

WSS SR-1W

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1. DESCRIPTION

1.1 Operation

The system consists of one host and 2 to 96 remote units. The system normally operates in a data collection mode, with information received at remote data ports being transmitted to the host and sent out the host data port. A second mode, 2-way, allows the computer connected to the host unit to communicate with a single remote for programming, special data transfers, etc.

1.2 Data Collection Mode

This is the normal operating mode of the system and the mode it enters at start-up. The host polls all remotes in a round-robin fashion. Any remote having data to send responds with its data when it is polled. The remotes buffer incoming data from their RS-232 ports until a valid block is received. When a valid block is received, it is sent to the host at the next poll. Incoming data may be any ASCII character other than [STX] and [ETX]. If XOn/XOff handshaking is enabled, [DC1] and [DC3] are also disallowed. A valid block consists of a string of characters beginning with the [STX] character and ending with the [ETX] character. Any characters received prior to an [STX] and after a [ETX] character are discarded by the remote. If a remote fails to answer two sequential polls, it is dropped from the polling list. All dropped remotes are polled each 15 seconds and those that respond are added to the polling list.

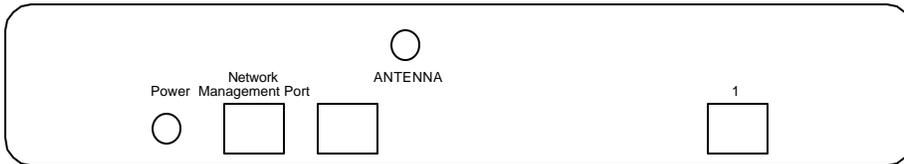
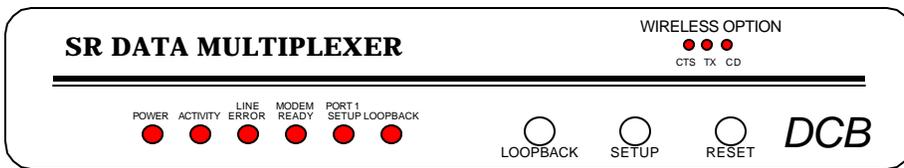
Each remote buffers up to approximately 32K bytes. This allows polling to be temporarily suspended without losing data. There is a 16K byte additional buffer in the host unit.

1.3 Two-Way Mode

This mode allows the host computer to communicate with a single remote in a two-way conversation. This mode is entered when the host unit receives a single [SOH] character followed by a one-byte binary remote address from the host computer. It is exited when the host unit receives an [ETX] character from the host computer. The one-byte binary character is the remote unit's drop number (0 to 95) which is configured into each remote unit. Upon entering two-way mode, the host unit completes any current data transmission and suspends polling. A two-way path is opened to the requested remote. All data received on the remote's port is sent to the host computer and all data from the host computer is sent only to that remote. Remote data blocking ([STX]...[ETX]) is not used during two way operation.

Some features of the unit include:

- Test message generation to the local or remote port.
- “Copy” commands to allow host site trainer to assist remote trainee.
- Monitor functions allow network management port user to monitor transmit or receive of the data port.
- Capture command to allow network management port user to control the remote data port.
- Many test features allow diagnostics of the system and communications link.
- Power supplies are available for 120 VAC, and 240 VAC, or 12, 24, and 48 VDC.
- Rack mount options available.



2. SPECIFICATIONS

2.1 Product

2.1.1 Data Port

Port Speeds

Asynchronous only

300, 1200, 2400, 4800, 9600, 19,200, or 38,400

Port Rate Selection

Selected per port through network management port control with an asynchronous terminal.

Data Format

10 bits/character, 1 start, 1 stop, 8 data (including parity)

Interface

CCITT V.24, RS-232D, implemented in RJ-45, 8 position connectors. (RS-561 standard physical pin-out used on RJ-45 connectors)

Port Flow Control

Input (control of data input to each port)

Software: Xon/Xoff

Hardware: Clear to Send

Output (Attached device control of output from each port)

Software: Xon/Xoff

Hardware: Busy High or Busy Low

Port Flow Control Selection

Selected per port through the network management port with an asynchronous terminal.

Buffering

32K Bytes

2.1.2 Composite Port

Built-In Wireless Modem Specifications

Frequency Hopping

Spread Spectrum

900 MHz or 2.4 GHz

Range to 20 Miles

Asynchronous to 115.2 Kbps

2.1.3 Network Management Port Commands

- Show Port Configuration
- Show ID
- Show Map (Host only)
- Show Status
- Show Network Configuration
- Change Port Configuration
- Change Drop Number (Drop only)
- Change ID
- Change Map (Host only)
- Change Restart Timer (Host only)
- Configure Network
- Configure Radio
- Activity Counters
- Zero Activity Counters
- Drop Activity
- Flow Control
- Test Tools
 - Capture Port
 - Copy Command
 - Test Message
 - Monitor Port Tx
 - Monitor Port Rx
 - NMP Parity
 - Drop Monitor (Host only)
 - Drop Restart Polling (Host only)
 - Kill Drop Polling (Host only)
 - Suspend Drop Polling (Host only)
 - Poll ALL Drops (Host only)
 - Port Reset
 - Reset Mux
- Type
- Repeat Last Command
- Disconnect NMP

2.2 Environmental

Operation: -40 to +70° C, 10 to 95% relative humidity
Storage: -40 to +85° C, 10 to 95% relative humidity

2.3 Physical / Electrical

10¼" W x 9¾" D x 2½" H
120 VAC external power supply
Optional 240VAC power supply available
30 watts, .25 amps

2.4 Other Specifications

Front Panel Indicators

- Power
- Activity
- Line Error
- Modem Ready
- Port 1 Setup
- Loopback
- Radio CTS
- Radio TX
- Radio CD

Front Panel Switches

- Loopback
- Setup
- Reset

3. INSTALLATION

3.1 Unpacking

Remove the unit from the shipping container and examine it carefully for external damage. If shipping damage is apparent, notify the shipper immediately.

The following accessories are included with each unit:

- external power supply
- manual
- warranty, maintenance contract and repair information
- Network Management Port cable (green) for connecting the network management port to an asynchronous terminal or PC for configuration

3.2 Setup

The HOST unit must be mapped for all active drop numbers. Use the CM command (paragraph 5.5.2). Each active DROP unit must have a drop number assigned using the CD command (paragraph 5.4.7).

3.3 Built-In Wireless Modem

Your SR-01 with internal wireless modem was configured at the factory to work in most applications. If changes are required to the modem settings, connect a terminal to the network management port (See Section 5) and follow the procedure below. User responses are shown in **BOLD**.

3.3.1 Enter Radio Setup Mode

AT YOUR COMMAND >> **CR<Enter>**

*** CONFIGURE NETWORK MODEM - Type ESC ESC to stop
*** WARNING: Network DCD is ON

MAIN MENU
Version 5.51 7-23-98
Standard Hop Table
Modem Serial Number 900-7532

- (3) Set Operation Mode
- (3) Set Baud Rate
- (3) Edit Call Book
- (3) Edit Radio Transmission Characteristics
- (3) Show Radio Statistics
- (3) Edit MultiPoint Parameters
- (3) TDMA Menu
- (Esc) Exit Setup

Enter Choice

Make the required changes following the menu prompts. See the DGR-115 manual for options. Type Esc Esc to exit.

ESC ESC <Enter>

*** END CONFIGURE MODEM

3.3.2 Suggested Radio Settings

Baud rate is 57600

Radio ParmS

- 0=5 frequency key
- 1=0 max packet size
- 2=5 min packet size
- 3=1 xmit rate
- 4=2 RF data rate
- 5=9 RF xmit power
- 6=0 slave security
- 7=0 RTS to CTS
- 8=255 ??

Multipoint ParmS

- 0=0 number of repeaters
- 1=0 master packet repeat
- 2=1 max slave retry
- 3=1 retry odds
- 4=0 dtr connect
- 5=0 repeater frequency
- 6=255 network ID
- 7= - not used
- 8=0 multi-master sync
- 9=255 ?

3.3.3 Set Mux Composite To Match Modem Baud Rate

AT YOUR COMMAND >> **CN<Enter>**

CONFIGURE NETWORK

ASYNC MODEM: 19200
LEASED LINE
ERROR CORRECTION OFF

SYNC or ASYNC modem? [S/A] >> **A<Enter>**

ASYNC rate? [9600 / 19200 / 38400 / 57600 / 115200] >> **57<Enter>**

*The ASYNC rate selected must match the
modem Baud Rate selected above.*

Leased or Dialup Line? [L/D] >> **L<Enter>**

Enable Error Correction? [Y/N] >> **N<Enter>**

ASYNC MODEM: 57600
LEASED LINE
ERROR CORRECTION OFF

AT YOUR COMMAND >>

3.4 Cabling

Cabling between the unit and the computer ports or terminal devices is a common source of installation problems. The unit must have data from attached terminal devices or computer ports, as an input on Position 6 of the RJ45 connector. Data from the unit to any attached equipment will be transmitted on position 5 of the RJ45 connector. See paragraph 6.1 for position location on the RJ45 connector.

See Section 6 to determine the correct cables for your computer and terminal devices.

3.5 Parity Considerations

The units transfer all character bits whether it is 7 data bits plus parity or 8 data bits. The unit does not verify parity for each character transferred. Consequently, the parity setting of the devices at either end of the channel must match. Because of this ability to transfer 8 bits transparently, the unit can transfer graphic characters, binary files and support "PC terminals."

Why XON/XOFF parity settings?

Parity only becomes an issue if you are using XON/XOFF flow control. The unit must know what to send for the parity bit of the XON and XOFF characters. The attached devices will not recognize the flow control characters if the parity is not correct. Also, the unit must know which character to interpret as an XON or XOFF when received from the attached device.

Remote site XON/XOFF parity settings.

When setting XON/XOFF flow control at a remote site, set the parity of the port to match the attached device. If the device is set for EVEN parity, set the port for XE (XON/XOFF Even). If the attached device is set for ODD parity, set the port for XO (XON/XOFF Odd). If you are using 8 data bits and no parity, set the port for XS (XON/XOFF Space). For the XON/ XOFF characters, the SPACE parity setting is the same as 8 data bits no parity.

Host site XON/XOFF parity settings.

Since the host computer can process data faster than we can type, it will never issue flow control to stop the inflow of data. If an XON or XOFF character is issued by the CPU, it is for a status or initialization function and not flow control. Because of this activity, the host unit must pass the XON/XOFF character to the remote end and not act upon it. To accomplish this task, the unit has an XON/XOFF Transparent setting. When set for Transparent, the unit will pass the XON/XOFF characters to the other end without taking flow control action. When using XON/XOFF flow control, set the host computer side ports to XT (XON/XOFF Transparent).

Host site parity determination.

When the host site port is set for XT (XON/XOFF Transparent), parity is not specified for the XON or XOFF characters to be issued. The unit will determine the parity for the XON/XOFF characters as follows:

1. If the flow control setting is for XT (XON/XOFF Transparent), the unit will interrogate the other unit for the parity setting of the corresponding port.
2. If the corresponding port is set for XE(Even), XO(Odd), XM(Mark) or XS(Space) flow control, the unit will use the matching parity.
3. If the corresponding port is set for XT(Transparent) or any of the CTS flow control options, the unit will default to Space parity (same as 8 data bits-no parity).

3.6 Flow Control and Rate Tips

Individual port options are set through the network management port. (See Section 5).

Flow control options are the most critical and the most common source of installation problems. If the flow control is improperly implemented data loss may occur.

If you are using software flow control (Xon/Xoff) double check the parity settings. Make sure that the Parity is set the same at the CPU, remote unit and attached devices. If your system uses 8 bits, no parity (8,N,1), set the host ports for Xon/Xoff Transparent (XT) and set the remote ports for Xon/Xoff Space (XS).

If half of your characters are good and half are bad, there is a parity setting mismatch between the CPU and terminal device.

When using hardware flow control, double check the cabling (see Section 6). For input flow control (data flow into the unit) Clear To Send, position 7 of the RJ45 connector, is used. For output flow control (data output from the unit to a terminal or printer) Busy high or low, position 3 is used.

Using the network management port, issue the "AC" command (Activity) to see information about port errors and retransmissions. Port errors indicate either speed, parity or both are incorrectly set. The "SC" command (Show Configuration) can be used to confirm each port is set correctly.

3.7 Resetting Factory Defaults

The factory default settings for the ports are as follows:

Data Port:

Loop	OFF
Flow Control	CNB (CTS No Busy)
Rate	9600

Composite Port:

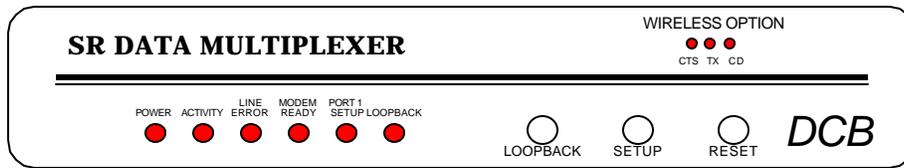
ASYNC 57,600 Bps
Full Duplex
Ignore Modem DCD

To reset the unit to factory defaults use the !R command from the network management port or perform the following steps using the front panel switches:

1. Depress and hold the SETUP switch while depressing the RESET switch.
2. Be sure to continue to hold the SETUP switch until the LEDs have stopped flashing.
3. All port settings should be at the factory defaults. Use the SC (Show Configuration) command to check the port settings.

4. CONTROLS AND INDICATORS

4.1 Switches



4.1.1 Front Panel Switches

Setup – Not implemented.

Loopback – Not implemented.

Reset – Performs a hardware reset of the unit.

4.2 Indicators

POWER – is ON when the unit is connected to power.

ACTIVITY:

ON – Network CTS is ON (Host unit only).

FLICKERING – indicates data activity to any Drop (Drop units only).

LINE ERROR – corrupted block sent/received.

MODEM READY:

Host unit is polling.

Drop unit is transmitting (RTS is high).

PORT 1 SETUP – Not used.

LOOPBACK – Not used.

Radio CTS – ON when radio CTS is high.

Radio TX – ON when radio is transmitting data.

Radio CD – ON when radio senses carrier from another unit.

5. NETWORK MANAGEMENT PORT

5.1 Introduction

The Network Management port (NMP) is used to configure the unit for proper operation. This connection must be used to configure the composite and data ports.

5.2 Connections and Setup

Connection to the NMP is made either through a port on the rear of the unit.

5.2.1 Dedicated Terminal or PC

The NMP functions are available through a port on the rear of the unit labeled Network Management Port. To connect a dedicated terminal to this port, use the green cable provided and the appropriate adapter for either a terminal or PC. Set the terminal device for 9600 bps, 8 data bits, no parity, one stop bit and no flow control.

5.2.2 Dedicated Modem

For remote access to NMP functions, a dial-up modem may be connected to the Network Management Port. You must fix the DTE interface speed of the modem at 9600 bps, 8 data bits, no parity and one stop bit. Refer to your modem manual for appropriate setup procedures. Use the appropriate cable from paragraph 6.3.3 for connection.

5.3 Using the Network Management port

To activate the NMP, press the ENTER key. When you see **AT YOUR COMMAND >>**, the NMP is active and ready for your commands. Type H <Enter> to display the command set.

5.4 Commands

The following commands, except CD, are available on units with either DROP or HOST firmware. For commands unique to HOST units, see Section 5.5.

5.4.1 Help (H or ?)

<u>COMMAND</u>	<u>LOCAL</u>	<u>REMOTE</u>	<u>PARAGRAPH</u>
Show: Port Config	SC		5.4.2
ID	SI		5.4.3
Status	SS		5.4.4
Network Config	SN		5.4.5
Change: Port Config	CP		5.4.6
Drop Nr	CD		5.4.7
ID	ID		5.4.8
Config Network	CN		5.4.9
Config Radio	CR		5.4.10
Activity Counters/Zero	AC/Z		5.4.11
Drop Activity	DA		5.4.12
Flow Control	FC		5.4.13
Test Tools	TT		5.4.17
Type	TY	RTY	5.4.14
Repeat Last Command	*		5.4.15
Disconnect NMP	BYE		5.4.16

This Help screen shows the choice of commands available. The commands allow you to display the selected options (Show network and configuration), configure the (Configure ports and Set ID), and perform many different diagnostic functions such as send a test message, monitor data, perform loopbacks, show flow control state, show activity and other useful tests.

5.4.2 Show (Port) Configuration

The Show Config (SC) command shows the current port configuration settings. Use this command to verify proper port configuration.

5.4.3 Show ID

The SI command displays both the Drop and Host unit ID's.

5.4.4 Show Status

This SS command displays unit statistics.

5.4.5 Show Network (Configuration)

The Show Network (SN) command displays the current network (composite port) configuration.

5.4.6 Change Port Configuration

The Change Port Config (CP) command sets the data port loopback, flow control and rate configuration for each data port. Follow the prompts and examples on the screen to select the port(s) and parameter(s) you wish to change. One or more ports may be set with a single command by selecting a range of port numbers. The factory default setting is CTS No Busy, 9600 bps.

5.4.7 Change Drop Number

The Change Drop Nr command (CD) is used to assign a unique drop number to each remote (Drop) unit.

5.4.8 Change ID

The ID command is used to assign a unique identifier to the local unit. IDs can be a maximum of 15 characters in length. Pressing <Enter> with no entry will leave the ID unchanged. IDs are handy for documentation.

5.4.9 Configure Network

The Configure Network command (CN) allows configuration of the composite port asynchronous rate.

5.4.10 Configure Radio

The Configure Radio command (CR) establishes a direct connection between the network management port and the radio modem. This allows the operator to directly configure the built-in radio modem.

Type two consecutive ESC characters to return to the AT YOUR COMMAND >> prompt.

5.4.11 Activity Counts / Zero

The Activity Counts (AC) command shows transmit and receive data statistics for all ports. The data are presented in terms of blocks of information sent and received by the network and each data port. Error counts are also shown.

The Z command is used to zero the counters so that current activity can be monitored.

5.4.12 Drop Activity

The DA command displays the number of data blocks sent and received as well as the number of polls received and polls failed. These are useful statistics for troubleshooting.

5.4.13 Flow Control

The Flow Control (FC) command displays the current port flow control status.

5.4.14 Type

The Type (TY) command displays information about the local unit including firmware version, number of ports and unit ID. The Remote Type (RTY) command is used to display similar information about a remote unit.

5.4.15 Repeat Last Command

To repeat the last command, simply press the * key. This is handy for repeating screens of constantly changing data.

5.4.16 Disconnect NMP

The BYE command toggles the CTS output from the Network Management port. This is used to disconnect equipment such as dial-up modems or the DCB Access Switch.

5.4.17 Test Tools

The Test Tools (TT) menu summarizes the test and troubleshooting commands. These commands are listed separately to reduce the clutter in the main help list, but are always available from the command prompt.

<u>COMMAND</u>	<u>LOCAL</u>	<u>REMOTE</u>	<u>PARAGRAPH</u>
Capture Port	CA#	RCA#	5.4.17
Copy Command	CC#	RCC#	5.4.18
Test Message	TM#	RTM#	5.4.19
Monitor Port Tx	MT#		5.4.20
Monitor Port Rx	MR#		5.4.20
NMP Parity	P		5.4.21
Port Reset	PR		5.4.22
Reset MUX	RESET		5.4.23

5.4.18 Capture Port

The Capture Port command (CA#) permits the network management port to capture any of the local ports. While this command is active, the normal data path is interrupted and a two-way communication link is established between the network management port and the captured port. A port number must be included on the command line.

The Remote Capture port command (RCA#) connects the network management port to a remote unit port. During this time, normal data communications are suspended and the NMP terminal can talk directly to captured port.

The Capture commands are active until two consecutive ESC characters are issued.

5.4.19 Copy Command

The Copy Command (CC#) is used for training. This command is used when the instructor is at the host site and the trainee is at the remote. The command is followed by the port number to which the trainee's terminal is attached.

After the command is entered, all data from the local port will be displayed on both terminals. Keyboard inputs from either terminal will be sent to the host port.

The Remote Copy Command (RCC#) performs the same function when the instructor is located at the remote site. This command is used only at the remote site.

The Copy commands are active until two consecutive ESC characters are issued by the instructor.

5.4.20 Test Message

The Test Message (TM#) command sends a Quick Brown Fox... message to a local port. The QBF message continues until any key is pressed on the network management port terminal. A local port number must be included on the command line.

The Remote Test Message (RTM#) command sends a QBF test message to a remote port. The message continues until any key is pressed on the network management port terminal. The number of the remote port must be included on the command line.

5.4.21 Monitor Port TX or RX

The Monitor Port TX (MT#) command monitors data transmitted from the selected port to the corresponding port of the remote unit. The Monitor Port RX (MR#) command monitors data received by the selected port from the corresponding port of the remote unit. A local port number must be included on the command line.

When port monitor is active, two ESC characters are needed to end the test.

5.4.22 NMP Parity

The NMP Parity command (P) sets the parity for the network management port. The factory default is SPACE (8,N,1).

5.4.23 Port Reset

The Port Reset (PR) command is used to reset flow control to hung ports. A range of local port numbers or ALL may be included with this command. Flow control leads at both the local and remote ports are reset.

5.4.24 Reset Mux

The Reset Mux (RESET) command performs a local unit reset.

5.5 Additional HOST unit commands

The following commands are available only in units with HOST firmware.

<u>COMMAND</u>	<u>LOCAL</u>	<u>REMOTE</u>	<u>PARAGRAPH</u>
Show: Map	SM		5.5.1
Change: Map	CM		5.5.2
Restart Timer	CT		5.5.3
Test Tools	TT		
Drop Monitor	DM		5.5.4
Drop Restart Polling	DR		5.5.5
Kill Drop Polling	KD		5.5.6
Suspend Drop Polling	SD		5.5.7
Poll ALL Drops	PA		5.5.8
Reset MUX	RESET	RRESET	5.5.9

5.5.1 Show Map

The Show Map (SM) command shows the mapping of all drops.

5.5.2 Change Map

The Change Map (CM) command is used to add or delete drop to the host polling sequence. Up to 96 drops (0-95) can be mapped.

5.5.3 Change Restart Timer

The Change (Restart) Timer (CT) setting determines how frequently the host polls drops that have been removed from the from active list. When this time interval expires, the host polls each inactive drop once. If the drop responds, that drop is returned to the active polling list. If the drop fails to respond, it remains on the inactive list. The timer can be set for intervals of N x 15 seconds, "0" disabled (inactive drops will never be restarted) or "C" continuous (drops will always remain active whether they respond to polls or not). The default is 15 seconds

In addition, Drop Timeout (the time the host waits for a poll response before removing the drop from the active list) can be set to AUTO or fixed at 10-10000ms. The default is AUTO.

5.5.4 Drop Monitor

The Drop Monitor (DM) command turns drop monitoring on or off. When on, the drop monitor will display drop numbers of drops that have timed out or been returned to the polling sequence. The format of the display is as follows:

Drop monitor ON...

T:nn = poll timeout on drop nn, now inactive

A:nn = drop nn is active again

5.5.5 Drop Restart Polling

Use the DR command to restart polling to drops that have been suspended or killed during troubleshooting. Killed drops must be restarted, suspended drops will restart automatically after 15 minutes.

5.5.6 Kill Drop Polling

Kill Drop Polling (KD) is used during troubleshooting to stop polling to a specific drop. Drops that are killed must be restarted using the Drop Restart command.

5.5.7 Suspend Drop Polling

Similar to Kill Drop, Suspend Drop (SD) is used to suspend polling to a specific drop. Suspended drops will automatically restart after 15 minutes.

5.5.8 Poll ALL Drops

The Poll ALL Drops command (PA) forces the host to poll all **unmapped** drops. Active or inactive mapped drops are not polled with this command. This can be used to find drops that are on the line but have not been mapped at the host.

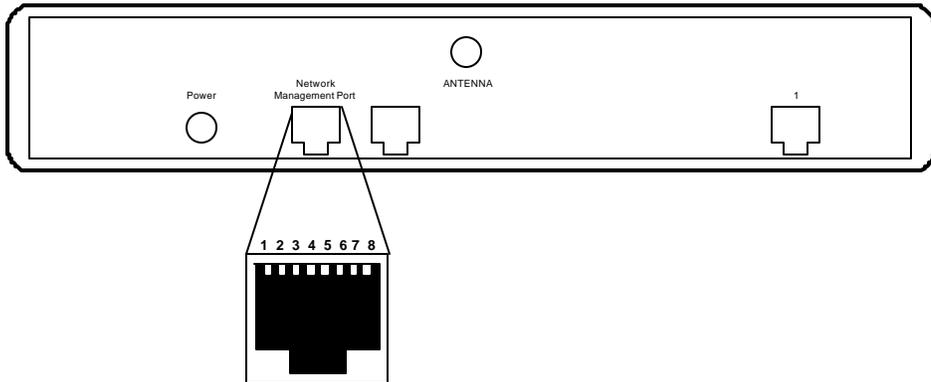
5.5.9 Reset Mux

The Reset Mux (RESET) command performs a local unit reset.

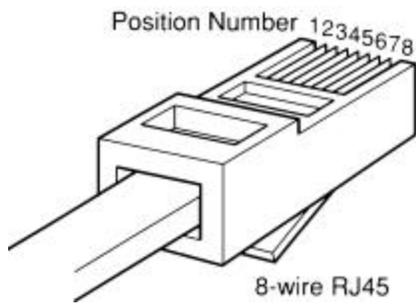
The Remote Reset (RRESET) command resets a remote drop, and requires a drop number.

6. INTERFACE SIGNALS AND CABLING

6.1 Connector Location and Pin Reference



Rear Panel and RJ-45 Jacks



RJ-45 Plug Positions

6.2 Port Interface

6.2.1 Data Port (RJ-45)

<u>Pin</u>	<u>Signal</u>	<u>In/Out</u>
1	Data Set Ready	OUT
2	Data Carrier Detect	OUT
3	Busy	IN
4	Signal Ground	
5	Receive Data	OUT
6	Transmit Data	IN
7	Clear to Send	OUT
8	Request to Send	IN

6.2.2 Network Management Port (RJ-45)

<u>Pin</u>	<u>Signal</u>	<u>In/Out</u>
1	Data Set Ready	OUT
2	Data Carrier Detect	OUT
3	Busy	IN
4	Signal Ground	
5	Receive Data	OUT
6	Transmit Data	IN
7	Clear to Send	OUT
8	Request to Send	IN

6.3 Cables

6.3.1 Data Ports to Host Computer

Configured as DTE

Unit RJ-45	Computer DB-25
1	6
2	8
3	20 (or other flow control output pin)
4	7
5	3
6	2
7	5 (or other flow control input pin)
8	4 (or 20 if 4 is flow control)

Configured as DCE

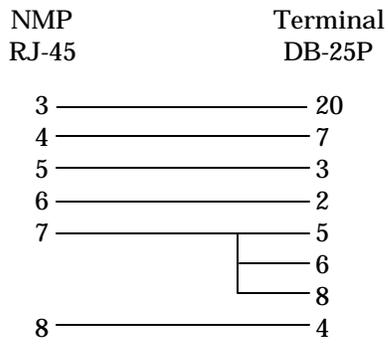
Unit RJ-45	Computer DB-25
1	
2	20 (or 4 if 20 is flow control)
3	5 (or other flow control output pin)
4	7
5	2
6	3
7	4 (or other flow control input pin)
8	8

To a PC Com Port

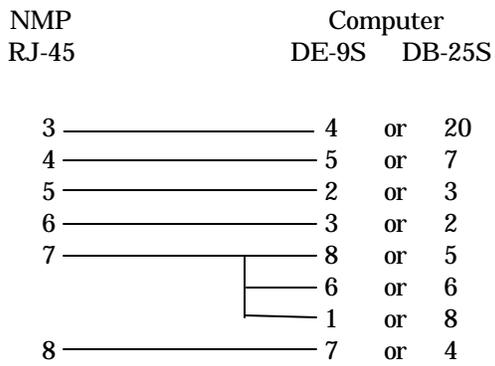
Unit RJ-45	Computer DB-25S DE-9S	
1	6	or 6
2	8	or 1
3	4	or 7
4	7	or 5
5	3	or 2
6	2	or 3
7	5	or 8
8	20	or 4

6.3.2 Network Management Port

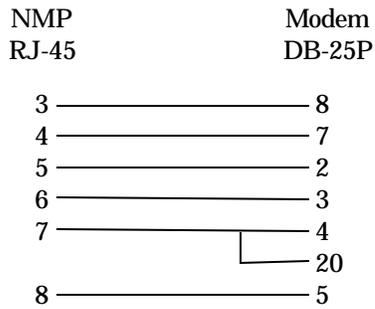
To a TERMINAL



To a PC using terminal emulation



To a dial-up MODEM for remote access



7. TROUBLESHOOTING

7.1 General Approach

When troubleshooting problems, a rational plan can save you many hours of frustration. The following is a brief outline of standard troubleshooting procedures.

1. Gather the facts to determine the exact nature of the problem.
2. Draw a picture of the system showing the equipment at both the host and remote ends and the phone lines or in-house wiring. Use this as a reference to note your observations, test steps and test results. A picture keeps you focused and often saves duplicate effort.
3. Record the front panel indications before changing anything. This is an important part of fact gathering
4. If you change anything, change only one thing at a time.
5. Use the built-in test functions, especially the loopback tests and record your results.

7.2 Loopback Tests

It is best to begin loopback testing at the remote terminal and work toward the host. If all the loopbacks are successful, the data communications equipment and the terminal are working correctly.

Put the remote unit port in loopback and have someone type alpha characters on the keyboard of the affected terminal. If the characters appear correctly on the screen, the port is working. Next loop the associated port of the host unit. If characters again appear correctly, the communications link and the ports on both units are working correctly. The problem then is with the host computer port or the cable between the host computer and the unit.

Port loopbacks can be turned on and off from the Network Management port.

7.3 Installation Troubleshooting, Modems or DSUs

First, set up the Modems or DSUs without connecting the units. If DSUs are used they should be set to constant carrier, also called forced Request To Send, or constant RTS.

Carrier Detect should be ON at both locations.

7.4 Installation Troubleshooting, Multiplexers

Before trying terminals, make sure the multiplexers are able to “see” each other. Use the RTY command to verify a response from the remote multiplexer. If you get a correct response to RTY, the link is up and the multiplexers are communicating.

7.5 Installation Troubleshooting, Terminals

Terminal problems typically fall into four categories:

1. The terminal or printer gets no data
2. The terminal or printer gets “garbage” data
3. Blocks of data are lost
4. Terminals or printers seem to “hang”.

When a terminal gets no data, check to see the cables are wired correctly and that flow control is set properly.

If the terminal gets “garbage” data, check the speeds of the host and remote units, the terminal and the computer ports to make sure they match.

Blocks of data are lost most often when data is sent to a printer or a lot of data is being displayed on a terminal. Most of these problems are due to flow control not matching between the printer or terminal and the local port.

If terminals and printers work for a while and then “hang”, check the flow control settings. When Xon/Xoff flow control is set to a different parity on the unit than on the terminal or printer, the result is either a “hung” device that is flow controlled off but never back on, or a device that is never flowed off causing buffer overflow and lost data.

7.6 Assistance

If you need assistance troubleshooting your system, contact DCB customer support at (217) 897-6600 between 8:00 am and 5:00 pm central time Monday through Friday.

8. WARRANTY

DCB products are warranted to be free of defects in materials and workmanship for two years. Data Comm for Business will repair or replace any equipment proven to be defective within the warranty period. All warranty work is F.O.B. Dewey, IL. This warranty is exclusive of abuse, misuse, accidental damage, acts of God or consequential damages, etc. DCB liability shall not exceed the original purchase price.

All equipment returned for repair must be accompanied by a Returned Material Authorization (RMA) number. To receive an RMA number, call (217) 897-6600 between the hours of 8 AM and 5 PM central time. Equipment must be shipped prepaid to DCB and will be returned at DCB's expense.

Ship returned items to:

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