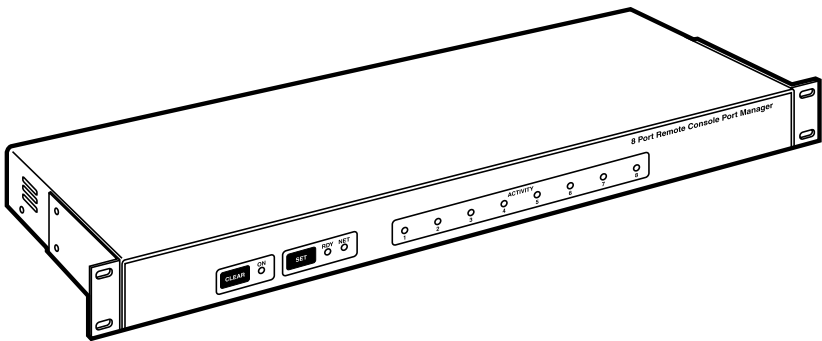




8-Port Remote Console Port Manager 16-Port Remote Console Port Manager



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RADIO FREQUENCY INTERFERENCE STATEMENTS

This equipment generates, uses, and can radiate radio-frequency energy, and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart B of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of Industry Canada.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par Industrie Canada.

NORMAS OFICIALES MEXICANAS (NOM) ELECTRICAL SAFETY STATEMENT

INSTRUCCIONES DE SEGURIDAD

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

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

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WARNING

Do not attempt to repair or service this device yourself. Internal components must be serviced by authorized personnel only. You might be shocked!

NAMEPLATE POWER WARNING

This device should only be operated with the type of power source indicated on the instrument nameplate. If you are not sure of the type of power service available, consult your local power company.

Connect the unit only to a properly measured supply. Use only the three-wire cord that is provided with the unit.

RACKMOUNT INSTALLATION

When installing this device in an instrument rack, the following factors must be accounted for:

For enclosed racks: Enclosed racks must provide adequate ventilation. Make certain that the rack is not overly crowded and note that each unit in the rack generates its own heat. An enclosed rack should have louvered sides and a fan to circulate cooling air. The maximum temperature for the equipment in this environment is 113°F (45°C).

When mounting the unit in an enclosed rack with a ventilation fan at the top of the rack, note that excessive heat generated by devices at the bottom of the rack can be drawn upward and into the ventilation slots of units located at the top. Make certain to provide adequate ventilation for equipment installed at the bottom of the rack.

For open racks: Make certain that the rack frame does not block the ventilation slots on the instrument cover. If the device is installed on sliders, check the unit when seated all the way into the rack to make certain that ventilation slots are not blocked.

VENTILATION

Slots in the instrument cover are provided to allow ventilation for heat dissipation. To ensure safe, reliable operation, these openings must not be covered or blocked.

DISCONNECT POWER

If any of the following events are noted, immediately disconnect the unit from the outlet and contact qualified service personnel:

If the power cord becomes frayed or damaged.

If liquid has been spilled into the device or if the device has been exposed to rain or water.

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1. Specifications

Communications Chip: 16654 UART with FIFO and flow control

Flow Control: RTS/CTS, X-ON/X-OFF, or both

Modem Control: User-defined password, initialization and hangup strings

Passwords: Individual, assigned to each port

Processor: Motorola® 68EC000, 16 bit, 12 MHz

Protocol: Asynchronous

Coding: Asynchronous, 7 or 8 bits ASCII, even, odd, or no parity, 1 or 2 stop bits

Timeout: No activity timeout disconnects port; 1, 5, 10, 15, 30 seconds, 1, 5, 15, 30, 90 minutes

Memory: Stores parameters and captured data; Non-volatile 512K SRAM buffer memory; Statically allocated

Break: Send or Inhibit Break

Speed: 300 bps to 115.2 kbps

Interface: RS-232 Ethernet

Option Switch: 8-position DIP switch, selects default settings for baud rate, flow control, response message format, and command echo

Indicators: LEDs: Power On, Ready, Net, Data Activity for Ports 1–16 (SW548A) or Ports 1–8 (SW547A)

Connectors: Both: (1) RJ-45 10BASE-T; SW547A: (8) DB9 male (DTE); SW548A: (16) DB9 male (DTE)

Operating Temperature: 32 to 113°F (0 to 45°C)

Humidity: 10 to 90% relative humidity, non-condensing

Venting: Side vents are used to dissipate heat generated within the unit.

Power: 115/230 VAC, 50/60 Hz, 5 watts

Size: SP547A: 1.75"H x 17"W x 6.5"D (4.5 x 43.2 x 16.5 cm); SP548A: 2.8"H x 17"W x 6.8"D (7.1 x 43.2 x 17.3 cm)

Shipping Weight: 8 lb. (3.6 kg)

2. Introduction

2.1 Overview

Remote Console Port Managers provide secure, in-band and/or out-of-band access to RS-232 console ports and maintenance ports on UNIX® servers, routers, and other network equipment. System administrators can access remote devices in order to change configuration parameters, connect users to restricted ports, collect buffered data, and perform a variety of other administrative functions.

This users' manual discusses both the 16-Port and 8-Port units. Throughout this manual, both units are referred to as the Remote Console Port Manager or the Manager. The 16-Port Manager includes sixteen RS-232 ports, and the 8-Port Manager includes eight RS-232 ports. All other features function identically.

2.2 Features

- **Versatile connectivity:** Up to 16 different devices can be connected to the 16-Port Remote Console Port Manager without having to select a common baud rate or parity (the 8-Port Remote Console Port Manager can be connected to up to eight different devices). Each port can be individually configured for specific baud rates, parity, handshaking, and various other parameters and options.
- **Easy setup and operation:** Configuring the Remote Console Port Manager is simple. Use the menuing system to select parameters and enable options. The Manager can easily adapt to the requirements of almost any data-communications application.
- **Limited command access:** The Remote Console Port Manager is ideal for situations that require limited access to important commands. Two security levels allow each port to function as a supervisor port or user port, depending on the password entered at login. Supervisor ports are allowed to change configuration, display status, and connect to any other port; User ports are only allowed to connect to the ports provided by their password. Each individual port can be assigned its own unique, user-defined password, up to sixteen characters long.
- **Non-volatile memory:** If AC power to the unit is lost or interrupted, the Manager's non-volatile memory will retain user-defined parameters and port connections.

- Modem and telnet communication: The Manager can be controlled by a local PC that communicates with the unit via cable, or controlled remotely via external modem or telnet connection. Your terminal emulation or telnet program is used to send commands to connect ports or display status.
- Configuration backup: Once you have configured the Remote Console Port Manager to fit your application, you can save parameters and options to an ASCII text file on your PC. This allows you to quickly restore user-selected parameters if the unit configuration is accidentally altered or deleted. Saved parameters can also be uploaded to other Remote Console Port Managers. This allows rapid setup when several units will be configured with identical or similar parameters.

2.3 Front Panel

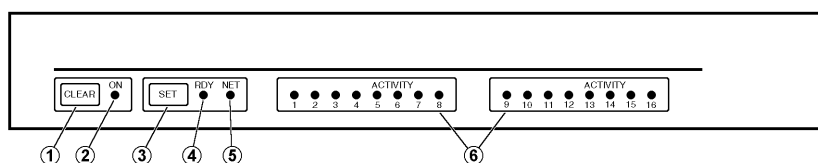


Figure 2-1. Front panel.

NOTE

The numbered items below correspond to the circled numbers in Figure 2-1 above.

1. CLEAR: Restarts the Remote Console Port Manager operating program without changing user-selected parameter settings or breaking port connections.
2. ON: Lights when AC power is applied.
3. SET: Used to initialize the Manager to defaults specified by the setup switches. To initialize, press and hold both the SET and CLEAR buttons, release only the CLEAR button, wait for the Port LEDs to flash, and then release the SET button.

NOTES

During initialization, all port LEDs will flash ON three times.

During initialization, all command-selected parameters will be cleared, and the Manager will revert to the default parameters specified by the option switches.

- 4. RDY: (Ready) Flashes to indicate that the unit is operational.
- 5. NET: Lights when a network connection is present.
- 6. ACTIVITY LEDs: Light to indicate data activity at the corresponding port. The 16-Port Manager has sixteen activity LEDs, and the 8-Port Manager has eight activity LEDs.

2.4 Back Panel

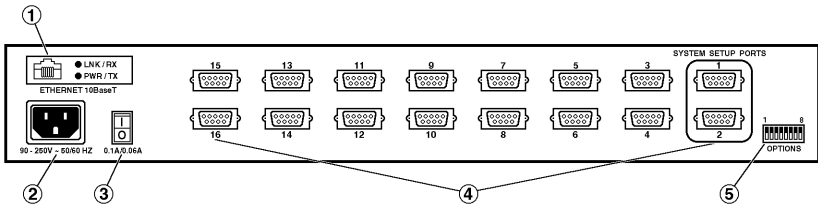


Figure 2-2. Back panel of the 16-Port Remote Console Port Manager.

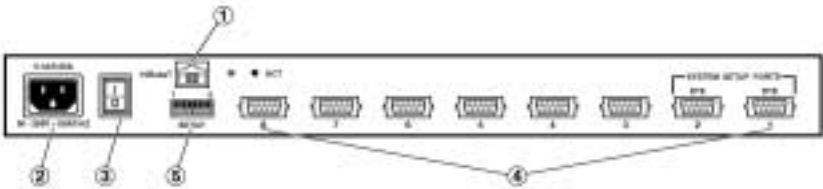


Figure 2-3. Back Panel of the 8-Port Remote Console Port Manager.

NOTE

The numbered items below correspond to the circled numbers in Figures 2-2 and 2-3 on the previous page.

1. Network Port: An RJ-45 Ethernet port for connection to your TCP/IP network. To communicate via the network port, you must first specify the IP address, subnet mask, and gateway address as described in **Section 5.5.4**.

NOTE

The Remote Console Port Manager features a 10BASE-T Interface. When connecting the Manager to a 100BASE-T interface, note that most router switches will autosense to determine if the device is 100BASE-T or 10BASE-T, and then configure the network interface accordingly. If your router switch does not autosense, the network interface port must be manually set to 10BASE-T.

2. Power Cable Receptacle
3. Power Switch
4. RS-232 Ports: For connection to console ports on target devices. Standard DB9 connectors configured as DTE ports. The RS-232 ports are similar to a serial port on a PC. When connecting a modem, use a standard serial cable. When connecting a PC or other DTE device, use a null-modem cable.
 - Ports 1 and 2 are system setup ports. Supervisor-level command access cannot be disabled at these ports.
 - Ports 1 and 2 can be connected to either a PC or a modem. Connection to a modem allows control by a remote PC.
5. Option/Setup Switches: A bank of eight DIP switches, which set the default baud rate, handshake, message type, and duplex mode. Switch functions are described in detail in **Section 4.2**.

3. Quick Start Guide

NOTE

This Quick Start procedure is included only to provide a quick demonstration of basic Manager capabilities. In order to take full advantage of the complete range of features provided by this unit, we strongly recommend that you complete the entire Installation and Configuration sections (Chapters 4 and 5) after completing the Quick Start procedure.

1. Apply power to the Remote Console Port Manager: Connect the Manager to an appropriate power source. Prior to connecting the unit to your power supply, make certain to review the safety precautions listed at the beginning of this users' manual and in **Section 4.1**.
2. Connect a PC to the Remote Console Port Manager: Attach a standard null-modem cable from your PC COM port to the Port 1 connector on the Manager's back panel. For a description of the port interface, please refer to **Appendix A**.

NOTE

When the Remote Console Port Manager is shipped from the factory, communication parameters are set as follows: 9600 bps, RTS/CTS handshaking, 8 data bits, one stop bit, no parity. Although the Manager allows these parameters to be easily redefined, for this Quick Start procedure we recommend that you configure your communications program (for example, ProComm®) to accept the default parameters.

3. Access the command mode: Start your communications program and then press **[Enter]**; the Manager's Port Status screen should be displayed (Figure 3-1) and the Manager's command prompt should appear. For more information on command mode access, please refer to **Section 5.1**.


```
PORT STATUS: Version 3.00, Site ID: BLACK_BOX_CORPORATION
```

PORT	NAME	PASSWORD	STATUS	MODE	BUFFER	COUNT
01	(undefined)	(undefined)	Free	Any		0
02	(undefined)	(undefined)	Free	Any		0
03	(undefined)	(undefined)	Free	Any		0
04	(undefined)	(undefined)	Free	Any		0
05	(undefined)	(undefined)	Free	Any		0
06	(undefined)	(undefined)	Free	Any		0
07	(undefined)	(undefined)	Free	Any		0
08	(undefined)	(undefined)	Free	Any		0
09	(undefined)	(undefined)	Free	Any		0
10	(undefined)	(undefined)	Free	Any		0
11	(undefined)	(undefined)	Free	Any		0
12	(undefined)	(undefined)	Free	Any		0
13	(undefined)	(undefined)	Free	Any		0
14	(undefined)	(undefined)	Free	Any		0
15	(undefined)	(undefined)	Free	Any		0
16	(undefined)	(undefined)	Free	Any		0

```
Enter /H for command menu.
CMS>
```

Figure 3-1. The Port Status screen (16-port model, defaults shown).

- Review Help menu: Type `/H` and press `[Enter]` to display a Help menu (Figure 3-2), which provides a basic listing of Manager commands.

```
COMMAND MENU:
```

DISPLAY		CONFIGURATION
<code>/S[P]</code>	Port Status	<code>/P</code> System Parameters
<code>/SD</code>	Port Diagnostics	<code>/P[n]</code> Port Parameters
<code>/W[P][n]</code>	Port Parameters [Who]	<code>/N</code> Network Configuration
<code>/J</code>	Site ID	<code>/I</code> Default and Test
<code>/SN[P]</code>	Network Status	<code>/UF</code> Upgrade Firmware
<code>/H</code>	Command Menu [Help]	<code>/CP</code> Copy Port Parameters

CONTROL		
<code><Enter></code>	Enter Command Mode	<code>P</code> Show Passwords
<code>/X</code>	Exit Command Mode	<code>n</code> Port # or name
<code>/C<n>[n]</code>	Connect-Local [Remote]	<code>*</code> "all"
<code>/D<n Nn ...*></code>	Disconnect Ports(s)	<code> </code> "or"
<code>/E<n ... *></code>	Erase Buffer	<code><></code> Required entry
<code>/U</code>	Send Parameter File	<code>[]</code> Optional entry
<code>/T</code>	Reset Network Interface	<code>Nn</code> Telnet Port #

```
/D, /E, /I, /T commands: add /Y to bypass "Sure (y/n)?"
CMS>
```

Figure 3-2. The Supervisor-level help screen.

5. Configure network port: In order to allow communication with the Manager via the network port, you must first define the IP address, subnet mask, and gateway address. At the Manager command prompt, type `/N` and press **[Enter]** to display the Network Port Configuration menu.
 - a) Settings for network parameters depend on the configuration of your individual network. Please contact your network administrator in order to determine the appropriate settings for the IP address, subnet mask, and gateway address.
 - b) To assign network parameters, key in the number for the desired parameter, press **[Enter]**, and then follow the instructions in the submenu. For example, to define the IP address, type `1` and press **[Enter]**.
6. Connect network cable: Connect your 10BASE-T or 100BASE-T network interface to the Manager's network port. The network port is an RJ-45, 10BASE-T Ethernet jack, for connection to a TCP/IP network.

NOTE

The Manager features a 10BASE-T interface. When connecting to a 100BASE-T interface, note that most router switches will autosense to determine if the device is 100BASE-T or 10BASE-T and then configure the network interface accordingly. If your router switch does not autosense, the network interface port must be manually set to 10BASE-T.

7. Network access: Telnet to the Manager's IP address. For example, if the IP address is "1.2.3.4" on a UNIX® system, the Telnet command would be invoked as follows:

```
$ telnet 1.2.3.4 [Enter]
```

After the telnet connection is established, the Manager should display the Port Status menu, and the Manager's command prompt should appear, indicating that you have successfully accessed the Manager's command mode via the network port.

This completes the Quick Start Guide for the Remote Console Port Manager. Please proceed to **Chapters 4** and **5** for complete installation and configuration procedures.

4. Hardware Installation

4.1 Connecting Power to the Remote Console Port Manager

The Remote Console Port Manager is AC powered. When connecting AC power to the Manager, proceed as follows.

CAUTION

This device should only be operated with the type of power source indicated on the instrument nameplate. If you are not sure of the type of power service available, please contact your local power company.

Reliable earthing (grounding) of this unit must be maintained. Pay particular attention to supply connections when connecting to power strips rather than directly to the branch circuit.

Plug the supplied power cable into the receptacle on the Manager's back panel, and then connect the power cable to an appropriate grounded AC outlet. The Manager features a self-adjusting power supply that automatically adapts to power supplies between 90 and 250 VAC. Press the power switch ON. The ON LED should light, and the RDY LED should begin to flash.

4.2 Configure Option Switches

When the Manager is shipped from the factory, the option switches are configured for 9600 baud, 8 bits, no parity, RTS/CTS handshaking, verbose command response, and command echo ON (all switches down). These settings are compatible with most applications. If the default settings are not compatible with your application, change the switch settings as described in Tables 4-1 through 4-4.

The option switches should be configured to match the parameters your control device will use when communicating with the Manager. This will ensure access to command functions, even if the unit is initialized to default parameters.

NOTES

If the option switch configuration is changed, new parameters will not take effect until the unit is initialized as described in Section 4.3.

Operating parameters (baud rate, parity, etc.) can be selected for each port using the /P command as described in Section 5.5. The /P command can select different parameters for each Manager port.

When the Manager is initialized, parameters will return to settings specified by the option switches.

4.2.1 BAUD RATE (SW1, SW2, SW3)

Option switches one through three select the default baud rate for all Manager RS-232 ports. The baud rate must match the rate your control device will use when communicating with the Manager. If the control device will communicate via a modem, select a default baud rate that is compatible with the modem.

Table 4-1. Baud rate DIP-switch settings.

Switch 1	2	3	Baud Rate
DOWN	DOWN	DOWN	9600 bps*
UP	DOWN	DOWN	300 bps
DOWN	UP	DOWN	1200 bps
UP	UP	DOWN	2400 bps
DOWN	DOWN	UP	19.2 kbps
UP	DOWN	UP	38.4 kbps
DOWN	UP	UP	57.6 kbps
UP	UP	UP	115.2 kbps

*Factory setting.

4.2.2 HANDSHAKE (SW4, SW5)

The handshake format must match the format your control device will use when communicating with the Manager. Option switches 4 and 5 can select RTS/CTS (hardware), X-ON/X-OFF, both, or none.

Table 4-2. Handshake DIP-switch settings.

Switch 4	5	Handshake
DOWN	DOWN	RTS/CTS*
UP	DOWN	X-ON/X-OFF
DOWN	UP	Both
UP	UP	None

*Factory setting.

4.2.3 RESPONSE MESSAGE FORMAT (SW6)

When commands are invoked, the Remote Console Port Manager can respond with either verbose (English text) or terse (numeric/abbreviated) messages. Response messages are summarized in **Section 11.2**. After installation, the /P command can also set the response format to “none” (Quiet Mode). When Quiet Mode is selected, the unit will not send response messages.

Table 4-3. Response message format DIP-switch settings.

Switch 6	Response Message Type
DOWN	Verbose (English Text)*
UP	Terse (abbreviated/numeric)

*Factory setting.

4.2.4 COMMAND ECHO (SW7)

Switch seven enables or disables the Command Echo. When enabled, characters sent to the Remote Console Port Manager will be echoed back to the control device.

Table 4-4. Command Echo DIP-switch settings.

Switch 7	Command Echo
DOWN	Enable*
UP	Disable

*Factory setting.

4.3 Initialize the Remote Console Port Manager to Default Settings

If option switch settings are changed, new parameters will not take effect until the Manager is initialized.

CAUTION

After initialization, the Manager will revert to the parameters specified by the option switches. Any command-selected parameters will be lost.

1. Simultaneously press the SET and CLEAR buttons, located on the Manager's front panel.

2. Release the CLEAR button, wait for the Port LEDs to flash, and then release the SET button.

4.4 Connecting the Network Cable

The Manager's network port is an RJ-45, 10BASE-T Ethernet jack, for connection to a TCP/IP network. Connect your 10BASE-T or 100BASE-T network interface to the Manager's network port.

Before attempting to access the unit via network, please assign the IP address, gateway address, and subnet mask as described in **Section 5.5.4**.

NOTE

The Remote Console Port Manager features a 10BASE-T interface. When connecting the Manager to a 100BASE-T interface, note that most router switches will autosense to determine if the device is 100BASE-T or 10BASE-T, and then configure the network interface accordingly. If your router switch does not autosense, the network interface port must be manually set to 10BASE-T.

4.5 Connecting Devices to the Remote Console Port Manager

1. Determine which Manager port will be used for connection to the new device (for example, port 3).
2. Use an appropriate DB9 cable to connect the RS-232 serial port on the device to a DB9 port on the Manager.
 - a) External modems and other DCE devices: Use a standard serial modem cable.
 - b) PCs and other DTE devices: Use a standard null-modem cable.
3. Access the Manager's command mode and then select communication parameters for each Manager port as described in **Section 5.5**.

4.6 Application Example

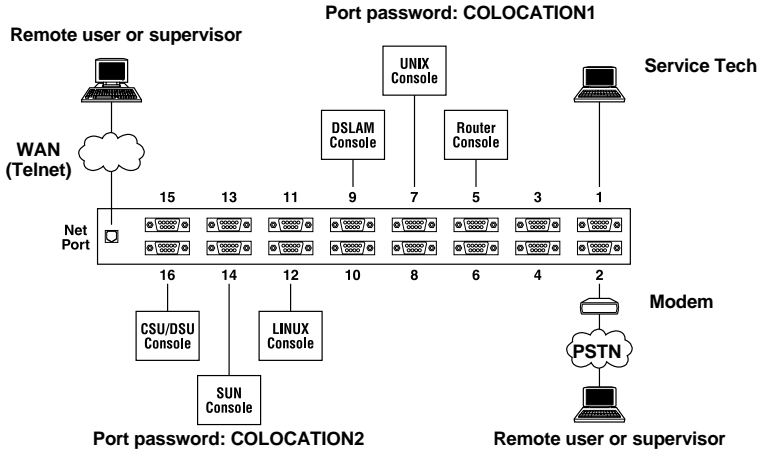


Figure 4-1. Application example for the 16-Port Manager.

The example in Figure 4-1 shows one of many possible installation configurations for the Manager. In this example, the 16-Port Manager's ports have been configured as follows:

- **Network port:** The network port allows telnet access by remote supervisors and/or users. When a telnet connection is established, the Manager will prompt the caller to enter a password. If the supervisor password is entered, the Manager will recognize supervisor-level commands; if a port password is entered, the Manager will only recognize user-level commands. Supervisors are allowed to adjust port configuration, connect to any port, or review unit status. Users are only permitted to review status and connect to ports that are allowed by their port password.
- **Port 1 (system setup port):** This port has been left open for on-site service personnel to access the command mode without disrupting other ports. Since port 1 is a system setup port, the service tech is allowed password-protected access to supervisor-level commands and is able to connect to any port, change configuration, or display unit status.
- **Port 2 (modem port):** An external modem has been installed at port 2. This port has also been configured for modem mode, which allows definition of a modem reset string, initialization string, and hang-up string. When a caller contacts the Manager via a modem, a password prompt will be displayed. If the supervisor password is entered, the Manager will permit access to supervisor-

level commands; if a port password is entered, the Manager will only recognize user-level commands. Supervisors are allowed to adjust port configuration, connect to any port, or review unit status. Users are only allowed to review status and connect to the ports allowed by their port password.

- Ports 5, 7, and 9 (user ports): The port password “COLOCATION1” has been assigned to these three ports. If the Manager is contacted via the network port or modem port, and this password is entered at login, users will only be able to review status and connect to the devices attached to Ports 5, 7, and 9.
- Ports 12, 14, and 16 (user ports): The port password “COLOCATION2” has been assigned to these three ports. If the Manager is contacted via the network port or modem port, and this password is entered at login, users will only be able to review status and connect to the devices attached to ports 12, 14, and 16.

NOTE

In this example, ports 3 through 16 could also be a mixture of ports connected to external modems and ports connected to devices such as file servers or archives. This would allow remote users to dial in and access a specific file server or archive after entering a valid port password at login.

5. Configuration

5.1 Access to the Manager's Command Mode

When the Manager's command mode is active, commands can be invoked to select parameters and connect or disconnect ports.

NOTE

Command mode cannot be accessed from a buffer mode port, passive mode port, or any port that is currently connected to another Manager's port.

1. Start your communications program (for example, ProComm). Make certain the Manager and ProComm are set for the same parameters (for example, baud, parity, etc.).
2. Access the command mode.
 - a) Local access: To access the command mode from a local PC that is connected to the Manager via cable, press **[Enter]**.
 - i. If you have already hit other keys, press **[Enter]** twice. There must be no other characters preceding **[Enter]**.
 - ii. If the supervisor password has been defined, the password prompt will be displayed. Type your supervisor or port password and press **[Enter]**. The CMS> prompt will appear.
 - b) Modem access: To access the command mode via a modem, proceed as follows:
 - i. Dial the number for the external modem connected to the Manager.
 - ii. If you have defined the supervisor password, a prompt will be displayed. Type your supervisor or port password and press **[Enter]**. If the Supervisor Password has not been defined, just press **[Enter]**. The CMS> prompt will appear.

- c) Network access: In order to access the Manager's command mode via the network, the IP address, subnet mask, and gateway address must first be defined. After network port parameters are assigned as described in **Section 5.5.4**, you may then connect to the Manager via the network using the following procedure:
- i. Telnet to the Manager's IP address. For example, if the IP address is "1.2.3.4" on a UNIX system, the telnet command would be invoked as follows:

```
$ telnet 1.2.3.4 [Enter]
```
 - ii. Note that if the telnet connection to the Manager is refused, this probably means that either the IP Security feature (see **Section 5.5.5**) has denied the connection, or the unit is operating on a 100BASE-T network that does not autosense for 10BASE-T devices (see **Section 4.4**).
 - iii. If the supervisor password has been defined, the password prompt will be displayed. Type your supervisor or port password and press **[Enter]**. The Manager will display the Port Status screen, and then the CMS> prompt will appear.

NOTE

In addition to standard telnet connections to ports 23, 2001, and 3001, the Manager also allows telnet users to specify an optional telnet port number in order to connect to a specific RS-232 port. Telnet users can also connect using either standard telnet protocol, or "raw socket mode." For more information regarding other telnet port numbers, please refer to Chapter 8.

5.2 System Setup Ports

Ports 1 and 2 are designated as system setup ports, and will always permit password-protected access to supervisor-level commands, even if the unit is reset to default parameters.

To make sure that access to command functions is always available, Ports 1 and 2 cannot be configured as buffer-mode or passive-mode ports. Buffer- and passive-mode ports are not able to access the command mode. In addition, Ports 1 and 2 always permit password-protected access to supervisor commands; the supervisor mode cannot be disabled at these two ports.

5.3 Password Functions

The Manager features two different types of passwords: the supervisor password and the port (user) passwords. The supervisor password allows access to configuration commands, and the port passwords allow users to create connections between specific ports or view port configuration parameters.

5.3.1 THE SUPERVISOR PASSWORD

The supervisor password allows access to higher-level Manager configuration commands, which administrators can use to select communication parameters, set up IP security, assign port access rights, and perform other system management tasks.

NOTES

If the supervisor password is not defined, then supervisor-level commands will be available to all ports, and port access and configuration functions will not be password protected. If you wish to prevent user ports from changing unit configuration, or connecting to restricted ports, the supervisor password must be defined.

If the supervisor password is defined, the Manager will display a password prompt when you attempt to access command mode. Any RS-232 port that has not been assigned a port password can only be accessed using the supervisor password.

If the Manager is reset to default parameters, all ports will revert to the default state, where supervisor-level commands are available to all ports without password protection.

When defining a supervisor password, we strongly recommend that you record the password for future use. If you forget or lose your supervisor password, you will not be able to access supervisor-level commands. In this case, the only way to access the supervisor mode, is to reinitialize the Manager to default values as described in Section 4.3.

After the supervisor password has been defined (via the system parameters menu), the Manager will display a password prompt whenever you attempt to access the command mode. If the correct supervisor password is entered, the Manager's command mode then starts up in supervisor mode. Supervisor-level commands are summarized in **Section 11.3**.

Normally, the supervisor password can be entered at any port in order to gain access to supervisor-level commands. If you wish to completely deny a port's access to Supervisor Mode (even with the supervisor password), the port parameters menus (/P and /N) can be used to disable the supervisor mode at ports 3 and above, and at the network port. The supervisor mode cannot be disabled at system setup ports 1 and 2.

5.3.2 THE PORT PASSWORDS

The port passwords (or user passwords) allow system administrators to restrict access to a specific group of ports. When the Manager's command mode is accessed with a port password, you may only connect to the RS-232 ports to which you have been granted access and review configuration parameters for those ports. Port passwords do not grant access to the Manager's configuration commands.

The port configuration menus are used to assign a port password to each individual port. In order to allow a port password to grant access to several Manager ports, the same password is assigned to each port to which you will be allowed access.

For example, if the port password "test" is assigned to ports 3, 4, and 6, then when "test" is entered at the password prompt, you will only be able to connect to ports 3, 4, and 6, and will only be able to view parameters for ports 3, 4, and 6.

If desired, all Manager ports can function as either a supervisor port or a user port, depending on which password is entered at login. However, if you want to prevent a port from being able to access the supervisor mode at all (even with the supervisor password), the supervisor mode can be disabled at the RS-232 ports and the network port using the port configuration menus as described in **Section 5.5**.

NOTE

The supervisor mode cannot be disabled at ports 1 and 2; these ports are designated as setup ports, and are always allowed password-protected access to supervisor-level commands.

5.4 Defining the Site ID and Supervisor Password

Before configuring individual ports, the site ID and supervisor password should be defined. The site ID is used to denote the location or name of the Manager, and the supervisor password is used to restrict access to sensitive commands. Both the site ID and supervisor password are defined via the System Parameters menu (/F).

NOTES

The Site ID cannot include double quotes.

The supervisor password cannot include an asterisk, forward slash, spaces, or double quotes.

Both the site ID and supervisor password will be cleared if the Manager is initialized to default settings.

The supervisor password cannot be the same as an existing port password.

NOTES (continued)

The System Parameters menu is only available in supervisor mode.

The supervisor password is case-sensitive. Make certain to note the exact password entered, including the case of each letter. We also strongly recommend that you write down your supervisor password. If the password is lost or forgotten, you will not be able to access supervisor-level commands unless you initialize the unit and clear all parameters as described in Section 4.3.

1. Access the command mode. When the CMS> prompt appears, type /F [Enter] to display the System Parameters menu.
2. Site ID message: (Up to 32 characters; default = undefined) Type 1 and press [Enter]; the Site I.D. prompt will appear. Type the desired text and press [Enter].
3. Supervisor password: (Up to 32 characters; default = undefined) Type 2 and press [Enter]; a prompt will appear. Type the desired password, then press [Enter]. The Manager will prompt you to confirm spelling and capitalization. Type the password a second time, then press [Enter].

5.5 Port Configuration

5.5.1 CONFIGURATION CONVENTIONS

When responding to prompts, invoking commands, and selecting items from the port configuration menus, note the following:

- To select an item from a Port Configuration menu, type the number for the item and press [Enter].
- To clear an item in a Port Configuration menu, enter the number for the desired item and press [Enter]. When the prompt appears, press [Space] and then press [Enter].
- The port name cannot include the forward slash character (/), double quotes ("), the asterisk character (*), or blank spaces.
- Port names cannot begin with a number.
- A Port cannot be named "N"; this name is reserved for the network port.
- Refer to the instructions in each screen for additional functions available under that screen.

- To exit a menu or prompt without changing its current value, press **[Esc]**.
- Passwords and port names are case sensitive. When defining passwords and port names, note the exact text, including the case of each character.
- The “Who” command (`/W`) can be used to display currently selected parameters for your resident port. Note that when the network port has been accessed using a port password (user mode), the `/W` command will only display the settings for the sequence disconnect, the selected logoff character and the current status of the “Accept Break” feature and the “Discard <LF> After <CR>” option.
- If you are configuring the Manager unit via modem, communication parameters will not be changed until after you exit from command mode and disconnect from the Manager.

5.5.2 PORT MODES

The Manager offers four different port operation modes: any-to-any mode, passive mode, buffer mode, and modem mode. The port modes function as follows:

- Any-to-any mode: Allows communication between connected ports. Any-to-any mode ports can be connected to other any-to-any mode, passive mode, buffer mode, or modem mode ports by accessing command mode and invoking the `/C` command (see **Section 7.1.1**). The any-to-any mode is available to all ports.
- Passive mode: Allows communication between connected ports, but does not allow access to command mode. Passive mode ports can be connected by accessing command mode from a free any-to-any or modem mode port and invoking the `/C` command (see **Section 7.1.1**). The passive mode is not available to ports 1 or 2 or the network port.
- Buffer mode: Allows collection and storage of data received from connected devices. Collected data can be retrieved by accessing command mode from a free any-to-any or modem mode port, and issuing the `/C` command.

NOTE

The buffer mode also allows pass-through communication with the connected device. The buffer mode is not available to ports 1 or 2 or the network port.

- **Modem mode:** Allows communication between connected ports and simplifies connection to an external modem. A port configured for the modem mode can perform all functions normally available in any-to-any mode. The modem mode also allows definition of a hang-up string, reset string, and initialization string. Any Manager RS-232 port can be configured for the modem mode. The modem mode is not available at the network port.

For more information on port modes, please refer to **Chapter 7**.

5.5.3 RS-232 PORT CONFIGURATION MENUS

```

PORT PARAMETERS #02

1. Port Name:                (undefined)
2. Password:                 (undefined)
3. Baud Rate:                9600
4. Bits/Parity:              8-None
5. Stop Bits:                1
6. Handshake Mode:           CTS/RTS
7. Port Mode:                Any-to-Any
   74. DTR Output:           Pulse
8. Supervisor Mode:          Permit
9. Logoff Character:         ^X
10. Sequence Disconnect:     One Character
11. Timeout Disconnect:     Off
12. Response Type:           Verbose
13. Command Echo:           On
14. Accept Break:            Yes

Enter: "<" Previous Port,
       ">" Next Port,
       <ESC> Exit...

```

Figure 5-1. Port Configuration menu (port 2 shown).

The Port Configuration menus are used to select options for each of the Manager's RS-232 ports. Parameters selected via these menus will stay in effect until the unit is initialized or the /P command is used to reconfigure the port. After initialization, parameters will revert to the defaults specified by the option switches.

To select port parameters, proceed as follows:

1. Access the command mode. If the password prompt is displayed, type your supervisor-level password.
2. Type /P, followed by the number of the port to be configured, and press **[Enter]**. For example, to configure port 2, type /P 2 **[Enter]**. The Port Configuration menu will appear (see Figure 5-1).

- a) If the /P command is entered at an RS-232 port without including the port number in the command line (for example, /P **[Enter]**), the configuration menu for your resident port will be displayed.
- b) If the /P command is entered at the network port without including the port number in the command line, this will produce an “Invalid Parameter” response.
- c) The /P command is only available in supervisor mode.

The Port Configuration menu offers the following options:

1. Port Name: Up to 16 characters. Default = undefined.
2. Password: Up to 16 characters. Defines the port password for this port. Note that identical port passwords are generally assigned to several ports. When this password is entered at the login prompt, you will then have access to all ports that share this password. Default = undefined.

NOTES

The port password is not displayed by the port parameters menu. When the port password has been defined, the field for this item will read “defined.” To display port passwords, invoke the /SP or /WP commands as described in Chapter 6.

The Manager will not allow you to define a port password that is the same as the existing supervisor password.

3. Baud Rate: Selects the baud rate for the port. Can be set to any standard rate from 300 bps to 115.2 kbps. Default = selected by option switches 1, 2, and 3.
4. Bits/Parity: Default = 8-None.
5. Stop Bits: Default = 1.
6. Handshake Mode: Selects the handshake format for this port; X-ON/X-OFF, CTS/RTS (hardware), both, or none. Default = CTS/RTS.
7. Port Mode: Defines the operation mode for this port. Note that ports 1 and 2 cannot be configured for passive mode or buffer mode. Default = any-to-any mode.

When any-to-any, passive, or buffer mode is selected, the unit will display the DTR output prompt (see Figure 5-1). This prompt is not displayed when modem mode is selected.

74. **DTR Output:** Determines how the DTR line will react when this port disconnects. The DTR line can be held low, high, or pulsed for 0.5 seconds and then held high. In the default state, the DTR line will pulse for 0.5 seconds and then remain high. For more information, please refer to **Appendix A**. Default = pulse.

```

PORT PARAMETERS #02

1. Port Name:                PORT_02      15. Direct Connect: On-Password
2. Password:                 (defined)  Telnet Port: 2102
3. Baud Rate:                9600
4. Bits/Parity:              8-None
5. Stop Bits:                1
6. Handshake Mode:           RTS/CTS
7. Port Mode:                Modem
   71. Reset String:          ATZ
   72. Init String:           AT&C1&D2S0=1
   73. Hang-Up String:        (undefined)
8. Supervisor Mode:          Permit
9. Logoff Character:         ^X
10. Sequence Disconnect:     One Character
11. Timeout Disconnect:      15 Min
12. Response Type:           Verbose
13. Command Echo:            On
14. Accept Break:            On

Enter: "<" Previous Port,
       ">" Next Port,
       <ESC> Exit...

```

Figure 5-2. Port Parameters menu (modem mode).

When port mode (menu item 7) is set to modem mode, the menu will include additional prompts (see Figure 5-2), which are used to define the following:

71. **Reset String:** If necessary, this prompt can be used to re-define the modem reset string. The Reset String is sent prior to the initialization string. Default = ATZ.
72. **Initialization String:** Defines a command string that is sent to initialize a modem to settings required by your application. Default = AT&C1&D2S0=1.
73. **Hang-Up String:** Although the Manager will pulse the DTR line in order to hang up an attached modem, the hang-up string is often useful for controlling modems that do not use the DTR line. Default = undefined.

NOTE

When communicating with the Manager via a modem, parameters will not be changed until after you have exited from command mode and discontinued the modem connection to the unit.

8. Supervisor Mode: Permits or denies port access to supervisor mode. When enabled (Permit), and the valid supervisor password is entered, the port will be allowed to invoke supervisor-level commands. If disabled (Deny), the port may *not* enter supervisor mode, even when the supervisor password is entered. Default = permit.
9. Logoff Character: Defines the logoff character for this port. The logoff character determines the command(s) or character(s) that must be issued at this port in order to disconnect from a second port (resident disconnect). Default = ^x ([Ctrl] plus [X]).

NOTE

When redefining the logoff character, make certain to select a character that does not normally occur in your data. This will prevent the unit from accidentally disconnecting ports in the middle of a data transfer. For example, if the logoff character is defined as “s,” then the ports will disconnect whenever the letter “s” is detected.

The logoff character cannot be used to terminate a telnet “Direct Connection.” Direct connections are terminated using the telnet program’s disconnect command. For more information on the direct connect function, please refer to Chapter 8.

10. Sequence Disconnect: Enables/disables and configures the resident disconnect command. This prompt offers the option to either disable the sequence disconnect, select a one-character format, or select a three-character format. Default = one character.

NOTES

When a resident connection is initiated, the Manager will send a message that lists the connected ports and displays the one-character or three-character disconnect command required in order to terminate the connection.

The one-character disconnect sequence is intended for situations where the destination port should not receive the disconnect command. When the three-character format is selected, the disconnect sequence will pass through to the destination port prior to breaking the connection.

When the three-character format is selected, the resident disconnect sequence will use the format “[Enter]LLL[Enter]”, where L is the selected logoff character.

NOTES (continued)

When the one-character format is selected, resident connections are terminated by entering the selected logoff character only. There is no need to press [Enter] before and after the logoff character when the one-character format is selected.

11. **Timeout Disconnect:** Enables and selects the timeout period for this port. If enabled, and the port does not receive or transmit data for the specified timeout period, the port will disconnect. When the port is set for any-to-any mode, passive mode, or buffer mode, the default setting for this item is "Off." When the port is set for modem mode, the default setting for this item is 15 minutes.

NOTES

The timeout disconnect value is also applied to telnet direct connections. For more information on the direct connect feature, please refer to Chapter 8.

The timeout disconnect is also applied to non-connected ports that are left in command mode. If the timeout feature is enabled and no additional data activity is detected, an unconnected port will exit from command mode when the timeout disconnect value expires.

When two connected ports timeout and are disconnected, both ports will also exit from command mode.

12. **Response Type:** Selects the type of messages that this port will send in response to commands. You can select verbose (English text), terse (numeric/abbreviation), or quiet mode (no response). Default = verbose.
13. **Command Echo:** Enables or disables the command echo for this port. Default = on.
14. **Accept Break:** Determines whether the port will accept breaks received from the attached device and pass them along to a connected port. When enabled, breaks received at this port will be passed to any port that this port is connected to and sent along to the device connected to the other port. When disabled, breaks will be refused at this port, and hence, not sent to the other port or connected device. Default = yes.

15. Direct Connect: Enables/disables and configures the telnet direct connect feature at this port. Direct connect allows users to access the Manager and automatically create a connection between the network port and a specific Manager RS-232 port by including the appropriate telnet port number in the telnet connect command (for example, port 5 = 2105). For more information on the direct connect feature, please refer to **Chapter 8**.
Default = off.

To configure the Direct Connect feature at this port, type **15** and press **[Enter]**. A submenu will be displayed, which offers three different direct connect options: “Off,” “On—No Password,” and “On—Password.”

- Off: Telnet users will not be able to employ the direct connect feature to connect to this port.
- On—No Password: Telnet users will be able to employ the direct connect feature to connect to this port without entering a password.
- On—Password: Telnet users will be able to employ the direct connect feature to connect to this port, but they will be required to enter a password before the connection is established.

NOTES

If “On—Password” is selected and the supervisor mode is disabled (deny) at the network port, then the port password must be entered in order to establish a direct connection with this port.

If “On—Password” is selected and the supervisor mode is enabled (permit) at the network port, then either the supervisor password or the port password may be entered in order to connect to establish a direct connection with this port.

- In addition to enabling, disabling, and configuring the direct connect feature, item 15 also lists both direct connect port numbers for this port.
 - a) Telnet Port: The telnet port number that is used to create a direct connection to this port using standard telnet protocol.
 - b) Raw Port: The telnet port number that is used to create a direct connection to this port using “Raw Socket” protocol.

5.5.4 NETWORK PORT CONFIGURATION MENU

In order to communicate with the Manager via network, the IP address, subnet mask, and gateway address must first be defined using the Network Parameters menu. If desired, this menu also allows you to implement IP security features, which can restrict access based on the user's IP address.

Settings for network parameters depend on the configuration of your individual network. Please contact your network administrator for appropriate settings, and then assign parameters as described in this section.

To select network parameters, access the Manager's command mode via one of the RS-232 ports, type /N, and then press **[Enter]**. The Network Parameters menu will be displayed (see Figure 5-3).

```

NETWORK CONFIGURATION

NETWORK PARAMETERS
1. IP Address:                204.1.221.195
2. Subnet Mask:              255.255.255.0
3. Gateway Address:          204.1.221.193
4. IP Security:              Off

TELNET PORT PARAMETERS
11. Supervisor Mode(port23): Permit
12. Logoff Character:        ^X
13. Sequence Disconnect:     One Character
14. Timeout Disconnect:      5 Min
15. Response Type:           Verbose
16. Command Echo:            On
17. Accept Break:            On
18. Discard <LF> after <CR>  Off

Enter: #<CR> to change,
      <ESC> Exit...

```

Figure 5-3. Network Parameters menu (supervisor mode only).

NOTES

The Network Parameters menu selects parameters for all six logical TCP ports (N1 through N6). The only exception is Item 11 (supervisor mode), which is only applied to TCP Ports N1 through N5.

When selecting network parameters, you must access the command mode via an RS-232 port. Network parameters cannot be changed via the network port. This prevents remote supervisors from being locked out if they accidentally change network communication parameters.

The Network Parameters menu is only available in supervisor mode.

The Network Parameters menu offers the following options:

1. IP Address: Defines the IP address for the Remote Console Port Manager. Type 1, then press **[Enter]**, and follow the instructions in the submenu. Default = undefined.
2. Subnet Mask: Defines the subnet mask for the Manager. Type 2, then press **[Enter]** and follow the instructions in the submenu. Default = undefined.
3. Gateway Address: Defines the gateway address for the Manager. Type 3, then press **[Enter]** and follow the instructions in the submenu. Default = undefined.
4. IP Security: Sets up the IP security feature as described in **Section 5.5.5**.

The Telnet Port Parameters menu offers the following options:

11. Supervisor Mode (Port 23): Permits or denies access to the supervisor mode. When enabled (permit) and the valid supervisor password is entered, this port may then issue supervisor-level commands. If disabled (deny), the port may not enter supervisor mode, even when the supervisor password is entered. Default = permit.

NOTE

Item 11 will only be applied to logical TCP ports N1 through N5. The supervisor mode cannot be disabled at port N6 (Port 2001). Port N6 will only accept the supervisor-level password and will not accept port (user) passwords. This ensures that the system administrator will always have network access to the Manager's command mode.

12. Logoff Character: Defines the logoff character for the network port. The logoff character determines the command(s) or character(s) that must be issued at this port in order to disconnect from a second port (resident disconnect). Default = ^x (**[Ctrl]** plus **[X]**).

NOTE

The Logoff Character cannot be used to terminate a telnet "direct connection." Direct Connections are terminated using your telnet program's disconnect command. For more information on the Direct Connect function, please refer to Chapter 8.

13. Sequence Disconnect: Enables/disables and configures the resident disconnect command. This prompt offers the option to either disable the sequence disconnect, select a one-character format, or a three-character format. Default = one character.

NOTES

When a resident connection is initiated, the Manager will send a message that lists connected ports and displays the one-character or three-character disconnect command that will be required in order to terminate the connection.

The one-character disconnect is intended for situations where the destination port should not receive the disconnect command. When the three-character format is selected, the disconnect sequence will pass through to the destination port prior to breaking the connection.

When three-character format is selected, the resident disconnect uses the format “[Enter]LLL[Enter]”, where L is the selected logoff character.

When the one-character format is selected, resident connections are terminated by entering the selected logoff character only. There is no need to press [Enter] before and after the logoff character when the one-character format is selected.

14. Timeout Disconnect: Enables and selects the timeout disconnect for the network port. If enabled, and the port does not receive or transmit data for the specified time period, the port will disconnect. Default = 5 minutes.

NOTE

The timeout disconnect value is also applied to telnet direct connections. For more information on the direct connect feature, please refer to Chapter 8.

15. Response Type: Selects the type of messages that the port will send in response to commands. You can select verbose (English text), terse (numeric/abbreviation), or quiet mode (no response). Default = verbose.
16. Command Echo: Enables or disables the command echo for the network port. Default = on.
17. Accept Break: Determines whether the port will accept breaks received from the attached device and pass them along to a connected port. When enabled, breaks received at this port will be passed to any port that this port is connected to and sent along to the device connected to the other port. When disabled, breaks will be refused at this port. Default = yes.
18. Discard <LF> after <CR>: If desired, this option can be used to discard the Line Feed character that is often produced by telnet software. When this parameter is enabled, the <LF> character sent after the <CR> will not be forwarded to the serial port that the telnet connection is in session with. When the status of this parameter is changed, the new setting will take effect

immediately, thus changing all current, active connections. This parameter applies to all Manager telnet connections. Default = off.

5.5.5 IMPLEMENTING IP SECURITY

The Remote Console Port Manager can be configured to restrict unauthorized IP addresses from telnetting to the unit. This allows you to grant telnet access to only a specific group of IP addresses, or to block a particular IP address from gaining access. In the default state, the Manager accepts incoming IP connections from all hosts. To configure the IP Security feature, proceed as follows:

NOTE

In the default state, the Manager will allow all IP addresses to Telnet to the unit.

1. Access the Network Parameters menu as described in **Section 5.5.4**.

NOTE

The Network Parameters menu is only available in supervisor mode.

2. When the Network Parameters menu appears, type **4** and press **[Enter]** to access the IP Security menu (Figure 5-4).

```
IP SECURITY:

1. Security Mask #1:                (undefined)
2. Mask #1 Action:                  Permit
3. Security Mask #2:                (undefined)
4. Mask #2 Action:                  Permit
5. Security Mask #3:                (undefined)
6. Mask #3 Action:                  Permit
7. Security Mask #4:                (undefined)
8. Mask #4 Action:                  Permit
9. Security Mask #5:                (undefined)
10. Mask #5 Action:                 Permit

Enter: #<CR> to Select Menu,
      <ESC> for Previous Menu...
```

Figure 5-4. IP Security menu.

3. The IP Security menu lists five IP security “masks” along with the selected permit/deny action for each mask.

- a) Each security mask prompt is used to define a specific IP address or range of IP addresses. Each mask action prompt is used to select the permit/deny action for the corresponding mask.
- b) Masks are listed in order of ascending priority; mask 1 has the lowest priority, and mask 5 has the highest priority.
- c) Masks have a cumulative effect; high-priority masks supersede the effect of lower-priority masks.
- d) Each IP address consists of a series of four eight-bit numbers. The number 255 is used as a wild card.

Example 1: Deny access to all hosts except 192.1.1.5:

Security Mask #1: 255.255.255.255	Mask #1 Action: Deny
Security Mask #2: 192.1.1.5	Mask #2 Action: Permit

Since 255 is a wild card, mask #1 blocks all IP addresses. Mask #2 then specifically grants access to 192.1.1.5 only.

Example 2: Allow access only by addresses that begin with 192:

Security Mask #1: 255.255.255.255	Mask #1 Action: Deny
Security Mask #2: 192.255.255.255	Mask #2 Action: Permit

Since 255 is a wild card, mask #1 blocks all IP addresses. Mask #2 then grants access to all addresses that begin with 192.

Example 3: Allow access only by addresses that begin with 192, deny access to 192.1.1.5.

Security Mask #1: 255.255.255.255	Mask #1 Action: Deny
Security Mask #2: 192.255.255.255	Mask #2 Action: Permit
Security Mask #3: 192.1.1.5	Mask #3 Action: Deny

Since 255 is a wild card, mask #1 blocks all IP addresses. Mask #2 then grants access to all addresses that begin with 192. Finally, mask #3 specifically blocks access by 192.1.1.5.

NOTES

Mask #5 has priority over the four other masks. If mask #5 is set to deny access by "255.255.255.255" (all wild cards), all IP addresses will be blocked and you will not be able to access the Manager's command mode via network. Access will only be allowed via the console port or modem port.

NOTES (continued)

When using the wild card address “255.255.255.255” to block access by all IP addresses, make certain that at least one higher-priority mask permits access by your IP address.

5.6 Copying Parameters to All Ports

The /CP command (Copy Port Parameters) provides a convenient means for selecting similar parameters for all Manager RS-232 ports.

When the /CP command is invoked, the unit will display a menu that a) allows you to select port communication parameters, and b) copy them to all Manager RS-232 ports. The Copy Port Parameters menu can be used to set all parameters for all RS-232 ports, or define only a select group of parameters and then copy them to all ports.

NOTES

The /CP command will not copy parameters to the network port.

The /CP command is only available in supervisor mode.

The Copy Port Parameters menu will not display the port password. This field will read either “undefined” or “defined,” depending upon whether or not the port password has been specified.

The /CP command cannot be used to set ports 1 and 2 to passive mode or buffer mode (Port Mode, Item 7).

The /CP command cannot be used to disable the supervisor mode at ports 1 and 2 (Supervisor Mode, Item 8).

To select common parameters for all Manager RS-232 ports, proceed as follows:

1. Access the Manager’s command mode. If the password prompt is displayed, type your supervisor-level password.
2. At the command prompt, type /CP and press **[Enter]**. The menu shown in Figure 5-5 will be displayed.

```

COPY PORT PARAMETERS:

1. Port Name:                               15. Direct Connect
2. Password:
3. Baud Rate:
4. Site/Parity:
5. Stop Bits:
6. Handshake Mode:
7. Port Mode:
   74. DTR Output:
8. Supervisor Mode:
9. Logoff Character:
10. Sequence Disconnect:
11. Timeout Disconnect:
12. Response Type:
13. Command Echo:
14. Accept Break:

(note: ports 1 and 2 will NOT have restricted values changed.)
Enter: parameter # <CR> to define parameter value to copy to all ports,
      <CR> to remove all values set,           X<CR> to exit WITHOUT copy,
      <ESC> to copy to ports and exit...

```

Figure 5-5. The Copy Port Parameters menu.

3. **Selecting Parameters:** To select parameters to be copied, type the number for the desired parameter, press **[Enter]**, and then follow the instructions in the submenu.

NOTES

You don't have to define all port parameters. For example, the /CP command could be used to select only the baud rate for all ports.

The /CP command will only copy the parameters that are currently displayed by the Copy Port Parameters menu. Although the port password is not displayed, the selected password will be copied if the field for this item reads "defined."

4. **Clear Menu:** After defining several parameters, if you want to clear the /CP menu and start again, type - (dash) and press **[Enter]**. The menu will be reset.
5. **Exit Without Copy:** To exit from the Copy Parameters menu without copying selected parameters to all RS-232 ports, type x and press **[Enter]**. The Manager will exit from the Copy Parameters menu and return to the command prompt.

6. Copy Parameters: When you have finished selecting parameters, press **[Esc]** to copy the selected parameters to all Manager RS-232 ports and exit from the Copy Port Parameters menu.

5.7 Save User-Selected Parameters

Although this step is optional, we strongly recommend saving all user-defined parameters to an ASCII file. This will allow quick recovery in the event of accidental deletion or reconfiguration of port parameters. **Chapter 9** describes the procedure for saving configuration parameters to an ASCII file.

6. The Status Screens

The status screens display the connection status and communication parameters for the Manager's RS-232 ports and the network port. There are four different types of status screens: the Port Status screen (/S), the Port Diagnostics screen (/SD), the Network Status screen (/SN), and the Port Parameters screens (/W).

6.1 The Port Status Screen (/S)

The Port Status screen lists the general status of the Manager's RS-232 ports. To display the Port Status screen, access the command mode and type /s [Enter]. The screen will appear as shown in Figure 6-1.

```

PORT STATUS: Version 3.00, Site ID: BLACK_BOX_CORPORATION

```

PORT	NAME	PASSWORD	STATUS	MODE	BUFFER	COUNT
01	(undefined)	(undefined)	Free	Any		0
02	(undefined)	(undefined)	Free	Any		0
03	(undefined)	(undefined)	Free	Any		0
04	(undefined)	(undefined)	Free	Any		0
05	(undefined)	(undefined)	Free	Any		0
06	(undefined)	(undefined)	Free	Any		0
07	(undefined)	(undefined)	Free	Any		0
08	(undefined)	(undefined)	Free	Any		0
09	(undefined)	(undefined)	Free	Any		0
10	(undefined)	(undefined)	Free	Any		0
11	(undefined)	(undefined)	Free	Any		0
12	(undefined)	(undefined)	Free	Any		0
13	(undefined)	(undefined)	Free	Any		0
14	(undefined)	(undefined)	Free	Any		0
15	(undefined)	(undefined)	Free	Any		0
16	(undefined)	(undefined)	Free	Any		0

Enter /H for command menu.

Figure 6-1. Port Status screen (supervisor mode, defaults shown).

Although both supervisors and users can display the Port Status screen, the screen will appear slightly different, depending upon whether the command mode was accessed with the supervisor password or a port password. When a port password (user mode) is entered at login, the Port Status screen will only display the status of those ports that share the same port password that was entered at login.

When the supervisor mode is active, the Port Status screen offers the option to either display or suppress port passwords. Normally, when the /S command is invoked, the Password column will read either “defined” or “undefined,” depending upon whether or not the password for each port has been specified. To display the Port Status screen with port passwords included, type /SP, then press [Enter].

NOTES

When the /SP command is invoked, passwords will be displayed in place of port names.

The /SP command option is not available in user mode.

As shown in Figure 6-1, the Port Status screen lists the following items.

NOTE

The 8-Port Remote Console Port Manager will show only eight ports.

- Port: The port number.
- Name: The user-defined name for each port.
- Password: The user-defined password for each port. Note that actual passwords are not displayed; this column will read either “undefined” or “defined.” To display Port Passwords, type /SP [Enter] (supervisor mode only).
- Status: The connect status of each port.
 - If the port is connected, this column will list the number of the other Manager port connected to this port.
 - If the connected port is listed as “N*n*” (where “*n*” is a number from 1 to 6), this indicates that the RS-232 port is connected to the Manager’s network port. The numbers N1 through N6 indicate which of the six available telnet sessions is being used.
- Mode: The user-selected port mode. This column will read any (any-to-any), modem, passive, or buffer, depending on the configuration selected for the port.
- Buffer Count: Lists the amount of data (in bytes) stored in the buffer for this port.

6.2 The Port Diagnostics Screen (/SD)

The Port Diagnostics screen provides more detailed information about each port, including the port name and communication parameters. To display the Port Diagnostics screen, access the command mode and type `/SD [Enter]`. The screen will appear as shown in Figure 6-2.

NOTE

The 8-Port Remote Console Port Manager's Diagnostics screen will show only eight ports.

```

PORT DIAGNOSTICS: Version 3.00, Site ID: BLACK_BOX_CORPORATION

```

PORT	NAME	STATUS	BAUD	COM	HS	MODE	BUF	CTS
01+	SUPER	*C-N1	19.2 k	8N1	RTS	Any	32536	H
02+	DSLAM 1	Free	57.6 k	8N1	RTS	Any	0	L
03+	DSLAM 2	Free	9600	8N1	RTS	Any	0	L
04+	DSLAM 3	C-15	9600	8N1	RTS	Any	0	L
05+	SUN 1	Free	9600	8N1	RTS	Any	0	L
06+	SUN 2	Free	115.2 k	8N1	RTS	Any	0	L
07	SUN 3	Free	9600	8N1	RTS	Any	0	L
08+	ROUTER CONS 1	Free	9600	8N1	RTS	Any	0	L
09+	ROUTER CONS 2	C-16	9600	8N1	RTS	Any	0	L
10+	ROUTER CONS 3	Free	9600	8N1	RTS	Any	0	L
11	LINUX 1	Free	9600	8N1	RTS	Any	0	L
12	LINUX 2	Free	9600	8N1	RTS	Any	0	L
13+	DSU/CSU 1	Free	9600	8N1	RTS	Any	0	L
14+	DSU/CSU 2	Free	9600	8N1	RTS	Any	0	L
15	TERM SERVER	C-04	9600	8N1	RTS	Any	0	L
16	MODEM	C-08	9600	8N1	RTS	Modem	0	H

Enter /H for command menu.

Figure 6-2. Port Diagnostics screen (sample values shown).

Like the Port Status screen, the Port Diagnostics screen is also available to both supervisors and users, and will appear slightly different, depending upon whether the command mode was accessed with the supervisor password or a port password (user mode).

In user mode, the Port Diagnostics screen will display only the status of those ports that share the same port password that was entered at login. Ports that are protected by other passwords will not be displayed.

NOTE

The /SD command does not offer the option to display passwords.

As shown in Figure 6-2, the Port Diagnostics screen lists the following items:

- Port: The port number. If this column contains a plus sign (+), this indicates that the port will be allowed to access the supervisor mode if the appropriate supervisor password is entered at login.
- Name: The user-defined name for each port.
- Status: The connect status for each port.
 - When the port is connected, this column will list the number of the other port that is connected to this port. If this column contains an asterisk, this indicates that the port has accessed the command mode.
 - If the connected port is listed as “N*n*” (where “*n*” is a number from 1 to 6), this indicates that the corresponding RS-232 port is connected to the Manager’s network port. The numbers N1 through N6 indicate one of the six available telnet sessions.
- Baud: The baud rate selected for each port.
- COM: The data bits, parity, and stop bits selected for each port. For example, “8N1” indicates eight data bits, no parity, and one stop bit.
- HS: The handshaking (flow control) mode for each port.
- Mode: The user-selected port mode. This column will read any (any-to-any), modem, passive, or buffer, depending on the configuration selected for each port.
- BUF: Lists the amount of data (in bytes) currently stored in the buffer for this port.
- CTS: The high/low status of the Manager’s line at the RS-232 interface.

6.3 The Network Status Screen (/SN)

This screen lists parameters for the network port. To display the Network Status screen, type /SN and press **[Enter]**. The Network Status screen is only available in supervisor mode.

Normally, the /SN command will not display passwords that were entered in order to initiate each telnet session, and the Telnet Connection column will read “active” or “free” for each of the six available logical TCP ports. However, if the /SN command line includes the “P” option (for example, /SNP), the Network Status

screen will also list the login password entered for each telnet session. When the /SNP command is invoked, the supervisor password will not be displayed; the telnet connection column will read “supervisor” instead of listing the actual password.

```

NETWORK STATUS:

NIC Installed:  Yes
MAC Address:    00-40-05-f9-e0-47

PORT|TCP PORT|STATUS|PASSWORD USED|
-----|-----|-----|-----|
N 1 |      23|ACTIVE|*****|
N 2 | (none)|Free  |      |
N 3 | (none)|Free  |      |
N 4 | (none)|Free  |      |
N 5 | (none)|Free  |      |
N 6 | (none)|Free  |      |

CMS>

```

Figure 6-3. Network Status screen.

As shown in Figure 6-3, the Network Status screen lists the following information:

- **NIC Installed:** If your Manager includes a network card, this item will read “Yes.”
- **MAC Address:** The permanent physical address assigned to the network card.
- **Port:** The network port name and telnet port number for each of the six available TCP ports.
- **TCP Port:** The logical TCP port number to which each telnet session is connected.
 - Normally, when a telnet session has been established, this field will list port number 23, 2001, or 3001.
 - If the telnet direct connect function has been used to connect to a CMS port using normal telnet protocol, this column will list the virtual TCP port number. For 16-Port Remote Console Port Managers, this number will range from 2101 to 2116. For 8-Port Remote Console Port Managers, this number will range from 2101 to 2108. For more information on the direct connect function, please refer to **Chapter 8**.

- If the telnet direct connect function has been used to connect to a Manager port using raw socket mode, this column will list the virtual TCP port number. For 16-Port Remote Console Port Managers, this number will range from 3101 to 3116. For 8-Port Remote Console Port Managers, this number will range from 3101 to 3108. For more information on the direct connect function, please refer to **Chapter 8**.
- Status: The status for each TCP port.
 - If the status column reads “active,” this indicates that the corresponding port has access to the Manager’s command mode.
 - If this telnet session is connected to a Manager’s RS-232 port, this column will read “C-*nn*,” where “*nn*” indicates the connected RS-232 Port for each telnet session. For 16-Port Remote Console Port Managers, “*nn*” will be a number between 01 and 16. For 8-Port Remote Console Port Managers, “*nn*” will be a number between 01 and 08.
- Password Used: The password that was used to log onto each telnet session. Normally, this column will display a series of asterisks in place of each password. However, if the /SNP command option is used, this command will display the actual port password used for each session.

NOTE

Supervisor passwords are never displayed; when the /SNP option is used, this column will display “supervisor” in place of the actual password.

6.4 The Port Parameters Screens (/W)

The /W (Who) command displays more detailed information about an individual Manager port. Rather than listing connection information for all ports like the Port Status screens, the Port Parameters screen lists all defined parameters for a specific port.

The /W command is available in both supervisor mode and port (user) mode.

NOTE

When you login with a port password, the Manager will only display information for ports that are “owned” by the password entered at login.

The /W command can be applied to either an RS-232 port or the Manager’s network port. Figure 6-4 shows the screen that is displayed when the /W command is applied to an RS-232 port. Figure 6-5 shows the screen displayed when the command is applied to the network port.

```

PORT PARAMETERS #05:

1. Port Name:          PORT_05    15. Direct Connect:   On-Password
2. Password:          (defined)   Telnet Port:         2105
3. Baud Rate:         9600         Raw Port:            3105
4. Bits/Parity:       0-None
5. Stop Bits:         1
6. Handshake Mode:    RTS/CTS
7. Port Mode:         Any-to-Any
   74. DTR Output:    Pulse
8. Supervisor Mode:   Permit
9. Logoff Character:  ^X
10. Sequence Disconnect: One Character
11. Timeout Disconnect: Off
12. Response Type:    Verbose
13. Command Echo:     On
14. Accept Break:     On

```

Figure 6-4. Port Parameters screen (RS-232 port shown).

```

NETWORK CONFIGURATION:

NETWORK PARAMETERS
1. IP Address:        65.106.93.117
2. Subnet Mask:       255.255.255.0
3. Gateway Address:   65.106.93.97
4. IP Security:       Off

TELNET PORT PARAMETERS

11. Supervisor Mode (except 2001):   Permit
12. Logoff Character:                 ^X
13. Sequence Disconnect:              One Character
14. Timeout Disconnect:               5 Min
15. Response Type:                   Verbose
16. Command Echo:                    On
17. Accept Break:                    On
18. Discard <LF> after <CR>:         Off

CMS>

```

Figure 6-5. Port Parameters screen (network port shown).

If supervisor mode is active, the `/W` command offers to display the port password for each RS-232 port. Normally, the password field will read either “defined” or “undefined,” depending upon whether or not the password for that port has been specified. To display the Port Parameters screen with the port password, type `/WP`, followed by the desired RS-232 port number. Press `[Enter]`.

NOTE

The **/WP** command option is not available in user mode and will not display the Supervisor Password.

The **/W** command uses the following format:

```
/W[P] xx [Enter]
```

Where:

P is the command option to display port passwords. When this option is included (for example, **/WP 5**), the Port Parameters screen will display the port password, if defined (supervisor mode only).

xx is the desired port number. If the letter "N" is entered in place of a port number, the **/W** command will display parameters for the network port.

NOTE

When the command mode is accessed via the network port using a port (user) password, the **/W** command will only display the sequence disconnect, logoff character, and the status of the accept break item.

7. Operation

7.1 Any-to-Any Mode

Any-to-any mode ports can be connected to other any-to-any, passive, buffer, or modem mode ports by accessing the command mode and issuing the `/C` command. All ports can be configured for any-to-any mode. Note that the network port is always configured for any-to-any mode.

7.1.1 PORT CONNECTION AND DISCONNECTION

The Remote Console Port Manager provides communication between devices without the requirement that both devices use the same communication parameters. This allows you to connect devices that use dissimilar baud rates, parity, handshake, etc. The Manager converts data rates and other parameters, eliminating the need to select common parameters for all connected devices.

Connecting Ports

Two different types of connections can be made between Manager ports: resident connections and third-party connections.

- Resident connections: Your resident port issues a `/C` command to connect to a second port. For example, port 4 issues the `/C` command to connect to port 5.
- Third-party connections: (supervisor mode only.) Your resident port issues a `/C` command to create a connection between two *other* ports. For example, port 1 is your resident port, and port 1 issues a command to connect port 2 to port 3.

NOTES

Third-party connections can only be initiated from a port with supervisor-level command capability.

The RS-232 ports cannot initiate a connection to the network port.

If a port has accessed command mode using the port password (user mode), then that port will only be able to connect to other ports that share the same port password.

To connect ports, proceed as follows:

1. Access the command mode.

2. Invoke the `/C` command to connect the desired ports.

- a) Resident Connect: To connect your resident port to another port, type `/C xx [Enter]`, where `xx` is the number or name of the port you want to connect. The Manager will display the numbers of the connected ports, along with the command sequence that will be required in order to disconnect the two ports.

Example: To connect your resident port to port 8, type `/C 8 [Enter]`.

- b) Third-Party Connect: Supervisor mode only. To connect any two ports (other than your resident port), type `/C xx yy [Enter]`, where `xx` and `yy` are two port names or numbers. The Manager will display the numbers of the two connected ports.

Example: To connect port 5 to port 6, invoke the following command at a port with supervisor-level command capability: `/C 5 6 [Enter]`.

NOTES

Resident connections: RS-232 ports are not allowed to initiate a resident connection to the network port.

Third-party connections: RS-232 ports are not allowed to connect another port to the network port. For example, port 1 is not allowed to connect port 3 to the network port.

When the `/C` command specifies the port name, you only need to enter enough letters to differentiate the desired port from other ports. Type an asterisk (*) to represent the remaining characters in the port name. For example, to connect your resident port to a port named "SALES," the connect command can be invoked as `/C S*`, providing no other port names begin with the letter "S."

Disconnecting Ports

There are three different methods for disconnecting ports: the resident disconnect, the third-party disconnect, and the no activity timeout. When the timeout feature is enabled, a no activity timeout will disconnect resident ports or third-party ports.

NOTE

Option 74 in the Port Parameters menu determines how the DTR signal will react when the port disconnects. The DTR signal can either be held low, held high, or pulsed and then held high.

1. Resident disconnect: Disconnects your resident port from another port. For example, if you are communicating via port 3, and port 3 is connected to port 4, a resident disconnect would be used to disassociate the two ports. The Manager offers two different resident disconnect command formats: the one-character format and the three-character format. (For more information, please refer to **Section 5.5.3**.)

NOTE

The resident disconnect methods discussed here cannot be used to terminate a telnet “direct connection.” Direct connections are terminated using the Telnet program’s disconnect command. For more information, please refer to **Section 8.4**.

- a) One character (default): When the one-character disconnect sequence is selected, simply enter the selected logoff character once. Default = **^X** (**[Ctrl]** plus **[X]**). You don’t have to enter a carriage return before or after the logoff character.
 - b) Three characters: Uses the format **[Enter]LLL[Enter]**, where **L** is the selected logoff character. For example, if the logoff character is defined as “+,” then the three-character disconnect sequence would be **[Enter]+++[Enter]**.
 - c) If the default resident disconnect sequence is not compatible with your application, both the command format and logoff character can be redefined via the Port Configuration menus, as described in **Section 5.5**.
2. Third-party disconnect: Supervisor mode only. The **/D** command is issued from your resident port to disconnect two third-party ports. For example, if your resident port is port 1, a third-party disconnect would be used to disconnect port 3 from port 4.

NOTE

The third-party disconnect method can be used to terminate a telnet direct connection. For more information on the direct connect function, please refer to **Chapter 8**.

- a) The **/D** command uses the format: **/D xx XX [Enter]**, where **xx** and **XX** are the numbers of the ports that you wish to disconnect. If an **N** is entered, the command will disconnect the network port.
- b) The **/D** (Disconnect) command can only be invoked by a port with access to supervisor-level commands.

- c) The `/D` command can specify both connected ports or either of the two ports. For example, if port 1 is your resident port, any of the following commands can be used to disconnect port 3 from port 4:

```
/D 3 4 [Enter]
```

or

```
/D 3 [Enter]
```

or

```
/D 4 [Enter]
```

- d) The `/D` command can also be used to disconnect a remote user from the network port. This is useful in cases where a remote user has unsuccessfully disconnected via telnet, and you don't want to wait for the Manager to timeout in order to free up the TCP port for other users. To disconnect a TCP port, type `/D Nn` and then press **[Enter]**, where `Nn` is one of the Manager's six available logical TCP ports (for example, `/D N2 [Enter]`).

3. No activity timeout: When the timeout feature is enabled at either connected port, the no activity timeout can disconnect resident ports or third-party ports.

NOTE

The no activity timeout also applies to telnet direct connections. For more information about the direct connect function, please refer to Chapter 8.

- a) RS-232 ports: To configure the timeout feature for the RS-232 ports, invoke the `/P` command to display the Port Configuration menu for the desired port as described in **Section 5.5.3**. Option 11 enables and defines the timeout feature.
- b) Network Port: To configure the timeout feature for the network port, invoke the `/N` command to display the Network Port Configuration menu as described in **Section 5.5.4**. Option 14 enables and defines the timeout feature.
- c) When the timeout feature is enabled, the port will automatically disconnect if no data is received for the defined timeout period.

NOTES

When two connected ports timeout, both ports will exit command mode after disconnecting.

The timeout value also applies to unconnected ports that are left in command mode. When an unconnected port is left in command mode and no additional data activity is detected, the port will automatically exit command mode when its defined timeout value elapses.

7.1.2 DEFINING HUNT GROUPS

A hunt group creates a situation where the Manager will scan a group of ports and connect to the first available port in the group. Hunt groups are created by assigning identical or similar names to two or more ports. Hunt groups can be defined using any-to-any, passive, buffer, or modem mode ports.

NOTE

The network port cannot be included in hunt groups.

1. Access the command mode. If the password prompt is displayed, enter the supervisor password.
2. Invoke the `/P` command to access the Port Configuration menu for the desired port(s) as described in **Section 5.5.3**. For example, to configure port 4, type `/P 4 [Enter]`.
3. From the Port Configuration menu, select item 1 to define the port name.
4. Repeat steps 2 and 3 above to assign identical names to the other ports in the hunt group. For example, a series of ports in a group could all be named "SERVER."
5. To connect to the next available port in the hunt group, invoke the `/C` command using the port name to specify the desired group. For example, `/C SERVER [Enter]`.
6. Your port will be connected to the first available port in the group. If all ports are presently connected, the Manager will respond with the "BUSY" message.
7. You only need to enter enough letters of the port name to differentiate the hunt group ports from other ports. Type an asterisk (*) to represent the remaining characters in the port name. For example, to connect your resident port to the first available port in a group of ports named "SALES1," "SALES2," and "SALES3," the connect command can be invoked as `/C S* [Enter]`, providing no other port names begin with the letter "S."

Hunt Group port names must be unique. Otherwise, ports with similar names will also be included in the hunt group.

Hunt Group Example 1:

1. Ports 1 and 2 are modem mode ports, and modems are installed at both ports. Port 1 is named "MODEM1," and port 2 is named "MODEM2."
2. Your resident port is port 4. To connect to the first available modem, access the command mode and type `/C MODEM* [Enter]`.

Hunt Group Example 2:

1. Ports 3, 4, and 5 are any-to-any mode ports. All three ports are named "SERVER."
2. Your resident port is port 1, and you want to connect port 2 to the first available server. Access the command mode and type `/C 2 SERVER [Enter]`.

7.2 Passive Mode

Passive mode ports function the same as any-to-any mode ports, but do not allow access to command mode. A passive mode port can communicate with other ports, but cannot enter command mode, and therefore cannot invoke commands to redefine port parameters, display status, etc.

Passive mode ports can be connected by accessing the command mode from a free any-to-any mode or modem mode port and invoking the third-party connect or resident connect command as described in **Section 7.1.1**. Passive mode ports will not buffer data, except during baud rate conversion.

NOTES

A passive mode port is not allowed to access the command mode.

To ensure supervisor access to important command functions, the passive mode is not available to ports 1 and 2 (setup ports).

The passive mode is not available at the network port.

7.3 Buffer Mode

Ports configured as buffer mode ports will collect data from the connected device and store it in the Manager's statically allocated memory. Each Manager port features a fixed-length, fixed-position data buffer.

The buffer mode allows collection of data from various devices without the requirement that all devices use the same communication parameters (for example, baud rate, parity, etc.).

NOTES

Buffer mode ports cannot access the command mode.

To ensure supervisor access to important command functions, the buffer mode is not available to ports 1 and 2 (setup ports).

The buffer mode is not available at the network port.

7.3.1 READING DATA FROM BUFFER MODE PORTS

To retrieve data from buffer mode ports, you must first determine which port buffers contain data. To check port buffers for stored data, access the command mode and type `/S [Enter]` to display the Port Status screen.

To retrieve data from buffer memory, go to a free any-to-any or modem mode port, access the command mode (supervisor-level), and issue the `/C` command using the following format:

```
/C xx [Enter]
```

where `xx` is the number or name of the port buffer to be read.

If the port's buffer is empty, the Manager will send a message which reads **Connected xx, Buffer Empty**, where `xx` is the port number. If the buffer contains data, the Manager will display a prompt that offers four options: next screen, scroll all, skip/connect, or erase/connect.

- Next screen: To scroll through data one screen at a time, press the [Space] bar. Each time you press the space bar, the next full screen of data will be sent.
- Scroll all: To send all data without pausing, press [1].
- Skip/connect: To connect to the buffer port without sending stored data, press [2].
- Erase/connect: To connect to the buffer port and erase stored data, press [3]. Buffered data will be erased immediately and will not be sent.

NOTE

All four of these options also allow pass-through communication with the device connected to the buffer mode port.

To clear data from the buffer, a) use the erase/connect option, or b) go to a free any-to-any or modem mode port with supervisor-level command capability and issue the /E (Erase Buffer) command using the following format:

```
/E xx [Enter]
```

where **xx** is the number or name of the port buffer to be cleared.

7.3.2 PORT BUFFERS

The status screen lists the amount of buffer memory currently used by each port. The Manager uses buffer memory in two different ways, depending on the user-selected port mode.

- Any-to-any, passive, and modem mode ports: When two ports are communicating at dissimilar baud rates, the buffer memory prevents data overflow at the slower port.
- Buffer mode ports: Stores data received from connected devices. The user issues a connect command (/C) from an any-to-any mode or modem mode port to retrieve data.

If the status screen indicates an accumulation of data, the /E (Erase Buffer) command can be invoked to clear the buffer.

7.4 Modem Mode

In addition to allowing data transfer, the modem mode also provides additional functions specifically related to modem communication. A modem mode port can perform all functions normally available in any-to-any mode. The modem mode is available to all Manager ports except the network port.

When the modem mode is selected, the port configuration menu (command /P) will display three additional prompts, which allow the user to redefine the modem reset string, initialization string, and hang-up string.

When the modem mode is selected for a port with supervisor-level command access, the supervisor password should be defined. This will discourage unauthorized access to higher command functions.

When a call is received, the Manager will prompt the caller to enter a password. The Manager allows three attempts to enter a valid password. If the correct password is not entered in three attempts, or if you do not respond to the password prompt within 30 seconds, the modem will disconnect.

The password can be defined and enabled by invoking the `/P` command as described in **Section 5.5**.

NOTES

When a modem mode port exits command mode or the DCD line is lost while the command mode is active, the Manager will pulse the DTR line to the modem. The unit will then send the user-defined modem command strings to make certain the modem is properly disconnected and reinitialized.

When an external modem is installed at a Manager port, other ports can use the modem for calling out. To call out, invoke the `/C` command to connect to the port, then access the modem as you normally would.

8. The Direct Connect Feature

The direct connect feature allows you to initiate a telnet session with the Manager and make an immediate connection to a specific RS-232 serial port of your choice *without* first being presented with the command interface. This allows you to connect to a discrete TCP port mapped directly to one of the Remote Console Port Manager's serial outputs.

Direct connect employs unique, pre-assigned TCP port numbers for each RS-232 port. You connect to the RS-232 port of choice by including the associated TCP port number in the telnet connect command line.

The direct connect feature can be individually configured at each Manager RS-232 port. In addition, direct connect allows you to communicate with the Manager using either standard telnet protocol or raw socket mode. Direct Connect can be used with any of the available RS-232 port modes (any-to-any, buffer, modem, and passive).

8.1 Standard Telnet Protocol and Raw Socket Mode

The direct connect feature offers the option to communicate with the Manager using either standard telnet protocol or raw socket mode. The TCP port number included in the telnet connect command line determines which protocol is used.

When standard telnet protocol is used, the Manager will respond to all IACs. When raw socket mode is used, data is always sent "as is," and command echo is always enabled.

NOTE

Telnet ports 23, 2001, and 3001 allow normal access to the Manager's command mode. However, port 3001 will transfer data using raw socket mode.

8.2 Configuration

The direct connect function is configured on a per-port basis using the RS-232 port configuration menus (/P nn), item 15, "Direct Connect." The following options are available:

1. Direct Connect Off: Direct Connect disabled at this RS-232 port. This is the default.

2. **Direct Connect On—No Password:** The Direct Connect feature is enabled at this port, but no password is required in order to connect to the port.
 - a) When the Telnet connection is established, you are immediately connected directly to the specified port, and the client is notified at the TCP level.
 - b) This option is intended for situations where security is provided by the attached device.
3. **Direct Connect On—Password:** The Direct Connect feature is enabled at this port, but you must enter a password before a direct connection is established with this port.
 - a) Upon login, the Manager will send a message which lists the site ID message, the number and name of this port, and the TCP port number that was entered in order to initiate the connection.
 - b) The Manager will prompt you to enter a password. If you enter a valid password, the Manager will then return a message that confirms the connection and again lists the name and number of this port.
 - c) If a valid password is not entered in 30 seconds or three attempts, the port will then timeout and disconnect.

NOTES

Password protection for the direct connect feature will only function if the supervisor-level password has been defined (see Section 5.4).

If the supervisor mode has been disabled at the network port (Network Configuration menu, Item 11 = “Deny”), then the port password must be entered in order to establish a connection to this port. If the port password is not defined, the connection will be refused.

If the supervisor mode is enabled at the network port (Network Configuration menu, Item 11 = “Permit”), then either the supervisor password or the port password may be entered in order to establish the direct connection.

8.3 Connecting to an RS-232 Port Using Direct Connect

The direct connect TCP port numbers are as follows:

1. Standard telnet connections: When standard telnet protocol is used, the Manager will respond to all IACs. (IAC means “Interpret as Command,” which is basically how TCP/IP differentiates commands from other data.)
 - a) 8-Port Remote Console Port Managers: TCP port numbers 2101 through 2108 correspond to RS-232 ports 1 through 8, respectively.
 - b) 16-Port Remote Console Port Managers: TCP port number 2101 through 2116 correspond to RS-232 ports 1 through 16, respectively.
2. Raw socket mode connections: When raw socket mode is used, data is always sent “as is,” and command echo is always enabled.
 - a) 8-Port Remote Console Port Managers: TCP port numbers 3101 through 3108 correspond to RS-232 ports 1 through 8, respectively.
 - b) 16-Port Remote Console Port Managers: TCP port numbers 3101 through 3116 correspond to RS-232 ports 1 through 16, respectively.

When establishing a direct connection to RS232 port “x”, the corresponding TCP port number must be used. If conditions are acceptable (for example, the target RS-232 port must be free and properly configured), an immediate connection will be made, with one possible exception: password entry may first be required depending on current password configuration settings.

NOTE

When a direct connect attempt fails because the RS-232 port is busy, the call is immediately rejected at the TCP level.

Connection Example

1. Assume that port 8 has been configured as described in **Section 8.2**. If the IP address for the Manager is “1.2.3.4” and you want to establish a standard telnet protocol connection with Manager port 8 (TCP port number 2108), then on a UNIX system the connect command would be invoked as follows:

```
$ telnet 1.2.3.4 2108 [Enter]
```


2. When the telnet connect command is sent, the CMS will respond as follows:
 - a) The Manager will send the site ID, RS-232 port number and name, telnet port number, and the password prompt (if required) as shown below:


```
CMS: [site id]
Port: [RS-232 port number and name]
Telnet Port: 21XX or 31XX (Where XX = the RS-232 port number)
Enter Password: (if required)
```
 - b) Once a connection is established, the “Connected” message is sent, and the cursor returns to the left-hand side of the screen.

8.4 Terminating a Direct Connect Session

To terminate a direct connect session, use the client Telnet program’s “disconnect” feature. The following will occur immediately upon a client initiated disconnect:

1. The network port is disconnected from the RS-232 port.
2. The network session is terminated.
3. The RS-232 port is put to sleep (goes into idle mode).

NOTES

The Sequence Disconnect command, which is defined via the Port Configuration menus (Section 5.5) cannot be used to terminate a direct connection.

Any Manager port that has accessed the command mode using the supervisor-level password can terminate a direct connection at another port by issuing the /D command as described in Section 7.1.1.

Acknowledgment of data received by the Manager’s network port does not indicate that the data has been completely sent out the serial port. Data may still be queued in the Manager’s buffers. Any data queued in the Manager at the time of a client-initiated disconnect is discarded and is not passed through to the attached device.

9. Saving and Restoring Configuration Parameters

After the Manager has been properly configured, parameters can be downloaded and saved as an ASCII text file. Later, if the configuration is accidentally altered, the file with the saved parameters can be uploaded to automatically reconfigure the unit without the need to manually assign each parameter.

Saved parameters can also be uploaded to other Managers. This allows rapid setup when several units will be configured with the same parameters.

The “Save Parameters” procedure can be performed from any terminal emulation program (for example, ProComm®, HyperTerminal, etc.), that allows downloading of ASCII files.

9.1 Sending Parameters to a File

1. Start ProComm and access the Manager’s command mode. If the password prompt is displayed, enter the supervisor password.
2. When the Manager’s command prompt appears, type `/U` and press **[Enter]**. The Manager will prompt you to configure your terminal emulation program to receive an ASCII download.
 - a) Set your terminal emulation program to receive an ASCII format download, and then specify a name for a file that will receive the saved parameters (for example, CMS.PAR).
 - b) Disable the line wrap function for your terminal emulation program. This will prevent command lines from being broken in two during transmission.
3. When the terminal emulation program is ready to receive the file, return to the Manager’s Save Parameter File menu and press **[Enter]** to proceed with the download. The Manager’s parameters will be saved on your hard drive in the file specified in step 2 above.
4. The Manager will send a series of ASCII command lines which specify the currently selected Manager parameters. The last line of the file should end with a `/G-00` command. When the download is complete, press **[Enter]** to return to the CMS> command prompt.

9.2 Restoring Saved Parameters

This section describes the procedure for using ProComm to send stored parameters to the Manager.

1. Start your terminal emulation program and access the Manager's command mode. If the password prompt is displayed, enter the supervisor password.
2. Configure your terminal emulation program to upload an ASCII text file.
3. Upload the ASCII text file with the saved Manager parameters. If necessary, type the file name and directory path.
4. Your terminal emulation program will send the ASCII text file to the Manager. When the terminal program is finished with the upload, make certain to terminate the upload mode.

NOTE

If the Manager detects an error in the parameters file, it will respond with the "Invalid Parameter" message. If an error message is received, carefully check the contents of the parameters file, correct the problem, and then repeat the Upload procedure.

When the configuration file is sent to the Manager via telnet, the unit's IP address, subnet mask, and gateway address cannot be altered.

5. If the parameter upload procedure is successful, the Manager will send a confirmation message, and then return to the CMS> command prompt. Type /S and press [Enter]. The Manager's status screen will be displayed. Check the status screen to make certain the unit has been configured with the saved parameters.

10. Upgrading Manager Firmware

When new, improved versions of the Manager operating firmware become available, the “Upgrade Firmware” function can be used to update the Manager. Updates can be uploaded via setup ports one and two, or via the network port.

NOTE

All other ports will be disabled during the firmware upgrade procedure.

1. Obtain the update file. To receive firmware modifications, call Black Box Technical Support at 724-746-5500.'
2. Access the Manager's command mode. If the password prompt is displayed, type the supervisor password. The upgrade firmware feature is only available in supervisor mode.
3. When the Manager's command prompt appears, type `/UF` and then press **[Enter]**. The Manager will display a screen which offers the following options:
 - a) Continue upload and keep current parameters: To proceed with the upgrade while retaining current, user-defined parameters, type `1` and press **[Enter]**. All parameter settings will be restored when the upgrade is complete.
 - b) Continue upload and default system: To proceed with the upgrade and reset parameters to default settings, type `2` and press **[Enter]**. When the upgrade is complete, all parameters will be set to default values.

NOTE

When the upgrade is performed via the network port, the Manager will not default the IP address, subnet mask, or gateway address. This allows the telnet connection to be reestablished after the upgrade procedure is complete.

- c) Abort upload: To cancel the upgrade and return to the command prompt, type `3` and press **[Enter]**.
4. Use your communication program's (for example, ProComm's) upload function to transfer the upgrade firmware to the Manager. Select ASCII file format, and then specify the file name and directory location where the firmware upgrade file resides.

NOTE

The upload function will timeout after one minute of inactivity. If the function times out, type 1 and press [Enter] to continue, or press [Esc] to abort.

5. If the upload is successful, the Manager will prompt the user to continue the upgrade or abort.
 - a) Upgrade: To continue with the upgrade, type 1 and press [Enter]. The Manager will erase the previous firmware, move new firmware from data flash to program flash memory, calculate and store the new checksum, and reboot. Do not attempt to reconnect to the Manager until the RDY indicator blinks to indicate the process is complete.
 - b) Abort: To abort the procedure, type 2 and press [Enter].
6. Incomplete upload: If the upload is interrupted, times out, or if the file is corrupted during transfer, the Manager will display a screen that asks for user confirmation before proceeding. To proceed, type 1 and press [Enter], then return to Step 4 on the previous page.
7. Emergency recovery: In the rare event that the Manager's operating system becomes corrupted during installation, front-panel indicators will blink five times and the unit will automatically switch to emergency recovery mode. Please contact Black Box Technical Support at 724-746-5500 for further instructions.

11. Command Reference Guide

11.1 Command Conventions

The commands described in this chapter conform to the following conventions:

- **Slash character:** Most commands begin with the slash character (/).
- **Apply command to all ports:** When the asterisk character is entered as the argument of the /D command (Disconnect Port), or the /E command (Erase Buffer) the command will be applied to all ports. For example, to erase all port buffers, type /E * **[Enter]**.
- **Port name wild card:** You do not always have to enter the entire port name. Port names can be abbreviated in command lines by entering the first character(s) of the name followed by an asterisk (*). For example, a port named "SERVER" can be specified as S*. Note however, that this command would also be applied to any other port name that begins with the letter "S."
- **Suppress "Sure?" prompt:** When the /D (Disconnect Port), /E (Erase Buffer), or /T (Default and Test Unit) commands are invoked, the /Y option can be included in the command line to override the "Are you Sure (y/n)?" prompt. For example, to disconnect port 8 without displaying the "Sure?" prompt, type /D/Y 8 **[Enter]**.
- **Enter Key:** All commands are invoked by pressing **[Enter]**.
- **Command mode:** Manager ports will only recognize commands when the command mode has been activated. The command mode can be accessed from a free any-to-any or modem mode port. To access the command mode, proceed as described in **Section 5.1**.
- **Connected ports:** When two ports are connected, most Manager commands will not be recognized by either of the connected ports. The only exception is the resident disconnect sequence. Default = ^X (**[Ctrl]** plus **[X]**).
- **Configuration menus:** To exit from a configuration menu, you must press **[Esc]**.

11.2 Command Response

When commands are sent to the Manager, the unit can respond with either verbose (English Text) or terse messages (numeric/abbreviated). The default message type for all ports can be set to either terse or verbose using option switch six.

After the unit is installed and configured, the port configuration commands (/P and /N) can specify an individual response format for each port. In addition to the terse and verbose response modes, the port configuration commands can also select the quiet mode. When the quiet mode is selected, the port will not send messages in response to commands.

Table 11-1 summarizes the various response messages for both the terse and verbose modes.

Table 11-1. Response messages for terse and verbose modes.

Terse	Verbose
0	OK
0	RAM test passed
1	Connected*
2	Busy
3	Disconnected
4	Invalid command
5	Are you sure (Y/N)?
6	Invalid parameter
7	Invalid syntax
8	Invalid access
9	Enter site ID:
A	Aborted
B	Enter password:
C	Invalid password
D	RAM test failed at*
E	Inactivity timeout, disconnected
F	Data in buffer from previous connection... Re-enter logoff sequence to purge buffer
G	Asleep

*These verbose response messages include additional information not provided by terse response messages.

11.3 Command Summary

Table 11-2. Command summary.

Function	Command Syntax	Command Availability	
		Supervisor	User
Exit Command Mode	<code>/X [Enter]</code>	X	X
Help Menu	<code>/H [Enter]</code>	X	X
Display Site ID	<code>/J [Enter]</code>	X	X
Display Port Status	<code>/S[P] [Enter]</code>	X (1)(2)	X(1)
Display Port Diagnostics	<code>/SD [Enter]</code>	X(1)	X(1)
Display Network Status	<code>/SN[P] [Enter]</code>	X(3)	
Display Port Parameters (Who)	<code>/W[P] [n] [Enter]</code>	X	X(4)
Set System Parameters	<code>/F [Enter]</code>	X	
Set Network Port Parameters	<code>/N [Enter]</code>	X	
Set RS-232 Port Parameters	<code>/P <x> [Enter]</code>	X	
Copy RS-232 Port Parameters	<code>/CP [Enter]</code>	X	
Connect	<code>/C <x> [x] [Enter]</code>	X	X(5)
Resident Disconnect(6)	<code>^X</code>	X	X
Third-Party Disconnection(7)	<code>/D[/Y]<x>[x] [Enter]</code> <code>/D[/Y] * [Enter]</code> <code>/D Nn [Enter] (8)</code>	X	
Erase Buffer	<code>/E[/Y]<x>[x] [Enter]</code> <code>/E[/Y] * [Enter]</code>	X	
Reset Network Port	<code>/T [Enter]</code>	X	
Default and Test	<code>/I[/Y] [Enter]</code>	X	

For (1), (2), (3), (4), (5), (6), (7), and (8), see the next page.

Table 11-2. Command summary.

Function	Command Syntax	Command Availability	
		Supervisor	User
Save Parameters	/U [Enter]	X	
Upgrade Firmware	/UF [Enter]	X	

(1) Supervisor mode displays parameters for all ports; User mode only displays parameters for ports allowed by the port password.

(2) To display port passwords, include the “P” Option. (Supervisor only.)

(3) For the /SN command only, the “P” Option will display the passwords that were used to log into the Manager’s network port.

(4) A port with “User” command capability can only view its own parameters. A user port cannot view parameters for other ports.

(5) A user port cannot perform a third-party connect.

(6) Resident disconnect: Disconnects your resident port from another port. The disconnect sequence can be redefined via the port configuration menus.

(7) Third-party disconnect: Disconnects two or more nonresident ports. Must be issued from a third port with supervisor command capability.

(8) Disconnects a TCP port, where **Nn** is the desired Manager TCP port.

11.4 Command Set

This section provides more detailed information on all Remote Console Port Manager commands, sorted alphabetically by command.

[ENTER] ENTER COMMAND MODE

In order to set parameters or connect ports, you must first access the command mode as described in **Section 5.1**. When the command mode is inactive (port asleep), the port will only respond when the **[Enter]** key is pressed without any characters preceding it. If the supervisor password (command /F) has been defined, the unit will require a password before allowing access to command mode.

Availability: Supervisor/User

Format: **[Enter]** (Press **[Enter]** twice if other characters have already been typed.)

Response: The port status screen will be displayed, followed by the CMS> command prompt.

^X RESIDENT DISCONNECT SEQUENCE

The resident disconnect sequence is issued to disconnect your resident port from another port. For example, if you are communicating via port 3, and port 3 is connected to port 4, the resident disconnect sequence would be used to disconnect port 3 from port 4. Although the default resident disconnect sequence is **^X** (**[Ctrl]** plus **[X]**), the command format and logoff character can also be redefined via the port configuration menus as described in **Section 5.5.3**. Note that a three-character disconnect command can also be selected.

NOTE

The resident disconnect sequence cannot be used to terminate a telnet “direct connection.” Direct connections are terminated using the telnet program’s disconnect command.

Availability: Supervisor/User

Format (Default): **^x**

Verbose Reponse: The Manager will send the “Disconnected” message, followed by the port status screen.

Terse Response: 3

/C CONNECT

Establishes a bi-directional connection between two ports. For more information and command line examples, please refer to **Section 7.1**. There are two different types of port connections:

- Resident connect: If the **/C** command specifies one port name or number, your resident port will be connected to the specified port.
- Third-party connect: If the **/C** command specifies two port names or numbers, the unit will connect the two ports indicated. A third-party connect command must be issued from a third port with “supervisor” command capability. “User” ports cannot initiate a third-party connect.

NOTES

Ports with “user” command capability can only connect to ports that share the same port password.

Ports with “supervisor” command capability are allowed to connect to all other ports.

RS-232 ports are not allowed to create a third-party connection to the network port. For example, port 1 cannot connect port 3 to the network port.

Availability: Supervisor/User

Format: /C <x> [x] [Enter]

Where *x* is the number or name of the port(s) to be connected.

Verbose Response: Connected *xx*, when a Resident Connection is initiated. The Manager will also display the currently selected resident disconnect sequence for your port.

Terse Response: 1

/CP COPY RS-232 PORT PARAMETERS

Allows quick setup when all Manager RS-232 ports will be configured with the same or similar parameters. When the /CP command is invoked, the Manager will display a menu that is used to select common port parameters, which can then be copied to all Manager RS-232 ports. For more information, please refer to **Section 5.6**.

Availability: Supervisor only

Format: /CP [Enter]

Response: The copy parameters menu is displayed.

/D THIRD-PARTY DISCONNECT

Invoke the /D command at your resident port to disconnect two other ports. The /D command cannot be used to disconnect your resident port. To disconnect your resident port, issue the resident disconnect sequence.

Availability: Supervisor only

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Format: **/D[/Y] <x> [x] [Enter]**

Where:

/Y (optional) suppresses the “Sure?” prompt, and

x is the number or name of the port(s) to be disconnected. To disconnect all ports, enter an asterisk. To disconnect a TCP port, enter the port number as “**Nn**,” where **Nn** is the name of the desired TCP port (**N1** through **N6**).

Verbose Response: “Are you Sure (y/n)?” If Y, unit will respond with “Disconnected.”

Terse Response: 5. If Y, unit will respond with 3.

Example: To disconnect port 2 from port 3 without the “Sure?” prompt, access the command mode from a third port with “All” command capability and type one of the following commands:

/D/Y 2 [Enter] or **/D/Y 3 [Enter]**

/E ERASE BUFFER

Erases data from the buffer for a specified port or several ports. Note that erased data cannot be recovered.

Availability: Supervisor only

Format: **/E[/Y] <x> [x] [Enter]**

Where:

x is the number or name of the port buffer(s) to be cleared. To erase buffers for all ports, enter an asterisk.

/Y (optional) suppresses the “SURE? (Y/N)” prompt.

Verbose Response: “Are You Sure (y/n)?” If Y, the unit will respond with “OK.”

Terse Response: 5. If Y, the unit will respond with 0.

Example: To clear the buffer for port 3, access the command mode from a port with “All” command capability and type **/E 3 [Enter]**.

/F SET SYSTEM PARAMETERS

Displays a menu which is used to define the site ID message and supervisor password. When the supervisor password is defined, the Manager will display a password prompt before allowing access to command mode. For more information, refer to **Section 5.4**.

NOTE

Record your supervisor password for future reference. If the supervisor password is lost or forgotten, you will not be able to access supervisor-level commands.

Availability: Supervisor only

Format: **/F [Enter]**

Response: The system parameters menu is displayed.

/H HELP

Displays a help screen, which lists all Manager commands along with a brief description of each command.

Availability: Supervisor/User

Format: **/H [Enter]**

Response: The help screen is displayed. Note that the user-level help screen does not include supervisor-level commands.

/I DEFAULT AND TEST

Tests internal memory and initializes the unit with the default parameters specified by the option switches.

CAUTION

When /I is invoked, the Manager will revert to the parameters specified by the option switches. Command-selected parameters will be lost.

Availability: Supervisor only

Format: **/I [/Y] [Enter]**

Where **/Y** is a command option used to suppress the “Sure?” prompt.

Verbose Response: “Are You Sure (y/n)?” If Y, memory test and initialization begins.

Terse Response: 5. If Y, memory test and initialization begins.

/J DISPLAY SITE ID

The user-defined Site ID message is displayed.

Availability: Supervisor/User

Format: /J [Enter]

Response: The site ID message is displayed.

/N SET NETWORK PORT PARAMETERS

Displays a menu that is used to define communication parameters for the network port. Also allows access to the IP security function, which can be used to restrict network access by unauthorized IP addresses. For more information on selecting network parameters, refer to **Section 5.5.4**.

Availability: Supervisor only

Format: /N [Enter]

Response: The network parameters menu is displayed.

/P SET RS-232 PORT PARAMETERS

Displays a menu that lets you select options and parameters for the selected RS-232 port. **Section 5.5.3** describes the procedure for defining port parameters.

Availability: Supervisor only

Format: /P [*x*] [Enter]

Where *x* is the number or name of the port to be configured. If the port number or name is not specified, the Manager will display the configuration menu for your resident port.

Response: The port parameters menu is displayed.

/S DISPLAY PORT STATUS

Displays the port status screen, which lists current conditions and parameters for all ports. Normally, the port status screen will not display port passwords and the password column will read either “defined” or “undefined,” depending upon whether or not the password for each port has been specified. When the supervisor mode is active, the /SP command offers the option to either display or suppress port passwords. For more information on the port status screen, refer to **Section 6.1**.

Availability: Supervisor/User

Format: /S[P] [Enter]

When the “P” option is included (for example, /SP), the port status screen will list the password for each port, if defined. (Supervisor mode only.)

Response: The port status screen is displayed.

/SD DISPLAY PORT DIAGNOSTICS

Provides more detailed information regarding the operational status of each port. Note that in user mode, this screen will only display parameters for the ports that are allowed by the port password that was entered at login. For more information on the port diagnostics screen, refer to **Section 6.2**.

Availability: Supervisor/User

Format: /SD [Enter]

Response: The port diagnostics screen is displayed.

/SN DISPLAY NETWORK STATUS

Displays the network status screen, which lists current conditions and parameters for the network port. For more information on the network status screen, refer to **Section 6.3**.

Availability: Supervisor only

Format: /SN[P] [Enter]

When the “P” option is included (for example, /SNP), the network status screen will list the passwords that were entered by each telnet connection when they logged into the network port.

Response: The network status screen is displayed.

/T RESET NETWORK PORT

Resets the NIC card and breaks the network connection to the unit. Note that when this command is invoked, the network connection will be reset without warning and must then be reestablished in order to communicate with the unit via the network.

Availability: Supervisor only

Format: **/T [Enter]**

Response: None (The NIC card is reset, and the network connection is broken.)

/U SAVE PARAMETERS

Sends the Manager's configuration parameters to an ASCII text file as described in **Chapter 9**.

Availability: Supervisor only

Format: **/U [Enter]**

Response: The Manager will send a series of command lines.

/UF UPGRADE FIRMWARE

When new versions of the Manager operating firmware become available, this command is used to update the existing firmware as described in **Chapter 10**. This command will only function at the network port and at setup ports one and two.

Availability: Supervisor only

Format: **/UF [Enter]**

Response: The Manager will display a menu which offers the options to retain existing Manager parameters or default parameters, or to abort the upgrade procedure.

/W DISPLAY PORT PARAMETERS (WHO)

Displays the configuration of an individual port, but does not allow you to change parameters. Ports with user-level command capability cannot display parameters for other ports. Normally, the port parameters screen will not include the port password. However, when the supervisor mode is active, the `/WP` option can be used to display the password for the target port. For more information, refer to **Section 6.4**.

Availability: Supervisor/User

Format: `/W[P] [x] [Enter]`

Where:

P When the **P** option is included (for example, `/WP 5`), the port parameters screen will list the password for each port, if defined. The supervisor password will not be displayed. (Supervisor mode only.)

x Is the port number or name. To display parameters for the network port, enter an **N**. If the “**x**” argument is omitted, parameters for your resident port will be displayed.

NOTE

In port (user) mode only, if the `/W` command is applied to the network port, the port parameters screen will only list the setting for the sequence disconnect, the selected logoff character, and the status of the accept break option.

Response: Displays port parameters.

Example: To display parameters for a port named “SERVER,” access the command mode from a port with supervisor-level command capability, and type `/W SERVER [Enter]`.

/X EXIT COMMAND MODE

Exits command mode. When issued at the net port, also ends the telnet session. Exiting from command mode will not terminate port connections.

- Any-to-any mode: Exits command mode.
- Modem mode: Disconnects and resets modem, hang-up message is sent, hardware line to modem drops for 500 ms, and reset message is sent.

Availability: Supervisor/User

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Format: /x [Enter]

Response: Disconnected

Appendix A. RS-232 Port Interface

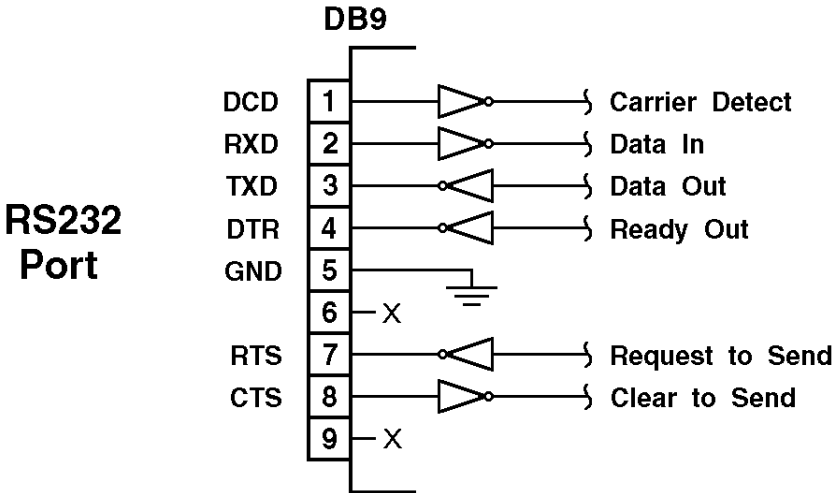


Figure A-1. RS-232 port interface.

DCD and DTR hardware lines function as follows:

1. When connected:
 - a) If either port is set for modem mode, the DTR output at either port reflects the DCD input at the other end.
 - b) If neither port is set for modem mode, DTR output is held high (active).
2. When not connected:
 - a) If the port is set for modem mode, upon disconnect DTR output is pulsed for 0.5 seconds and then held high.
 - b) If the port is not set for modem mode, DTR output is controlled by the DTR output option (parameters menu, option 74). Upon disconnect, option 74 allows DTR output to be held low, held high, or pulsed for 0.5 seconds and then held high.

Appendix B. Troubleshooting

B.1 Calling Black Box

If you determine that your Remote Console Port Manager is malfunctioning, do not attempt to alter or repair the unit. It contains no user-serviceable parts. Contact Black Box at 724-746-5500.

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

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

B.2 Shipping and Packaging

If you need to transport or ship your Remote Console Port Manager:

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



VPN: 13225-A

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