SNA Spoofer

FEDERAL COMMUNICATIONS COMMISSION
RADIO FREQUENCY INTERFERENCE STATEMENT

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 required 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 the Canadian Department of Communications."

"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 édicté par le ministère des Communications du Canada."

TRADEMARKS
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Contents

1.0 Specifications

Link Format —   DLC, Async

Link Rate —   1200, 2400, 4800, 9600, 14,400, 19,200, 28,800, and 38,400 bps

SNA Format —   NRZ, NRZI, Auto Detect

Interfaces —   RS-232/V.24, DTE, DCE, auto-configurable

EIA Control —   Constant, variable, auto-configurable

DSR/DTR Toggle —   Disable, enable, auto-configurable

Number of PUs —   16

Frame Size —   Supports SDLC frames with a maximum size of 1024 bytes, and a window of up to 7 frames. Frame size between SNAPS and the DVI interface is fixed at 256 bytes. Frame fragmentation is the responsibility of SNAPS.

Compression Type —   Huffman (enable/disable)

SNA Line Speed —   1200, 2400, 4800, 9600, 14,400, 19,200, 28,800, 38,400, 56,000, 57,600, and 64,000 bps

Line Turnaround Delay —   0 to 2000 milliseconds in 50-millisecond steps

Display —   Single, tristate LED which displays power, diagnostics, and data activity

Power —   Input: MT825A — 115 VAC;
                         MT825AE — 230 VAC
                         Output : 9 VDC, 300 mA

Size —   3.5"H x 2.2"W x 0.75"D (8.9 x 5.6 x 1.9 cm)

Weight —   1 lb. (454 g) , including cable

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

**Storage
Temperature —**   -40° to +158°F (-40° to 70°C)

Humidity —   0 to 95% non-condensing

2.0 Introduction

The SNA Spoofer is an intelligent device designed to provide local polling for IBM® SNA applications for either the host (FEP) or controller (CPU), using a network to channel the SNA traffic. Prior to transmission all control frames are removed from the SNA stream, leaving only information frames. And the information frames themselves are compressed prior to transmission, further reducing the bandwidth load on the network (see Figure 2-1).

The SNA Spoofer may be connected to any other device that provides link support, such as a modem or multiplexor.
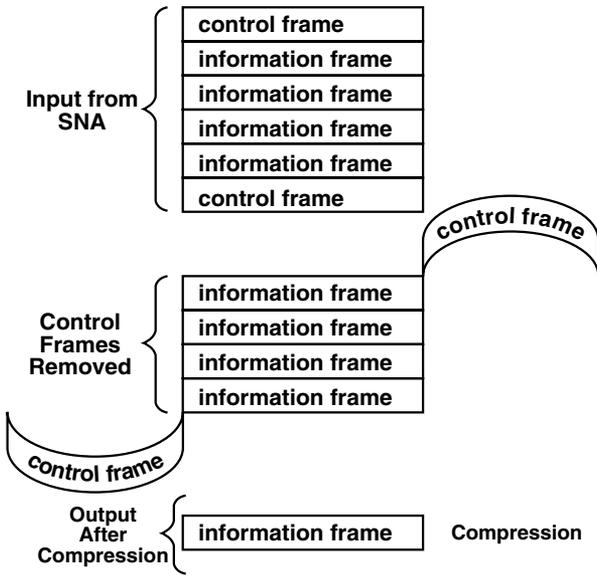
Figure 2-1. How the SNA Spoofer Works.

2.1 Power Source

When connected to any device, power is obtained from an external power supply. Refer to Chapter 3 for details.

2.2 Features

In addition to bandwidth reduction, the SNA Spoofer incorporates the following features:

- **Error Detection and Retransmission** are performed by the SNA Spoofer.

- **Auto Host/Controller Detection.** The SNA Spoofer can differentiate between an IBM host or controller (FEP or CPU) it is connected to, so that the user need not reconfigure when changing sides.

- **Auto NRZ/NRZI Detection.** With this feature enabled, the SNA Spoofer will match the type of data code/encode used by the interfacing IBM unit.

- **Auto DCE/DTE Interface Detection.** With this feature enabled, the SNA Spoofer monitors the connected device for the presence of a clock. If there is a clock, the device is assumed to be a DCE, and the SNA Spoofer will function as a DTE. If there is no clock present the SNA Spoofer will function as a DCE, providing both the Tx and Rx clocks.

- **Auto DSR/DTR Toggle.** Some SNA controllers monitor the DSR/DTR control signal for a low-to-high transition that signifies a reset or power up. The SNA Spoofer will automatically provide such a transition on the proper control signal (DSR when DCE configured, DTR when DTE configured).

- **Auto Controller Address Detection.** With this feature enabled, the SNA Spoofer keeps track of the CPU addresses by building and maintaining a CPU address table.

2.3 Configuration

The SNA Spoofer comes with a floppy disk that contains the application software. Part of the application software includes a set of default parameters designed to meet most requirements. In case you need to modify the default values, you may do so with the help of a utility program provided for that purpose. Refer to Chapter 3 for details.

3.0 Installation

3.1 Unpacking

Unpack and visually inspect the equipment. Report any physical damage to the shipping carrier. Save the packing material. You will need it if you wish to return the unit for update or repair.
Check the contents of the equipment against the packing slip.

Verify that you have received the following (see Figure 3-1):

- SNA Spoofer with host/controller interface cable.

- One external power supply with cable. (Models 1000S/M/232/D and 1000S/G/232/D only.)

- Diskette

- DCE-to-DTE Converter (optional).
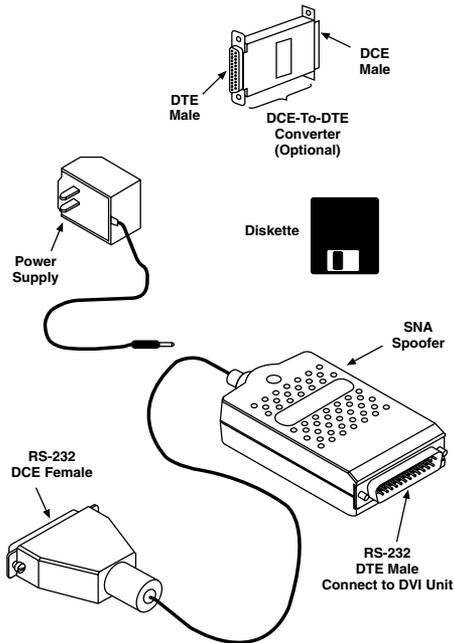
Figure 3-1. Items Shipped with the SNA Spoofer.

3.2 Power Source

When connected to any general device, a nominal +10 volt @ 150 milliampere power must be supplied from an external source, and connected to the power connector on the SNA Spoofer (see Figure 3-2).

North American models are shipped with a 120-volt wall-mounted external power supply rated at +9 volts DC @ 300 mA.

International models require an external power supply with appropriate AC input voltage, and with a nominal output voltage equivalent to the North American power supply. The output connector must be of the barrel type, and with dimensions as shown in Figure 3-2. It must be approved by the appropriate safety agency of the country where the equipment is operated in.
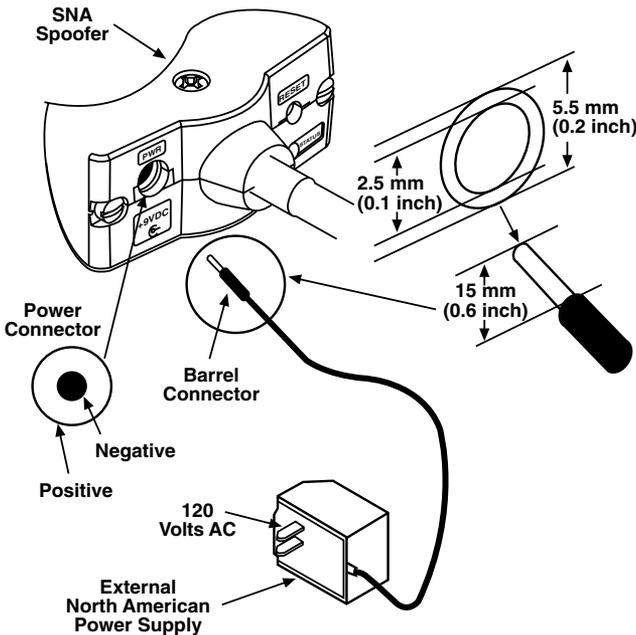
Figure 3-2. Cable and Power Connectors.

3.3 Installation Procedure

3.3.1 SELECTING AN INSTALLATION SITE

Due to the relatively small size of the SNA Spoofer, the installation site is determined by the location of the equipment that interfaces with it. Allow enough space for easy cable access and unobstructed air flow from the sides of the unit.

3.3.2 INTERFACE CONNECTIONS

As shown in Figure 3-3, the SNA Spoofer has two data interfaces. One data interface is a 15-foot (4.6 m) cable terminated at one end in an RS-232 female DCE connector that connects to an SNA host or controller. Pin assignments for this connector are shown in Figure 3-4. A DCE-to-DTE connector is provided to allow the SNA Spoofer to be
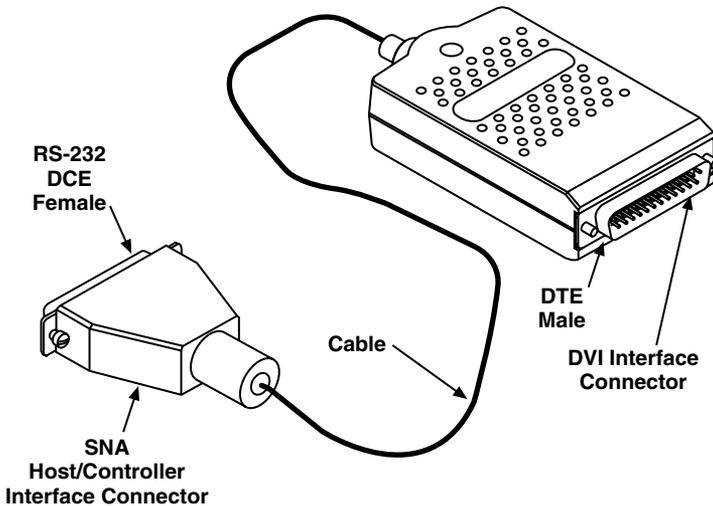
Figure 3-3. Data Interface.

DCE Female

FGND	1	
TD	2	←
RD	3	→
RTS	4	←
CTS	5	→
DSR	6	→
GND	7	→
DCD	8	→
UA	11	←
TXC	15	→
RXC	17	→
ERXC	18	←
DTR	20	←
RI	22	→
ETXC	24	←
BO	25	←
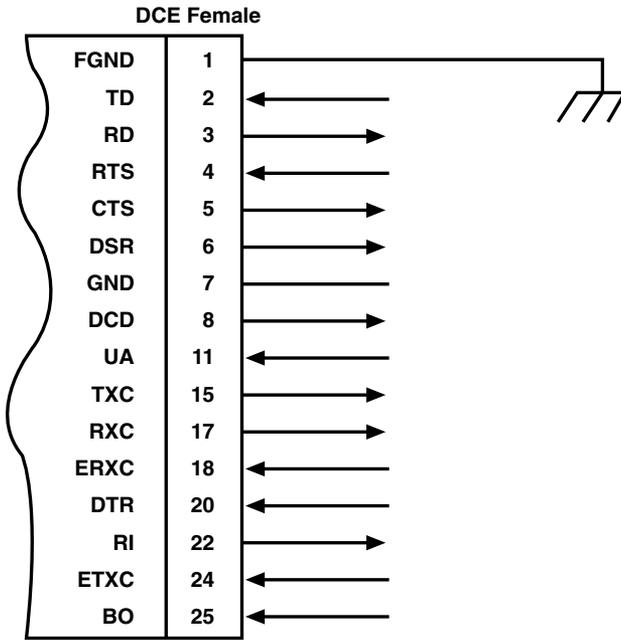
Figure 3-4. SNA Interface Cable Pin Assignments.

connected to a DTE-type SNA interface. Pin assignments for the converter are shown in Figure 3-5.

DTE (Male)		DCE (Male)	
1	→	1	FGnd
3	→	2	TD
2	←	3	RD
8	→	4	RTS
11	←	5	CTS
20	←	6	DSR
7	→	7	GND
4	←	8	DCD
5	→	11	UA
18	←	15	Tx Clock
24	←	17	Rx Clock
15	→	18	External Rx Clock
6	→	20	DTR
25	←	22	RI
17	→	24	External Tx Clock
22	→	25	Busy
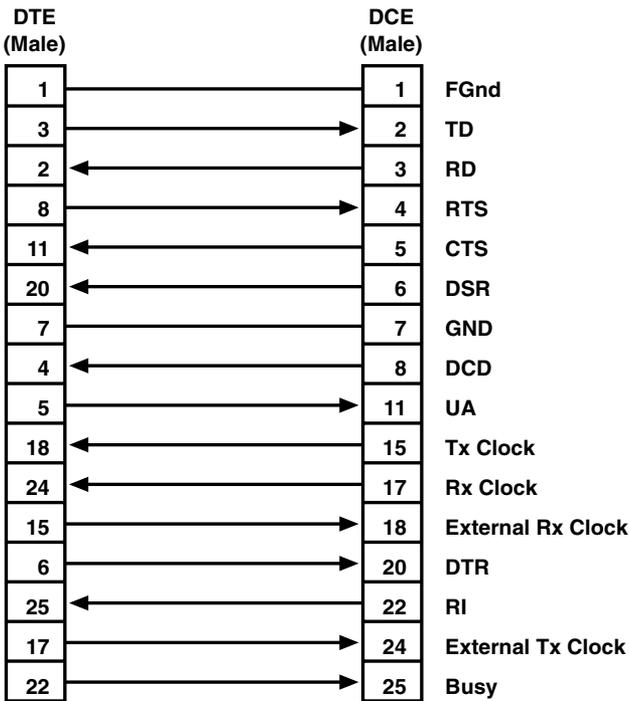
Figure 3-5. DCE-to-DTE Converter Pinouts.

4.0 Operation

[This section contains information related to the operation of the SNA Spoofer.

4.1 Connectors, Switches, and Indicators

The connectors, switch, and indicators on the SNA Spoofer are shown in Figure 4-1. Their functions are as follows:

1. External power connector. When the SNA Spoofer is connected to something other than a general device, this connector serves as a receptacle for power obtained from an external power supply. It is also used to provide power to the SNA Spoofer during downline load operations.

2. The interface connector emulates an RS-232 interface. It is used to connect the SNA Spoofer to any other device that provides link support, such as a modem or multiplexor.

3. Reset switch. This pushbutton switch is used to manually reset SNA Spoofer. In addition, this switch serves as an operator control during downline load operations and hardware diagnostics.

4. Status indicator. A single, three-color LED used for providing system status. Display is a continuous cycle of four 400-millisecond time intervals. Each time interval can have one of four indicator states, as follows:

   R = Red
   G = Green
   A = Amber
   W = White (Off)

Table 4-1 describes the system status represented by each of the possible color combinations in a display cycle.
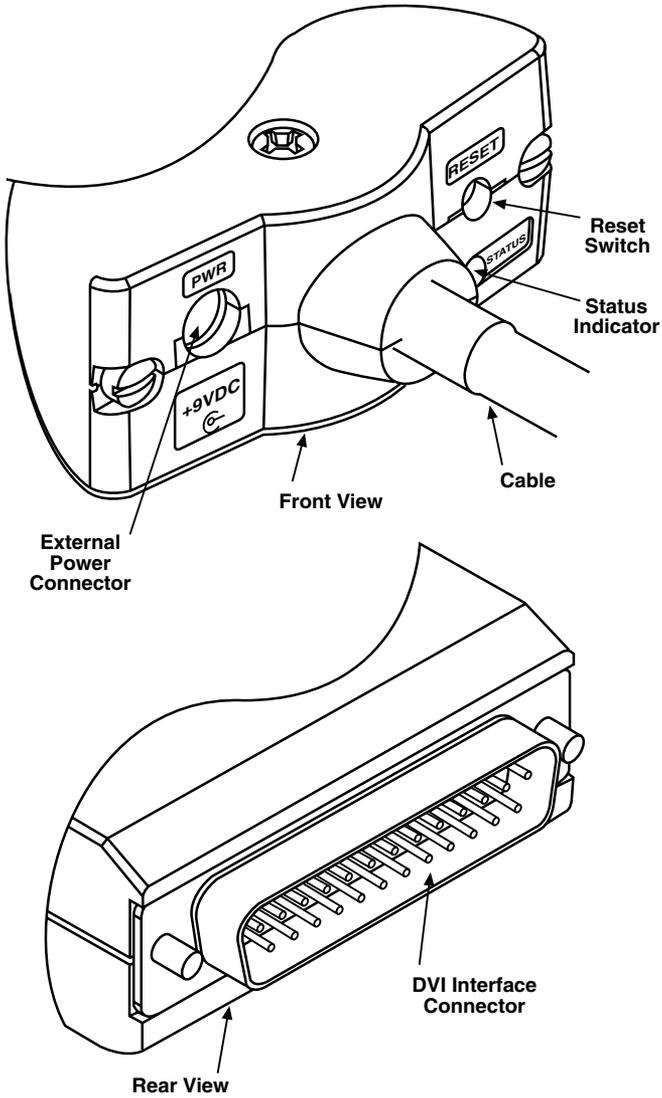
Figure 4-1. Front and Rear Views of the SNA Spoofer.

Table 4-1. Indicator Functions.

Color Combination	Description	Interpretation
WWWW	LED Off	No Power
RRRR	Solid RED	Flash EPROM (booster) checksum error
RWRW	Flashing RED	RAM test failure
GGGG	Solid GREEN	Normal operation
GWGW	Flashing GREEN	System is in downline-load mode
AAAA	Solid AMBER	Hardware component failure
AWAW	Flashing AMBER	Security test failure
GAGA	Alternating GREEN and AMBER	Downline load in progress
GGGR	Long GREEN, short RED	Local alarm
GGGA	Long GREEN, short AMBER	Remote alarm
GGGW	Long GREEN, short WHITE	Link alarm
GGRA	Alternating GREEN, GREEN, RED, AMBER	Local and remote alarms
GRGW	Alternating GREEN, RED, GREEN, WHITE	Local and link alarms
GGAW	Alternating GREEN, GREEN, AMBER, WHITE	Remote and link alarms
GRAW	Alternating GREEN, RED, AMBER, WHITE	Local, remote, and link alarms

Notes

1. Local Alarm Conditions

a. DTR/DSR is off, or Autodetect is in progress.

b. No polling from the host, or no response from the controller for 30 seconds.

2. Remote Alarm Conditions

a. No acknowledgement from the remote SNA Spoofer.

b. The network is down.

3. Link Alarm Conditions

a. DTR/DSR is low.

b. CTS is flow controlled.

4. On Power Up, under normal operating conditions the LED will change from WHITE (off) to RED then GREEN. During this time, SNA Spoofer will automatically test the following functions:

a. Verify that the boot program was successfully tested.

b. Perform a RAM test.

c. Verify that the application program was successfully tested.

5. While the operating (Reset) switch is pressed, the LED will be RED.

4.2 Operating Procedures

There are three operating procedures associated with SNA Spoofer: Reset, Downline Load, and Hardware Diagnostics. All procedures are performed from the single operating (Reset) switch (shown in Figure 4-1) and from the PC keyboard.

4.2.1 RESET

To manually reset the SNA Spoofer, with a sharp pointed object, press and release the operating (Reset) switch. Following reset, the unit will perform the same diagnostic tests as are initiated after a Power Up.

4.2.2 DOWNLINE LOAD

This procedure is used to load the applications program and configuration parameters into the local SNA Spoofer.

Equipment Required

1. A PC, configured for operation in a DOS (or Windows™) environment.

2. A diskette (supplied) that contains the applications program and a help menu.

Setup

1. Use Figure 3-2 as a guide. Disconnect the cable that normally connects SNA Spoofer to the SNA equipment, and connect it to the serial port on the PC.

2. Connect the other end of the SNA Spoofer to the external power supply.

3. Install the diskette in the PC (see Figure 4-2).

Figure 4-2. Downline Load Setup.

Downline Load Procedure

1. Press and hold the SNA Spoofer operating (Reset) switch for 6 to 15 seconds, and observe the LED indicator. While the switch is pressed, the indicator will be RED. After the switch is released, the indicator will change to GWGW.

2. On the PC:

a. Type CD /SNA Spoofer and press the ENTER key. You will enter the SNA Spoofer directory.

b. Type DOWNLOAD and press the ENTER key. The configuration menu will appear on the screen with the default values shown.

c. If necessary, modify each configurable parameter. To do that, with the arrow keys scroll to each applicable parameter, press the RETURN key, scroll to the desired parameter, then press the RETURN key.

d. Press the PgDn Key. The control menu will appear.

e. Configure the Down Load Setup parameters (Record Size, Communications Port, and Port Speed), as necessary.

f. If you have modified any of the configuration parameters in step c, or any of the download parameters in step e, select the SAVE command and press the ENTER key.

g. From the Control Comand, select the Download Command and press the ENTER key. SNA Spoofer will enter the downline load operation. Observe the LED. It will cycle through GREEN AMBER GREEN AMBER.

3. At the end of the downline load operation, the LED will display one of three possible conditions:

a. If the downline load operation and flash EPROM test were successful, the LED will first turn AMBER and then GREEN for 10 seconds. Following that, the system will automatically reset. The SNA Spoofer is now ready for operation.

b. If the downline load operation failed, the LED will immediately return to the downline mode (GWGW). Try again. If after several attempts the SNA Spoofer continues to fail, call your supplier.

c. If the downline load operation was successful but the flash EPROM test failed, the LED will turn AMBER for approximately 12 seconds. Following that, SNA Spoofer will return to the downline load mode (GWGW). Try again. If after several attempts the SNA Spoofer continues to fail, call your supplier for further instructions.

4.2.3 HELP MENU

The help menu is entered from the PC keyboard by pressing the F1 function key.

4.2.4 HARDWARE DIAGNOSTICS

The hardware diagnostics program is designed to test circuit components and the cable that connects the SNA Spoofer to the SNA equipment. No tools are required. The procedure is as follows:

1. Using Figure 4-3 as a guide, connect the loose end of the cable to the SNA Spoofer connector (INTERFACE) that normally connects to the general device.

2. Connect one end of the power supply to the external SNA Spoofer power connector, and connect the other end to a suitable power outlet.
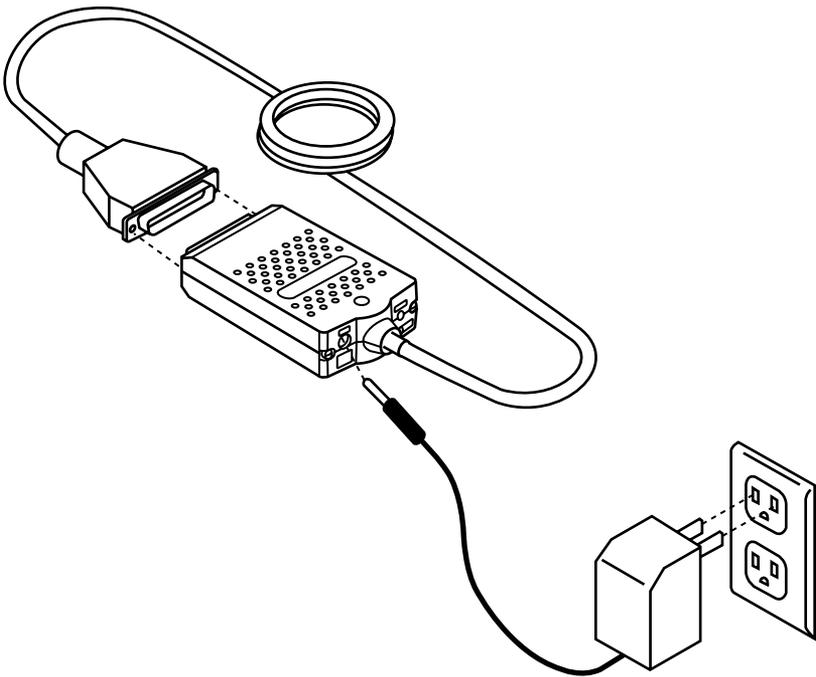
Figure 4-3. Hardware Diagnostics Setup.

3. Press and hold the operator (Reset) switch from 16 to 20 seconds and observe the LED. Interpret the LED reading as follows:

a. Slowly flashing GREEN. All tests passed.

b. LED not lit (WHITE). Power failure.

c. Solid AMBER.

- No boot program in flash EPROM.

- Bad flash EPROM.

- Refresh circuit failure.

d. If the test results are as in step b or c, call your supplier.

e. Flashing AMBER. Security failure.

f. Long GREEN followed by a number of RED intervals. Cable failure. See details in Table 4-2.

g. Long GREEN followed by 1 AMBER. Flash EPROM failed on erase function.

h. Long GREEN followed by 2 AMBERs. Flash EPROM failed on program function.

i. If the LED cycles with any other color/time combination, the switch was either not held in long enough, or the failure is not recognized by the diagnostics program.

Table 4-2. Cable Diagnostics.

Number of Red Intervals	Pin#/Signal	Cable Connection	Chan.B	State Tested
1	4/RTS	IN	OUT	OFF
2	8/CD	OUT	IN	OFF
3	4/RTS	IN	OUT	ON
4	8/DCD	OUT	IN	ON
5	20/DTR	IN	OUT	OFF
6	6/DSR	OUT	IN	OFF
7	20/DTR	OIN	OUT	ON
8	6/DSR	OUT	IN	ON
9	11/UA	IN	OUT	OFF
10	5/CTS	OUT	IN	ON
11	11/UA	IN	OUT	OFF
12	5/CTS	OUT	IN	ON
13	25/BO	IN	OUT	OFF
14	22/RI	OUT	IN	OFF
15	25/BO	IN	OUT	ON
16	22/RI	OUT	IN	ON
17	2/TXD	IN	OUT	X'AA'
18	3/RXD	OUT	IN	X'AA'
19	2/TXD	IN	OUT	X'55'
20	3/RXD	OUT	IN	X'55
21	24/ERXC-DMA0	IN	OUT	9600
22	18/ETXC-DMA1	IN	OUT	9600
23	15/TXC-DMA0	OUT	IN	9600
24	15/TXC-DMA0	OUT	IN	9600

4.3 Configuration

The following statements show how to configure synchronous and asynchronous general device channels:

4.3.1 ACCESSING THE ASYNC CHANNEL MENU

Command Facility Main Menu
(Select Option 3)

↓

Configure Local Nodes
(Select Option 2)

↓

Async Channel

↓

Prompt: ENTER NODE-ID CHANNEL # (^X TO ABORT):

↓

Typical Entry: SIMI/C1

↓

Prompt: ENTER TO NODE-ID/CHANNEL # (^X TO ABORT):

↓

Typical Entry: MPARK/B2

```
ASYNC CHANNEL
1.CHANNEL CHARACTERISTICS
2.CHANNEL FEATURES
3.EXTENDED FEATURES
4.SWITCHING PARAMETERS

CR - ACCEPT ENTRY
M - MAIN MENU
ENTRY:
```

4.3.2 CONFIGURING THE ASYNC CHANNEL

```
1.CHANNEL CHARACTERISTICS [node
id/ch #]
   1.DATA RATE [SAME AS SPOOFER]
   2.CODE LEVEL            [8]
   3.PARITY             [NONE]
   4.STOP BIT              [1]
   5.ECHO                [OFF]
   6.CHANNEL END     [TERMINAL]
   7.XON CHARACTER        [-]
   8.XOFF CHARACTER       [-]
   9.BUFFER CONTROL      [CTS]
   10.FLOW CONTROL      [NONE]
   11.CR DELAY            [0]
   12.LF DELAY            [0]
   13.FF DELAY            [0]

CR - ACCEPT ENTRY
M - MAIN MENU
P - PREVIOUS MENU
ENTRY:

2.CHANNEL FEATURES [node id/ch #]
   1.PRIORITY             [-]
   2.EIA CONTROL     [ENABLE]
   3.SMOOTH SCROLL      [OFF]
   4.TANDEM              [NO]
   5.FLOW CONTROL STRIP  [PASS]
   6.HP ENQ/ACK          [NO]
   7.SYNC LOSS DISCONNECT  [NO]
   8.COMMAND MODE
   ENTRY SEQUENCE     [^XBREAK]
   9.COMMAND MODE ACCESS[ENABLE]
   10.COMMAND FACILITY MAIN MENU
                     ACCESS
[-]
   11.LOCAL CHANNEL
   CONFIGURATION         [-]

CR - ACCEPT ENTRY
M - MAIN MENU
P - PREVIOUS MENU
```

```
ENTRY:
3.EXTENDED FEATURES  [node id/ch
#]
   1.DATA COMPRESSION       [-]
   2.REMOTE CTS CONTROL[FORCE ON]


CR - ACCEPT ENTRY
M - MAIN MENU
P -  PREVIOUS MEN
ENTRY:

4.SWITCHING PARAMETERS [node
id/ch#]
   1.CONNECT PROTOCOL[DEDICATED]
   2.UNBALANCED RATE        [-]
   3.CALL INHIBIT          [NO]
   4.RECEIVE INHIBIT       [NO]
   5.CHARACTER SET       [ASCII]
   6.MATRIX SWITCHING   [ENABLE]
   7.RESOURCE CLASS         [-]
   8.DESTINATION NODE/CLASS [-]
   9.CHANNEL PASSWORD       []

CR - ACCEPT ENTRY
M - MAIN MENU
P - PREVIOUS MENU
ENTRY:
```

4.3.3 ACCESSING THE SYNC CHANNEL MENU

To access the sync channel menu, follow the same steps given for accessing the async channel menu, with one exception: From the Configure Local Nodes Menu, select Option 3 instead of Option 2.

4.3.4 CONFIGURING THE SYNC CHANNEL

For DLC protocol, the sync channel must be configured as follows:

```
SYNC CHANNEL CHARACTERISTICS
[node id/ch #]
  1.DATA RATE       [1200-64000]
  2.CHANNEL CLOCKING
      [TX INTERNAL/RX INTERNAL]
  3.MAXIMUM TRANSMIT
  BLOCK SIZE              [512]
  4.MAXIMUM RECEIVE
  BLOCK SIZE              [512]
  5.INTERFACE TYPE    [TO DTE]
  6.CARRIER MODE          [-]
  7.ENCODING            [NRZ]
  8.IDLE FILL           [-]]
  9.BUFFER CONTROL      [CTS]
  10.CLOCK FLOW CONTROL  [NONE]
  11.DSR CONTROL         [-]
  12.PRIORITY            [-]

CR - ACCEPT ENTRY
M - MAIN MENU
P - PREVIOUS MENU
ENTRY:
```

For TDM protocol, the sync channel

must be configured as follows:

```
SYNC CHANNEL CHARACTERISTICS
{node id/ch 3]
  1.DATA RATE       [1200-64000]
  2.CHANNEL CLOCKING
      [TX INTERNAL/RX INTERNAL]
  3.INTERFACE TYPE     [TO DTE]
  4.SYNC CHARACTER        [FF]
  5.DSR CONTROL           [-]

CR - ACCEPT ENTRY
M - MAIN MENU
P - PREVIOUS MENU
ENTRY:
```

4.4 Other Applications

In general, the SNA Spoofer is will suited to support communications between an AS/400® Host Mainframe and a 3270 or 5250 Remote Controller, and between an AS/400 Host and another AS/400 Host, provided that the SDLC lines are set as follows:

1. **Line Type or Category of Line:** Set to SDLC. The SNA Spoofer will interface only with IBM SDLC, Synchronous Data Link Control lines.

2. **Data Line Role:** Set to *PRI or *SEC. The *NEG option is not recommended because it may result in erratic startup.

3. **Physical Interface:** Set to RS-232/V24. An external mains powered connector can be alternately used for an RS-232/V24 physical interface.

4. Applications which use Modulo 128 must be reconfigured to Modulo 8.

5. Since the SNA Spoofer is a physical DCE, a crossover cable must be installed if you are going to connect the SNA Spoofer to another DCE device.

6. **Connection Type:** Set to *NONSWTPP, *SWTPP, or *MP. *MP implies that more than one Remote Workstation Controller is configured. In this case, the SNA Spoofer supports up to 16 CPUs.

7. Maximum frame size supported by the SNA Spoofer is 1024 data bytes.

5.0 Applications
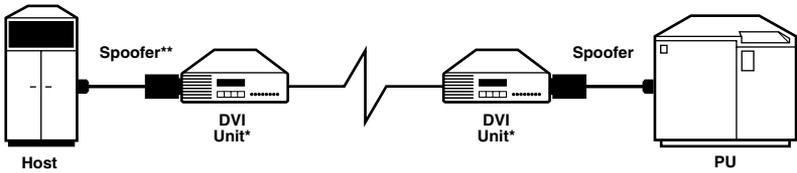
* DVI unit may be replaced by an asynchronous X.25 PAD, modem multiplexer, or similar device.

** Use Auto PU Address Detection

Figure 5-1. Single-Line, Single-Link Application.
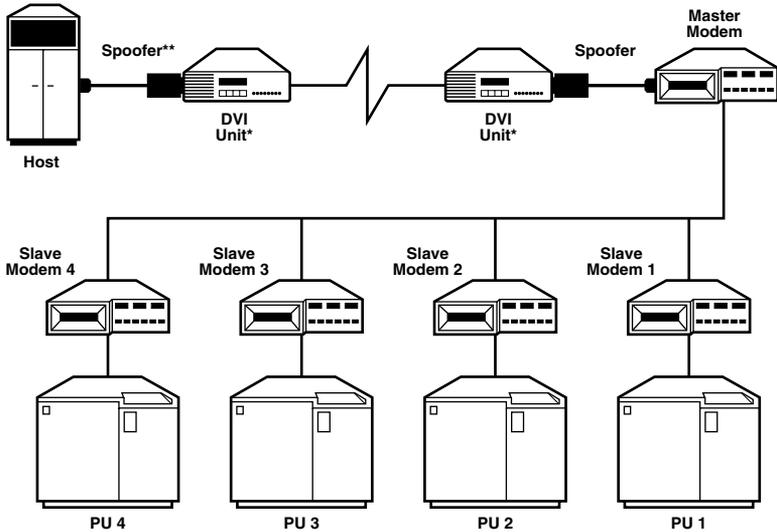
* DVI unit may be replaced by an asynchronous X.25 PAD, modem multiplexer, or similar device.

** Use Auto PU Address Detection

Figure 5-2. Single-Line, Remote Multidrop Application.
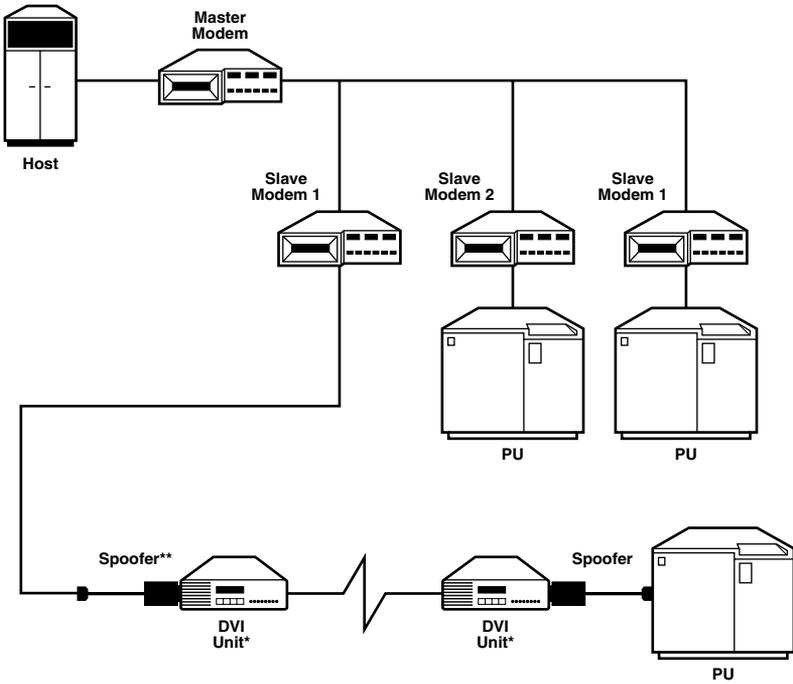
Figure 5-3. Multidrop With Remote Access Application.
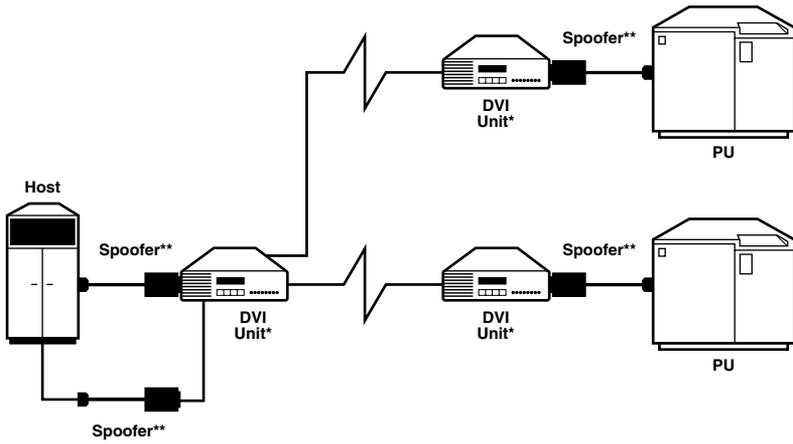
Figure 5-4. Two-Line Star Application.
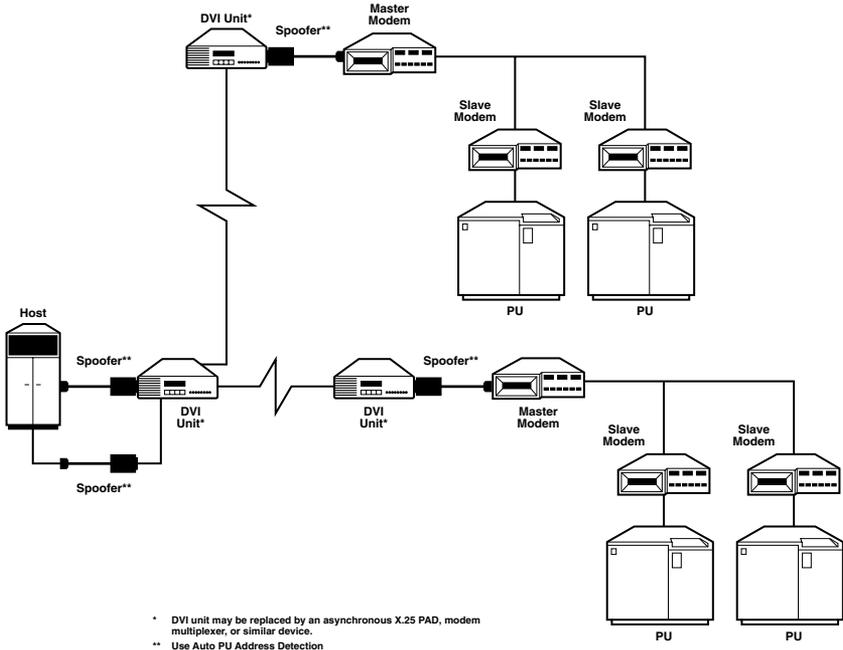
Figure 5-5. Two-Line Star With Remote Multidrop Application.

BLACK BOX
NETWORK SERVICES