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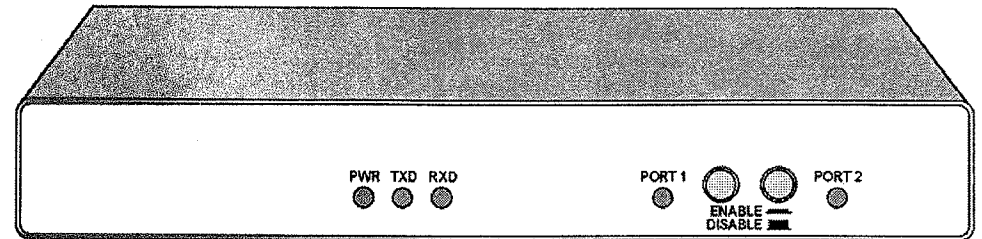


APRIL 1999  
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## Multiport Modem Sharing Device, 2-Port



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

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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 J 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.

# Contents

Chapter	Page
1. Specifications .....	6
2. Introduction.....	7
2.1 Overview.....	7
2.2 Features .....	7
2.3 Performance .....	7
3. Installation .....	9
4. Switch and Strap Options .....	10
4.1 Port Enable/Disable Switches (S1 and S2) .....	10
4.2 Master Port DCE/DTE (S3 and S4) .....	11
4.3 Clock Source (S5-1, -2, and -3) .....	11
4.4 Data Carrier Detect (S5-4) .....	12
4.5 JP1 - Port Data Carrier Detect .....	12
4.6 JP2 - Port TXD.....	13
4.7 JP3 - Signal & Chassis Ground Jumper .....	13
5. Applications .....	14
5.1 Modem Sharing.....	14
5.2 Port Sharing.....	15
6. User Reference .....	16
6.1 User Indicators .....	16
6.2 Digital Interface Specification .....	16
6.3 Troubleshooting .....	17

# 1. Specifications

<b>Data Format</b> —	Synchronous or asynchronous, protocol and code transparent
<b>Data Rates</b> —	<i>Asynchronous:</i> Up to 115.2 Kbps <i>Synchronous (Internal):</i> 1.2, 2.4, 4.8, 9.6, 19.2, 38.4 Kbps <i>External Master Port:</i> Up to 76.8 Kbps <i>External Sub-channel:</i> Up to 76.8 Kbps
<b>Selectable Options</b> —	Clock Source, Data Rate, Data Carrier Detect, Master port DCE or DTE, Broadcast Data, Manual Switch Enable/Disable (per sub-channel)
<b>Electrical Interface</b> —	(3) Female RS-232-D/CCITT V.24 DB25 female
<b>LED Indicators</b> —	Power (PWR), Port 1, Port 2, Transmit data (TXD), Receive data (RXD)
<b>Power Requirements</b> —	115 VAC±10%, 60 Hz @ 0.2 Amp max.
<b>Operating Temperature</b> —	50 to 120°F (10 to 50°C)
<b>Size</b> —	1.7"H x 10"W x 6.5"D (4.3 x 25.4 x 16.5 cm)
<b>Weight</b> —	3 lb. (1.4 kg)

# 2. Introduction

## 2.1 Overview

This device is an automatic two-port, RS-232/CCITT V.24 sharing device which enables two terminals to share a modem, multiplexor, computer port, or DDS circuit in a point-to-point or multipoint application. It can operate at data rates up to 76.8 Kbps synchronously or 115.2 Kbps asynchronously.

This unit provides front-panel indicators for active port, power, and data. Manual front-panel push-button switches are provided for disabling sub-channels. Standard features include clock source, data rates, automatic lockout, Master port DTE/DCE selectability, and broadcast of data and carrier for polling applications.

This unit is easily configured and installed using straight-through cables only. It can be cascaded for added flexibility without the need for crossover cables.

## 2.2 Features

- Operates with DDS, dial or leased-line modems.
- Master port is DCE or DTE selectable.
- Internal data rates up to 38.4 Kbps.
- Internal or external clock.
- Front-panel Enable/Disable switches.
- Cascadable.

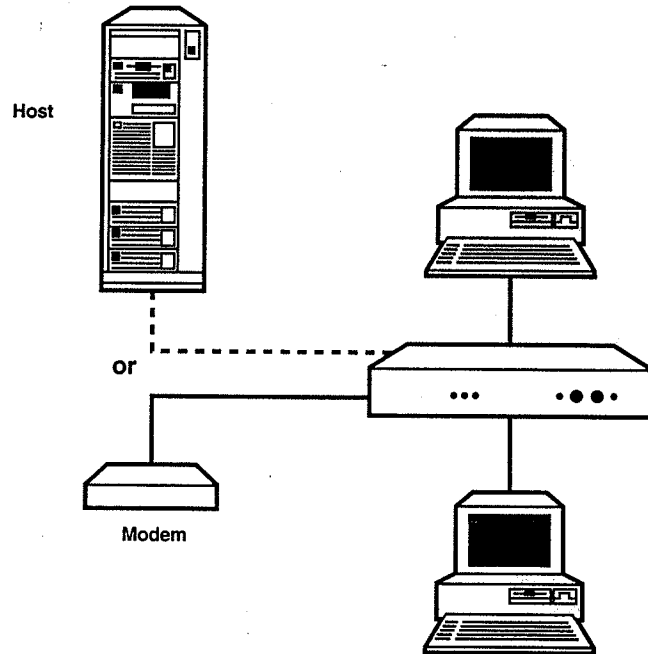
## 2.3 Performance

This sharing device automatically switches between RS-232/CCITT V.24 interface ports in polling and non-polling applications. For polling applications, terminals or controllers contend for the master by raising the Request to Send control lead. (Note that Data Terminal Ready, DTR pin 20, also needs to be active from the device contending for the master port.) Clear To Send (CTS) is sent back to the sub-channel when connected to the master port; all others are locked out until the contending port lowers RTS. The controllers or terminals need to be set for a "switched" or "half duplex" mode for proper operation. Flashing Port LEDs will indicate proper configuration. If the port LED lights constantly, then the controller is not set for "switched" or "half duplex."

For non-polling applications (for example, dial modem sharing), the sharing device supports the necessary signals for dialing and can be reconfigured to broadcast data to the sub-channel selected only. This provides a more private communication session. In this operation, the LED will light constantly. Once the session is over, software on the computer attached to that sub-channel lowers RTS, and the device is now available to others for dial modem sharing.

The clocking source for synchronous applications can be from one of three sources: external from the device connected to the master port, via pin 24 on sub-channel 1, or internal up to 38.4 Kbps.

The Master port, using an internal DCE/DTE selectable switch, can be used to connect to a computer port. This eliminates the need for crossover cables between devices. Use with straight-through cables only.



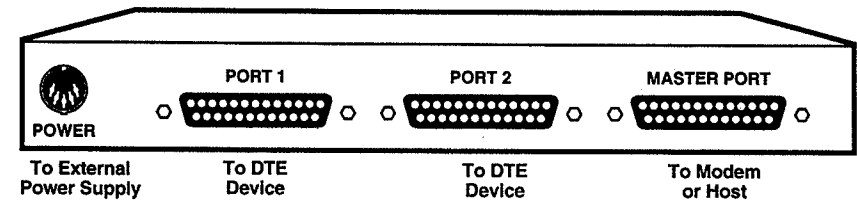
**Figure 2-1. Typical Application.**

# 3. Installation

Your sharing device is packaged in a corrugated container with a custom foam insert to ensure that the unit, external wallmount power supply, and user documentation arrive undamaged. If any of these items are missing, please notify us immediately.

To cable the sharing device, use standard straight-through cables with DB25 connectors. The sharing device handles all handshaking requirements necessary for normal operation. The cabling length for RS-232D specified circuits can be up to 50 feet. Longer cable lengths might be possible in some circumstances; call Technical Support for advice.

The Master Port is used for master modem or master system port connection. Port 1 and Port 2 are for terminals, PCs, or local control units that are to share the master port device. A circular DIN connector is also on the back panel for the external power-supply connection. There is no ON/OFF switch on the sharing device. As soon as the external power supply is plugged into any standard three-prong 15-amp outlet, the unit is on and the front-panel power LED (PWR) will light.



**Figure 3-1. Sharing Device Connections.**

## 4. Switch and Strap Options

The sharing device is quickly configured and installed. In addition to the front-panel Enable/Disable switches for the ports, the sharing device has a few internal switches and straps for specific applications.

To access the internal switches and jumper options, remove the four top-side panel screws and remove the top cover. Refer to Figure 4-1 for strap and switch locations.

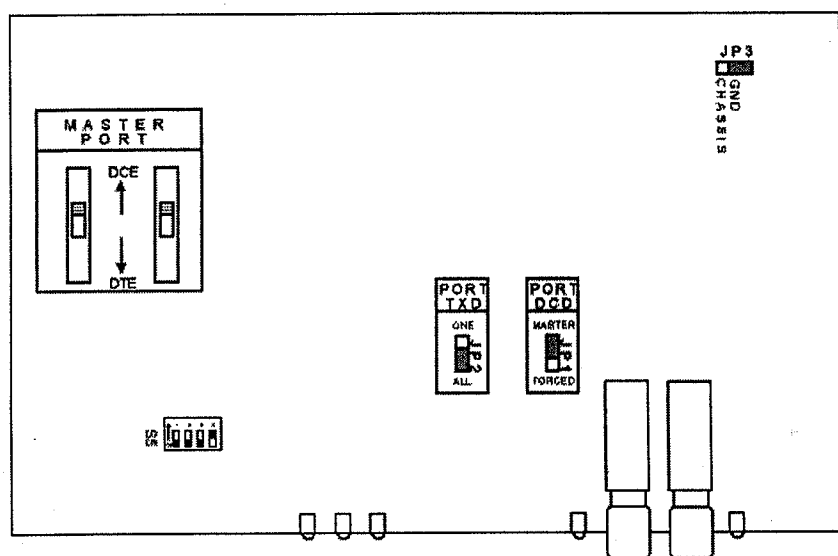


Figure 4-1. Internal Straps (Factory Settings).

Before using the sharing device, set the straps and switches that match your application. There are two sets of switches and three sets of straps to set. Remove the top cover to expose the internal straps and switches.

### 4.1 Port Enable/Disable Switches (S1 and S2)

These switches are accessible from the front panel. There is one switch for each sub-channel to manually enable or disable that specific sub-channel. If a problem occurs to a terminal, push the button of the sub-channel in question to disable that sub-channel until the problem is resolved. Disabling a bad port will not affect the other device. To enable a port, push the switch in until latched.

### 4.2 Master Port DCE/DTE (S3 and S4)

These switches determine the Master Port's configuration. Set the switches in the "TO DCE" position to connect the Master Port to a modem (DCE). Set the switches in the "TO DTE" position to connect the Master Port to a computer (DTE). (Master Port DCE/DTE is pictured in Figure 4-1.)

#### NOTE

Both switches must be set to the same position.

### 4.3 Clock Source (S5-1, -2, and -3)

When using this device in a synchronous application, a specific clock source must be identified. When the Master Port is configured for connecting to a modem (DCE), only the modem will be the clock source (pins 15 and 17). *Other options are not available.* Therefore, S5-1, -2, and -3 are not applicable. When the Master port is configured for connecting a Host computer (S3 and S4 set to "DTE"), then the following options are available:

**Master Port (DTE):** When the Master Port is configured for connecting to a terminal (DTE), timing will be accepted on pin 24 (XTXC) of the Master Port. (Note that this option is for a terminal or host that provides output clock on pin 24. *It is not intended for use with tail-circuit applications like crossover cables.*)

**Sub-channel 1:** Timing will be accepted on pin 24 (XTXC) of Sub-channel 1. (Note that this option is for a terminal or host that provides output clock on pin 24. *It is not intended for use with tail-circuit applications like crossover cables.*)

**Internal Clock:** Timing will be provided by the sharing device.

Refer to Table 4-1 for switch settings on source and available data rates.

Below are the different switch settings. When the sharing device is configured as the timing source, the unit supplies clock for all ports. This unit will present clock to pins 15 (Transmit Clock) and 17 (Receive Clock).

#### NOTE

Internal Clock option is recommended, but it can only be used when all the devices connected are DTEs.

**Table 4-1. Clock Source and Rate**

			Clock Source	
1	2	3	Internal	External
ON	ON	ON	38.4 Kbps	
OFF	ON	ON	19.2 Kbps	
ON	OFF	ON	9.6 Kbps	
OFF	OFF	ON	4.8 Kbps	
ON	ON	OFF	2.4 Kbps	
OFF	ON	OFF	1.2 Kbps	
ON	OFF	OFF		Sub-Channel 1 via pin 24*
OFF	OFF	OFF		Master (DTE) via pin 24*

\*Not recommended for tail-circuit applications

**4.4 Data Carrier Detect (S5-4)**

Some devices require Data Carrier Detect (DCD) to be active before they can raise RTS. Therefore, the sharing device provides this capability. The method of controlling the DCD depends on how S5-4 and strap JP1 is configured. With S5-4 set to the OFF position, DCD is "ON" only to the selected sub-channel. JP1 is disabled in this operation. With Switch S5-4 set to the ON position, DCD will function in accordance with JP1's strapping. JP1 and S5-4 will now broadcast the DCD to all sub-channels via the Master Port.

In a polling environment, S5-4 should be in the ON position. This satisfies controllers which require DCD to be active prior to responding to the host.

Data Carrier Detect is pictured in Figure 4-1.

**4.5 JP1 - Port Data Carrier Detect**

This strap is used in conjunction with S5-4. When the S5-4 switch is set to the ON position, the strap becomes active and DCD will be broadcast to all sub-channels. With this strap in the "FORCED" mode, all sub-channels have DCD active regardless of the modem activity. (Port Data Carrier Detect is pictured in Figure 4-1.)

**NOTE**

The "FORCED" option is recommended when the Master Port is configured for computer-port connection.

**MASTER:** All ports' DCD follows the Master Port's carrier.

**FORCED:** DCD is held high to all sub-ports.

Factory setting: MASTER

**4.6 JP2 - Port TXD**

For multiple-user access, some applications require that address polls be broadcast to all remote devices. Therefore, the sharing device can be configured to have the data broadcast to all the devices connected simultaneously or to one sub-channel. JP2 - PORT TXD jumper field is the enable or disable broadcast option. (Port TXD is pictured in Figure 4-1.)

**ONE:** In the ONE position, data received from the Master Port is transmitted only to the selected sub-channel. (A sub-channel gains access by raising RTS.)

**ALL:** In the ALL position, data received from the Master Port is transmitted to all ports at the same time. Polling applications require this to be set to the ALL position to enable all devices to hear the "Polling Sequence" and the appropriate device will gain access by raising RTS.

Factory setting: ALL

**4.7 JP3 - Signal & Chassis Ground Jumper**

This strap is provided for users requiring signal ground to be tied to chassis ground. (JP3 is pictured in Figure 4-1.)

In the GND position, Signal Ground is isolated from Chassis Ground. In the CHASSIS/GND position both grounds are tied together at that point.

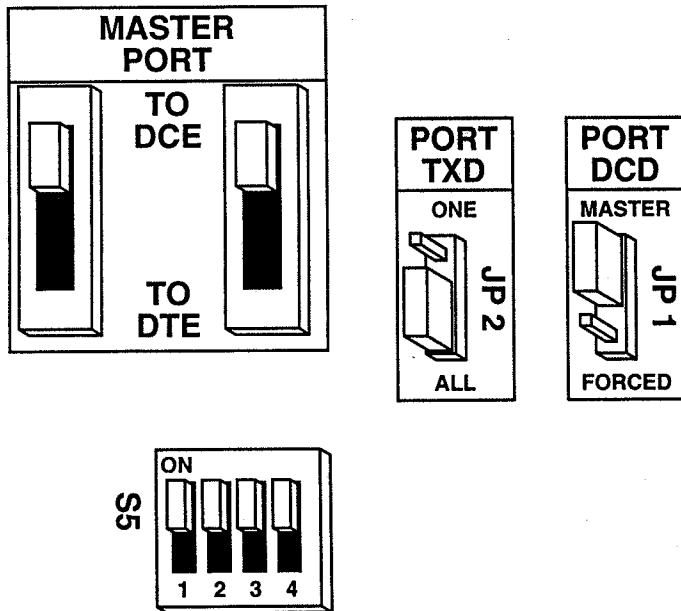
Factory setting: GND (isolated)



# 5. Applications

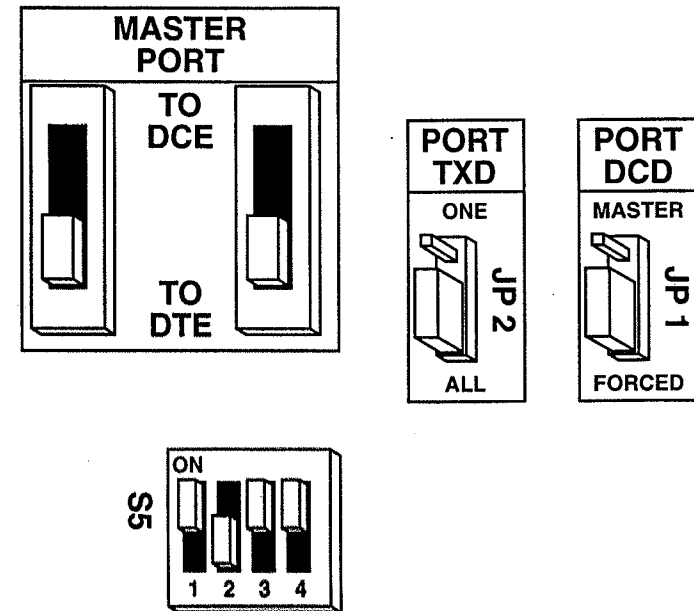
## 5.1 Modem Sharing

This example shows how to configure the sharing device for a modem-sharing application. The Master Port switches (S3 and S4) are set to the DCE position. Because the modem is providing clock, the Timing Source switches (S5-1, -2, and -3) are not applicable. With S5-4 set to the "ON" position, JP1 set to "MASTER," and TXD set to "ALL," both DCD and data will be broadcast to all sub-channels. This is the factory-default setting.



## 5.2 Port Sharing

This example illustrates internal switch settings, when the Master port is connected to a computer DTE port and the sharing device is the clock source. The Master Port switches are set to the "TO DTE" position; the bit rate selected is 9600 bps, and the sharing device provides clock source on pins 15 and 17 to all ports. The DCD switch (S5-4) is "ON" and JP1 is in the "FORCED" position, providing DCD to all sub-channels. In addition, JP2 is set to "ALL" to broadcast the polling sequence to the terminals.



# 6. User Reference

## 6.1 User Indicators

Front-panel indicators provide a visual indication of Power supplied to the unit, Transmit Data activity, Receive Data activity, and Port Status.

Table 6-1. Front-Panel LED Indicators

Label	Description	Function
PWR	Power	ON: When connected to AC source (Green).
TXD	Transmit Data	ON: To sub-channels from the master (Yellow).
RXD	Receive Data	ON: From sub-channels to the master (Yellow).
PORT n	Port 1-2	ON: Selected sub-channel port (Red).

## 6.2 Digital Interface Specification

This unit supports and complies with the EIA/TIA RS-232D/CCITT V.24 electrical specification. All sub-channel and master channel connections require only straight-through DB25 cables.

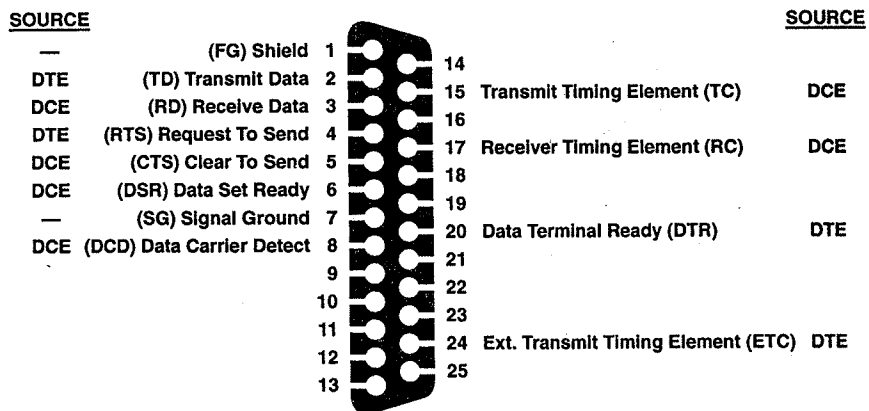


Figure 6-1. Digital Interface.

## 6.3 Troubleshooting

In the event you should have a problem, follow the suggestions listed below to correct the problem. If the problem persists, call Technical Support at 724-746-500.

Problem	Solution
Power LED is not lit.	Check to see if the outlet is functional. Check to see if the power supply is plugged into the outlet properly. Is the power connector seated correctly?
Terminal/Controller does not communicate.	Verify that the DB25 cables support pins 1 through 8, 15, 17, and 20. Are all cables connected to their respective ports? Verify that the front-panel switches are enabled. Verify that the modem link is operational (DCD active). Verify that the application is either async or sync. Verify that DTR pin 20 is active on the controller. Verify that S5-4 is switched to the ON position.
One Controller always has the link (one port is constantly lit).	Controller isn't properly configured. Controller must be set for multipoint and/or half duplex. Request To Send (RTS pin 4) must be able to Switch ON and OFF.
The controller works with the modem, but not with the sharing device.	Verify that the cable supports pins 1 through 8, 15, 17, and 20. Verify that the controllers' address is in the polling sequence from the Host. Verify that the equipment interfaces are electrically RS-232 compatible.* Verify that RTS pin 4 and DTR pin 20 are active from the controller. Verify that the front-panel switch is enabled.

\*Not all DB25 connectors are electrically RS-232 compatible. Refer to equipment manuals for verification.