PARADYNE™

FrameSaver® SLV
Network Access Module (NAM)
Installation Instructions

Document Number 9000-A2-GN1J-30

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Complete documentation for this product is available at **www.paradyne.com**. Select *Library* → *Technical Manuals* → *FrameSaver Frame Relay Devices.*

Select the following document:

9128-A2-GB20
FrameSaver SLV 9126/9128 User's Guide

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Before You Begin

Make sure you have:

- ❑ A small, flat-blade screwdriver.
- ❑ A small, Phillips screwdriver if installing an ISDN PRI DBM.
- ❑ *FrameSaver SLV ISDN Dial Backup Module (DBM) Installation Instructions* (Document No. 9000-A2-GN19) if installing an ISDN PRI DBM.

  If a FrameSaver NAM with DBM is being replaced, the DBM must be transferred to the replacement NAM.
- ❑ Configuration information for the FrameSaver unit being installed or replaced.

❑ Appropriate cables:

- — DSX cable
- — Data port cables
- — COM port-to-terminal or COM port-to-PC cable
- — Modem cable

See the User's Guide for additional information on:

- *Troubleshooting*
- *Cables, Connectors, and Pin Assignments*
- *Technical Specifications*
- *Equipment List*

Package Checklist

Verify that your package contains the following:

❑ FrameSaver SLV NAM

❑ NAM I/O card

❑ T1 network cable

❑ ISDN PRI cable, if applicable

❑ *FrameSaver SLV 9126/9128 Quick Reference* (Document No. 9128-A2-GL10)

Visit the Paradyne World Wide Web site at **www.paradyne.com** to register your warranty. Select *Service & Support → Warranty Registration.*

Safety Instructions

Please refer to the *EMI Warnings* and *Important Safety Instructions* beginning on page 24.

⚠ HANDLING PRECAUTIONS FOR STATIC-SENSITIVE DEVICES

This product is designed to protect sensitive components from damage due to electrostatic discharge (ESD) during normal operation. When performing installation procedures, however, take proper static control precautions to prevent damage to equipment. If you are not sure of the proper static control precautions, contact your nearest sales or service representative.

496-15149

Installing the I/O Card

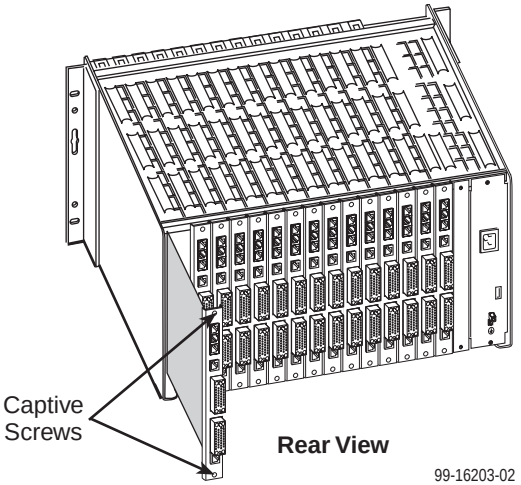
The NAM's I/O card provides the network, DSX, DBM, modem, DTE and COM port connections. The I/O card inserts directly behind the NAM that it supports in the access carrier.

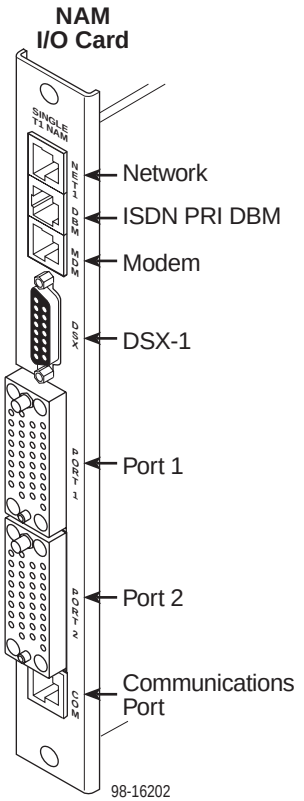
1. Remove the I/O card from the shipping box.

To avoid damaging the card, handle by the top and bottom edges only.

2. At the rear of the carrier, align the I/O card with the upper and lower tracks of the slot.

Push gently toward the midplane until it stops and the card cannot be pushed any further.





3. Using a small, Phillips screwdriver, alternately tighten the captive screws until they are all snug.

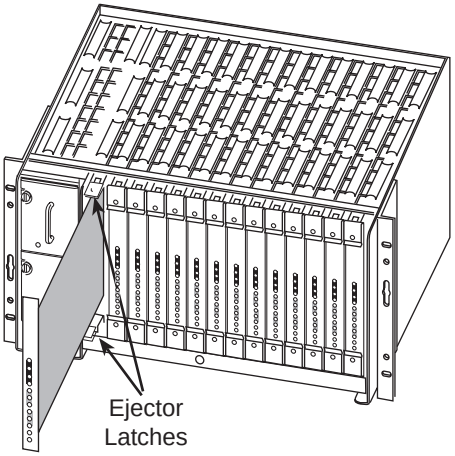
Installing the NAM into a Multislot Housing

The illustration shows the 14-slot access carrier as the housing.

CAUTION:

Be sure that you install the NAM in the correct slot so that it mates with its matching I/O card. Otherwise, you could damage your card.

1. Remove the NAM from the shipping box. Handle only by the top and bottom edges to avoid damaging the card.
2. At the front of the carrier, align the NAM with the upper and lower tracks of the appropriate slot.
3. Slide the NAM into the tracks until it seats with the midplane connectors. Use care not to force the card or bend any pins.
4. Close the carrier's upper and lower ejector latches to lock the card into place, then tighten the captive screws on the ejector latches.



Front View 98-16209

Verification Check:

❑ Did the OK LED light?

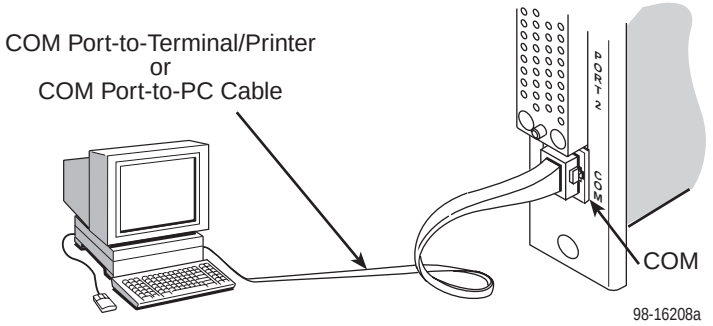
– If yes, the FrameSaver unit has power.

– If no, refer to *Troubleshooting* in the User's Guide.

Connecting the COM Port to an Asynchronous Terminal

The FrameSaver unit must first be directly connected to a VT100-compatible asynchronous terminal or a PC providing VT100 terminal emulation to set up access and management of the unit.

1. Configure the VT100-compatible async terminal or PC to be compatible with the FrameSaver unit:
   - COM Port in use by your PC: COM1 or COM2
   - COM Port Baud Rate is set to 19.2 kbps
   - Character length is set to 8 data bits
   - Parity is set to none
   - Stop bit is set to 1
   - Flow Control is set to None
2. Insert the 8-pin end of the cable into the COM port for the appropriate slot.
3. Insert the other end of the cable into the VT100-compatible asynchronous terminal, PC, or async terminal providing VT100 terminal emulation to set up the unit.



4. Press Enter on the keyboard to display the Main Menu.

Verification Check:

❑ Did the Main Menu appear on the async terminal?
- If yes, continue with the installation.
- If no, recheck terminal and FrameSaver unit compatibility (see settings in Step 1), or press the Enter key.

  Refer to *Troubleshooting* in the User's Guide for additional information.

A Quick Guide to Configuration

The FrameSaver unit should operate using the default (factory-set) configuration options, except for the changes specified in these installation instructions. Refer to the following table for help to navigate through the menus.

Press the . . .	**To . . .**
Esc key	Go back one screen or menu level. To see a visual representation of the menu levels, see *Menu Hierarchy* in the Quick Reference.
Tab key, or up (↑) and down (↓) arrow keys	Move the cursor from one menu item to the next.
Enter or Return key	Complete the menu or option selection.
Spacebar	Display the next available setting when changing a configuration option. All the available settings for an option appears at the bottom of the screen.

As an example, follow these steps to go to the Configuration Edit/Display menu so you can start setting up the unit. To load a configuration for editing:

1. From the Main Menu, press the down arrow key twice so the cursor is on Configuration.
2. Press Enter to display the Configuration menu. The Load Configuration From menu appears.
3. Press Enter to select Current Configuration. The cursor is already on this selection. The Configuration Edit/Display menu appears.

This sequence of steps would be shown as the menu selection sequence:

Main Menu → Configuration → Load Configuration From: → Current Configuration

To save a configuration option change:

1. Press Ctrl-a to switch to the screen function keys area at the bottom of the screen.
2. Type **s** or **S** (Save) and press Enter. The Save Configuration To menu appears.
3. Press Enter again to save your changes to the Current Configuration.
4. Press Esc until the Configuration Edit/Display menu reappears to continue configuring the unit.

   Press Ctrl-a, type **m** (MainMenu), and press Enter to return to the Main Menu.

In the sections that follow, only the minimum option changes required are included so you will have a quick and trouble-free installation.

See the configuration option tables in the User's Guide for more information about configuration options.

Installing and Setting Up the FrameSaver SLV

To complete the installation, you must:

- Verify that self-test passed.
- Configure the FrameSaver unit.
- Connect to the network and continue configuration.
- Connect to the modem.
- Connect to the ISDN, if applicable.
- Connect to the DSX, if applicable.
- Connect to the DTE(s).
- Check the connections.

NOTE:

Follow these instructions as they are presented. The system should be configured first before connecting the cables. Otherwise, installation time will be increased.

Verifying that Self-Test Passed

Before starting to configure the FrameSaver unit, confirm that the unit passed the self-test.

1. Follow this menu selection sequence from the Main Menu, pressing Enter after each selection:

   Main Menu → *Status* → *System and Test Status*

2. Check the Self-Test Results column (in the center of the System and Test Status screen).
   - If **Passed** appears, the FrameSaver unit successfully completed the self-test.
   - If any failure messages appear, reset the unit by removing and reinserting the NAM. The unit will perform the self-test again. If the failure reappears, call your service representative for assistance.

Configuring the FrameSaver Unit

To configure the FrameSaver unit:

- Set the system clock.
- Assign the Node IP Address.
- Set up Network physical interface, and DSX-1 physical interface, if applicable.
- Enter time slot assignments, if applicable.
- Set up Data Port physical interface(s).
- Set up modem call directories if dial-out traps are desired.
- Set up management.
- Set up Automatic Frame Relay Discovery Configuration.
- Set up Automatic Backup Configuration, if an ISDN DBM if installed.

Setting the System Clock

To set up the system clock:

1. Select Date & Time.

   Main Menu → Control → Date & Time

2. Move the cursor to the first field and enter the:
   – Date in mm/dd/yyyy format (month/day/year).
   – Time in hh:mm format (hours:minutes).
3. Save the date and time.

Assigning the Node IP Address

1. Set up the node.

   Main Menu → Configuration → Management and Communication → IP Node

2. Minimally, enter the following options:
   – Node IP Address
   – Node Subnet Mask
3. Save the configuration.

Setting Up the Network and DSX-1 Interfaces

1. Select the network interface's physical configuration options.

   Configuration → Network → Physical

2. Configure the interface to match the network provider's settings.
3. Save the configuration and return to the Network menu.
4. Select Frame Relay.
5. Configure the frame relay characteristics to match the network provider's settings.
6. Save the configuration and return to the Configuration Edit/Display menu.
7. If applicable, select DSX-1.
8. Enable the interface and configure the unit to match the service provider's settings.
9. Save the configuration.

Entering Time Slot Assignments

Frame relay time slots are discovered automatically if Time Slot Discovery is enabled on the Frame Relay Network 1 Assignments screen, which is the default setting).

Configuration → Time Slot Assignment → Frame Relay Network Assignments

This feature can be disabled, if desired, so that Frame Relay-to-Network Time Slot Assignments can be manually configured.

Use the following procedure if additional network time slots need to be cross-connected to the DSX-1 interface. See *Assigning Time Slots* in *Configuration Options* of the User's Guide to read more about assigning time slots for a FrameSaver 9124, 9126, or 9128.

1. For the DSX-1 interface, select DSX-1 from the Configuration Edit/Display menu and enable Interface Status.
2. Return to the Configuration Edit/Display menu.
3. Select Time Slot Assignment, then Frame Relay Network Assignments.
4. For the DSX-1 interface, map the desired time slots to the DSX-1 interface.
   – Press the Tab key to move the cursor to the desired network interface time slot.
   – Press the spacebar until the appropriate DSX-1 channel is displayed, Frame Relay (FrameRly1) or Available. Frame Relay is the default.
   – Repeat the process until all the desired time slots have been assigned to a DSX-1 channel.
5. Save the configuration and return to the Configuration Edit/Display menu if no DSX-1 channels will be assigned to network time slots.

   If configuring DSX-to-network time slots, proceed to Step 6.
6. Return to the Time Slot Assignment menu and select DSX-1 to Network Assignments.

7. Map the DSX-1 time slots to the network time slots.
8. Save the configuration.

Setting Up Data Ports

1. Configure the physical characteristics of the port.

   Configuration → Data Ports → Physical

2. For multiport FrameSaver units, select a port.

   Helpful Hint:
   Press the spacebar to display the port number and press Enter.

3. If Port-2 will be used on a multiport unit, enable Port Status.
4. Change any options that may be necessary for the port.
5. Save any changes and return to the Data Ports menu.
6. Select Frame Relay.
7. Configure the port to match the DTE's settings, if necessary.
8. Save the configuration.

Setting Up the Modem

FrameSaver 9126 and 9128 units have an integral modem for remote management. It is already set up for dial-in access to the unit, with Port Use set to Terminal.

If using the modem for dialed IP network connectivity (SNMP, Telnet, FTP, or trap dial-out):

1. Select Modem Port.

   Configuration → Management and Communication → Modem Port

2. Minimally, change Port Use to Net Link, Save the change, and return to the Management and Communication menu.
   – Change Port Use to Net Link.
   – Assign the IP Address and Subnet Mask if it is different from the Node.
   – Change Link Protocol to SLIP, if necessary. The default setting is PPP.
3. Save the configuration.

See *Setting Up the Internal Modem* in *Setup* of the User's Guide for additional information.

If trap dial-out is desired:

1. Set up the modem call directory phone numbers.

   Main Menu → Control → Modem Call Directories

2. Select the desired Directory Number (A for Alarm, or 1–5 for an alternate trap destination if the A does not answer).
3. Enter the phone number(s). Use valid characters only:
   - ASCII text
   - B for blind dialing
   - W for wait for dial tone
   - P for pulse dialing unless B specified
   - T for tone dialing unless B specified
   - Space, underscore (_), comma (,) for a 2-second pause, and dash (–) readability characters
4. Save the phone number(s).
5. Select SNMP Traps.

   Configuration → Management and Communication → SNMP Traps

   - Enable SNMP Traps.
   - Assign SNMP Trap Managers.
   - Specify the IP address of the NMS that traps will be sent to when dialing out.
   - Select desired trap categories.
6. Save the configuration and return to the Management and Communication menu.
7. Select Dial-Out and minimally, enable Trap Dial-Out.
8. Save the configuration.

Setting Up Management

For remote sites, only SNMP management needs to be set up. For the central site, local management between the unit and the router must be set up along with SNMP management.

To set up SNMP management:

1. Select Management and Communication.
2. Select General SNMP Management.
3. Minimally, set Name 1 Access to Read/Write.
4. Save the configuration.

To set up local management at the central site unit:

1. Create a DLCI for the data port.

   Configuration → Data Ports → DLCI Records

2. Save the configuration and return to the Configuration Edit/Display menu.
3. Select Management PVC.

   Configuration → Management and Communication → Management PVC

4. Make the DLCI Record a management DLCI to create a Management PVC.

   Minimally, enter the following options for each of the DLCI Records created:

   – Name for the management DLCI.
   – Special and the IP Address for the interface if it is different from the Node IP Address.
   – Primary Link for this DLCI (i.e., the DLCI's primary destination interface).
   – Primary DLCI (i.e., the DLCI number at the other end of the PVC).

5. Save the configuration.

Setting Up Automatic Frame Relay Discovery Configuration

The default frame relay discovery mode is 1MPort. No auto-configuration occurs until the network cable is connected. If you do not want management links configured or auto-configuration, change the default setting for the FR Discovery feature.

The following table describes the difference between the various settings.

FR Discovery Mode	Description
1MPort *(Default)*	Auto-configuration is enabled, and for each DLCI discovered on the network, a multiplexed network DLCI and a standard port DLCI will be configured and connected. The multiplexed network DLCI will contain one EDLCI for management traffic (EDLCI/2), and one EDLCI for customer data (EDLCI/0). The customer data EDLCI on the network will be cross-connected to the data port DLCI.
1Port	Auto-configuration is enabled. For each DLCI discovered on the network, a multiplexed network DLCI and a standard port DLCI will be configured and connected (EDLCI/0), creating a PVC within the FrameSaver unit. No management DLCIs will be configured on the network interface.
2MPorts	■ Auto-configuration is enabled on both Port-1 and Port-2. ■ A management PVC is configured on EDLCI/2. ■ A multiplexed network DLCI containing three EDLCIs is configured for Port-1 customer data (EDLCI/0), Port-2 customer data (EDLCI/1), and management data (EDLCI/2). ■ PVC connections are configured between the network and port DLCIs.
NetOnly	Auto-configuration is enabled, DLCIs are discovered on the network interface, but no cross-connections are configured.
Disable	No frame relay discovery takes place. No DLCIs will be configured on the network interface. The user must manually configure DLCIs and PVC connections.

See *Using Auto-Configuration* in *Typical Applications* and *Setting Up Automatic Configuration* in *Setup* of the User's Guide for more information.

To change the default setting for Frame Relay (FR) Discovery:

1. Select Auto-Configuration.

   Main Menu → Auto-Configuration

2. Select another frame relay discovery mode.
3. Save the change. The **`Delete All DLCIs and PVC Connections?`** prompt will appear.
4. Make your selection, Yes or No.
5. Return to the Main Menu.

NOTE:
If auto-configuration creates a multiplexed DLCI, but a standard DLCI is needed, change the DLCI to standard from the network DLCI Records screen:

Configuration → Network → DLCI Records

Setting Up Automatic Backup Configuration

The Automatic Backup Configuration feature is used to automatically create alternate DLCI records and PVC connections on the ISDN DBM (backup) interface when there is a failure of the primary link or DLCI, or LMI is Inactive. This feature should be disabled for the central site unit, but enabled for the remote unit.

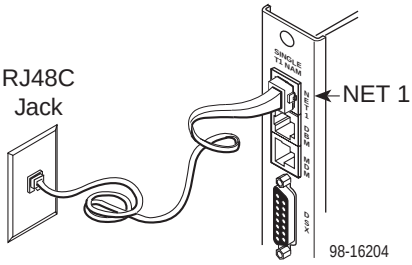
Automatic backup can be changed at any time via the Auto Backup Criteria configuration options. Specific days and times that backup will be allowed can also be specified. The following table describes what happens when Auto Backup is enabled or disabled.

Auto Backup	Description
Enable	Auto-configuration of backup is enabled and traffic is rerouted to the backup (alternate) interface when a failure occurs. The FrameSaver unit automatically enables the Alternate Link configuration option and creates an Alternate DLCI and EDLCI, and traffic is rerouted over the backup interface.
Disable *(Default)*	Auto-configuration of backup is disabled and traffic is not rerouted to the backup interface.

See *Changing the Automatic Backup Configuration* in *Setup* and *Configuring Auto Backup Criteria* in *Configuration Options* of the User's Guide for more information.

Connecting to the Network

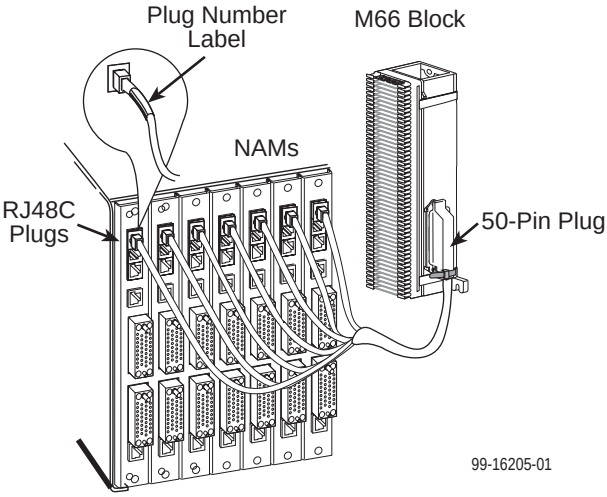
1. Insert the 8-pin connector on the RJ48C network cable into the NET interface.
2. Insert the other end of the cable into the RJ48C modular jack.



Connecting to an M66 Block

Use the optional T1 mass termination cable to connect up to seven NAMs to an M66 block. The T1 mass termination cable is a 5-foot RJ48H cable consisting of a 50-pin plug-to-seven RJ48C plugs.

1. Insert RJ48C plugs on the RJ48H network cable into up to seven FrameSaver unit NET interface(s).
2. Insert the 50-pin plug end of the cable into the M66 block.



Verification Check:

❑ Check the Network LEDs. Is the Sig (signal) LED on, and are the OOF (out of frame), and ALM (alarm) LEDs off?

– If yes, the network interface is set up correctly and is ready to pass data.

– If no, check that both ends of the network cable are properly seated, then verify that the network physical options are configured correctly.

Main Menu → Configuration → Network → Physical

❑ Check Health and Status messages in the left column of the System and Test Status screen to see the LMI status, to verify that LMI is up.

Main Menu → Status → System and Test Status

– If **`LMI Down, Network`** appears for more than three minutes, or any other network-related status message appears, refer to the status information in *Displaying System Information* of the User's Guide for possible reasons for the messages and what can be done to resolve the problem.

Setting Up the ISDN DBM

FrameSaver 9126 and 9128 units may be equipped with an ISDN DBM.

- An ISDN BRI DBM may be installed in a FrameSaver 9126, supporting up to 2 B-channels.
- An ISDN PRI DBM may be installed in a FrameSaver 9128, supporting up to 23 B-channels.

The following guidelines apply.

- Central site configuration guidelines:
  - Configure a Link Profile for each remote site.
  - Configure the unit to answer calls from the remote sites.
  - Leave Automatic Backup Configuration disabled.
  - Manually create alternate DLCIs on the ISDN Backup Link.
  - Manually specify ISDN DLCIs as alternate DLCIs for the PVC Connection after the primary DLCIs have been automatically discovered from the primary network Link LMI or manually configured.
- Remote site configuration guidelines:
  - Configure a Link Profile for the central site in the first link profile, called HQ_Site. This ensures that a backup DLCI will be created automatically on the backup link for each DLCI discovered on the network interface using the central site's link profile.
  - Configure the unit to originate calls to the central site if it is a FrameSaver 9128. A FrameSaver 9126 is already configured to originate calls.
  - Enable the Automatic Backup Configuration feature if the unit is a FrameSaver 9128. A FrameSaver 9126 already has this feature enabled.

To set up the DBM for dial backup:

1. Configure the DBM interface.

   Main Menu → Configuration → ISDN → Physical

2. Minimally, set the following configuration options:
   – Interface Status is set to Enable.
   – Originate or Answer is set to Answer for a central site, and set to Originate for a remote site.
   – Local Phone Number 1 is entered, plus the following:

FrameSaver 9126 with BRI	FrameSaver 9128 with PRI
Configure the B-channels: ■ Service Profile ID1 (SPID) ■ Local Phone Number 1 ■ Service Profile ID2 (SPID) ■ Local Phone Number 2	Configure T1 physical characteristics to match the service provider's settings. ■ Local Phone Number

3. Save the configuration and return to the ISDN menu.
4. Select Link Profiles, then type **n** (New) and press Enter.
5. Set up the ISDN Link Profiles.
   – Name for the destination entered (e.g., Tampa). The default setting is HQ_Site.
   – Link Status is set to Auto.
   – Phone numbers entered:

Originating FrameSaver Unit	Answering FrameSaver Unit
Outbound phone number. Valid characters can include: ■ Numbers (0–9) ■ Special characters * and # ■ Spaces	Inbound Calling ID1 and ID2. These are the phone numbers of units that calls will be accepted from. Valid characters can include: ■ Numbers (0–9)

   NOTE:
   Remember to include local dial-out numbers (i.e., 9, then the number).

6. If configuring a central site unit, proceed to Step 7.
   If configuring a remote site unit, proceed to Step 11.
7. Save the configuration and return to the ISDN menu.
8. Select DLCI Records, New, and press Enter. Minimally, configure the following options to create DLCI records for the link:
   – DLCI number
   – DLCI Type is set to Multiplexed if a multiplexed DLCI is being backed up.
9. Save the configuration.

10. Select PVC Connections, then New. Minimally, configure the following options to create a PVC connection to be backed up.
    - Alternate Destination Link name entered (e.g., Tampa). See the ISDN Link Profile Name.
    - Alternate Destination DLCI.
    - Alternate Destination EDLCI if a multiplexed DLCI.
11. Save the configuration and return to the Configuration Edit/Display menu.
12. Select Auto Backup Criteria.
13. Enable Auto Backup.
14. Specify When Auto Backup Allowed – Always or Restrict. If Restrict is selected, specify the days and hours of the week during which automatic backup can take place.
15. Save the change.

See *Setting Up An ISDN DBM for Dial Backup* in *Setup* of the User's Guide for additional information.

Entering Trap Managers

Once the FrameSaver unit is connected to the network, SNMP Trap Managers can be configured.

To enter SNMP managers:

1. Select SNMP Traps configuration options.

   Main Menu → *Configuration* → *Management and Communication* → *SNMP Traps*

2. Minimally, enter at least one trap manager – the central site's NMS trap manager:
   - SNMP Traps is set to Enable
   - Number of Trap Managers
   - NMS *n* IP Address (*n* being the first, second, third, etc., trap manager entered)
   - Destination (of the management PVC that will be used to reach the trap manager)
3. Save the configuration.

Setting Up Service Provider Connectivity

If management needs to be set up between a service provider's customer and its network operations center (NOC), a non-multiplexed DLCI must be configured to carry management data between the customer's central site and the NOC console. This requires that a frame relay discovered DLCI needs to be modified. This is because all auto-configured network DLCIs are configured as multiplexed DLCIs.

To set up NOC management:

1. Select DLCI Records on the network interface:

   Configuration → *Network* → *DLCI Records*

2. Select Modify. The **`Modify DLCI Record for DLCI Number?`** prompt appears.

3. Select the DLCI that will be used by pressing the spacebar until the correct DLCI number appears, then select it.

4. Change the DLCI Type from Multiplexed to Standard.

   The **`DLCI in connections. Update DLCI usage as follows:`** prompt appears.

5. Select the **`Delete EDLCI Connections and Make a Mgmt Only PVC`** option.

6. Select Yes at the prompt.

   PVC connections for the selected DLCI are broken, the Port-1 DLCI mapped to this network DLCI and the embedded management DLCI (EDLCI) are deleted, and the selected DLCI will be reconfigured as a management PVC using the Node IP Address.

Verifying the End-to-End Path

After installation of a remote site unit, run an IP Ping test to ping the NMS at the central site and verify that the entire path from the remote unit to the NMS is functioning. To run the IP Ping test, NMS trap managers must have been configured for the remote unit. One of those trap managers must be the central site NMS.

1. Select the IP Ping test.

   Main Menu → *Test* → *IP Ping*

2. Enter the IP Address of the device being pinged, then select Start.

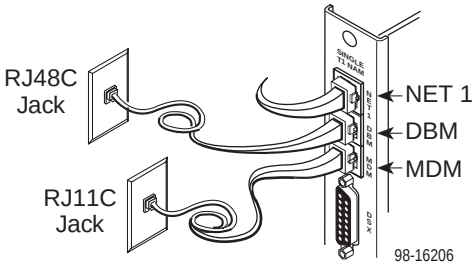
   NOTE:
   When running tests, the cursor is positioned over the Start command. Press Enter to start the test. Stop is displayed while the test is running. Press Enter again to issue the Stop command.

   – While the test is running, **`In Progress . . .`** is displayed in the Status field.
   – When the test is finished, **`Alive. Latency = `*`nn`*** **`ms`** should appear as the Status (*nn* being the amount of time the test took in milliseconds).

   If any other message is displayed, additional testing will be required. See *Device Messages* in *Displaying System Information* of the User's Guide for information about IP Ping-related messages.

Connecting to the Modem

1. Insert the 6-pin connector on the modem cable into the DBM interface.
2. Insert the other end of the cable into the modem service RJ11C jack.



Connecting to the ISDN

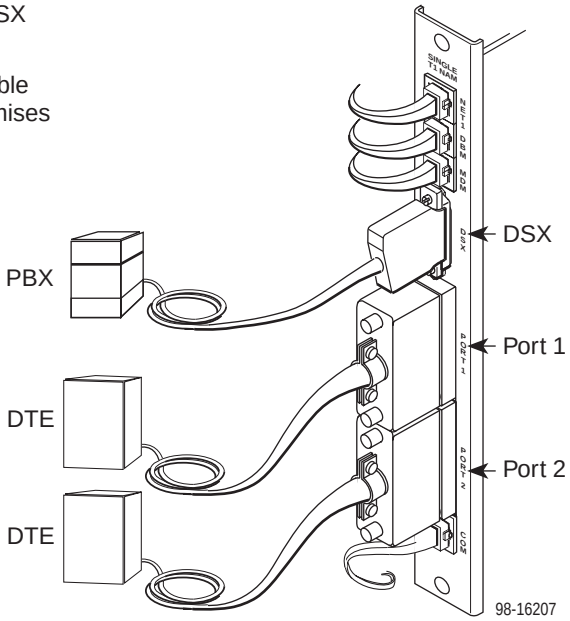
1. Insert the 8-pin connector on the ISDN cable into the MDM interface.
2. Insert the other end of the cable into the ISDN service RJ48C jack.

Connecting to the DSX

1. Insert the DB15 end of the DSX cable into the DSX interface.
2. Insert the other end of the cable into the CPE (Customer Premises Equipment, such as a PBX).

Connecting to a DTE

1. Connect one end of the V.35 cable to Port1 or Port 2.
2. Connect the other end of the V.35 cable to the DTE.



Checking Connections

Check the modem, DSX, DTE, and PVC connections, as well as the ISDN DBM setup.

Check the Modem Connection

If Port Use is set to Terminal (dial-in access):

1. Dial the modem's phone number using a remote async terminal or PC.
2. Verify that the Main Menu appears.

If Port Use is set to Net Link (SNMP, Telnet, FTP, and trap dial-out):

1. Dial the modem's phone number using a PC running PPP or SLIP link protocol.
2. Run the IP Ping test to the modem interface.
   See *Verifying the End-to-End Path* on page 19.

Results using either method:

- If successful, the modem setup is correct.
- If not successful, make sure the cable connections are secure, then verify that the modem was configured correctly (see *Setting Up the Modem* on page 10). Otherwise, refer to the status information in *Displaying System Information* of the User's Guide.

Check the ISDN Setup

1. Verify the ISDN lines by checking the DBM Interface Status.

   Main Menu → Status → DBM Interface Status

   – If Line Status displays Active, the ISDN line is operational.
   – If Line Status displays an invalid (Inv) status (e.g., Inv SPID), verify that you entered ISDN physical options correctly.
2. Check backup setup.
   – Have someone disconnect the network cable at the remote site.
   – Check the status of the FrameSaver unit:
   Main Menu → Status → System and Test Status → Health and Status column
   – Wait as the originating DBM places the backup call.
   The originating unit BKP LED starts blinking.

   When the answering FrameSaver unit receives the call, its BKP LED starts blinking, and the **`ISDN Active`** message appears.

   The BKP LEDs of both units stop blinking and remain on when the connection is made, and the **`Backup Active`** message appears.

3. Verify that data is passing between DBMs by selecting a backup link.

   Main Menu → Status → Performance Statistics → Frame Relay

   If data is being passed, Frames/Characters Sent and Received (Frame Relay Link) and Status Msg Received (Frame Relay LMI) increment each time the screen is Refreshed.

   A PVC Connectivity test can also be run if the ISDN DLCI is multiplexed.

   Main Menu → Test → ISDN PVC Tests → [DLCI Number] → Connectivity → Start

   See *Verifying Backup Setup* in *Setup* of the User's Guide for additional information.

Check the DSX Connection

1. Check the DSX LEDs. Is the Sig (DSX-1 signal) LED on, and are the DSX-1 OOF (out of frame) and ALM (alarm) LEDs off?
   – If yes, the DSX interface is set up correctly and ready to communicate.
   – If no, check that both ends of the DSX cable are properly seated and secured.

   When OOF is on, match the Line Framing Format and Line Coding Format options to the network provider's settings.

   When ALM is on, contact the service provider.

2. Check Health and Status messages in the left column of the System and Test Status screen to verify that there are no DSX-1 Health and Status messages.

   Main Menu → Status → System and Test Status

   If any DSX-1 messages appear, refer to the status information in *Displaying System Information* of the User's Guide.

In the User's Guide, see *Displaying System Information* for additional status information, and *Troubleshooting* for additional troubleshooting information.

Check the DTE Connection

1. Check that the port OK LED is on?
   – If yes, the port is ready to communicate.
   – If no, check that both ends of the V.35 cable are properly seated and secured.

2. Check Health and Status messages in the left column of the System and Test Status screen for messages.

   Main Menu → Status → System and Test Status

   – If **`System Operational`** appears, the Port-1 interface is set up correctly and is operational.
   – If **`System Operational`** does not appear, refer to the status information in *Displaying System Information* of the User's Guide.

   NOTE:

   When any error conditions are detected, a status message will appear at the bottom right corner of the screen.

Check that Data is Being Received

1. Press Esc until you return to the Main Menu**.**
2. Select Performance Statistics**,** and select an interface's frame relay statistics (e.g., Network Frame Relay).

   Main Menu →Status → Performance Statistics → Network Frame Relay

3. Verify that the Frames Received and Characters Received counts under the Frame Relay Link statistics are incrementing, and there are no errors under the Frame Relay LMI statistics.
   – If data is being received, count increments occur after refreshing the screen.
   – If data is not being received, recheck the cable connections, and replace or repair a damaged cable. Recheck LMI status; you may need to contact your service provider. Next, check the DLCI's status.

   Helpful Hint:
   Type **r** for Refresh and press Enter to update the counts that are displayed.

In the User's Guide, see *Displaying System Information* for additional status information, and *Troubleshooting* for additional troubleshooting information.

Check PVC Connections

Check PVC connections to verify that all PVCs, including management PVCs, are configured, and to see whether the PVC is active or not.

1. Press Esc to return to the Status menu**.**
2. Select PVC Connection Status.

   The PVC Connection Status screen shows all PVC connections; the interface and DLCI number of the source interface and DLCI number for the destination interface. You can also see whether the PVC is active.

3. Verify that each PVC is active.
   – If active, the FrameSaver unit should be passing data.
   – If not active, no data traffic can be carried by the PVC. If the PVC is configured correctly, the circuit may be down.

In the User's Guide, see *Displaying System Information* for additional status information, and *Troubleshooting* for additional troubleshooting information.

⚠ Important Safety Instructions

1. Read and follow all warning notices and instructions marked on the product or included in the manual.
2. This product is intended to be used with a 3-wire grounding type plug – a plug which has a grounding pin. This is a safety feature. Equipment grounding is vital to ensure safe operation. Do not defeat the purpose of the grounding type plug by modifying the plug or using an adapter.

   Prior to installation, use an outlet tester or a voltmeter to check the ac receptacle for the presence of earth ground. If the receptacle is not properly grounded, the installation must not continue until a qualified electrician has corrected the problem.

   If a 3-wire grounding type power source is not available, consult a qualified electrician to determine another method of grounding the equipment.
3. Slots and openings in the cabinet are provided for ventilation. To ensure reliable operation of the product and to protect it from overheating, these slots and openings must not be blocked or covered.
4. Do not allow anything to rest on the power cord and do not locate the product where persons will walk on the power cord.
5. Do not attempt to service this product yourself, as opening or removing covers may expose you to dangerous high voltage points or other risks. Refer all servicing to qualified service personnel.
6. General purpose cables are provided with this product. Special cables, which may be required by the regulatory inspection authority for the installation site, are the responsibility of the customer.
7. When installed in the final configuration, the product must comply with the applicable Safety Standards and regulatory requirements of the country in which it is installed. If necessary, consult with the appropriate regulatory agencies and inspection authorities to ensure compliance.
8. A rare phenomenon can create a voltage potential between the earth grounds of two or more buildings. If products installed in separate buildings are **interconnected**, the voltage potential may cause a hazardous condition. Consult a qualified electrical consultant to determine whether or not this phenomenon exists and, if necessary, implement corrective action prior to interconnecting the products.
9. In addition, if the equipment is to be used with telecommunications circuits, take the following precautions:

   — Never install telephone wiring during a lightning storm.

   — Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.

   — Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.

   — Use caution when installing or modifying telephone lines.

— Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning.

— Do not use the telephone to report a gas leak in the vicinity of the leak.

EMI Warnings

⚠ WARNING:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case, the user will be required to correct the interference at his own expense.

The authority to operate this equipment is conditioned by the requirements that no modifications will be made to the equipment unless the changes or modifications are expressly approved by Paradyne.

In order to maintain compliance with FCC limits, any supplied ferrite chokes must be installed in accordance with the card installation instructions.

⚠ WARNING:

To Users of Digital Apparatus in Canada:

This Class A digital apparatus meets all requirements of the Canadian interference-causing equipment regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du règlement sur le matériel brouilleur du Canada.

Government Requirements

Certain governments require that instructions pertaining to connection to the telephone network be included in the user documentation. Specific instructions are listed in the following sections.

United States
Notice to Users of the Telephone Network

This equipment complies with Part 68 of the FCC rules. On the back of the housing is a label that contains, among other information, the FCC registration number and ringer equivalence number (REN) for this equipment. If requested, please provide this information to your telephone company.

The REN is used to determine the number of devices that may be connected to the telephone line. Excessive RENs on the line may result in the devices not ringing in response to an incoming call. In most, but not all areas, the sum of RENs should not exceed five (5.0). To be certain of the number of devices that can be connected to the line, as determined by the total RENs, contact the local telephone company.

If your unit causes harm to the telephone network, the telephone company may discontinue your service temporarily. If possible, they will notify you in advance. But if advance notice is not practical, you will be notified as soon as possible. You will be advised of your right to file a complaint with the FCC.

Your telephone company may make changes in facilities, equipment, operations, or procedures that could affect the proper operation of your equipment. If so, you will be given advance notice so as to give you an opportunity to maintain uninterrupted service.

No repairs may be performed by the user. Should you experience difficulty with this equipment, refer to the *Warranty, Sales, Service, and Training Information* on page 28.

Make the T1 network connection using a Universal Service Order Code (USOC) type RJ48C jack for single-line installations and type RJ48H jack for multiline installations. Specify both the Service Order Code 6.0F, as well as the proper Facility Interface Code, to the telephone company when ordering the T1 line. The T1 equipment can be configured to support any of the framing format and line signaling techniques shown in the table below. The T1 equipment's configuration must correspond to the T1 line's parameters.

T1 Facility Interface Codes

Interface Code	Description
04DU9-BN	1.544 Mbps superframe format (SF) without line power
04DU9-DN	1.544 Mbps SF and B8ZS without line power
04DU9-1KN	1.544 Mbps ANSI ESF without line power
04DU-1SN	1.544 Mbps ANSI ESF and B8ZS without line power

Make the ISDN PRI connection using a USOC-type RJ48C jack. When ordering an ISDN line from the telephone company, specify the following:

- Service Order Code 6.0F
- Facility Interface Code 04DU-1SN
- Up to 23B Service for an ISDN PRI DBM – Supports up to 23 circuit-switched B-channels, with one local phone number for the entire T1 network connection.
- Circuit Switched Data capability should be specified.

Make the modem connection using a USOC-type RJ11C jack. The modem cannot be used on public coin phone service provided by the telephone company. Connection to party-line service is subject to state tariffs. Contact the state public utility commission, public service commission, or corporation commission for tariff information.

After the telephone company has installed the requested services and jacks, you can connect the unit with the cable provided. An FCC-compliant telephone cord and modular plug are provided with this equipment. This equipment is designed to be connected to the telephone network or premises wiring using a compatible modular jack that is Part 68 compliant.

Canada
Notice to Users of the Canadian Telephone Network

The Industry Canada label identifies certified equipment. This certification means that the equipment meets telecommunications network protective, operational and safety requirements as prescribed in the appropriate Terminal Equipment Technical Requirements document(s). The Department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be coordinated by a representative designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

CAUTION:

Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

The Ringer Equivalence Number (REN) assigned to each terminal device provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Numbers of all the devices does not exceed 5.

If your equipment is in need of repair, refer to *Warranty, Sales, Service, and Training Information*.

Warranty, Sales, Service, and Training Information

Contact your local sales representative, service representative, or distributor directly for any help needed. For additional information concerning warranty, sales, service, repair, installation, documentation, training, distributor locations, or Paradyne worldwide office locations, use one of the following methods:

- **Internet:** Visit the Paradyne World Wide Web site at **www.paradyne.com**. (Be sure to register your warranty there. Select *Service & Support* →*Warranty Registration*.)
- **Telephone:** Call our automated system to receive current information by fax or to speak with a company representative.
  - — Within the U.S.A., call 1-800-870-2221
  - — Outside the U.S.A., call 1-727-530-2340

Document Feedback

We welcome your comments and suggestions about this document. Please mail them to Technical Publications, Paradyne Corporation, 8545 126th Ave. N., Largo, FL 33773, or send e-mail to **userdoc@paradyne.com**. Include the number and title of this document in your correspondence. Please include your name and phone number if you are willing to provide additional clarification.

Trademarks

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Patent Notification

FrameSaver SLV products are protected by U.S. Patents: 5,550,700 and 5,654,966. Other U.S. patents pending.

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