

## 9000 Series Access Carrier with AC Power Supply Installation Instructions

Document Number 9000-A2-GN1D-60

June 1999

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The 9000 Series Access Carrier with an ac power supply is a metal enclosure that supports mounting of up to 14 Network Access Modules (NAMs).

It can be mounted in either a 19-inch or 23-inch cabinet or rack. Up to six carriers can be installed in one standard 72-inch cabinet. All LEDs (light-emitting diodes) on the NAM(s) are visible from the front of the access carrier. All I/O cables on the I/O card(s) are accessed from the rear.

### Product Documentation on the World Wide Web

We provide complete product documentation online. This lets you search the documentation for specific topics and print only what you need, reducing the waste of surplus printing. It also helps us maintain competitive prices for our products.

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

Select one of the following documents:

9121-A2-GH30

*FrameSaver 9120 Technical Reference*

9128-A2-GB20

*FrameSaver SLV 9126/9128 User's Guide*

9161-A2-GH30

*Model 916x/926x T1 Access Mux Technical Reference*

9621-A2-GH30

*FrameSaver 9620 Technical Reference*

To request 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

In addition to the access carrier, verify that your package also contains the following:

- Power supply (already installed) and power cord
- Power supply fan tray (already installed)
- Fan tray for NAMs (already installed)
- Baffle for heat deflection, including extender brackets for installation in a 23-inch rack, and associated screws
- Alarm Relay Connector
- Set of five filler panels with screws for any unused NAM slots and I/O slots
  - Two panels that cover four slots
  - Two panels that cover two slots
  - One panel that covers one slot
- Brackets with screws for installing the housing in a cabinet or rack (already mounted in the 19-inch rack position)

When your equipment arrives, inspect it for physical damage and tighten any screws that may have worked loose. Contact your sales representative immediately if there are any signs of shipping damage, or if anything is missing from your package. Otherwise, proceed with the installation.

## Available Options

The following options can be ordered separately:

- 72-inch EIA standard cabinet, 19 inches wide
- Redundant/replacement power supply
- Replacement power supply fan tray
- Replacement fan tray for NAMs
- Replacement baffle
- RJ48H T1 Mass Termination cable for T1 NAMs
- FrameSaver 9120 Carrier NAM Upgrade Kit to upgrade a current 1-slot FrameSaver 9120 NAM for use in the access carrier
- 9161 Single T1 NAM Upgrade Kit to upgrade the T1 NAM I/O to the Single T1 NAM I/O for use in the access carrier
- 9261 Dual T1 NAM Upgrade Kit to upgrade the 9261 NAM I/O to the Dual T1 NAM I/O for use in the access carrier

Contact your sales representative to order an option.

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# Before You Begin

Make sure you have:

- A dedicated, grounded power outlet that is protected by a circuit breaker and located within 6 feet of the access carrier
- A clean, well-lit, and ventilated site that is free from environmental extremes
- One-to-two feet of clearance for cable connections
- Strain relief material for cable support
- A large Phillips screwdriver to install the access carrier in a cabinet or rack
- A small or medium Phillips screwdriver to install the I/O card filler panels and front filler panels
- A small, flat-blade screwdriver to install the I/O cards, cable connections, and redundant power supply (if needed)
- Contacted your network provider to coordinate installing the carrier and its associated cards into the network

See the Technical Reference or User's Guide for additional information on:

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

# Safety Instructions

Refer to the *Important Safety Instructions* and *EMI Warnings* beginning on page 14.

## **⚠** 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.**



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## **⚠** WARNING:

**Never install the access carrier on its side. Make sure that it is installed in an upright position. You MUST ensure that the cards remain in a vertical, upright position while the unit is operating.**

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## Installing the Access Carrier into a Cabinet/Rack

One 72-inch cabinet can hold up to six access carriers; however, a cabinet does not need to be fully populated. The minimum vertical distance between access carriers is 1U (1.75 inches, EIA-310-C standard). Follow these rules during installation:

- Install access carriers from the bottom of the cabinet and work up. This provides the following:
  - Proper alignment for subsequent access carriers.
  - Easier installation since the access carriers can be lowered onto the mounting screws from above.
  - Convenient connection of the interface cables.
  - Proper cabinet balance. Bottom-up installation keeps the cabinet from becoming top heavy.
- Install the access carrier into the cabinet/rack before installing any cards in the unit.
- Use some type of strain relief to support multiple cables. An RJ48H mass termination cable is available to attach seven T1 Network interfaces to an M66 block.

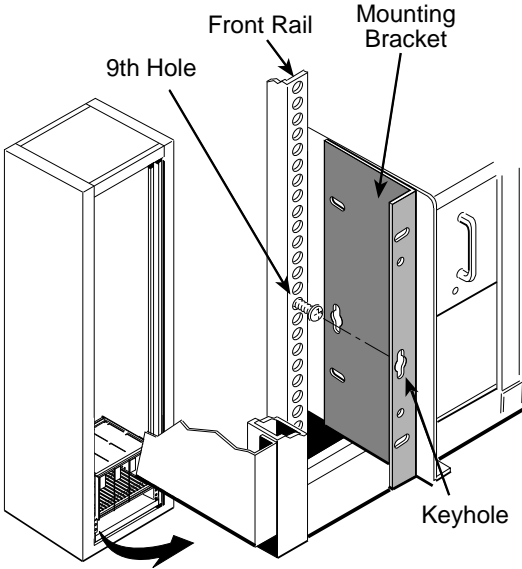
The cabinet/rack may or may not have threaded screw holes.

<b>If the cabinet/rack . . .</b>	<b>Then use the . . .</b>
Has threaded screw holes	Short Phillips-head screws included in the hardware package and follow the procedure in <i>Installing in a Cabinet/Rack with Threaded Screw Holes</i> on page 5.
Does not have threaded screw holes	Speed Nuts and the longer Phillips-head screws included in the hardware package and follow the procedure in <i>Installing a Cabinet/Rack without Threaded Screw Holes</i> on page 6.

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## Installing in a Cabinet/Rack with Threaded Screw Holes

1. Use a screwdriver to install the screw loosely enough to allow the bracket keyhole to drop under the screw head during installation. Use the 9th hole as shown on the left side of the carrier. Use the 12th hole on the right side of the carrier.



**Front of 19-Inch Carrier Cabinet**

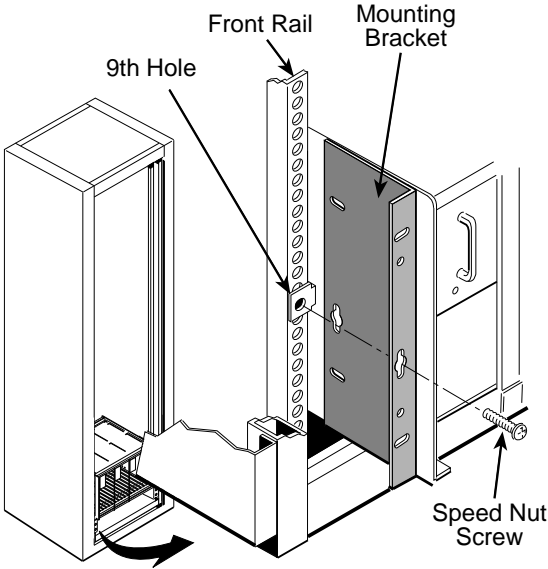
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2. Place the access carrier against the front rail of the cabinet, allowing the installed machine screws on each side to pass through the keyholes.
3. Lower the access carrier into place, allowing the keyholes to slide under the screw heads. This positions and supports the access carrier correctly for installation of the remaining machine screws.
4. Install the remaining machine screws at the top and bottom on each side of the brackets and tighten them.

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## Installing in a Cabinet/Rack without Threaded Screw Holes

1. Slip a Speed Nut into the 3rd, 9th and 16th rail holes on the left side of the carrier, and into the 3rd, 12th and 16th holes on the right side of the carrier. Align the hole of the Speed Nuts with the hole in the rails.
2. Place the access carrier against the front rail of the cabinet, allowing the installed machine screws to pass through the keyholes.



**Front of 19-Inch Carrier Cabinet**

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3. Install the remaining machine screws at the top and bottom on both sides of the brackets, then tighten them.

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## Power Supply

The access carrier obtains low-voltage power from the power supply.

- The power supply, with its I/O card, is already installed in your access carrier.
- You can also order an additional power supply for backup.
- The power receptacle is part of the power I/O card.

## Installing a Redundant Power Supply

The redundant ac power supply is a separately orderable product. Refer to the instructions that came with the power supply, *AC Power Supply for 5-Slot Housing and 9000 Series Access Carrier Installation Instructions*, Document No. 9000-A2-GN17, for installation information.

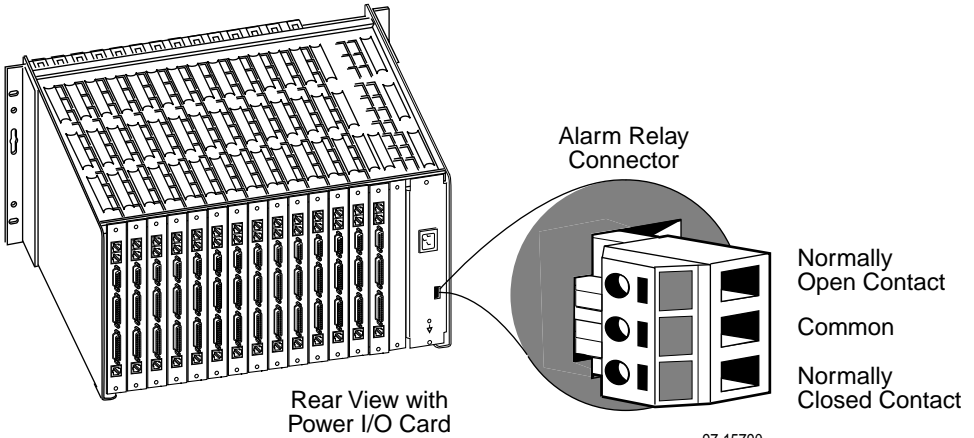
## Power Supply Fan Tray

A power supply fan tray is included with your access carrier beneath the power supply. You can order a replacement power supply fan tray, if needed. Observe the following LEDs on the power supply fan tray upon powering up the access carrier.

<b>If this LED is lit . . .</b>	<b>Then the power supply fan tray is . . .</b>
Green	Operational.
Yellow	Not operating at the proper speed.

# Alarm Relay Connector

The access carrier provides one independent alarm relay for a system alarm light or buzzer. This relay uses SPDT (Single Pole Double Throw) contacts (common, normally open, and normally closed). After making any necessary connections to your alarm system, plug the connector that you received in the box with the access carrier into the socket on the power I/O card.



# NAM Fan Tray

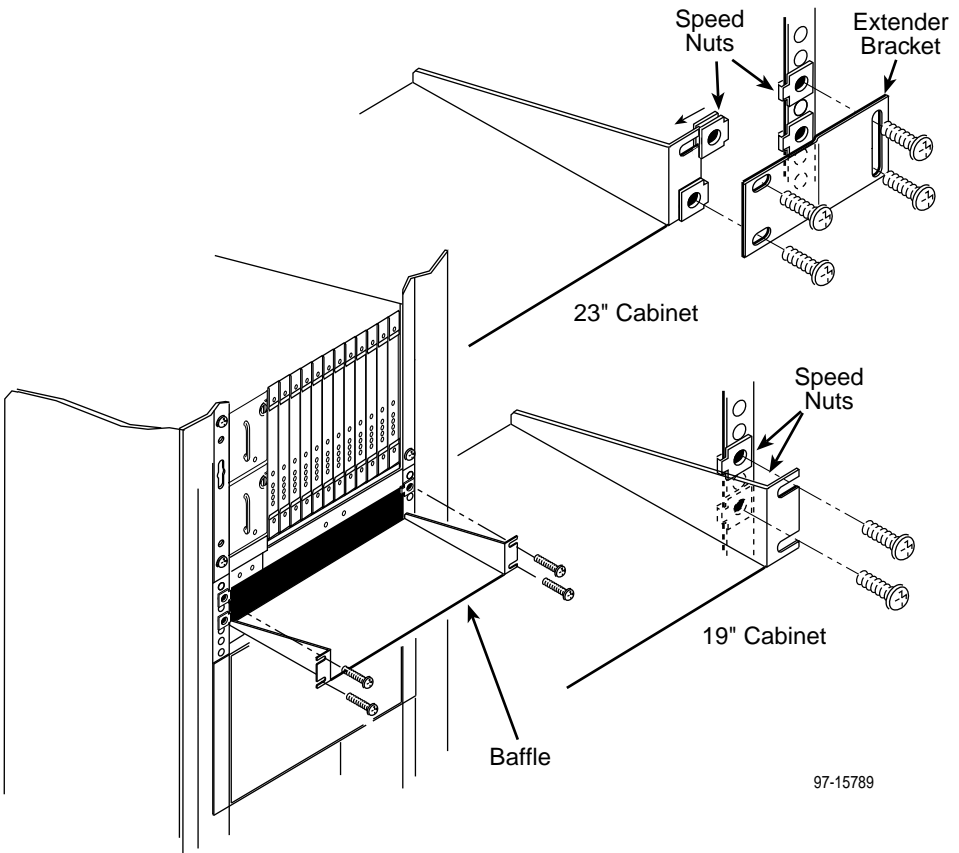
A fan tray for the NAMs is used so that the ambient temperature remains within the acceptable range. A replacement fan tray is available as a separately orderable product.

Once the carrier is connected to ac power, the fans in the fan tray begin circulating air and the green LED lights. If not, check potential reasons in *Troubleshooting* of the Technical Reference or User's Guide.

# Installing the Baffle

A baffle with Speed Nuts is provided for heat deflection. Extender brackets are also provided to convert the baffle for use in a 23-inch rack.

1. If installing the baffle in a 23-inch rack, attach the two extender brackets to each side of the baffle using four of the Speed Nuts (#12-24) and four of the screws (#12-24 x 1/2-inch) provided.
2. If the rack does not have threaded screw holes, slip a Speed Nut onto the first available hole on each side of the rack beneath the installed carrier. Align the hole of the Speed Nuts with the hole in the rails.
3. Using four of the screws provided, attach the baffle to the rack immediately below the carrier, as shown.



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# Card Installation and Removal

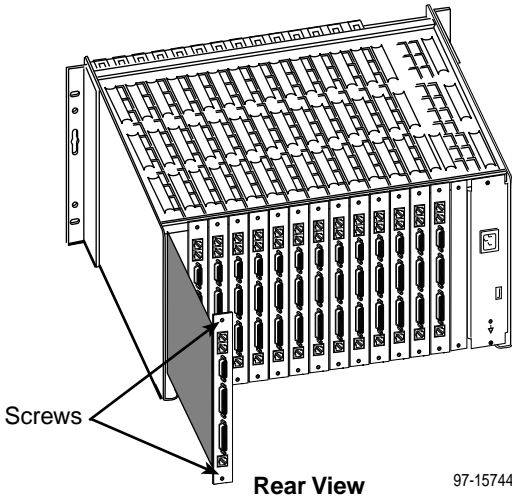
NAMs are installed from the front of the access carrier. I/O cards that provide the interface connections for their associated NAMS are installed from the rear.

**NOTE:**

Cards can be added or removed without powering down the unit.

## I/O Card Installation

The I/O card inserts into the rear of the access carrier and directly connects to the NAM that it supports. Refer to the Installation Instructions that came with your NAM card(s) for installation information.



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## Installing Rear Filler Panels

Once I/O card installations are completed, a filler panel must be installed for each unfilled I/O card slot to ensure compliance with safety requirements.

### **WARNING:**

**Filler panels must be installed on the unused slots to avoid possible injury from electrical shock.**

The access carrier package contains rear filler panels and screws to install unused I/O card slots. The filler panels provided will cover either four, two, or one empty I/O card slot(s).

1. Select the proper filler panel size to cover empty slots.
2. At the rear of the carrier, align the filler panel with the upper and lower tracks of the slot, then screw the panel into place using the screws provided.

## NAM Card Installation

A NAM is required for network access and acts as an interface between the network and the customer premises equipment. NAMs are installed from the front of the access carrier.

### **CAUTION:**

**You must insert the cards in the correct slot so that they mate with their corresponding I/O cards.**

Refer to the Installation Instructions that came with your NAM card(s) for installation information. Refer to the appropriate Technical Reference or User's Guide for NAM operation information.

## Installing Front Filler Panels

Once card installations are completed, a filler panel must be installed for each unfilled NAM slot to ensure compliance with safety requirements.

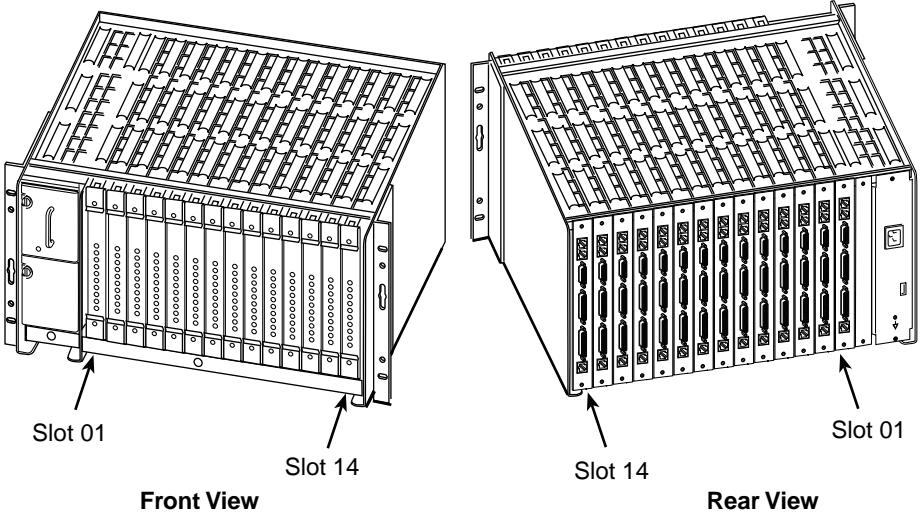
### **⚠ WARNING:**

**Filler panels must be installed on the unused slots to avoid possible injury from electrical shock.**

The access carrier package contains front filler panels for unused NAM slots and captive screws to install them. Filler panels provided will cover either four, two, or one empty NAM slot(s).

1. Select the proper filler panel size to cover the empty slots.
2. Latch the front filler panel into place using the upper and lower ejector latches.
3. Screw the bottom ejector screw into the panel using the captive screw already installed.
4. Screw the top ejector into the panel using the extra captive screw provided.

## Fully Loaded Access Carrier



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## Power-On and Verification

### CAUTION:

The power cord contains a 3-wire grounding-type plug which has a grounding pin. This is a safety feature. Grounding of the carrier is vital to ensure safe operation. Do not defeat the purpose of the grounding plug by modifying it or by using an adapter.

Prior to installation, use an outlet tester or voltmeter to check the ac receptacle for earth ground. If the power source does not provide a ground connection, consult an electrician to determine another method of grounding the carrier before proceeding with the installation.

1. Insert the power cord into the I/O card's power connector.
2. Plug the other end into a power outlet.

## Verification Checklist

- Did the green power supply LED light? If not, see *Troubleshooting* in the Technical Reference or User's Guide.
- Did the green power supply fan tray LED light? If not, see *Troubleshooting* in the Technical Reference or User's Guide.
- Did the green LED on the carrier fan tray light? If not, see *Troubleshooting* in the Technical Reference or User's Guide.

## Power Failure Recovery

In cases of simultaneous and abrupt restoration of nominal voltage conditions, this product automatically restores service without manual intervention.

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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 dangerous voltage points or other risks.
3. 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. 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.
5. Do not allow anything to rest on the power cord and do not locate the product where persons will walk on the power cord.
6. Disconnect power before servicing.
7. 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.
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.
10. Filler panels are provided with the access carrier to cover unused slots. You *must* install filler panels on the unused slots to avoid possible injury from electrical shock and to maintain compliance with FCC rules.
11. This access carrier must be installed in a complete enclosure such as a cabinet or enclosed rack to prevent user access to hazardous circuits.

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12. 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.**

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# 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 access carrier is a label that contains, among other information, the FCC registration number for this equipment. If the unit comes with an integral modem, the ringer equivalence number (REN) will also be labeled. 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 19.

For Digital Data Service (DDS) installations, inform the local telephone company of the appropriate facility interface code for the service you desire.

### DDS Facility Interface Codes

Interface Code	Data Rate (bps)
04DU5-56	56,000
04DU5-64	64,000

The DDS Service Order Number is 6.0Y. The USOC jack required is RJ48S.

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**

<b>Interface Code</b>	<b>Description</b>
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

If equipped with an ISDN PRI DBM, 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.

If equipped with an ISDN BRI DBM, make the ISDN BRI connection using a USOC-type RJ49C jack. When ordering an ISDN line from the telephone company, specify the following:

- Facility Interface Code 02IS5
- Calling Number Identification Service (CNIS) for both the originating and answering units for data traffic on the B-channel.
- Capability Package B for 1B-service or Capability Package (I) for 2B Service for an ISDN BRI DBM – Supports up to two circuit-switched B-channels, BRI-B1 and BRI-B2, each with one Service Profile Identification (SPID) number and one local phone number.
- Busy Fixed Call Forwarding for the answering unit (typically the central site unit) is recommended if getting Capability Package I (2B service). This feature is only required if all remote units will call the same phone number. Busy Fixed Call Forwarding forwards a call to the BRI-B2 channel when the BRI-B1 channel is busy.

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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 DSU 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* on page 19.

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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**. (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

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