

iMarc™ SLV Model 9820-45M Installation Instructions

NOTE: The FrameSaver® product line has been renamed to iMarc.

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Product Documentation Online

Complete documentation for this product is available at www.paradyne.com.
Select *Support* → *Technical Manuals* → *iMarc IP/FrameRelay Devices*.

Select the following documents:

- iMarc Technical Description* (9000-A2-GB30)
- iMarc Configuration Reference* (9000-A2-GB31)
- iMarc SNMP Reference* (9000-A2-GB32)
- iMarc Operations Guide* (9000-A2-GB33)

To order a paper copy of a Paradyne document, or to speak with a sales representative, please call 1-727-530-2000.

Package Checklist

In addition to these installation instructions, the shipping carton should contain:

- iMarc SLV 9820-45M
- One 50-position to 50-position HSSI network cable
- One power cable for each power supply installed
- Two mounting brackets
- Installation kit containing machine screws and other hardware

Notify your supplier if anything is missing or damaged.

Be sure to register your warranty at www.paradyne.com/warranty.

Site Preparation Checklist

Preparation for installation of the iMarc SLV 9820-45M includes the following steps:

- Identify a suitable location for installation:
 - Verify that there is a nearby unshared ac power source, preferably from an Uninterruptable Power Supply (UPS). If a redundant power supply is used, verify that there is a second source available.
 - Verify that there is free vertical space of at least seven inches in the rack for each iMarc SLV 9820-45M to be installed. See the *iMarc Technical Description* for the complete dimensions of the unit.
 - There must be clearance of at least four inches at the back of the units for cabling. Access to the back of the unit is required during installation or when test equipment is connected to the unit.
 - The front of the unit must be visible so that LEDs can be monitored. Access to the front of the unit is also required in the event the front panel assembly must be replaced.
 - The ambient temperature of the site must be in the range of 32° to 122°F (0° to 50°C).
- Determine location of your DCE, DTE, LAN, and monitor interfaces.
- Procure cables of appropriate types and lengths (see Table 1, Cables Required, and Table 2, Maximum Cable Lengths).
- Install and position the cables for eventual attachment to the iMarc SLV 9820-45M.

Installing the iMarc SLV 9820-45M

Before you install the unit, read the *Important Safety Instructions* on page 24.

Physical installation of the iMarc SLV 9820-45M includes:

- Procuring the required cables
- Mounting the iMarc SLV 9820-45M in a rack
- Connecting to power
- Observing the power-on self-test

Cables Required

Table 1, Cables Required, shows the cables used with the iMarc SLV 9820-45M. See the *iMarc Technical Description* for electrical specifications of the cables.

Table 1. Cables Required

Port	Cable Description	Quantity Required	Supplied
Network and Port 1	50-position EIA-613 (HSSI) to 50-position, 0.5-inch straight exit connector*	Two	One
LAN	Ethernet 10/100BaseT straight-through cable with 8-pin modular connectors	One (if LAN port is to be connected to an Ethernet hub)	No
	Ethernet 10BaseT crossover cable with 8-pin modular connectors	One (if LAN port is to be connected to a Network Interface Card)	No
Modem	RJ11 to RJ11 modular	One	No

* Do not substitute a SCSI-2 cable for a HSSI cable.

Maximum Cable Lengths

Table 2, Maximum Cable Lengths, shows the maximum distances for each cable for which a maximum is specified.

Table 2. Maximum Cable Lengths

Cable Description	Maximum Length
50-position EIA-613 (HSSI) to 50-position, 0.5-inch straight exit connector	50 ft (15 m)
Ethernet 10/100BaseT unshielded twisted pair with 8-pin modular connector	328 ft (100 m)
DB25-to-DB25 EIA-232-F for terminal	100 ft (30 m)

Mounting the iMarc SLV 9820-45M

The iMarc SLV 9820-45M can be mounted in a standard 19-inch or 23-inch cabinet or open rails, and either flush with the mounting rails or approximately 4 inches forward of the rails. The different configurations are accommodated by positioning two mounting brackets.

The following procedure requires:

- A fiber-tip marking pen
- A large Phillips screwdriver
- Mounting brackets and #8 flathead machine screws
- Four self-retaining nuts (for rails with unthreaded holes)
- Four #10 machine screws (for use with self-retaining nuts or rails with small threaded holes)
- Four #12 machine screws (for rails with large threaded holes)

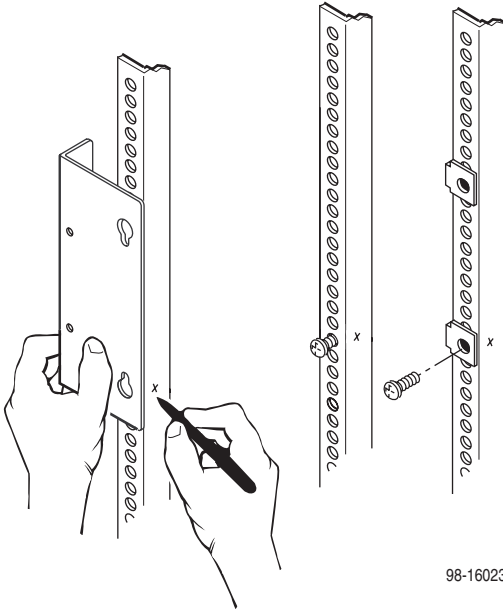
The mounting brackets, machine screws, and self-retaining nuts are supplied with the iMarc SLV 9820-45M.

► Procedure

To install the iMarc SLV 9820-45M in a standard rack:

1. Determine the general position of the iMarc SLV 9820-45M in the rack. Hold one of the mounting brackets in that position and align it so that the notches in the keyed holes of the bracket line up precisely with holes in the rail.
2. Mark the holes in the rail where the two machine screws will go. Then mark the opposite rail in the same positions.
3. If the rack has threaded holes, go to Step 4. If the rack does not have threaded holes, fit self-retaining nuts over the rails at the marked holes.

-
4. Using a large Phillips screwdriver, put machine screws at the two bottom screw positions you marked. Leave the screws loose enough that the mounting brackets can slide over them.



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5. Determine the size of the rack you are installing the unit in.

The brackets must be mounted with the:

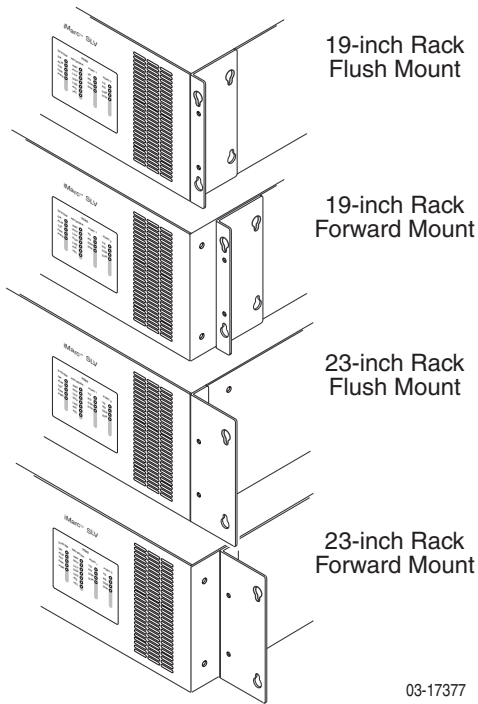
- Wide side of the brackets against the body of the unit for a 19-inch rack
- Narrow side of the brackets against the body of the unit for a 23-inch rack

Use the screw holes:

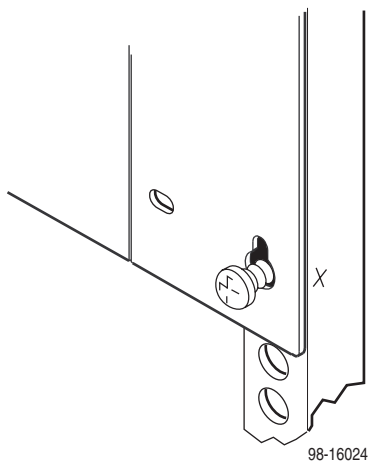
- Nearest the front of the unit to mount it flush with the rails
- Four inches from the front of the unit to mount it overhanging the rails (forward mount)

The keyed holes are at the bottom of the brackets when they are positioned correctly.

6. Fasten the mounting brackets to the unit with four #8 flathead screws.



7. Lift the iMarc SLV 9820-45M into position in the rack, putting the screws through the keyed holes of the bracket. Lower the unit onto the screws.



8. Put a machine screw through the top hole of each bracket and tighten the screw. Tighten the bottom screws.

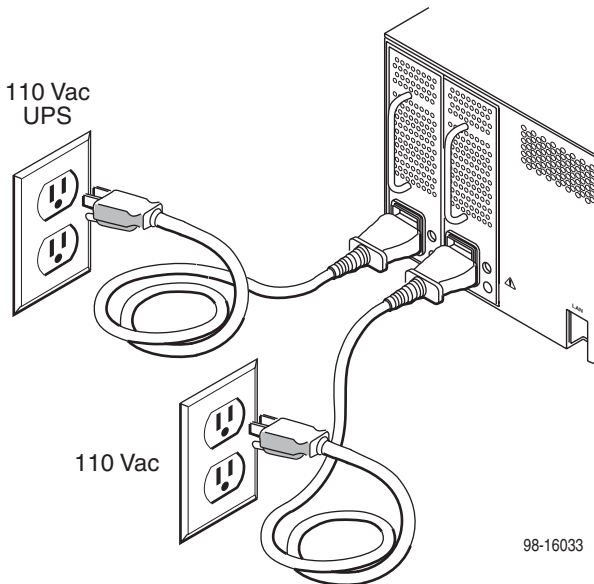
Connecting to Power

The iMarc SLV 9820-45M is powered by two power modules. Each is supplied with a power cable.

► Procedure

To install the power cable:

1. Verify that the switch on the power module is in the Off (0) position.
2. Push the 3-hole connector of the power cable into the power receptacle on the back of the iMarc SLV 9820-45M. Fix the cable to the rail with a cable tie or other strain relief device.
3. Connect the other end of the power cable to a grounded 110 Vac power source.
4. Push the switch on the power module to the On (1) position.



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If two power modules are used, connect them if possible to separate power sources. If one power source fails, the iMarc SLV 9820-45M continues to run.

Connecting the Terminal Cable

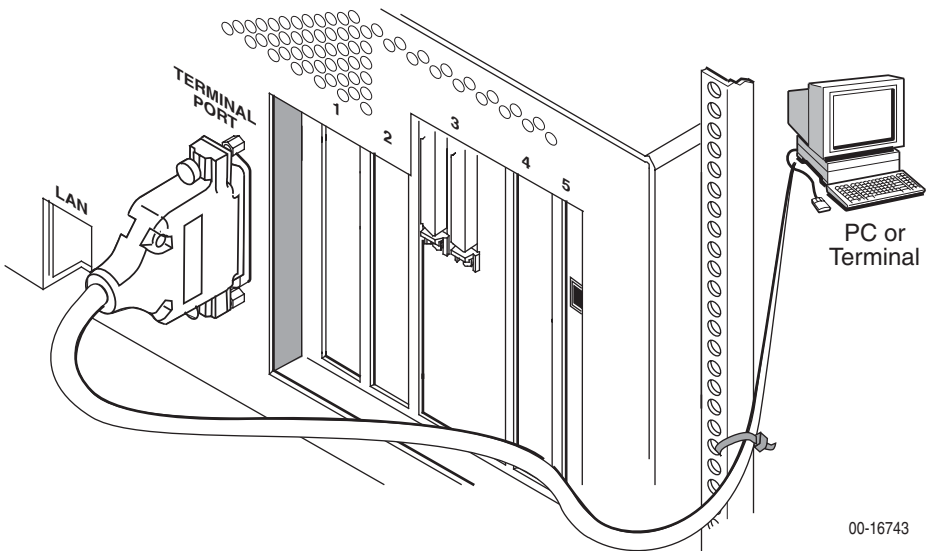
The TERMINAL PORT on the back of the iMarc SLV 9820-45M can be used to connect a VT100-compatible terminal or a PC with terminal emulation software. The port can be protected by access level or password. See the *iMarc Configuration Guide* for more information.

Connect a terminal or PC to the unit with an EIA-232-F straight-through cable.

► Procedure

To install the cable with a terminal or PC:

1. Press the 25-pin connector of the cable onto the TERMINAL PORT socket on the back of the iMarc SLV 9820-45M. If the cable will be permanently attached, fasten the connector and fix the cable to the rail with a cable tie or other strain relief device.
2. Connect the other end of the cable to the serial port of your terminal or PC.



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3. Verify that the terminal or emulation software is set to:
 - 19200 bps
 - 8 data bits
 - No parity bit
 - 1 stop bit
 - No flow control

Power-On Self-Test

When power is applied to the iMarc SLV 9820-45M, it performs a series of internal tests. The SYSTEM TST and SYSTEM OK LEDs are on during the power-on self-test. When the test is complete, all LEDs light up for about five seconds, then assume their assigned functions. After the test, if the test ran with no errors, the SYSTEM OK LED stays on and the SYSTEM ALM (Alarm) LED turns off.

If the power-on self-test failed, a message describing the failure can be displayed on the System and Test Status screen of the Asynchronous Terminal Interface. Use this menu sequence to view the System and Test Status screen:

Main Menu → Status → System and Test Status

A Quick Guide to Configuration

The iMarc 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. See <i>Menu Hierarchy</i> on page 11.
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.

Follow these steps to go to the Configuration Edit/Display menu so you can start setting up the unit.

► Procedure

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

Menu Hierarchy

The Menu Hierarchy shows the organization of the iMarc unit's screens.

Status	System and Test Status	Self-Test Results Last System Reset Health and Status Test Status
	LMI Reported DLCIs	DLCI Status CIR (bps)
	IP Path ConnectionStatus	Device Name IP Address Status Discovery Source
	PVC Connection Status	Source Link, DLCI, EDLCI Status Primary Destination Status Alternate Destination Status
	Network Interface Status	Operating Rate
	IP Routing Table	Destination Mask Gateway Hop Type Interface TTL
	Performance Statistics	Service Level Verification DLCI Frame Relay Clear All Statistics
	Trap Event Log	Number of Trap Events Time of Day Event
	Display LEDs and Control Leads	
	Identity	System NAM

Test	Network PVC Tests	PVC Loopback Send Pattern Monitor Pattern Connectivity
	Data Port PVC Tests	PVC Loopback Send Pattern Monitor Pattern
	Data Port Physical Tests	DTE Loopback
	IP Ping	
	Lamp Test	
	Abort All Tests	
Configuration	System	Frame Relay and LMI Class of Service Definitions Service Level Verification General
	Network	Physical Frame Relay DLCI Records
	Data Ports	Physical Frame Relay DLCI Records
	PVC Connections	Source Link, DLCI, EDLCI Primary Destination Link, DLCI, EDLCI Alternate Destination Link, DLCI, EDLCI
	IP Path List	Add and Display Static Paths
	Management and Communication Options	Node IP Management PVCs General SNMP Management Telnet and FTP Session SNMP NMS Security SNMP Traps Ethernet Port Communication Port Modem Port
Auto-Configuration	Frame Relay Discovery Mode Automatic Circuit Removal	

Control**Modem Call Directories**Directory Number
Directory Phone Number**System Information**Device Name
System Name, Location, Contact
Date
Time**Administer Logins**Login ID
Password
Access Level**Change Operating Mode**Back-to-Back Mode
Standard Mode**Select Software Release**Current Release
Alternate Release
Switch & Reset**LMI Packet Capture Utility**Capture Interface
Packet Capture Start/Stop
Status
Packets in Buffer
Display LMI Trace Log**Telnet****Disconnect Modem****Reset Device****Easy Install**Node IP Address
Node Subnet Mask
TS Access
Create a Dedicated Network
Management Link
Ethernet Port Options Screen

Saving Configuration Options

► Procedure

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 *iMarc Configuration Guide* for more information about configuration options.

About the Installation Procedures

There are two methods for installing and setting up the iMarc unit.

- One person can install and set up the unit. If this is the case, see *Full Installation and Setup* on page 17.
- An installer can physically install and set up access to the unit, and the network operation center (NOC) can complete the setup. If this is the case, see *Minimal Installation* on page 15.

Minimal Installation

A minimal configuration can be performed using the Easy Install screen. Once the unit is installed and minimal configuration is completed, the NOC can complete and verify the setup.

► Procedure

1. Select the Easy Install feature.

Main Menu → Easy Install

```
main/easy_install                               9820-45M
Device Name: Node A                            05/13/2000 01:01
                                         EASY INSTALL

Node IP Address:                               000.000.000.000   Clear
Node Subnet Mask:                             000.000.000.000   Clear
TS Access:  DLCI                             980

Create a Dedicated Network Management Link
Ethernet Port Options Screen

-----
Ctrl-a to access these functions, ESC for previous menu   MainMenu   Exit
Save
```

2. Enter the Node IP Address and Subnet Mask.
3. Set TS Access to DLCI, then select a DLCI on the network interface to be used as the troubleshooting access link.
4. Create a dedicated network management link. Select a DLCI when prompted. The management link will be used by the NOC to access the unit.
5. If the Ethernet port will be used, select the Ethernet Port Options Screen. Enable the interface. Respond Yes to the prompt **Would you like to set the Node's Default IP Destination to Ethernet?** and configure the following:
 - Enter the IP address and subnet mask for the Ethernet interface.
 - Enter the Default Gateway Address (the IP Address that will be used for packets without a route).
 - Press the ESC key to return to the Easy Install screen.

-
6. Save the configurations.
 7. Install the network cable (see *Connecting to the Network* on page 19). The iMarc unit starts discovering DLCs (see *Automatic Configuration* on page 18).
 8. If the Ethernet port will be used for management, install the Ethernet cable (see *Connecting the LAN Cable* on page 21).
 9. Install the DTE cable (see *Connecting to the DTE* on page 22).

Physical installation of the unit is complete; the NOC can now remotely access the unit for additional configuration.

Completing Setup of the Unit From the NOC

► Procedure

1. Access the remote iMarc unit on the dedicated network management link, using the Node IP Address.
2. Configure specific frame relay options, like CIR (Committed Information Rate) or traffic policing, and any other configuration options requiring input or changes from the default settings.
3. Configure SNMP traps.
4. Save the configurations.
5. Verify the entire path from the remote unit to the NOC NMS is functioning (see *Verifying the End-to-End Path* on page 20).
6. Verify that data is being received (see *Checking That Data is Being Received* on page 23).
7. Verify that all PVCs, including Management PVCs, are configured (see *Checking PVC Connections* on page 23).

Full Installation and Setup

The Easy Install feature can also be used when one person installs and sets up the iMarc unit from beginning to end.

► Procedure

1. Follow Steps 1 through 6 of the *Minimal Installation* on page 15.
2. If the unit will be enforcing CIR (Committed Information Rate) and EIR (Excess Information Rate) on network frame relay links, enable Traffic Policing.
Main Menu → Configuration → System → Frame Relay and LMI
You can change other Frame Relay and LMI default settings, if necessary.
3. Configure each interface according to the local management interface (LMI) and assigned line conditions supplied by the service provider.
Configuration → Network → Frame Relay
Configuration → Data Ports → Frame Relay
4. Install the network cable (see *Connecting to the Network* on page 19). The iMarc unit starts discovering DLCIs (see *Automatic Configuration* on page 18).
5. If SNMP traps are wanted, set up managers and select the desired traps (see *Configuring SNMP Trap Managers and Traps* on page 20).
6. Verify the entire path from the remote unit to the NMS is functioning (see *Verifying the End-to-End Path* on page 20).
7. If the Ethernet port will be used for management, install the Ethernet cable (see *Connecting the LAN Cable* on page 21).
8. Install the DTE cable (see *Connecting to the DTE* on page 22).
9. Verify that data is being received (see *Checking That Data is Being Received* on page 23).
10. Verify that all PVCs, including Management PVCs, are configured (see *Checking PVC Connections* on page 23).

The iMarc installation is complete.

See the *iMarc Operations Guide* for additional status and troubleshooting information.

Automatic Configuration

The iMarc 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 Automatic Configuration* in the *iMarc Configuration Guide* for information about other modes and how the Frame Relay Discovery Mode can be changed.

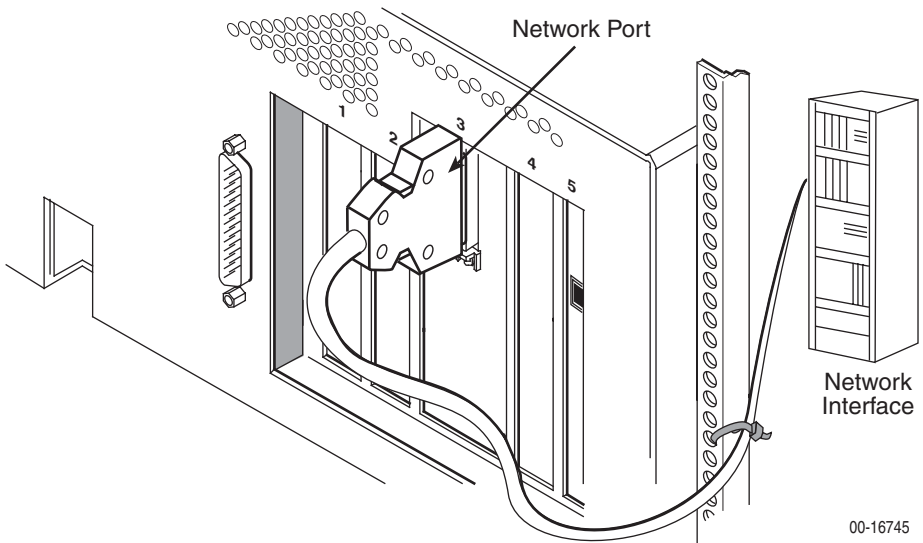
No automatic configuration occurs until the network cable is connected. If you do not want management links configured or automatic configuration, change the default setting for the Frame Relay Discovery feature.

Connecting to the Network

► Procedure

To install the network cable:

1. Press the 50-pin connector of the HSSI cable onto the NETWORK PORT socket on the back of the unit until the latches lock.
2. Connect the other end of the cable to your network device.
3. Fix the cable to the rail with a cable tie or other strain relief device.



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NOTE:

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

4. Verify that the Network DSR LED is on.
5. Verify that the network physical options are configured correctly.
Main Menu → Configuration → Network → Physical
6. 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 *iMarc Operations Guide* for possible reasons.

Configuring SNMP Trap Managers and Traps

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

► Procedure

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 Initial Route Destination for the Trap Manager(s).
- Select desired trap categories.

3. Save the configuration.

4. Return to the Main Menu.

Verifying the End-to-End Path

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

► Procedure

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...** appears 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 the *iMarc Operations Guide* for information about IP Ping-related messages.

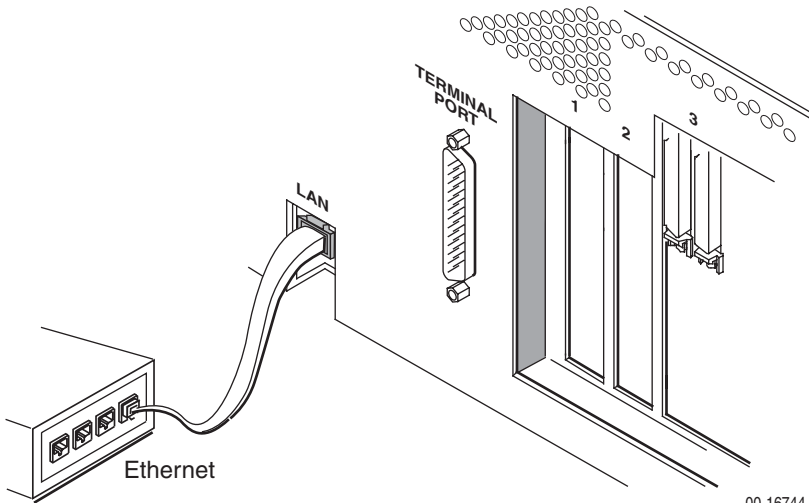
Connecting the LAN Cable

The LAN port can be connected to an Ethernet hub using a standard 10BaseT cable, or to a Network Interface Card (NIC) in a PC using a crossover cable. The LAN port provides a high-speed connection that can be used for FTP and Telnet sessions.

► Procedure

To connect the iMarc SLV 9820-45M to an Ethernet hub or NIC:

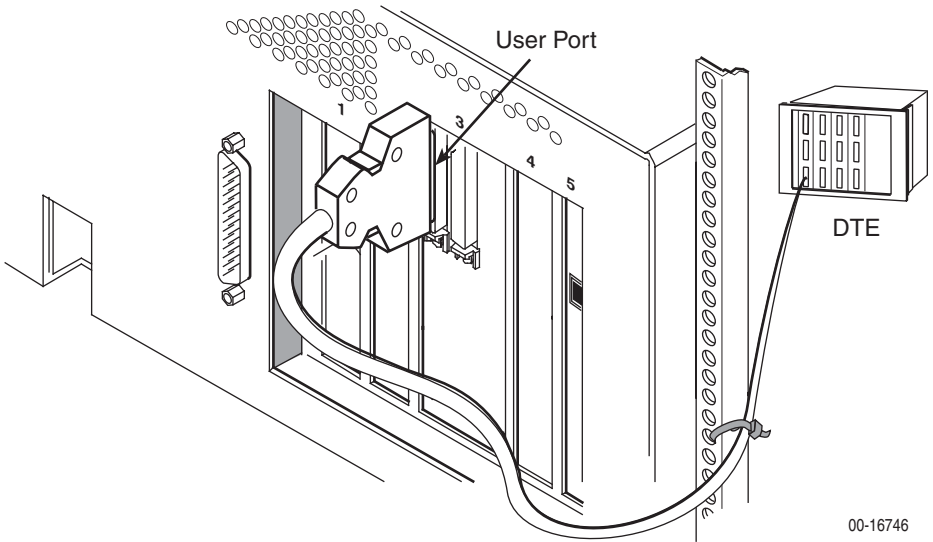
1. Select the correct cable:
 - To connect the LAN port to a hub, use a standard 10BaseT cable
 - To connect the LAN port to a NIC, use a 10BaseT crossover cable
2. Insert the 8-pin modular connector of the cable into the LAN socket on the back of the iMarc SLV 9820-45M. It locks in place when it is fully seated.
3. Fix the cable to the rail with a cable tie or other strain relief device.
4. Connect the other end of the cable to your LAN hub or NIC.



Connecting to the DTE

► Procedure

1. Press the 50-pin connector of the HSSI cable onto the USER PORT socket on the back of the unit until the latches lock.
2. Connect the other end of the cable to the DTE.
3. Tighten the screws on each side of the connectors to secure them.



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Verification:

- Is the Port DTR LED on?
 - If yes, the port is set up correctly and is operational.
 - If no, check that both ends of the cable are properly seated and secured.
- 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 **System Operational** does not appear, refer to the status information in the *iMarc Operations Guide*.

NOTE:

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

Checking That Data is Being Received

► Procedure

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.

Checking PVC Connections

► Procedure

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 iMarc 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.

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.
3. 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.
4. If a 3-wire grounding type power source is not available, consult a qualified electrician to determine another method of grounding the 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. 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.
8. 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. Use a minimum 26 AWG, UL Listed or CSA Certified line cord for the modem connection.
9. 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.
10. 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.
11. 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.

-
12. Follow these instructions when rack mounting the equipment.
- Maintain an environment compatible with the maximum rated operating temperatures indicated in *Technical Specifications* in the *iMarc Technical Description*. The ambient temperature of equipment in a closed or multi-unit rack assembly may be higher than the room temperature.
 - Install the equipment in a rack such a way that the amount of air flow required for safe operation of the equipment is not compromised.
 - Mount the equipment in a rack in such a way that a hazardous condition is not created due to uneven mechanical loading.
 - Apply the equipment nameplate ratings to ensure that connection of the equipment does not overload the supply circuits.
 - Maintain reliable earthing of rack-mounted equipment, particularly if using indirect connections to the branch circuit such as power strips.
13. This product contains a coin cell lithium battery that is only to be replaced at the factory. **Caution:** There is a danger of explosion if the battery is incorrectly replaced. Replace only with the same type. Dispose of used batteries according to the battery manufacturer's instructions. **Attention:** Il y a danger d'explosion s'il y a remplacement incorrect de la batterie. Remplacer uniquement avec une batterie du même type. Mettre au rebut les batteries usagées conformément aux instructions du fabricant.

EMI Notices

UNITED STATES – EMI NOTICE:

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.

CANADA – EMI NOTICE:

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 listed in the following sections pertain to the unit's modem, Model 9008-F1-100.

United States

Notice to Users of the Telephone Network

This equipment complies with Part 68 of the FCC rules. On the modem's rear panel is a label or silkscreened text that contains, among other information, the FCC registration number for this equipment and the Ringer Equivalence Number (REN). 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 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* on page 28.

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 at 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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Patent Notification

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



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