2.1 Setting the IP Address

Note: The IP address MUST LOCALLY be configured into the SM500A chassis in order to establish an Ethernet connection. Use the COM1 port on the Advanced Control Card for the local connection.

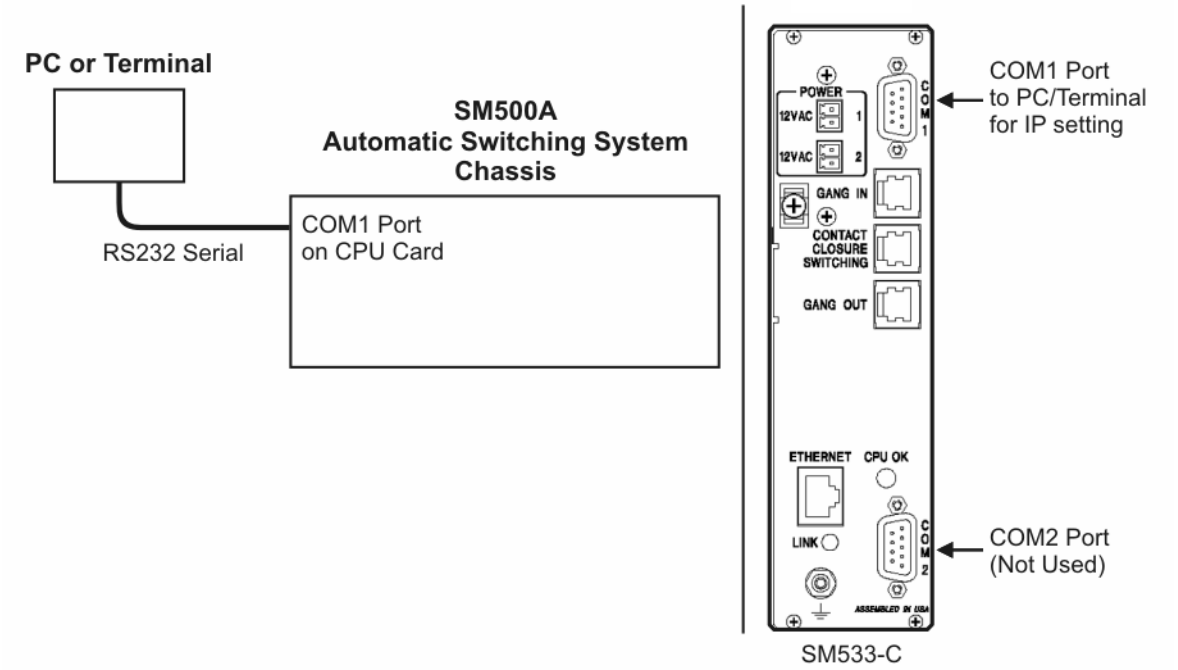


Figure 7.2. Local RS232 connection via COM1 on the Advanced Control Card (SM533-C) for chassis IP configuration

Configure the IP address of each chassis

1. Using a terminal or terminal emulation program on a PC (HyperTerminal, for example), configure the terminal communication settings as follows.

   Baud rate: 19200
   Data bits: 8
   Parity: None
   Stop bits: 1
   Flow control: None

2. Connect a straight DB9 cable (serial RS232) from the terminal or PC to the COM1 port on the Advanced Control Card (figure 7.2).
3. Verify proper communication by pressing “Enter” on your keyboard. The chassis should respond with “1:OK” or similar.
4. Set the echo using the command, “SET RACK 1 ECHO ON”.
5. Enter the IP address for the chassis using the command “SET RACK 1 IP ADRESS x.x.x.x”, where x.x.x.x is replaced by the IP address.
6. Enter the subnet mask for the chassis using the command “SET RACK 1 SUBNET MASK, 0.0.0.0”, in case of local network configuration.
7. Verify the settings by using the command “GET RACK 1 NETWORK CONFIGURATION”.
8. Reset the chassis using the command “RESET RACK 1”.
9. Repeat this procedure for all chassis.

7.2.2 Web Browser and System Gang (Optional) Connections

Connect the Ethernet cable

1. Connect Ethernet cables from the Ethernet port on the Advanced Control Card from each chassis to an Ethernet hub (figure 7.3) or similar functioning network device.

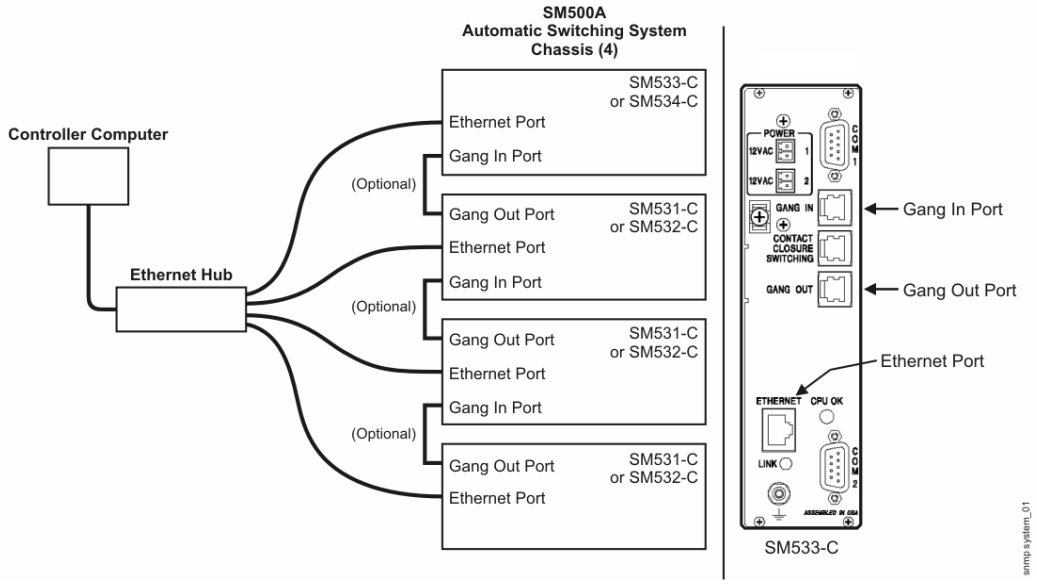


Figure 7.3. Typical connection and daisy chain Gang In/Gang Out connections on the Advanced Control Card. The Web browser can access every chassis in the system.

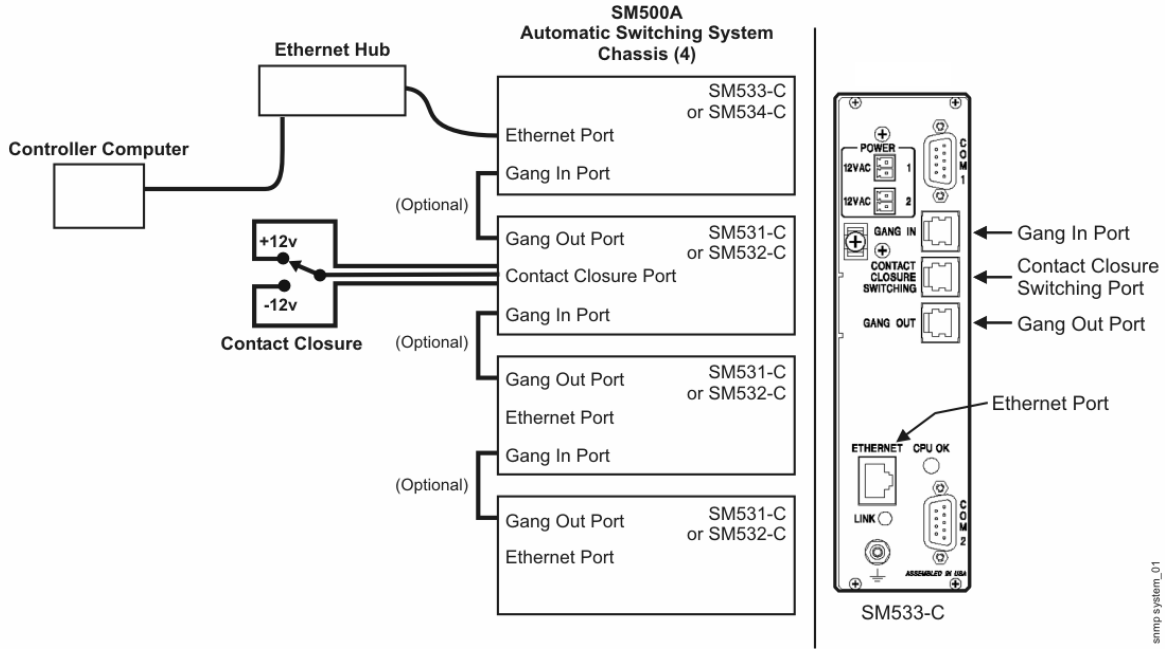


Figure 7.4. Typical setup for combined manual/software control using various control cards. The Web browser can access only the first chassis in the system. System gang switching can be performed on all chassis.

Connect the System Gang cables (optional)

This optional cable connection is applicable to system gang switching and remote system gang switching. Both of these switching functions will switch simultaneously all the chassis in a system, from the initiating chassis downward to daisy chained chassis.

1. Connect RJ11 cables from the GANG OUT port on one Advanced Control Card to the GANG IN port on the next Advanced Control Card.
2. Repeat this procedure in daisy chain fashion for all chassis.

7.3 Status Window

The Web browser interface allows the user to view the status of the chassis, perform switch operations and enter names for the chassis and ports.

The chassis status window is the initial home screen of the web browser that shows the status of the target chassis. The rack displays the current channel configuration. For convenience, this screen will automatically refresh on a 30 second interval to update the rack status.

To START the Web browser interface:

1. Start the web browser.
2. Enter the IP address of the target chassis in the address field and press Enter. The Status screen for the chassis appears which shows a real time view of the switch positions on the front panel.

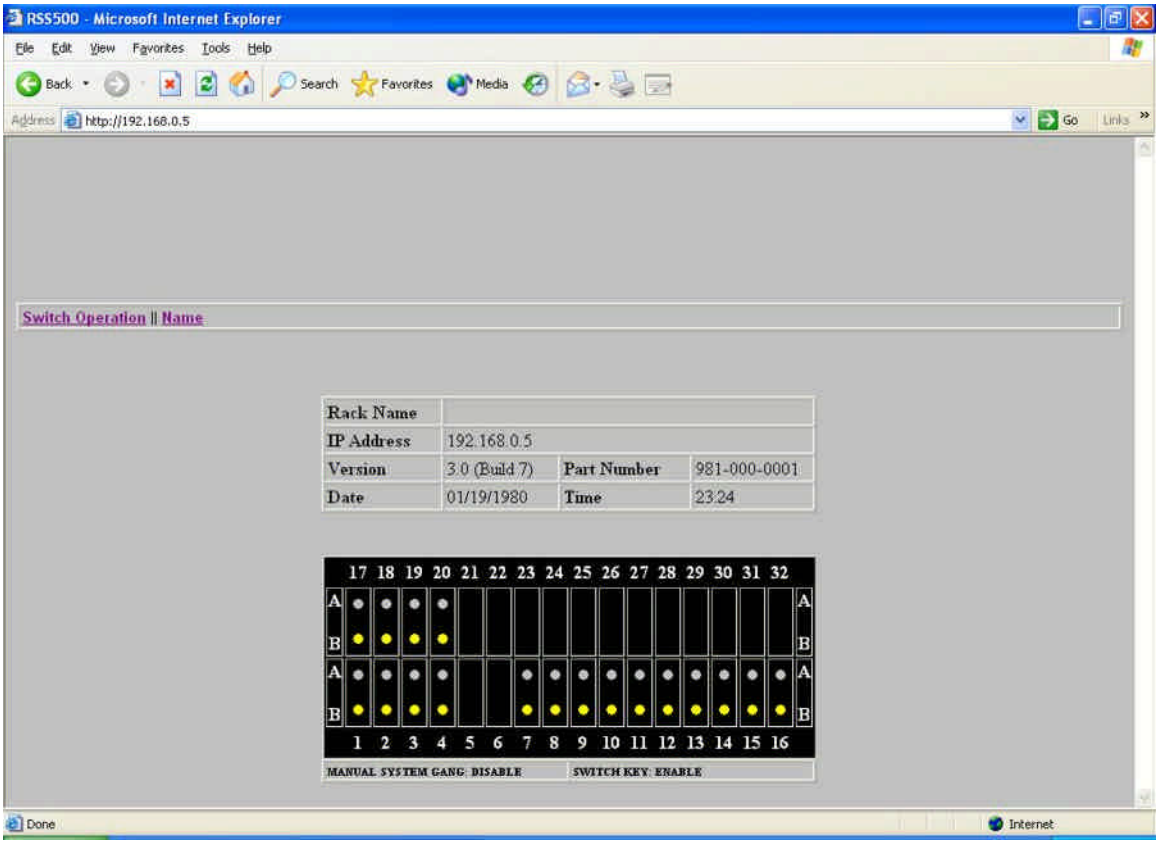


Figure 7.5. Web browser interface. Main window.

The following information is displayed in the Home/Status window:

1. Rack name – entered name of the chassis
2. IP address – IP address of the chassis
3. Version – Current firmware version
4. Part number – Chassis part number
5. Date – Current date indicated by the chassis
6. Time -- Current time indicated by the chassis
7. Manual system gang – enabled/disabled
8. Switch key – enabled/disabled. This is the physical position of the switch key on the front panel.

7.4 Switch Operation Window

This window is where switch operations on the chassis may be performed. The current switch positions are highlighted.

To perform INDIVIDUAL or GROUP switching:

1. Select the check box(es) of the target switch position (A or B).
2. Enter the password (case sensitive). Default password: 'admin'. May be changed when entered. Also, can be locally modified via ASCII command: SET RACK n WEB PW (referenced in ASCII Command section).
3. Click the 'Submit' button. The browser will indicate whether the switching is 'Completed', 'Denied' or 'Error'

To perform GANG switching:

1. Select the check box of the target Gang Switch position (A or B).
2. Enter the password (case sensitive). Default password: 'admin'. May be changed when entered. Also, can be locally modified via ASCII command: SET RACK n WEB PW (referenced in ASCII Command section).
3. Click the 'Submit' button. The browser will indicate whether the switching is 'Completed' or 'Denied'.

To perform SYSTEM GANG switching (requires GANG IN/GANG OUT connections as shown in figure 7.3):

1. Select the check box of the target Sys(tem) Gang Switch position (A or B).
2. Enter the password (case sensitive). Default password: 'admin'. May be changed when entered. Also, can be locally modified via ASCII command: SET RACK n WEB PW (referenced in ASCII Command section).
3. Click the 'Submit' button. The browser will indicate whether the switching is 'Completed' or 'Denied'.

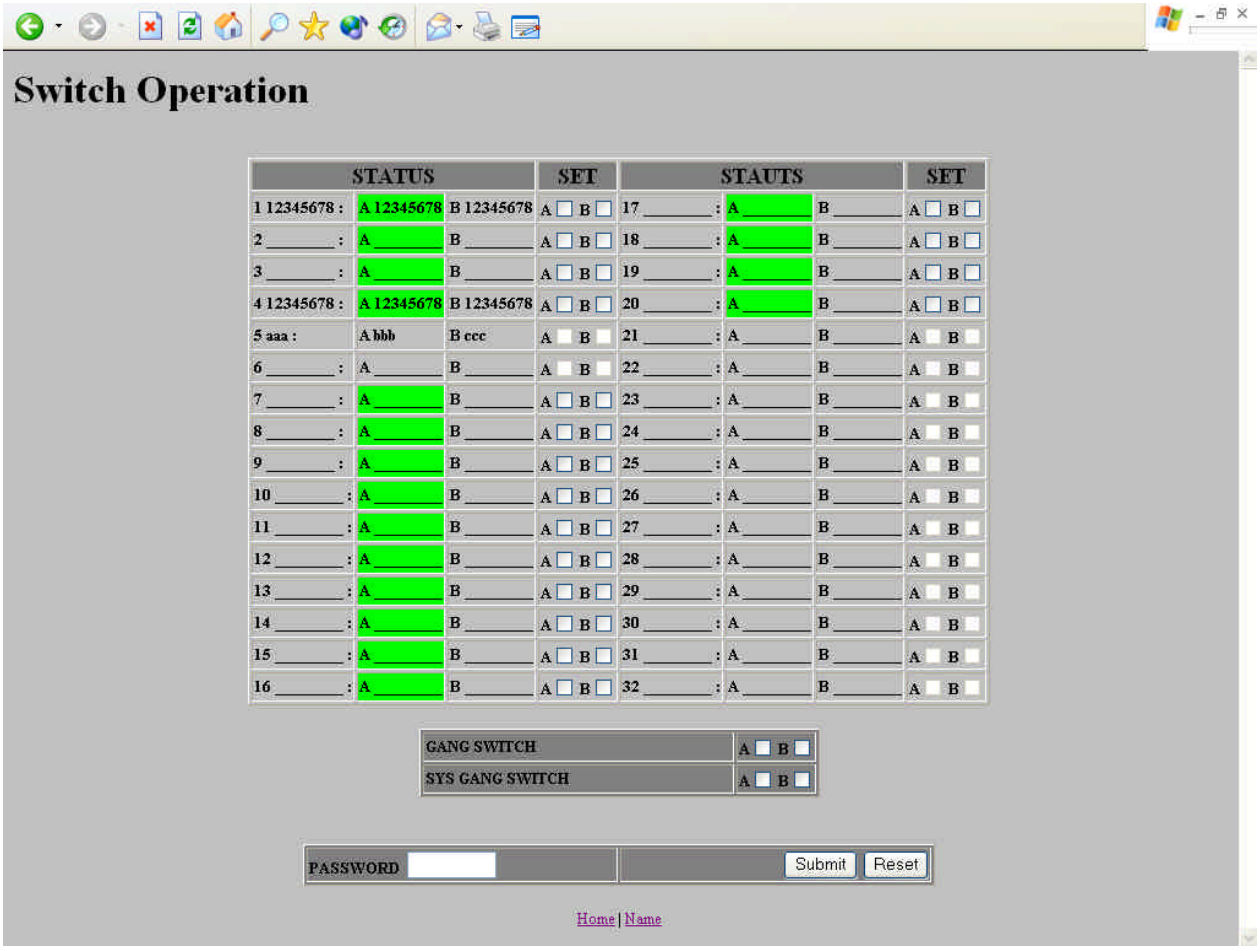


Figure 7.6. Web browser interface. Switch Operation window.

The following additional information is also displayed:

1. The status of the current switch positions. Highlighted.
2. The entered names of the COM, A and B ports.
3. Active slots are indicated by the slight outline of the A and B boxes.

7.5 Name Window

The 'Name' window is where the names of the chassis and the ports (COM, A, and B) may be entered. The user may set port identifiers on any of the 32 channels in the chassis, including those channels that are not present.

To ENTER the NAMES of the chassis and ports:

1. For the **chassis name**, enter the name in the 'rack' field at the bottom of the window.
2. For the **port names**, select the channel from the drop down list at the bottom of the window and enter their names.
3. Enter the password. Default password: 'admin'. May be changed when entered.
4. Click the 'Submit' button.

The chassis acknowledges the operation with one of the following messages:

COMPLETED Identifiers updated successfully.

DENIED Denied because of an invalid password.

The chassis identifier has a maximum length of 31 characters. Channel port identifiers have a maximum length of 8 characters. All identifiers are maintained in flash. The password is case sensitive.

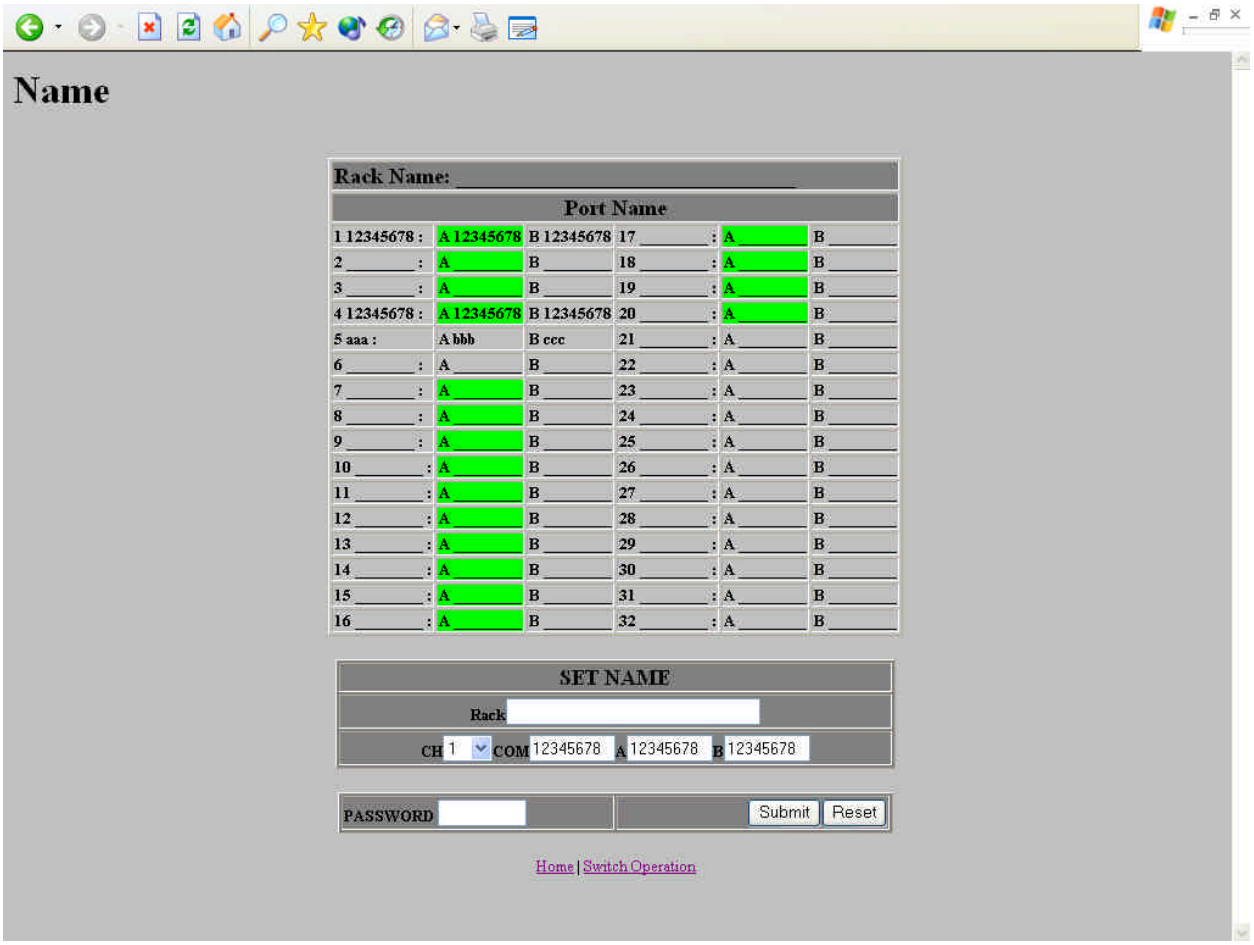


Figure 7.7. Web browser interface. Name window.

8 Control via Advanced GUI Based Management (SM540A)

8.1 General Description

The Advanced GUI Based Management (SM540A) provides a PC graphical interface that allows users to perform remote switching operations on one or multiple chassis in an Automatic Switching System via PC. It runs on a local PC connected to a local area network to which the SM500A systems are connected.

The software application features a PC based graphical interface with point and click operation. From the main screen, users can add one or several chassis to create each switching system, name all chassis and ports, view all chassis connections and check their status in real time, and perform basic and user-defined switch operations.

The main screen provides access to all application features of the Automatic Switching System. Users begin by entering the name and IP address of one or several chassis—up to 64 chassis per system. Users can then connect and display the status screen, which shows the front panel of a selected chassis with its switch positions in real time. For basic switching, users can click on any of the applicable buttons or LEDs to perform the switch operation. Additionally, buttons are provided to allow naming or renaming of the ports and chassis.

The main screen also provides access to customized switching. Users can define multiple switch operations within one or several chassis across the system through simple point and click. Users choose a combination of chassis, group or port to create a switch operation that may be named for quick access. Circuits may be switched individually (AB switching), in selected groups within one or across several chassis, or fully gang switched across an entire system of SM500A chassis.

8.2 Installation

8.2.1 DIP Switch (S1) Setting

Control via Advanced GUI Based Management (SM540A) requires setting the toggles on DIP switch S1 located on the Advanced Control Card (SM533-C or SM534-C). Figure 6.1 shows the location of DIP switch S1.

To enable Advanced GUI Based Management control (SM540A):

1. Set the toggles on DIP Switch S1 on the Advanced Control Card to the following positions:

   S1, toggles 3: Set to ON.

   S1, toggles 1, 4 to 8: Set to OFF.

8.2.2 Software Installation

To install the Advanced GUI Based Management (SM540A).

1. Insert the Advanced GUI Based Management CD in the CD-ROM drive.
2. If the CD-ROM drive automatically starts the installation, skip to Step 5.

3. If the CD-ROM drive does not automatically start the installation, choose the Run command. Windows 95/Windows 98/Windows NT users access the run command from the Start menu.
4. At the Run command prompt, enter D:\Setup, where D is the drive letter for the CD-ROM drive.
5. Follow the on-screen prompts to complete the installation.

8.2.3 Setting the IP Address

Note: The IP address MUST LOCALLY be configured into the SM500A chassis in order to establish an Ethernet connection. Use the COM1 port on the Advanced Control Card for the local connection.

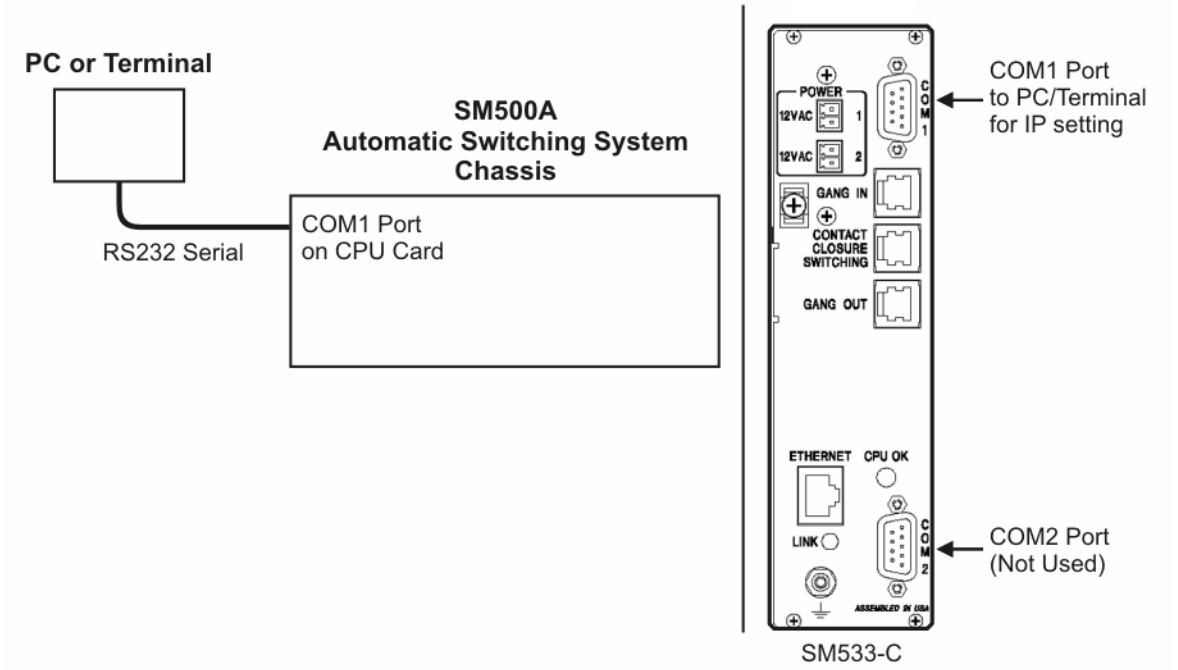


Figure 8.1. Local RS232 connection via COM1 on the Advanced Control Card (SM533-C) for chassis IP configuration

Configure the IP address of each chassis

1. Using a terminal or terminal emulation program on a PC (HyperTerminal, for example), configure the terminal communication settings as follows.

   Baud rate: 19200
   Data bits: 8
   Parity: None
   Stop bits: 1
   Flow control: None

2. Connect a straight DB9 cable (serial RS232) from the terminal or PC to the COM1 port on the Advanced Control Card (figure 8.1).
3. Verify proper communication by pressing “Enter” on your keyboard. The chassis should respond with “1:OK” or similar.

4. Set the echo using the command, “SET RACK 1 ECHO ON”.
5. Enter the IP address for the chassis using the command “SET RACK 1 IP ADRESS x.x.x.x”, where x.x.x.x is replaced by the IP address.
6. Enter the subnet mask for the chassis using the command “SET RACK 1 SUBNET MASK, 0.0.0.0”, in case of local network configuration.
7. Verify the settings by using the command “GET RACK 1 NETWORK CONFIGURATION”.
8. Reset the chassis using the command “RESET RACK 1”.
9. Repeat this procedure for all chassis.

8.2.4 Software Application and System Gang (Optional) Connections

Connect the Ethernet cable

1. Connect Ethernet cables from the Ethernet port on the Advanced Control Card from each chassis to an Ethernet hub (figure 8.2) or similar functioning network device.

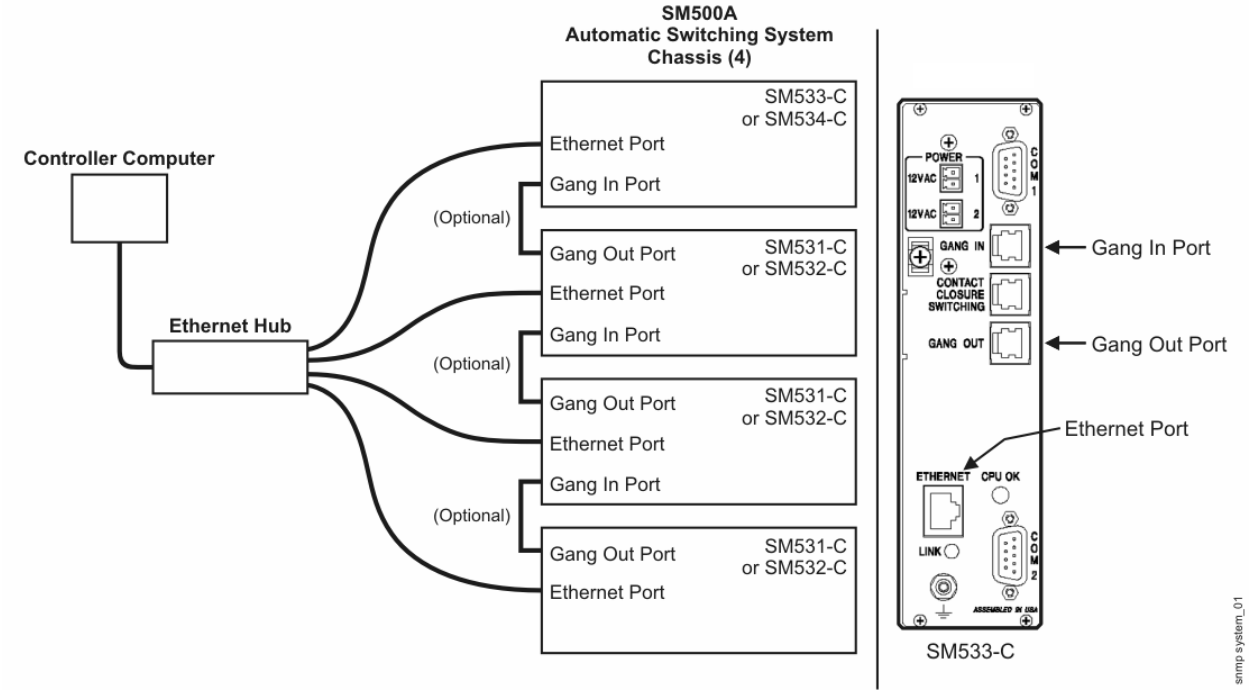


Figure 8.2. Typical Ethernet connection and daisy chain Gang In/Gang Out connections on the Advanced Control Card. The Advanced GUI Based Management can access all chassis in the system.

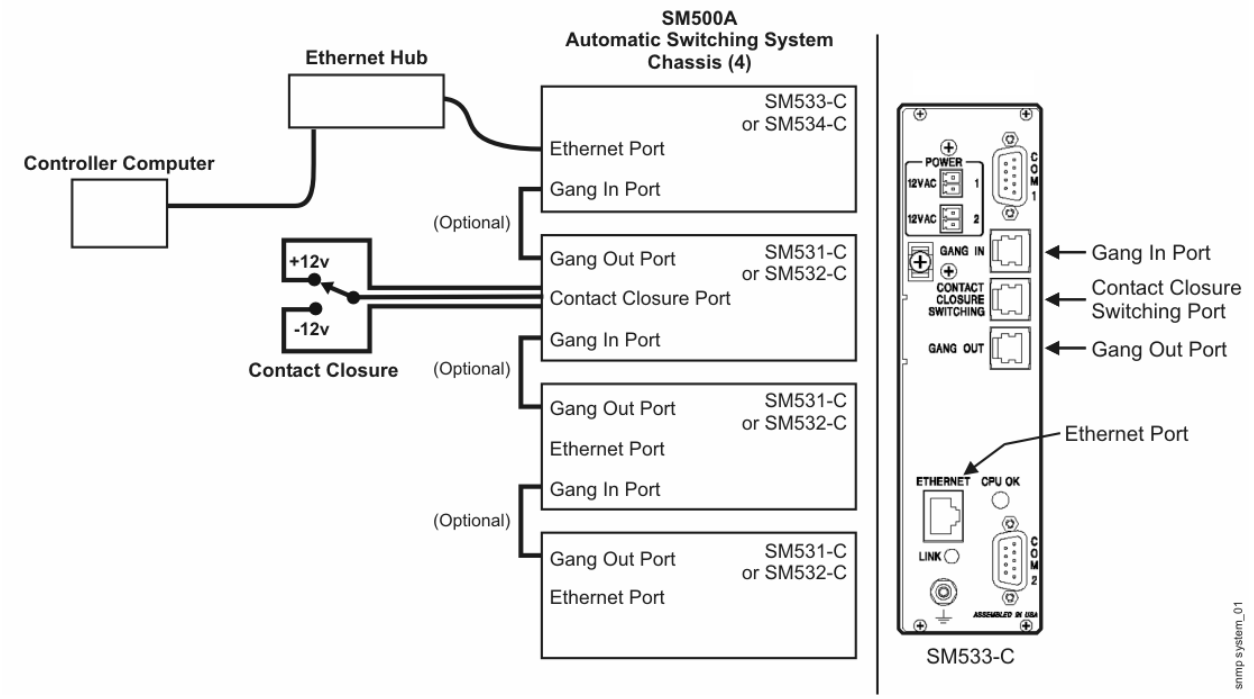


Figure 8.3. Typical setup for combined manual/software control using various control cards. The Advanced GUI Based Management can access only the first chassis in the system. System gang switching can be performed on all chassis.

Connect the System Gang cables (optional)

This optional cable connection is applicable to system gang switching and remote system gang switching. Both of these switching functions will switch simultaneously all the chassis in a system, from the initiating chassis downward to daisy chained chassis.

1. Connect RJ11 cables from the GANG OUT port on one Advanced Control Card to the GANG IN port on the next Advanced Control Card.
2. Repeat this procedure in daisy chain fashion for all chassis.

8.3 Primary Windows

8.3.1 Main Window

The main window is displayed when starting the Advanced GUI Based Management interface. All functions may be accessed from this window.

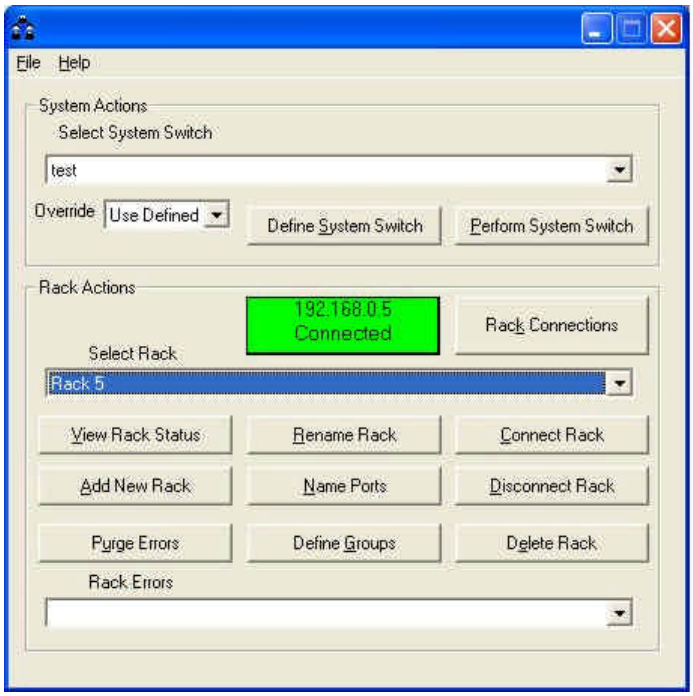


Figure 8.3. Advanced GUI Based Management, main window.

8.3.2 Chassis Status Window

The chassis status window displays the A/B switch positions of the specified chassis in real time. Other displayed information includes the IP address, error log, key status, firmware version and part number.

The chassis status window is mouse sensitive. Dragging the mouse over any of the channels will indicate the entered port names. Individual A/B switching may be performed by clicking on the desired A/B LED. Gang Switching may be performed by clicking the A/B buttons located at the top right of the window. A checkbox is also available for System Gang Switching. Please refer to the 'Switching' section for more information.

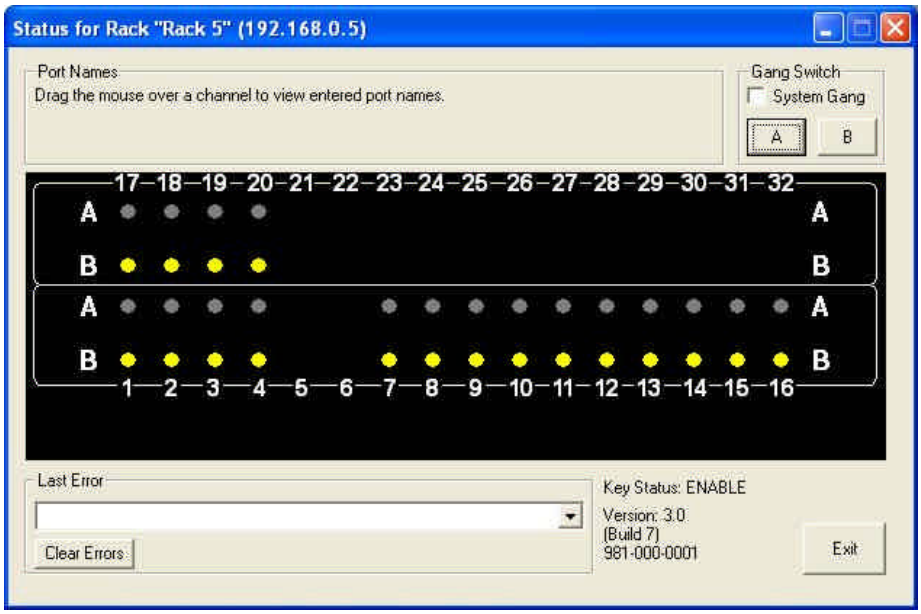


Figure 8.4. Advanced GUI Based Management, Status window.

8.3.3 Chassis Connection Status Window

The chassis connection status window displays the connection status of all chassis that have been entered for the system. All chassis are polled approximately every 10 seconds. Green indicates a connected chassis. Red indicates a connection/communication failure. Yellow indicates that the chassis is not connected (by user choice). Light blue indicates connecting to the chassis.

To VIEW all chassis connections:

1. Click the 'Rack Connections' button in the main window. The 'Connection Status For All Racks' window appears. The connection statuses for all chassis that have been added to the system are displayed.

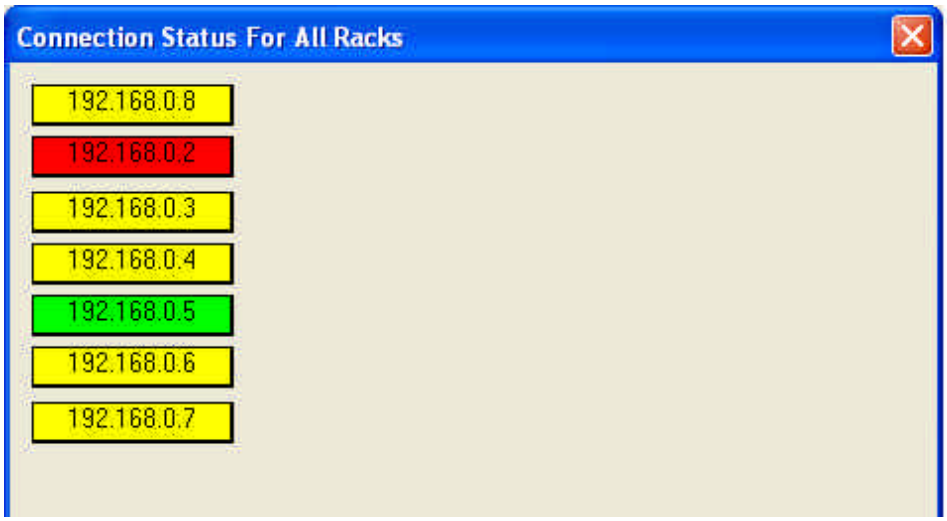


Figure 8.5. Advanced GUI Based Management, Connection Status window.

8.4 System Setup

8.4.1 Add/Delete/Rename Rack (Chassis)

To ADD a new chassis to the system:

1. Click the ‘Add New Rack’ button in the main window. The ‘Add Rack’ window appears.
2. Enter the chassis name and its IP address in the blank fields.
3. Optionally, select the ‘Connect’ checkbox to connect to the chassis after clicking ‘OK’.
4. Click ‘OK’ when finished.
5. Repeat entire procedure for every chassis in the system.

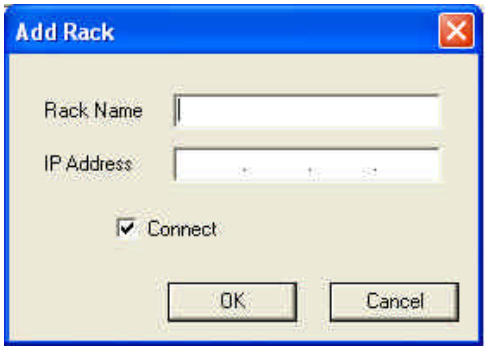


Figure 8.6. Advanced GUI Based Management, Add Rack (Chassis) window.

To DELETE a chassis in the system:

1. Click the ‘Delete Rack’ button in the main window. A window appears asking to verify deleting the chassis information.
2. Click ‘OK’ to delete the chassis information from the system.

To RENAME a chassis in the system:

1. Click the ‘Rename Rack’ button in the main window. The ‘Rename Rack’ window appears.
2. Edit the ‘Rack Name’ field. The IP address may not be edited.
3. Click ‘OK’ when finished.

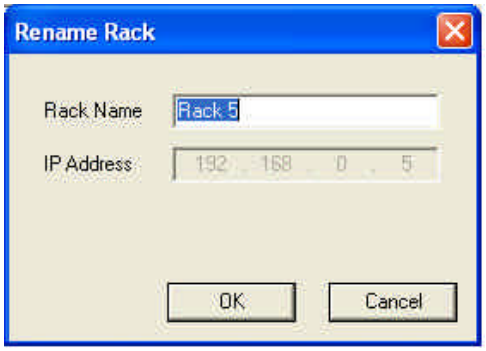


Figure 8.7. Advanced GUI Based Management, Rename Rack (Chassis) window.

8.4.2 Name Ports

To NAME PORTS for a specified chassis:

1. Click the ‘Select Rack’ drop down list in the main window to select a chassis.
2. Click the ‘Name Ports’ button. The ‘Name Ports for Rack xxx’ window appears. The IP address of the chassis is also shown in the window heading.
3. Enter the names of the ports. Normally, only valid ports are displayed when a chassis is connected. To display all ports, select the ‘Show All’ check box at the bottom of the window. This allows the naming of all ports for future use.
4. Click ‘OK’ when finished.

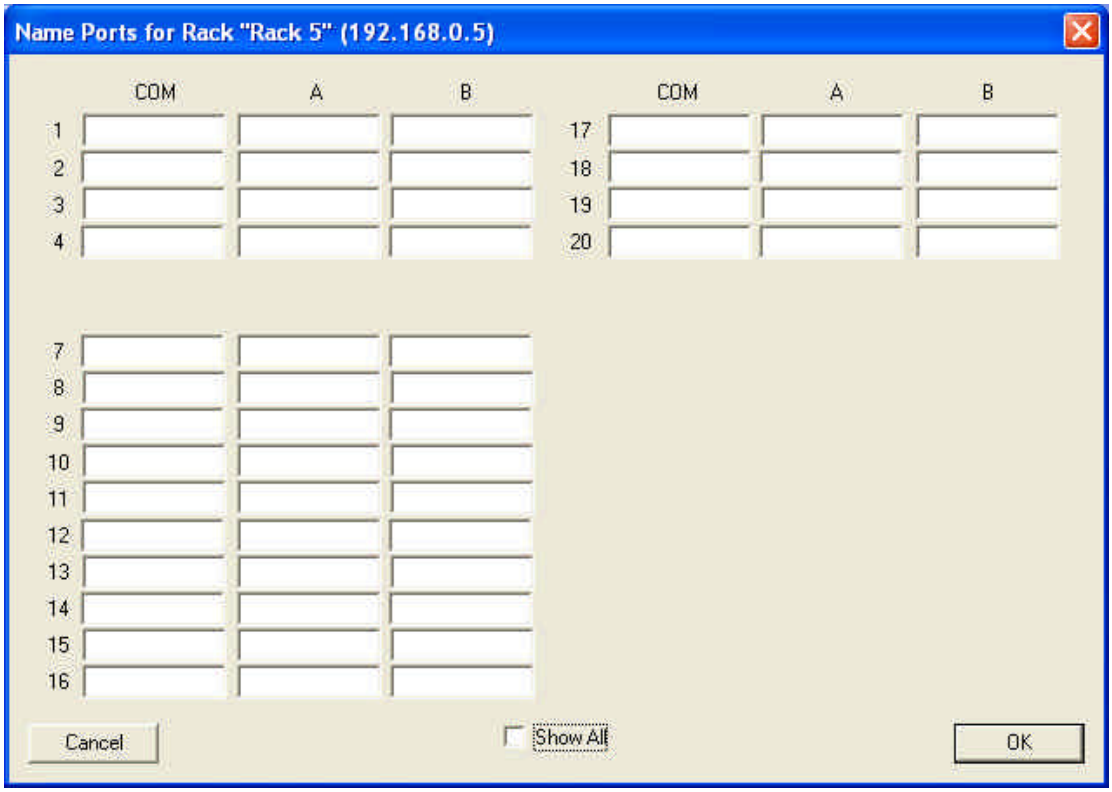


Figure 8.8. Advanced GUI Based Management, Name Ports window.

8.4.3 Define Groups

To DEFINE GROUPS for a specified chassis:

1. Click the ‘Select Rack’ drop down list in the main window to select a chassis.
2. Click the ‘Define Groups’ button. The ‘Define Groups for Rack xxx’ window appears. The IP address of the chassis is also shown in the window heading.
3. Click on a ‘Define…’ button to begin selecting channels per group. Up to 16 groups per chassis may be defined. The ‘Group x Definition for Rack xxx’ window appears. The IP address of the chassis is also shown in the window heading.

4. Select the checkboxes for the channels that will be included in the group. Click ‘Set All’ to select all channels. Click ‘Clear All’ to deselect all channels.
5. Click ‘OK’ when finished.
6. Repeat steps 2 through 5 to define other groups in the chassis.
7. Repeat entire procedure to define groups for other chassis.

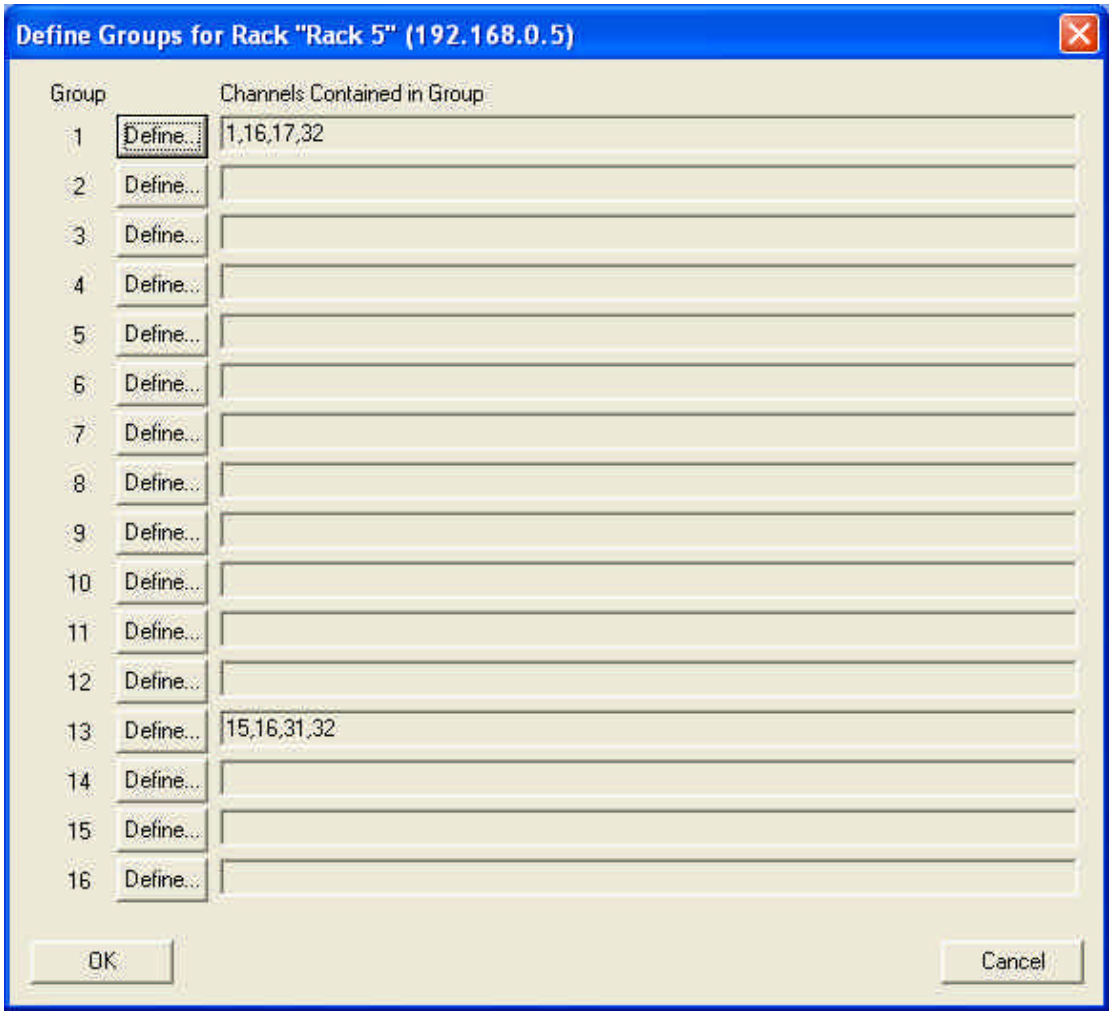


Figure 8.9. Advanced GUI Based Management, Define Groups window.

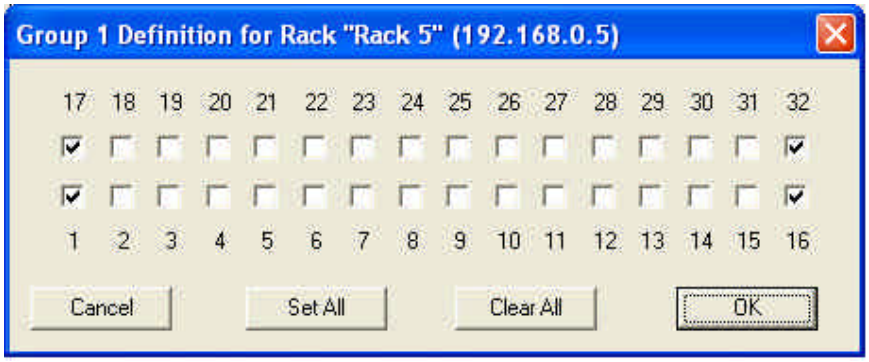


Figure 8.10. Advanced GUI Based Management, Group Definition window.

8.5 Connecting to Chassis (Rack)

To CONNECT to a specified chassis:

1. Click the 'Select Rack' drop down list in the main window to select a chassis.
2. Click the 'Connect Rack' button. The connection status box in the main window shows the connection status and IP address. The box is illuminated green when a chassis connection has been properly established.

To DISCONNECT a chassis:

1. Click the 'Disconnect Rack' button in the main window. A window appears asking to verify disconnecting the chassis.
2. Click 'OK' to disconnect the chassis.

8.6 Switching (Individual, Gang, System Gang)

To PERFORM Individual, Gang Switch or System Gang Switching:

1. Click the 'Select Rack' drop down list in the main window to select a chassis.
2. Click the 'Connect Rack' button to establish communication with the chassis.
3. Click the 'View Rack' status. The 'Status for Rack xxx' window appears.
4. For **Individual Switching**, click on the desired A or B LED. The LED will illuminate to indicate the switch has been performed.
5. For **Gang Switching**, click the A or B button at the top right of the window. All LEDs on the chassis will illuminate on the switched position.
6. For **System Gang Switching** across several chassis, select the 'System Gang' checkbox and click the A or B button. All LEDs on the chassis will illuminate on the switched position.

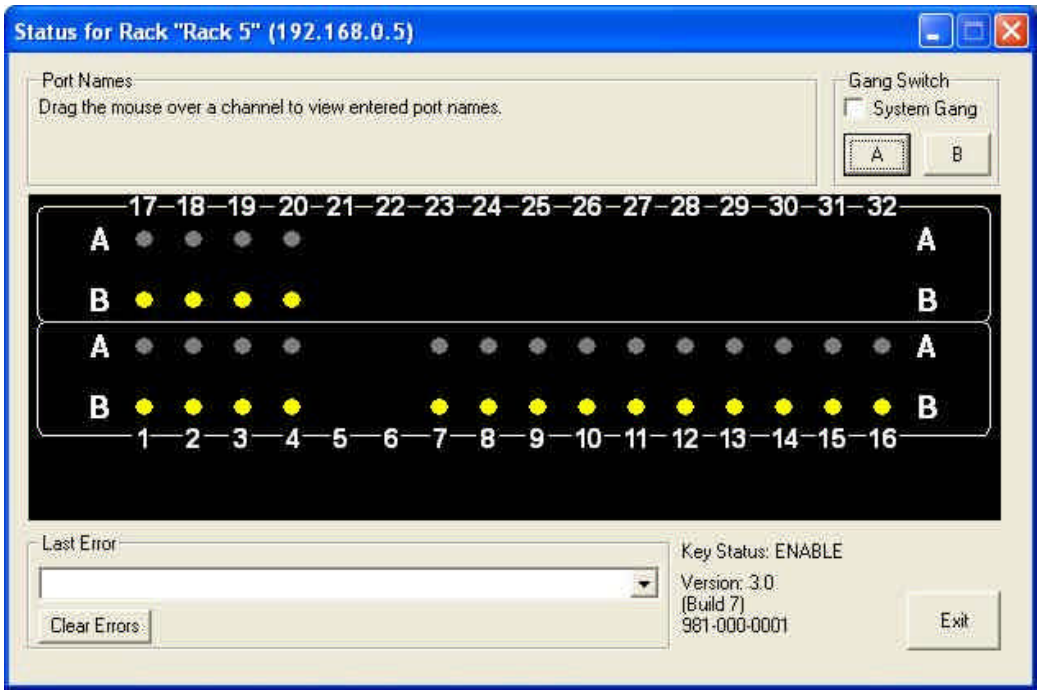


Figure 8.11. Advanced GUI Based Management, Status window.

8.7 Switching (User Defined)

8.7.1 Defining a Group Switch

To DEFINE a GROUP Switch:

1. Click the 'Define System Switch' button in the main window. The 'Define System Switch' window appears.
2. From the 'Select Rack' drop down list, select a chassis.
3. From the 'Group Switches' drop down list, select the target group to be edited. If no groups are listed, go to the next step.
4. In the 'Group Switch Details' area, define the group's switching properties. Enter/edit the group name (up to 32 characters). Select a number from the 'Group' drop down list to associate with the group (the groups for each chassis should already be defined via the 'Define Groups' button in the main screen). Select the desired A or B switch position for the group.
5. Click the 'Save Group' button to save the group's switching properties.

8.7.2 Defining a System Switch

To DEFINE a SYSTEM Switch:

1. Click the 'Define System Switch' button in the main window. The 'Define System Switch' window appears.
2. In the 'System Switch' drop down list, select a previously defined system switch to be edited. If none are available, skip to the next step.

3. In the ‘Name’ field, enter/edit the name of the system switch (up to 32 characters).
4. To select groups to add to the system switch, first select a chassis from the ‘Select Rack’ drop down list; its group names are then displayed in the bottom right box titled, ‘Group Switches For All Racks’. Click on a group and click the ‘Add Selected’ button to add it to the ‘System Switch Contents’ box on the bottom left. Repeat this step to add more groups.
5. Click the ‘Save System Switch’ when finished

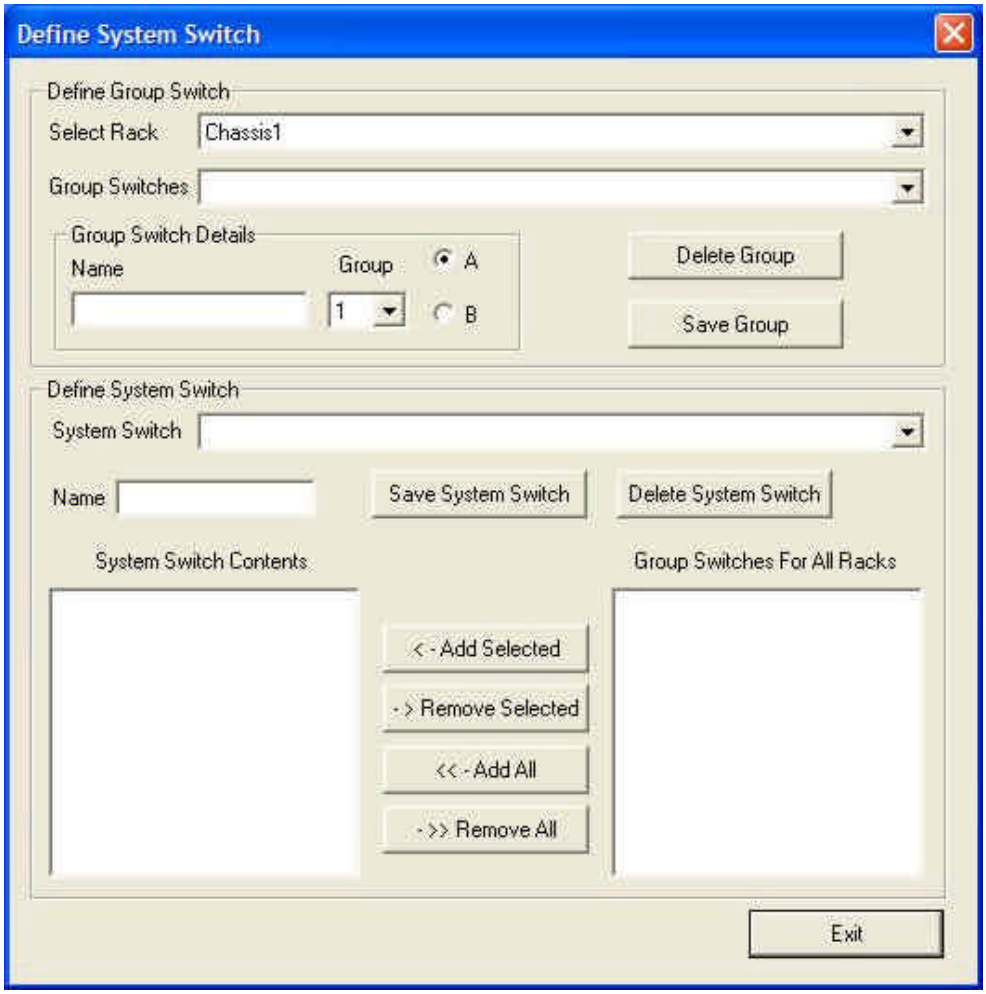


Figure 8.12. Advanced GUI Based Management, Define System Switch window.

8.7.3 Performing a System Switch

To PERFORM a System Switch:

1. From the ‘Select System Switch’ drop down list, select a system switch name (user defined).
2. Optionally, to override the A/B switch position that had been previously defined for the system switch, select ‘Force to A’ or ‘Force to B’ from the ‘Override’ drop down list.
3. Click the ‘Perform System Switch’ button to execute the switching.

8.8 Errors

To VIEW Rack (Chassis) Errors:

1. Click from the ‘Rack Errors’ drop down list in the main window.

To PURGE Rack (Chassis) Errors:

1. Click the ‘Purge Errors’ button in the main window.

9 System Specifications

9.1 Automatic Switching System SM500A

Signal Interfaces

RS-232/V.24, V.35, RS-449, X.21/X.25,T1/T2, EIA-530, RJ-11, RJ-45, NTDS. Coax: BNC

Protocols

Transparent to all protocols

Relay Specifications

Relay type: latching
Contact material: gold-clad silver
Initial contact resistance: 50 milliohms
Expected life (number of operations) for all interface cards: 10,000,000

Operating Temperature

0-50°C, 32-122°F at 5-90% humidity, noncondensing

SM500A Size

19” (48.62 cm) wide, rack mountable
7” (17.78 cm) high
6.25” (15.87 cm) deep

Power

115VAC 60 Hz
Optionally 230VAC 50 Hz
Optionally -48VDC at 1.6 A SB (internally fused)

9.2 AC Redundant Power Supply

Line Voltage

115/230VAC, 60/50 Hz, switch selectable for each plug-in unit. Separate AC line feed to each plug-in unit.

Fusing

1.6 A SB 115VAC
0.8 A SB 230VAC

Output

8 outputs @ 12VAC, 1A each

Operating Temperature

0-50°C, 32-122°F at 5-90% humidity, noncondensing

Agency Listing

UL recognized, CSA certified

Size

19” (48.62 cm) wide
3.5” (8.89 cm) high
6.25” (15.87 cm) deep

Weight

11 lb (4.99 kg) (total assembly)

1000 Park Drive · Lawrence, PA 15055-1018 · 724-746-5500 · Fax 724-746-0746