



## FrameSaver® SLV 9664 Installation Instructions

Document Number 9664-A2-GN10-00

March 2000

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Complete documentation for this product is available at **[www.paradyne.com](http://www.paradyne.com)**.  
Select *Library* → *Technical Manuals* → *FrameSaver Frame Relay Devices*.

Select the following document:

9664-A2-GB20

*FrameSaver SLV 9664 User's Guide*

To order a paper copy of a Paradyne document:

- Within the U.S.A., call 1-800-PARADYNE (1-800-727-2396)
- Outside the U.S.A., call 1-727-530-8623

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## Package Checklist

Verify that your package contains the following:

- FrameSaver SLV unit
- Universal power supply, with an attached cable and ferrite choke
- Power cord appropriate for the wall-plug standard in your country (depends on model ordered).
- (NT1) network cable
- FrameSaver SLV 9664 Quick Reference* (Document No. 9664-A2-GL10)

Additional cables may be ordered. See *Cables You Can Order* on page 3 when ordering cables.

Be sure to register your warranty at [www.paradyne.com/warranty](http://www.paradyne.com/warranty).

## Before You Begin

If you ordered a wall mounting kit (Feature No. 9001-F1-891) for your FrameSaver unit, install the wall mounting before you start installing the unit. Follow the same guidelines below when installing the wall mounting. Contact your sales representative to order this feature.

Before starting the installation, make sure you have:

- A dedicated, grounded power outlet that is protected by a circuit breaker within 6 feet of the FrameSaver 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 connection to the ISDN Network Termination (NT1). The cable is provided with the FrameSaver unit.
- An asynchronous (async) terminal or PC (personal computer) to set up the unit.
- Node IP Addresses and Subnet Masks (see your network administrator).

See the User's Guide for additional information on:

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

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## Cables You Can Order

<b>If connecting to . . .</b>	<b>Order a . . .</b>	<b>Feature Number</b>	<b>Part Number</b>
LAN adapter	Adapter DB25 plug-to-8-position modular receptacle	3100-F1-920	002-0069-0031
	COM Port-to-LAN adapter cable (14 feet – 4.3 meters)	3100-F2-910	035-0315-1431
Equipment with X.21 interfaces, DB15 connectors	X.21 DTE adapter cable, EIA-530A-to-X.21 (1 foot – .3 meters)	3100-F1-571	035-0302-0131
Equipment with V.35 interfaces, MS34 connectors	V.35 DTE adapter, EIA-530A-to-V.35	3100-F1-570	035-0244-0031

Contact your sales representative to order cables.

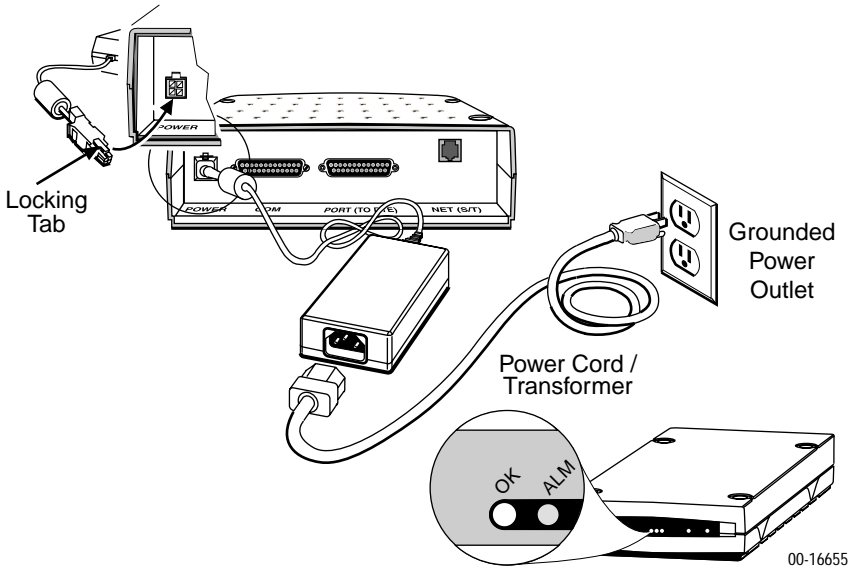
## Safety Instructions

Please refer to the *Important Safety Instructions* beginning on page 17.

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# Installing the Power Supply and Cord

1. Insert the power supply's 4-prong plug into the POWER jack.  
When inserting the plug at the rear of the FrameSaver unit, align the plug with the notch above the POWER jack. Make sure the locking tab snaps securely into the jack.



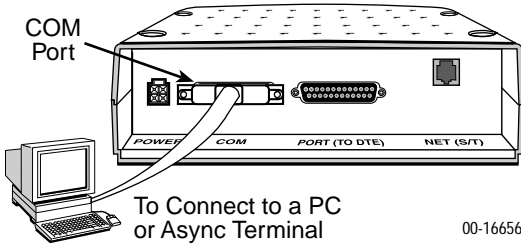
2. Insert the socket end of the power cord into the power supply's receptacle.
3. Plug the power cord into the grounded power outlet.  
If any LEDs light, you have power. If not, refer to *Troubleshooting* in the User's Guide for possible explanations.

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## Connecting the COM Port to an Async Terminal or PC

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

1. Configure the VT100-compatible terminal or PC to be compatible with the access unit:
  - 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 unit's COM port.



3. Insert the other end of the cable into the PC or VT100-compatible terminal.
4. Tighten the screws on each side of the connector to secure them.
5. Press Enter (or Return, depending on your keyboard) to display the Main Menu.  
If the Main Menu does not appear, recheck the terminal or PC settings (see Step 1), or press the Enter key. Refer to *Troubleshooting* in the User's Guide for other possible explanations.

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# A Quick Guide to Configuration

The FrameSaver 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 in navigating 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 <i>Menu Hierarchy</i> in the Quick Reference.
Tab key, or Up (↑), Down (↓), Left (←) and Right (→) 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*

To save a configuration option change:

1. Press Ctrl-a to switch to the 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.

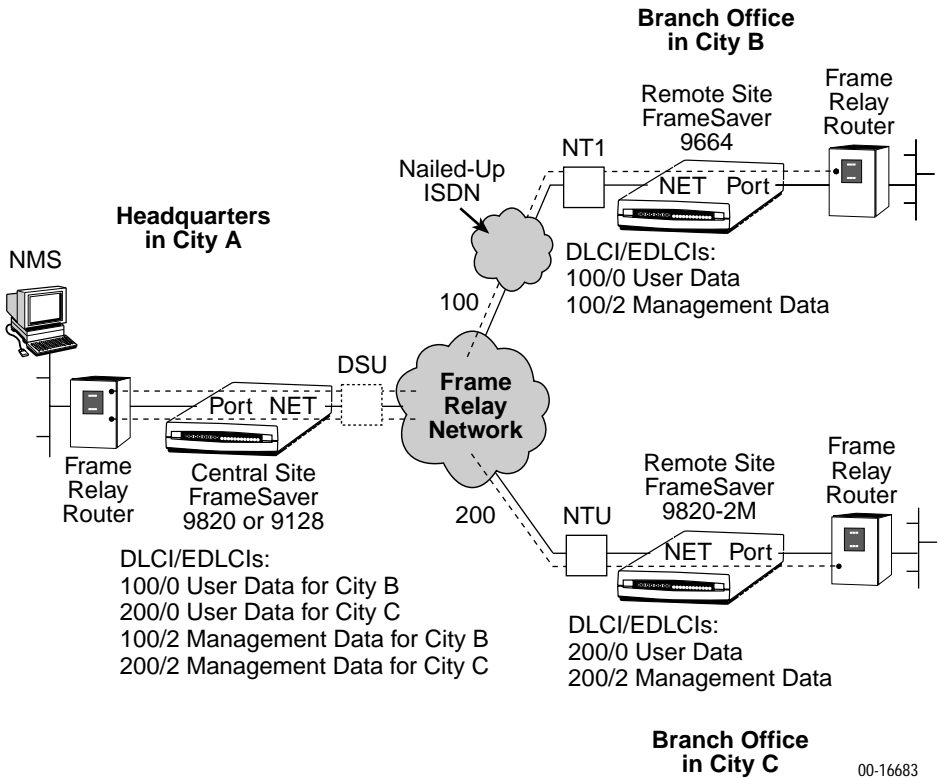
Press Ctrl-a, type **m** (MainMenu), and press Enter to return to the Main Menu.

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 9664 FrameSaver Unit

The following sections guide you through installation and setup of a FrameSaver unit. It is assumed that the FrameSaver unit is configured for factory default settings at the start of installation.

A typical multinational application is shown in the following illustration. This example shows a network that includes FrameSaver units at the central site (e.g., the company's headquarters in City A) and the remote sites (e.g., branch offices in City B and City C). User data PVCs provide LAN-to-LAN connectivity between the central site and the remote sites. Depending upon your application, the central site may or may not need an external DSU when accessing the frame relay network.



From a network management perspective, the central site FrameSaver unit should be configured for management from a Network Management System (NMS), through either the attached router, as shown in the above figure, or through the Network Operations Center (NOC) router (for management by the Network Service Provider). Multiple management PVCs then connect the central site unit to the remote site units using Paradyne's proprietary PVC multiplexing method (embedded DLCIs).

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## Verifying that Self-Test Passed

1. Follow this menu selection sequence from the Main Menu and press 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 in this column, 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.

## Setting the System Clock

To set up the system clock:

1. Select System Information.  
*Main Menu → Control → System Information*
2. Move the cursor to the Date, then the Time field to enter:
  - Date in the mm/dd/yyyy format (month/day/year)
  - Time in the hh:mm:ss format (hours:minutes:seconds)
3. Save the settings.

## Assigning the Node IP Address

1. Set up the node.  
*Main Menu → Configuration → Management and Communication → Node IP*
2. Minimally, enter the following options:
  - Node IP Address
  - Node Subnet Mask
3. Save the configuration.

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# Configuring Physical Interfaces

The network connection supports leased-line service with a BRI S/T interface via an 8-position unkeyed modular jack that is connected to an external NT1.

The data port interface supports three different port types: EIA-530, V.35 and X.21. If your application does not use a V.35 interface, then the Port Type setting needs to be changed. The port type is specified in the physical configuration options.

To configure the physical interfaces:

1. Select the Network physical configuration options.

*Main Menu → Configuration → Network → Physical*

2. Select the appropriate Port Type.
3. Press Ctrl-a and Save your change(s).
4. Return to the Configuration Edit/Display menu.
5. Repeat Steps 2 through 4 for the data port.

*Main Menu → Configuration → Data Ports → Physical*

6. Return to the Configuration Edit/Display menu.

## Setting Up Local Management at the Central Site

1. Create a DLCI for the data port.

*Configuration → Data Ports → DLCI Records*

2. Save the configuration.
3. Create a Management PVC using the data port DLCI just created.

*Configuration → Management and Communication → Management PVC*

Minimally, enter the following options:

- Name for the management PVC
- Interface IP Address and Subnet Mask, if different from the Node's
- Primary Link for this Management PVC (the user data port)
- Primary DLCI (i.e., the data port DLCI)

4. Save the configuration.

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## Automatic Configuration

The FrameSaver unit provides several automatic configuration features. Frame Relay Discovery and configuration is one of these features.

*Main Menu → Auto-Configuration*

The default discovery mode is 1MPort. In this mode, for each DLCI discovered on the network, a multiplexed network DLCI and a standard data port DLCI will be configured and connected, and a Management PVC will be embedded in the network DLCI.

### **NOTE:**

When 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*

Other modes can be selected. See *Setting Up Auto-Configuration* in *Configuration of the User's Guide* for information about other modes and how the Frame Relay Discovery Mode can be changed.

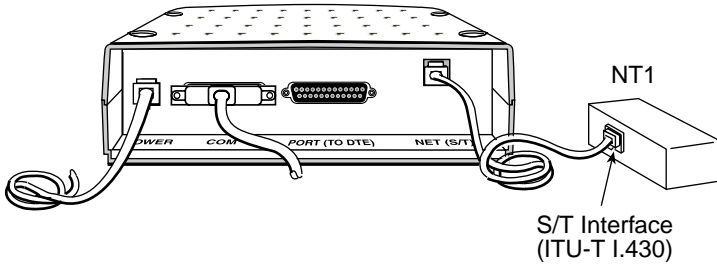
No automatic configuration occurs until the network cable is connected. If you do not want management links configured or automatic configuration, change the default setting for the Frame Relay Discovery feature.

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## Connecting to the Network

Now that the FrameSaver unit is set up, the unit can be connected to the network.

1. Insert the 8-pin connector of the network cable into the network interface, NET (S/T).
2. Insert the other end of the cable into the S/T interface of the NT1.



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### NOTE:

After connecting the network cable, wait about a minute to allow Auto-Configuration a chance to discover the operating rate and the DLCIs.

3. Check that the Network (NET OK) LED is on. If it is, the network interface is set up correctly and it is operational. If not, make sure both ends of the network cable are properly seated.
4. Check Health and Status messages in the left column of the System and Test Status screen to see the LMI status and verify that LMI is up.

*Main Menu → Status → System and Test Status*

If **LMI Down**, **Net1-FR1** appears for more than three minutes, or any other network-related status message appears, refer to the status information in *Operation and Maintenance* of the User's Guide for possible reasons.

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## Setting Up Service Provider Connectivity at the Central Site

When 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.  
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.

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# Configuring SNMP Trap Managers and Traps

Once the FrameSaver unit is connected to the network, SNMP trap managers and SNMP traps can be configured.

To enter SNMP managers and configure traps:

1. Select SNMP Traps.

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

2. Configure the following:
  - Enable SNMP Traps.
  - Identify the total Number of Trap Managers.
  - Specify the IP address of the NMS(s) to which traps will be sent.
  - Specify the network Destination for the Trap Manager(s).
  - Select desired trap categories.
3. Save the configuration.
4. Return to the Main Menu.

If trap dial-out is desired, the PC or asynchronous terminal must be disconnected from the unit's COM port when setup is complete, and an external modem connected instead. See *Setting Up for Trap Dial-Out* in *Configuration* of the User's Guide for additional information.

## 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.

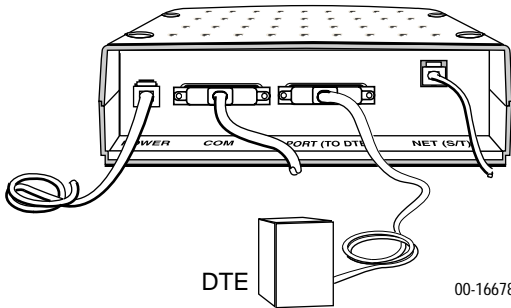
- While the test is running, **In Progress...** is displayed in the Status field.
  - When the test is finished, **Alive. Latency = nn ms** should appear as the Status (*nn* being the amount of time the test took in milliseconds).
- If any other message is displayed, additional testing will be required.

See *Device Messages in Operation and Maintenance* of the User's Guide for information about IP Ping-related messages.

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## Connecting to the DTE (Router or FRAD)

1. Connect the appropriate cable to the Port (To DTE) connector.
  - If the DTE interface type is EIA-530A, the DTE can be directly connected to the Port (To DTE) connector.
  - If the DTE interface type is V.35 or X.21, a V.35 or X.21 adapter cable is required.
2. Plug the other end of the cable into the DTE.
3. Tighten the screws on each side of the connector to secure them.



4. Check that the Port OK LED is on. If it is, the port is set up correctly and it is operational. If not, make sure both ends of the cable are properly seated and secured.
5. 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 interface is set up correctly and is operational.
- If not, refer to *Status Information in Operation and Maintenance* of the User's Guide.

### **NOTE:**

When any error conditions are detected, a status message appears along the bottom right corner of the screen.

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## Check that Data is Being Received

1. Return to the Main Menu.
2. Select Performance Statistics, and select an interface's frame relay statistics.  
*Main Menu → Status → Performance Statistics → Frame Relay → Net1-FR1*
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 count increments occur after refreshing the screen, the unit is receiving data.
  - 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.

## Check PVC Connections

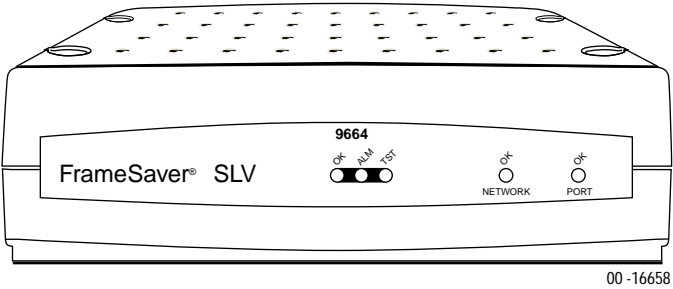
Check PVC connections to verify that all PVCs, including management PVCs, are configured, and to see whether the PVC is active or not.

1. Return to the Status menu.
2. Select PVC Connection Status.  
The PVC Connection Status screen shows all PVC connections; the interface source and DLCI number of the incoming data linked to the interface and DLCI number for the outgoing data. 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.

The FrameSaver installation is complete.

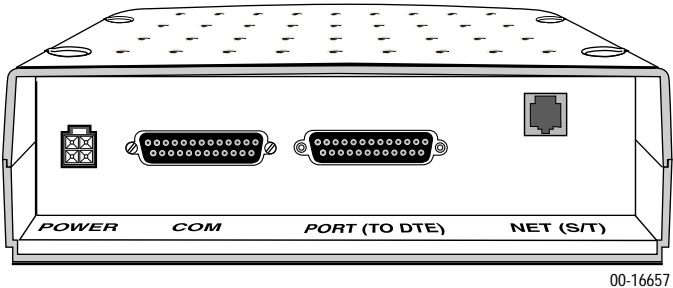
In the User's Guide, see *Operation and Maintenance* for additional status information, and *Troubleshooting* for additional troubleshooting information.

# FrameSaver 9664 Front Panel



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# FrameSaver 9664 Rear Panel



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## **▲ Important Safety Instructions**

1. Read and follow all warning notices and instructions marked on the product or included in the manual.
2. All installation and service must be performed by qualified service personnel, as opening or removing covers may expose you to dangerous high voltage points or other risks.
3. The power supply to be used with 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.
4. Input power to this product must be provided by a power supply with a Safety Extra Low Voltage (SELV) output less than 240 VA available, certified for use in the country of installation.  
Paradyne power supply part number 327-0107-0031 is recommended. This power supply includes a special mating connector for connection to this equipment.
5. 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.
6. Do not allow anything to rest on the power cord and do not locate the product where persons will walk on the power cord.
7. Special cables, which may be required by the regulatory inspection authority for the installation site, are the responsibility of the customer.
8. 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.
9. 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.

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**10.** 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.

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## CE Marking

When the product is marked with the CE mark, this demonstrates full compliance with the following European Directives:

- **Directive 73/23/EEC** – Council Directive of 19 February 1973 on the harmonization of the laws of the member states relating to electrical equipment designed for use within certain voltage limits, as amended by Directive 93/68/EEC.
- **Directive 89/336/EEC** – Council Directive of 3 May 1989 on the approximation of the laws of the member states relating to Electro-Magnetic Compatibility (EMC), as amended by Directive 93/68/EEC.
- **Directive 91/263/EEC** – Council Directive of 29 April 1991 on the approximation of the laws of the member states concerning telecommunication terminal equipment, including mutual recognition of their conformity, as amended by Directive 93/68/EEC. The application of this directive is in relation only to ISDN Basic Rate network interfaces as specified in CTR 3.

## Japan

Class A ITE

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラス A 情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

### CAUTION Translation:

**This is a Class A product based on the standard of the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may arise. When such trouble occurs, the user may be required to take corrective actions.**

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## 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](http://www.paradyne.com). (Be sure to register your warranty at [www.paradyne.com/warranty](http://www.paradyne.com/warranty).)
- **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

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## Trademarks

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## Patent Notification

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



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