



FrameSaver™ SLV NNI **Installation Instructions**

Document Number 9024-A2-GN11-01

September 1998

If you ordered a wall mounting kit (Feature No. 9001-F1-891) for your 1-slot FrameSaver SLV (service level verifier) NNI (network-to-network interface) unit, install the wall mounting before you start installing the unit.

Contact your sales representative to order this feature.

Before You Begin

Make sure you have:

- A dedicated, grounded power outlet that is protected by a circuit breaker within 6 feet of the FrameSaver SLV NNI unit.
- A clean, well-lit, and ventilated site that is free from environmental extremes.
- One to two feet of clearance for cable connections.
- A physical T1 connection to the frame relay network.
- An async (asynchronous) terminal or PC (personal computer) to set up the FrameSaver NNI unit.
- Node IP Addresses and Subnet Masks. See your network administrator for this information.
- The DLCI (data link connection identifier) for each end of the PVC (permanent virtual circuit), provided when the frame relay service was purchased.
- A frame relay switch that supports V.35.

Worksheets

It is recommended that you complete configuration worksheets before you begin, with changes from the default (factory-set) settings and information to be entered clearly marked (e.g., the node's IP address). Having completed worksheets before installation is begun speeds setup time.

Worksheets are provided in Appendix B of the *FrameSaver SLV NNI Supplement*.

NOTE:

It is important that you follow the instructions for installing the FrameSaver NNI unit as they are presented if you are to have a quick and trouble-free installation. Do not install your cables until instructed to do so.

Package Checklist

Verify that your package contains the following:

- 1-Slot FrameSaver SLV NNI unit
- Power cord with desktop 120 Vac power transformer
- Universal power supply with an attached cable and ferrite choke
- RJ48C (T1) modular cable for U.S. network access (20 feet – 6.1 meters)
- FrameSaver SLV 9x24 User's Guide* (Document No. 9024-A2-GB20)
The User's Guide and the Adobe Acrobat Reader are provided on diskettes. A PC running Microsoft Windows 3.1 or higher is required to view or print the document.
- FrameSaver SLV NNI Supplement* (Document No. 9024-A2-GB40)
- Warranty card
- Training reply card

Additional cables may need to be ordered. See *Cables You May Need to Order* on page 3 when ordering cables.

Cables You May Need to Order

FrameSaver SLV NNI units have native interfaces so cables can be purchased anywhere, with the following exceptions.

If connecting to a . . .	Order a . . .	Model/Feature/ Part Number
T1 Line interface/connector (<i>For use in Canada</i>)	T1 line interface cable, RJ48C-to-CA81A	3100-F1-510
LAN	Customer converter with a DB25 plug on one end and an 8-pin modular jack on the other end, with a custom 8-conductor cable and LAN adapter	3100-F2-910
External Device (e.g., a modem)	Standard EIA-232-D crossover cable	9008-F1-550

Contact your sales representative to order cables.

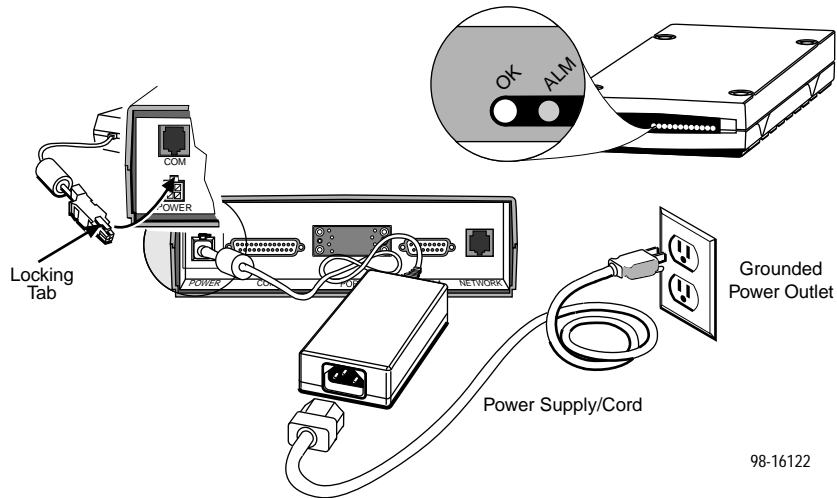
Safety Instructions

Please read the EMI Warnings and Important Safety Instructions in the *FrameSaver SLV 9x24 User's Guide*.

Installing the Power Supply and Cord

1. Insert the 4-prong plug into the POWER jack.

When inserting the plug at the rear of the FrameSaver NNI unit, align the plug with the notch above the POWER jack. Make sure the locking tab snaps securely into the jack.



98-16122

2. Insert the socket end of the power cord into the power supply's receptacle.
3. Plug the power cord into the grounded power outlet.

Verification Check:

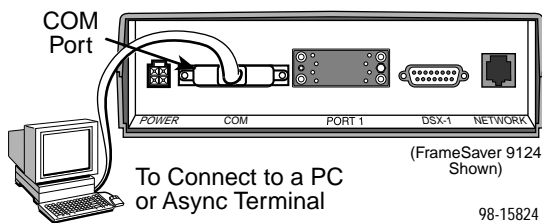
Did any LEDs light?

- If yes, the FrameSaver NNI unit has power and is operational.
- If no, refer to *Troubleshooting Power and COM Port Connections* on page 6.

Connecting the COM Port to an Async Terminal

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

1. Configure the async or VT100-compatible terminal to be compatible with the FrameSaver NNI unit:
 - COM Port in use by your PC: COM1 or COM2.
 - COM Port Baud Rate set to 19.2 kbps.
 - Character length set to 8 data bits.
 - Parity set to none.
 - Stop bit set to 1.
 - Flow Control set to None.
2. Insert the DB25 end of the EIA-232 cable into the FrameSaver NNI unit's COM port.



3. Insert the other end of the cable into the VT100-compatible terminal.
4. Tighten the screws on each side of the connector to secure them.
5. Press Enter on the keyboard (or Return, depending upon your keyboard) to display the Main Menu.

Verification Check:

Did the Main Menu appear?

- If yes, you are ready to continue with the installation.
- If no,
 - Recheck terminal and FrameSaver NNI unit compatibility (see settings in Step 1).
 - Did you press the Enter key on your keyboard?

See *Troubleshooting Power and COM Port Connections* on page 6 for other possible causes. See Chapter 13, *Troubleshooting*, in the User's Guide for additional explanations.

Troubleshooting Power and COM Port Connections

Symptom	Possible Cause	Solutions
No power, or none of the system LEDs are lit.	Power cord is not securely plugged into the wall power outlet or the universal power supply.	Check that the power cord is securely attached at both ends.
	Wall receptacle has no power.	<ol style="list-style-type: none"> 1. Check the wall receptacle power by plugging in some equipment that is known to be working. 2. Check the circuit breaker.
	Power supply is defective.	Contact your sales or service representative for replacement of the power supply.
An LED is not lit.	LED is burned out.	Run the Lamp Test. If the LED in question does not flash with the other LEDs, contact your sales or service representative.
Power-Up Self-Test fails. The Alarm LED is on after power-up, but the OK LED is not.	The FrameSaver NNI unit has detected an internal hardware failure.	<ol style="list-style-type: none"> 1. Reset the FrameSaver NNI unit and try again. 2. Contact your service representative.
Cannot access the FrameSaver NNI unit or the user interface.	Login or password is incorrect, COM port is misconfigured, or access to the FrameSaver NNI unit is misconfigured.	<ol style="list-style-type: none"> 1. Reset the FrameSaver NNI unit (see Chapter 12, <i>Operation and Maintenance</i>, of the User's Guide). 2. Contact your service representative.

A Quick Guide to Configuration

The FrameSaver NNI unit should operate using the default (factory-set) configuration options, with exception to the changes specified in these installation instructions. Refer to the following table for help navigating 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 <i>FrameSaver SLV NNI Supplement</i> .
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:

1. From the Main Menu, press the down arrow or Tab 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, where the cursor is already positioned. 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

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

In addition, each section identifies the worksheet you would be using if you were provided a specified configuration, or when changing or recording configuration changes from the default settings.*

* Worksheets are provided in Appendix B, *Configuration Worksheets*, of the NNI Supplement.

Installing and Setting Up the FrameSaver NNI

To complete the installation, you must:

- Configure SNMP management.
- Connect to the network.
- Configure SNMP trap managers.
- Configure a Management PVC to the NOC
- Connect to the IEC/IXC.

NOTES:

Follow these instructions as they are presented. Installation time will be increased if you connect the cables first.

Even though a DSX-1 interface is provided, it is not used in this release.

Verifying that Self-Test Passed

Before starting to configure the FrameSaver NNI 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 NNI unit successfully completed the self-test.
 - If any failure messages appear, reset the unit by disconnecting, then reconnecting the power cord. The unit will perform the self-test again. If the failure reappears, call your service representative for assistance. You may need to return the unit to the factory.

Setting Up SNMP Management

Worksheet: Communication Protocol Options, then
Worksheet: General SNMP Management Options

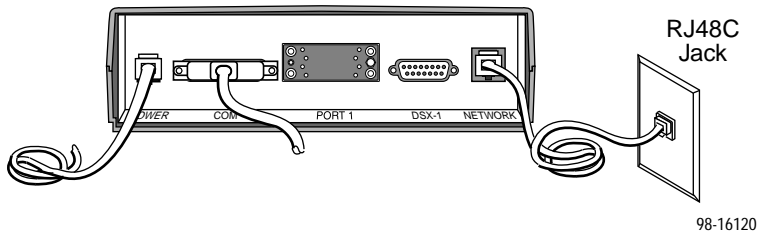
See *Configuring the Communication Protocol* and *Configuring SNMP Management* in Chapter 9, *Configuration Options*, of the User's Guide to read about the configuration options identified in the following procedure.

To set up SNMP management:

1. Select Communication Protocol configuration options from the Configuration Edit/Display menu.
Configuration → Current Configuration → Management and Communication → Communication Protocol
2. Minimally, enter the following options:
 - Node IP Address
 - Node Subnet Mask
3. Press Esc once to return to the Management and Communication menu.
4. Select General SNMP Management and press Enter.
5. Minimally, set Name 1 Access to Read/Write.
6. Press Ctrl-a to move the cursor to the bottom of the screen, type **s** (**S**ave), and press Enter. The **Save Configuration To:** prompt appears.
7. Select Current Configuration and press Enter.
8. Press Esc three times to return to the Main Menu.

Connecting to the Network

1. Insert the 8-pin connector of the RJ48C network cable into the network interface.
2. Insert the other end of the cable into the RJ48C (T1) modular jack.



NOTE:

After connecting the network cable, wait a few minutes to allow Auto-Configuration time to discover DLCIs.

Verification Check:

1. 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 operational.
 - If no, check that both ends of the network cable are properly seated.
2. 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 if any other network-related status message appears, refer to the status information in Chapter 11, *Displaying System Information*, of the User's Guide for possible reasons for the messages and what can be done to resolve the problem.

Proceed to *Entering Trap Managers* on page 11.

Entering Trap Managers

Worksheet: SNMP Traps Options

Now that the FrameSaver NNI 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 → Current Configuration → Management and Communication → SNMP Traps
2. Minimally, enter at least one trap manager – the central site's NMS trap manager:
 - SNMP Traps set to Enable
 - Number of Trap Managers
 - NMS *n* IP Address (*n* being the first, second, third, etc. trap manager entered)
3. Press Ctrl-a to move the cursor to the bottom of the screen.
4. Type **s** (Save) and press Enter. The **Save Configuration To:** prompt appears.
5. Select Current Configuration and press Enter.
6. Press Esc three times to return to the Main Menu.

Helpful Hint:

You can press Ctrl-a, type **m** and press Enter to return to the Main Menu, or you can press the Esc key until the Main Menu appears.

Proceed to *Setting Up a Management PVC to the NOC* on page 12.

Setting Up a Management PVC to the NOC

Management between the FrameSaver NNI unit and the service provider's network operations or control center (NOC or NCC) needs to be set up. A non-multiplexed DLCI must be configured to carry management data between the FrameSaver NNI unit and the NOC console.

To set up NOC management:

1. Select DLCI Records on the network interface:
Configuration Edit/Display → Network → DLCI Records
2. Type **o** (M_odify) and press Enter. The **Modify DLCI Record for DLCI Number?** prompt will appear.
3. Select the DLCI that will be used by pressing the spacebar until the correct DLCI number appears, then press Enter.
4. With the cursor on the DLCI Type field, press the spacebar to change the DLCI Type from Multiplexed to Standard.
The **Delete EDLCI Connections and Make it a Mgmt Only PVC?** prompt appears.
5. Type **y** for yes and press Enter.
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.

Proceed to *Verifying the End-to-End Path* on page 13.

Verifying the End-to-End Path

After installation of an FrameSaver NNI 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 NOC NMS.

If trap managers were not configured, proceed to [Troubleshooting the Network Connection](#) on page 14 and run a Connectivity test.

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 Chapter 11, *Displaying System Information*, for information about IP Ping-related messages.

Proceed to [Connecting to the IEC/IXC](#) on page 15.

Troubleshooting the Network Connection

1. Check the Network LMI Reported DLCIs screen to verify that the DLCI status is Active.

Main Menu → Status → LMI Reported DLCIs

2. If two FrameSaver NNI units are located in your network, run a Connectivity test between them.

Main Menu → Test → Network PVC Tests → Interior Connectivity

- If **RndTrip Time (ms)** appears, along with the number of milliseconds it took to receive a response, the FrameSaver NNI unit at the other end is connected and operational. Go to Step 3.
 - If a response is not received within 5 seconds and **No Response** is reported, refer to *Frame Relay PVC Problems* in Chapter 13, *Troubleshooting*, of the User's Guide.
3. Put one FrameSaver NNI unit into PVC Loopback, taking frames from the PVC and looping them back.

Main Menu → Test → Network PVC Tests → Interior PVC Loopback

4. On the other FrameSaver NNI unit, send a pattern over the network interface and monitor it.

*Main Menu → Test → Network PVC Tests →
Interior Send Pattern → Start
Interior Monitor Pattern → Start*

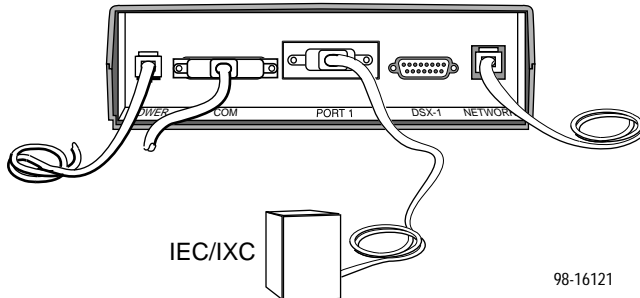
- If there are few or no errors, the unit at the remote end is connected and operational.
- If 5 packets out of 25 are missing or out of sequence and **Out of Sync** is reported, refer to the *Device Messages* in Chapter 13, *Troubleshooting*, of the User's Guide for additional information.

See Chapter 11, *Displaying System Information*, of the User's Guide for additional message information. See Chapter 13 of the User's Guide and Chapter 4 of the NNI Supplement, *Troubleshooting*, for additional troubleshooting information.

Proceed to *Connecting to the IEC/IXC* on page 15.

Connecting to the IEC/IXC

1. Connect one end of the V.35 cable to Port 1.
2. Plug the other end of the cable into the IEC/IXC equipment.
3. Tighten the screws on each side of the connector to secure it.



Verification Check:

1. Is the Port OK LED on?
 - If yes, the port is set up correctly and is operational.
 - 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 Chapter 11, *Displaying System Information*, of the User's Guide.

NOTE:

When any error conditions are detected, a status message will appear along 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

Reminder:

You can save keystrokes by using the up (↑) and down (↓) keys to scroll through menu selections on the screen, from first-to-last menu selections, or last-to-first.

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. Type r for Refresh and press Enter to update the counts that are displayed.
 - If data is being received, the counters increment when the screens is Refreshed.
 - 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 SLV statistics.
4. Repeat steps 2 and 3 for the other interface (e.g., Port-1 Frame Relay).

See Chapter 11, *Displaying System Information*, of the User's Guide for additional status information. See Chapter 13, *Troubleshooting*, for additional troubleshooting information.

Check FrameSaver NNI Connections

Check the SLV statistics to verify that the FrameSaver NNI unit is keeping statistics between itself and another FrameSaver NNI unit, and between itself and the endpoint unit.

1. Press Esc to return to the Performance Statistics menu.
2. Select Port-1 SLV, and verify that the two FrameSaver NNI units on each side of the IEC/IXC are communicating and collecting data.

The **Interior** column should show the other FrameSaver NNI unit's DLCI number and IP address, and statistics should be showing a count instead of Unknown.

 - If yes, both FrameSaver NNI units are installed and operational.
 - If no, check that FrameSaver NNI unit at the other end is installed.

The **Exterior** column, for DLCIs that terminate in the FrameSaver NNI unit, should show the endpoint unit's DLCI number and IP address, and statistics should be showing a count instead of Unknown.

 - If yes, the FrameSaver NNI and endpoint units are set up correctly and are operational.
 - If no, recheck the cable connections, and replace or repair a damaged cable. Check that the endpoint unit is installed.
3. Press the spacebar to cycle through the DLCIs passing through the FrameSaver NNI unit. All the appropriate DLCIs should appear at the bottom of the screen and in the Far End DLCI field. Do this for both the Interior and Exterior statistics.
 - If yes, the units and their DLCIs are operational.
 - If no, check the DLCI's status.

See Chapter 11, *Displaying System Information*, of the User's Guide for additional status information. See Chapter 4, *Troubleshooting*, of the NNI Supplement 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 twice to return to the Status menu.
2. Verify that each PVC is active.
 - If active, the FrameSaver NNI 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.

See Chapter 11, *Displaying System Information*, of the User's Guide for additional status information. See Chapter 13, *Troubleshooting*, for additional troubleshooting information.

Technical Specifications

Specification	Criteria
Weight	2.59 lbs. (1.18 kg)
Power Consumption and Dissipation Built-in power cord Power consumption Normal service voltage ranges	120 Vac power supply: NEMA 5-15P plug 9.5 watts, 0.140 mA at 120 Vac Average power 9.5 watts 120 Vac \pm 12 Vac, 60 Hz \pm 3
Physical Environment Operating temperature Storage temperature Relative humidity Shock and vibration	32°F to 122°F (0°C to 50°C) -4°F to 158°F (-20°C to 70°C) 5% to 85% (noncondensing) Withstands normal shipping and handling
Approvals FCC Part 15 FCC Part 68 Industry Canada Safety	Class A digital device Refer to the equipment's label for the Registration Number. Refer to the equipment's label for the Certification Number. Refer to the equipment's label for safety information.
COM Port/Interface – Communications/Management Standard Data rates	25-position (DB25) connector EIA-232/ITU, V.24 (ISO 2110) 9.6, 14.4, 19.2, 28.8, 38.4, 57.6, and 115.2 kbps

Specification	Criteria
T1 Network Interface Data rates Services supported Physical interface (USA) Physical interface (Canada) Framing format Coding format Line Build-Out (LBO) ANSI PRM Bit stuffing Yellow alarm generation	8-position modular unkeyed USOC jack Up to 1.536 Mbps Fractional T1 service, frame relay service RJ48C CA81A using adapter cable D4, ESF AMI, B8ZS 0.0 dB, -7.5 dB, -15 dB, -22.5 dB Selectable FCC Part 68, AT&T TR 62411 Selectable
Port 1 – DTE Synchronous Data Ports Standard Data rates	34-position V.35 connector V.35/ITU (ISO 2593) All fractional T1 rates; automatically set to the network rate

Pin Assignments

Since FrameSaver SLV NNIs have standard connectors, there is no need to order, buy, or make special cables. You can use any standard straight-through cable for each interface. However, interface and cable pin assignments are available in Appendix G, *Cables, Connectors, and Pin Assignments*, of the User's Guide.

Warranty, Sales, and Service 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:

- **Via the Internet:** Visit the Paradyne World Wide Web site at <http://www.paradyne.com>
- **Via Telephone:** Call our automated call system to receive current information via 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@eng.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.



9024-A2-GN11-01