

## Hotwire® Shelf Concentration and Processing (SCP) Card Installation Instructions

Document Number 8400-A2-GZ40-10

October 2003

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### Hotwire Shelf Concentration and Processing Card

A Hotwire® Shelf Concentration and Processing (SCP) card is a circuit card assembly that comprises a parent card with an ATM switch, a backplane interface, a processor, a cell multiplexer/demultiplexer, and an uplink childcard. The childcard determines the type of ATM uplink supported by the SCP card.

When the SCP card is used in a Hotwire 8620 or 8820 GrandSLAM chassis, it aggregates DSL traffic from each of the DSL port cards in the chassis on the chassis's backplane bus and concentrates it onto an ATM interface. The following models are available:

SCP Card Model	ATM Uplink Childcard
8411-A1-000	DS3
8412-A1-000	OC3/STM1 Multimode Fiber
8413-A1-000	OC3/STM1 Single Mode Fiber Intermediate Reach (15 km)
8414-A1-000	OC3/STM1 Single Mode Fiber Long Reach (40 km)
8416-A1-000	8-Port DS1 IMA (Inverse Multiplexing over ATM)
8417-A1-000	8-Port E1 IMA

The SCP card supports the following line cards:

- 8955 ReachDSL ATM Card
- 8965 ADSL ATM Card
- 8985 SHDSL ATM Card

With a Management Communications Controller (MCC) card installed in the same chassis, the SCP card also supports Hotwire Time Division Multiplexer (TDM) SDSL and SHDSL cards, Models 8775, 8777, 8779, and 8799.

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## Product Documentation Online

Complete documentation for this product is available at [www.paradyne.com](http://www.paradyne.com).  
Select *Support* → *Technical Manuals* → *Hotwire DSL Systems*.

Select the following documents:

8400-A2-GB20  
*Hotwire Shelf Concentration and Processing (SCP) Card User's Guide*

8620-A2-GN20  
*Hotwire 8620 GrandSLAM Installation Guide*

8820-A2-GN20  
*Hotwire 8820 GrandSLAM Installation Guide*

8900-A2-GB20  
*Hotwire ATM Line Cards, Models 8955, 8965, and 8985, User's Guide*

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

Refer to the appropriate Hotwire GrandSLAM installation guide to:

- Install and set up the Hotwire GrandSLAM chassis
- Connect cables

After the SCP card is installed, there are configuration procedures that must be performed before you can begin to use the DSL port cards. Refer to the *Hotwire ATM Line Cards User's Guide* and the *Hotwire Shelf Concentration and Processing (SCP) Card User's Guide* for detailed configuration procedures.

## Package Contents

Verify that the shipping carton contains:

- One SCP card in an anti-ESD bag
- One 14-foot serial cable with modular connectors
- One DB9 adapter for use with the serial cable
- This document

If anything is missing or damaged, contact your sales representative.



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## Installing Two SCP Cards in the Same DSLAM

Two SCP cards may be installed in one DSLAM to provide redundancy or load sharing. There are three basic configurations for paired SCP cards:

- **Y-Cable** – The OC3 ports of the two SCP cards are connected to the same uplink device. If the active SCP card fails, the backup SCP card automatically becomes the uplink. See *Equipment List* on page 15 for available Y-cables.
- **Dual Link** – Automatic switching occurs in the event of failure, but the SCP cards are connected to different uplink devices.
- **Load Sharing** – Both SCP cards are active, and connected to different uplink devices. In the event of the failure of one of the cards, Dual Link redundancy must be manually enabled.

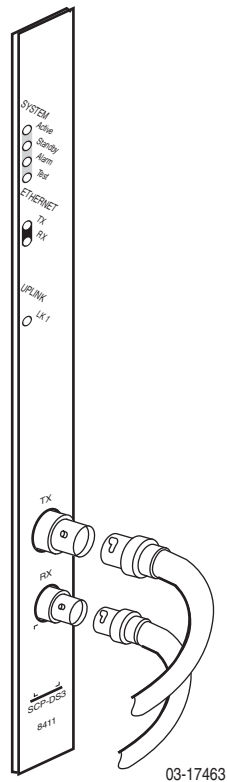
If you use two SCP cards configured for redundancy, and intend to manage the chassis through the active card's Ethernet port, each card must have its own connection to your hub (through the connector marked LAN Slot A or B). The cable cannot be switched after the backup SCP card becomes the active card. Also, since the two SCP cards share the same MAC address, they cannot both be connected to switch ports on your Ethernet switch.

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## DS3 Uplink

SCP cards with a DS3 uplink have two BNC jacks: one for the transmit direction and one for the receive direction. To cable an SCP card with an DS3 uplink:

1. Connect the input cable to the RX jack on the faceplate of the SCP card.
2. Connect the output cable to the TX jack on the faceplate of the SCP card.
3. If the chassis is mounted in a rack, direct the cables toward the nearest rail and fasten them with cable ties.

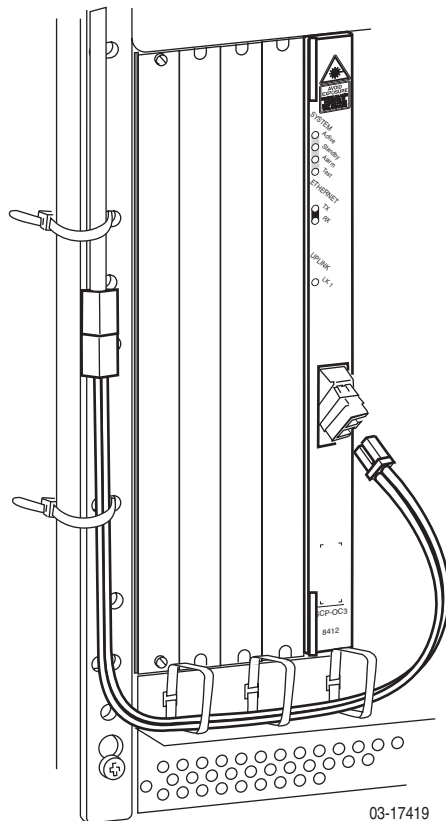


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## OC3 Uplink

SCP cards with an OC3 uplink use an SFP transceiver that accepts an LC-type connector. To cable an SCP card with an OC3 uplink:

1. Remove the plastic dustcover from the SFP socket.
2. Insert the LC connector of your fiber optic cable into the SFP socket.
3. Observing the minimum bend radius for your cable, fasten it with cable ties in such a way that it will not be kinked or snagged in the course of other cabling. If you do not know the specifications for your cable, maintain a radius of at least ten times the cable diameter.



## IMA Uplink

SCP cards with an IMA uplink have an RJ45M-type 50-position connector with eight Tip/Ring and eight Tip1/Ring1 connections that conforms to ANSI T1.403-1999. The following splitter cables are available:

- Feature Number 8026-F1-001 for the Model 8416 SCP card terminates in eight 8-pin modular jacks. See Table 2, Feature Number 8026-F1-001 Pin Assignments, on page 12.

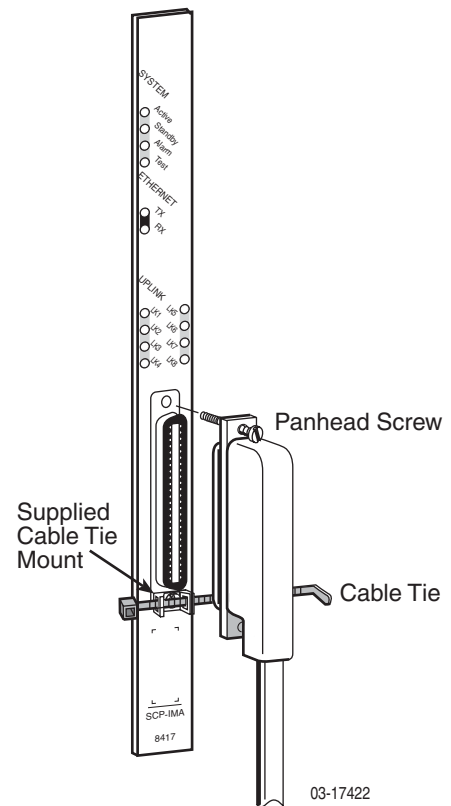
To connect the SCP card to a switch, attach the modular jacks of the 8026-F1-001 cable to T1/E1 crossover cables, and attach the crossover cables to the switch.

- Feature Number 8027-F1-001 for the Model 8417 SCP card terminates in 16 BNC jacks. See Table 3, Feature Number 8027-F1-001 Pin Assignments, on page 13.

To cable an SCP card with an IMA uplink:

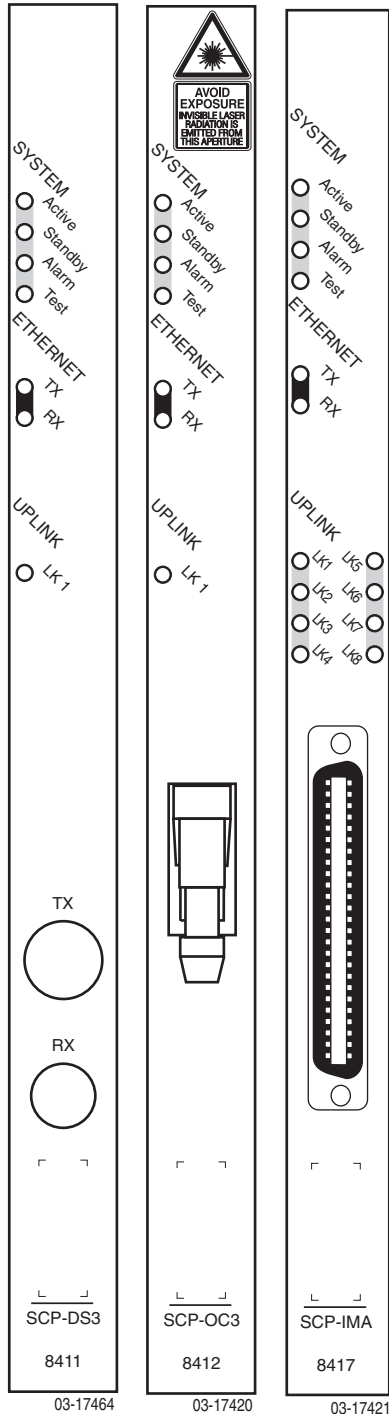
1. Feed the supplied cable tie through the openings in the base of the 50-position connector.
2. Fasten the splitter cable to the connector with the captive panhead screw.
3. Wrap the cable tie around the cable and fasten it.

If any ferrite chokes are supplied with the SCP card, they must be installed to meet EMI requirements. Install the choke or chokes as close as possible to the 50-position connector. Hold them in place with an adjacent cable tie.



# SCP Card LEDs

The following table describes the meaning and states of the LEDs on the Hotwire SCP card faceplate. Example faceplates are shown at left.



Type	LED	LED is ...	Indicating ...
SYSTEM	Active	Green, Slow-cycling	This SCP card is the active card and is functioning normally. Slow-cycling describes a recurring pulse when the LED is on longer than off at a ratio of approximately 10:1.
		Green, On	SCP card failure. System processing functions have stopped.
		Off	No power to card, or this is the standby SCP card.
	Standby	Green, Slow-cycling	This SCP card is the standby card and is functioning normally. Slow-cycling describes a recurring pulse when the LED is on longer than off at a ratio of approximately 10:1.
		Green, On	SCP card failure. System processing functions have stopped. No power to card, or this is the active SCP card.
Alarm	Yellow	Alarm is present on the SCP card.	
Test	Yellow	Test in progress.	
ETHERNET	TX	Green, Blinking	Data is being transmitted.
		Off	Inactive.
ETHERNET	RX	Green, Blinking	Data is being received.
		Off	Inactive.
UPLINK	LK1 or LK1-LK8	Green	The link is active.
		Yellow	The link is in an alarm state.
		Off	The link is disabled.



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## Using the Default Management Address

The SCP card uses Transaction Language 1 (TL1) language for Command Line Interface (CLI) commands and messages. The CLI can be used to configure and maintain the system, but the web interface is recommended. You can access the web interface using the default management address or a network address you specify using the CLI (see *Setting the Management Address Using the CLI*).

### ► Procedure

To use the default management address:

1. Connect a PC to the Ethernet port of the SCP card using a crossover cable.
2. Access the web interface by typing the default address 10.10.10.10 into the Location field of your web browser. See *Using the Web Interface* on page 11.

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## Setting the Management Address Using the CLI

The management address can be set using the CLI.

### ► Procedure

To set the management address of the SCP card using the CLI:

1. Using the supplied cable and DB9 adapter, connect a PC with a terminal emulation program to the SERIAL SCM jack of your GrandSLAM. This gives you access to the CLI.
2. Log in to the SCP card using the ACT-USER command:

```
ACT-USER::SUPERUSER:::ASN#1500
```

The default password, ASN#1500, will appear as asterisks on your screen.

3. Assign an IP address, netmask, and next-hop router using the ED-IPPORT command. For example:

```
ED-IPPORT::ETH-1:100:MANUAL:IPADDR=135.26.10.37,  
NETMASK=255.255.255.0,GATEWAY=135.26.10.30:IS
```

The GATEWAY in the ED-IPPORT command specifies a router for the SCP card to use to create a dynamic route upon receipt of a packet from an unknown host on the Ethernet port. To specify a default gateway for the SCP card (for the routing of packets for which there is no appropriate route), use the SET-NE-ALL command. For example:

```
SET-NE-ALL::COM:100:::DEFROUTER=135.26.10.20;
```

4. Attach the SCP card to your network using the appropriate LAN connection on your GrandSLAM:
  - On the Model 8820 GrandSLAM, connect to the LAN SLOT A or LAN SLOT B port, depending on where the SCP card is installed.
  - On the Model 8620 GrandSLAM, connect to the LAN SCM port.

You can now access the web interface by typing into the Location field of your web browser the IP address assigned to the Ethernet port. See *Using the Web Interface* on page 11.

In a configuration with two SCP cards, this procedure provides access only to the active SCP card.

# Using the Web Interface

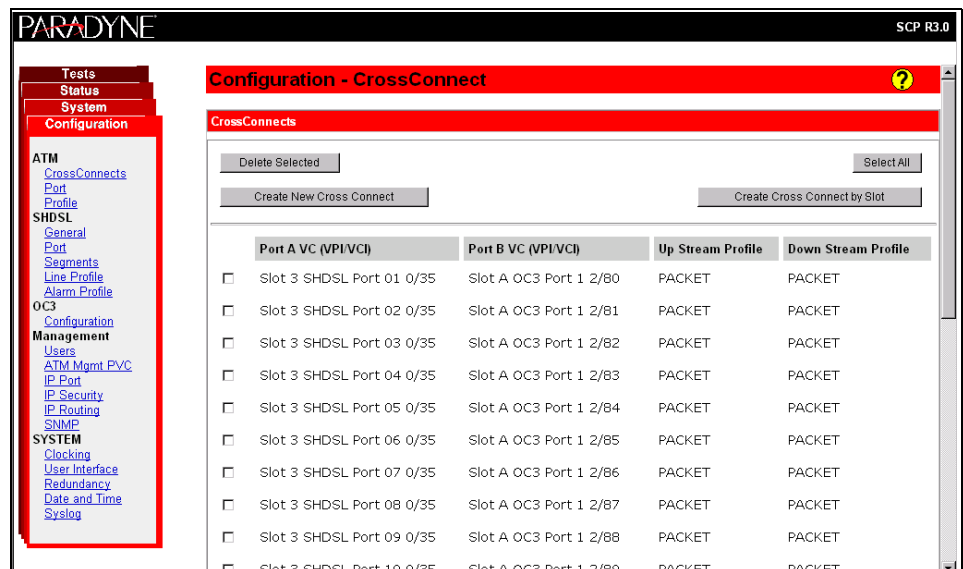
To access the web interface:

## ► Procedure

1. Open your web browser. (Internet Explorer Version 6 or above is recommended.)
2. Type http:// and the IP address of the SCP card into the Address field of your browser window. This is 10.10.10.10 by default, or the address you set using the CLI. For example:



3. A login window appears. Enter the default User ID (SUPERUSER) and Password (ASN#1500), and click on OK. The web interface screen appears.
4. Click on the menu tab appropriate to what you would like to do:
  - Configuration – To configure the system and interfaces
  - Status – To display statistics, status, and contents of memory
  - System – To display system information, download firmware, back up configurations, and modify users
  - Tests – To start and stop tests

A screenshot of the PARADYNE web interface. The top header shows 'PARADYNE' on the left and 'SCP R3.0' on the right. A navigation menu on the left lists various categories: Tests, Status, System, Configuration, ATM, SHDSL, OC3, Management, and SYSTEM. The main content area is titled 'Configuration - CrossConnect' and contains a table of cross-connects. The table has four columns: Port A VC (VPI/VCI), Port B VC (VPI/VCI), Up Stream Profile, and Down Stream Profile. Each row represents a cross-connect configuration for a specific slot and port. The 'Up Stream Profile' and 'Down Stream Profile' columns both contain the value 'PACKET'.

Port A VC (VPI/VCI)	Port B VC (VPI/VCI)	Up Stream Profile	Down Stream Profile
<input type="checkbox"/> Slot 3 SHDSL Port 01 0/35	Slot A OC3 Port 1 2/80	PACKET	PACKET
<input type="checkbox"/> Slot 3 SHDSL Port 02 0/35	Slot A OC3 Port 1 2/81	PACKET	PACKET
<input type="checkbox"/> Slot 3 SHDSL Port 03 0/35	Slot A OC3 Port 1 2/82	PACKET	PACKET
<input type="checkbox"/> Slot 3 SHDSL Port 04 0/35	Slot A OC3 Port 1 2/83	PACKET	PACKET
<input type="checkbox"/> Slot 3 SHDSL Port 05 0/35	Slot A OC3 Port 1 2/84	PACKET	PACKET
<input type="checkbox"/> Slot 3 SHDSL Port 06 0/35	Slot A OC3 Port 1 2/85	PACKET	PACKET
<input type="checkbox"/> Slot 3 SHDSL Port 07 0/35	Slot A OC3 Port 1 2/86	PACKET	PACKET
<input type="checkbox"/> Slot 3 SHDSL Port 08 0/35	Slot A OC3 Port 1 2/87	PACKET	PACKET
<input type="checkbox"/> Slot 3 SHDSL Port 09 0/35	Slot A OC3 Port 1 2/88	PACKET	PACKET
<input type="checkbox"/> Slot 3 SHDSL Port 10 0/35	Slot A OC3 Port 1 2/89	PACKET	PACKET

## BNC Jacks

The following table shows the connections for BNC jacks (Model 8411).

**Table 1. BNC Jack Connections**

Connector	Label	Connection	Description
Transmit	TX	Pin	Transmit signal
		Shell	Transmit signal return
Receive	RX	Pin	Receive signal
		Shell	Receive signal return

## IMA Interface Pin Assignments

Table 2 lists connector pin assignments for Model 8416, and the Model 8417 when used with modular connectors for a 120-ohm E1 connection. Table 3 lists connector pin assignments for the Model 8417 when used with BNC connectors for a 75-ohm E1 connection.

**Table 2. Feature Number 8026-F1-001 Pin Assignments (1 of 2)**

DS1 or 120 Ohm E1 Port	50-Position Telco Connector Pinouts	8026-F1-001 RJ48C Connector Pinouts	Function
Port 1	27	5	Data Out (Tip)
	2	4	Data Out (Ring)
	26	2	Data In (Tip)
	1	1	Data In (Ring)
Port 2	30	5	Data Out (Tip)
	5	4	Data Out (Ring)
	29	2	Data In (Tip)
	4	1	Data In (Ring)
Port 3	33	5	Data Out (Tip)
	8	4	Data Out (Ring)
	32	2	Data In (Tip)
	7	1	Data In (Ring)
Port 4	36	5	Data Out (Tip)
	11	4	Data Out (Ring)
	35	2	Data In (Tip)
	10	1	Data In (Ring)

**Table 2. Feature Number 8026-F1-001 Pin Assignments (2 of 2)**

<b>DS1 or 120 Ohm E1 Port</b>	<b>50-Position Telco Connector Pinouts</b>	<b>8026-F1-001 RJ48C Connector Pinouts</b>	<b>Function</b>
Port 5	39	5	Data Out (Tip)
	14	4	Data Out (Ring)
	38	2	Data In (Tip)
	13	1	Data In (Ring)
Port 6	42	5	Data Out (Tip)
	17	4	Data Out (Ring)
	41	2	Data In (Tip)
	16	1	Data In (Ring)
Port 7	45	5	Data Out (Tip)
	20	4	Data Out (Ring)
	44	2	Data In (Tip)
	19	1	Data In (Ring)
Port 8	48	5	Data Out (Tip)
	23	4	Data Out (Ring)
	47	2	Data In (Tip)
	22	1	Data In (Ring)

**Table 3. Feature Number 8027-F1-001 Pin Assignments (1 of 2)**

<b>75 Ohm E1 Port</b>	<b>Function</b>	<b>50-Position Telco Connector Pinouts</b>	<b>BNC Connector</b>
Port 1	Data In	1	Shell (Ring)
		26	Pin (Tip)
	Data Out	2	Shell (Ring)
		27	Pin (Tip)
Port 2	Data In	4	Shell (Ring)
		29	Pin (Tip)
	Data Out	5	Shell (Ring)
		30	Pin (Tip)

**Table 3. Feature Number 8027-F1-001 Pin Assignments (2 of 2)**

<b>75 Ohm E1 Port</b>	<b>Function</b>	<b>50-Position Telco Connector Pinouts</b>	<b>BNC Connector</b>
Port 3	Data In	7	Shell (Ring)
		32	Pin (Tip)
	Data Out	8	Shell (Ring)
		33	Pin (Tip)
Port 4	Data In	10	Shell (Ring)
		35	Pin (Tip)
	Data Out	11	Shell (Ring)
		36	Pin (Tip)
Port 5	Data In	13	Shell (Ring)
		38	Pin (Tip)
	Data Out	14	Shell (Ring)
		39	Pin (Tip)
Port 6	Data In	16	Shell (Ring)
		41	Pin (Tip)
	Data Out	17	Shell (Ring)
		42	Pin (Tip)
Port 7	Data In	19	Shell (Ring)
		44	Pin (Tip)
	Data Out	20	Shell (Ring)
		45	Pin (Tip)
Port 8	Data In	22	Shell (Ring)
		47	Pin (Tip)
	Data Out	23	Shell (Ring)
		48	Pin (Tip)

## Equipment List

The following feature numbers may be used to order SCP cards, line cards, and related cables.

**Table 4. Feature Numbers**

<b>Description</b>	<b>Feature Number</b>
<i>Cards</i>	
SCP Card: DS3	8411-A1-000
SCP Card: OC3/STM1 Multimode Fiber	8412-A1-000
SCP Card: OC3/STM1 Single Mode Fiber Intermediate Reach	8413-A1-000
SCP Card: OC3/STM1 Single Mode Fiber Long Reach	8414-A1-000
SCP Card: 8-Port DS1 IMA	8416-A1-000
SCP Card: 8-Port E1 IMA	8417-A1-000
MCP GrandSLAM 3.0	8900-B1-211
ADSL2 ATM Line Card 24 ports Annex A	8965-B1-000
ReachDSL 2.2 ATM Line Card 24 ports	8955-B1-000
G.SHDSL ATM Line Card 24 ports	8985-B1-000
<i>Cables</i>	
LC-to-SC Conversion Cable for SCP Multi-Mode Fiber	8400-F1-001
LC-to-SC Conversion Cable for SCP Single Mode Fiber	8400-F1-002
Y-Cable for SCP Redundancy: LC Connections, Multi-Mode Fiber	8400-F1-003
Y-Cable for SCP Redundancy: LC connections, Single Mode Fiber	8400-F1-004
Y-Cable for SCP Redundancy: SC Connections, Multi-Mode Fiber	8400-F1-005
Y-Cable for SCP Redundancy: SC Connections, Single Mode Fiber	8400-F1-006
Y-Cable for SCP Redundancy: DS3	8400-F1-007
50-Position Connector to Eight 8-Pin Modular Jacks Cable	8026-F1-001
50-Position Connector to Sixteen BNC Jacks Cable	8027-F1-001

# SCP Card Technical Specifications

**Table 5. SCP Card Technical Specifications (1 of 2)**

Specifications	Criteria
<b>Size</b>	Length: 10.4 inches (26.42 cm) Height: 11.15 inches (28.32 cm) Width: 1.0 inches (2.54 cm)
<b>Weight</b>	Approximately 1.7 lbs. (0.76 kg)
<b>Approvals</b> Safety Certifications	Refer to the equipment's label for approvals on product.
<b>Power</b>	The SCP card contains a DC-to-DC converter that requires 48V power input. The 48V power is distributed through the Hotwire chassis backplane.
<b>Power Dissipation</b>	DS3: 32 watts OC3: 29 watts IMA: 32 watts
<b>Physical Environment</b> Operating temperature Storage temperature Relative humidity Shock and vibration	32° to 140° F (0° to 60° C) -4° F to 158° F (-20° C to 70° C) 5% to 85% (noncondensing) Withstands normal shipping and handling.
<b>DS3 Uplink Specifications</b> Number of ports Connector Type Standards Supported  Frame Formats Line Type Data Rates Supported	1 DS3 Two 75-ohm BNC jacks Operations, violations, alarm states, performance statistics: ANSI T1.107-1995, ANSI T1.646-1995 Output jitter: ITU G.709, ITU G.783 DS3 electrical specifications: ITU G.709 DS3/ATM physical layer interface: ATM Forum af-phy-0054.000 HEC generation, calculation, error detection: ANSI T1.646, ITU T1.646 PLCP, Direct B3ZS 44.736 Mbps



**Table 5. SCP Card Technical Specifications (2 of 2)**

Specifications	Criteria
<b>OC3 Uplink Specifications</b>	
Number of ports	1 OC3
Connector Type	Duplex LC Socket
Standards Supported	ANSI T1.105.06-94 Jitter, ANSI T1.105.09 94 Jitter, ANSI T1.117.06-91, ITU-T G.957 7/95
Frame Formats	OC3 or STM-1 Operation, Direct Mode only
Line Type	Non-Return to Zero
Data Rates Supported	155.52 Mbps
Facility Datalink Protocol	ANSI T1.105 Format, ANSI T1.646 HEC, ITU-T I.432 Scrambler
Cable Distance	
Model 8412 (MMF)	2 Km (6561.7 feet)
Model 8413 (SMFIR)	15 Km (49,212.6 feet) SMF fiber
Model 8414 (SMFLR)	40 Km (131,234 feet) SMF fiber
<b>IMA Uplink Specifications</b>	
Number of ports	8 T1 or E1
Connector Type	RJ45M-type (50-pin telco)
Standards Supported	RFC 495, ANSI T1.403, ITU G.703/G.704
Frame Formats	T1: Superframe, extended Superframe E1: E1, E1-CRC
Line Type	T1: B8ZS E1: HDB3
Data Rates Supported	T1: 1.544 Mbps per T1 (max. 8 T1) E1: 2.048 Mbps per E1 (max. 8 E1)
Facility Datalink Protocol	ANSI T1.403
Cable Distance	T1/E1 (short haul): 200 meters (656 feet) (LBO=0, -7, -15, -22 dB) T1/E1 (long haul): 2000 meters (6561.7 feet)

## Important Safety Instructions

The OC3 configuration of the SCP circuit card has provisions for the customer to install Class 1 laser transceivers to provide optical coupling to the telecommunications network. Once a Class 1 laser is installed, the equipment is considered to be a Class 1 laser product (Appareil à Laser de Classe 1). If the Class 1 laser device is not purchased from Paradyne Corp., the customer is responsible to insure that the Class 1 AEL (Allowable Emissions Limit) per EN/IEC 60825 is not exceeded after the laser transceivers have been installed. Do not install laser products whose class rating is greater than 1. Refer to the important safety instructions that accompany the transceiver prior to installation. Only laser Class 1 devices certified for use in the country of installation by the cognizant agency are to be utilized with this product. Also, laser warnings are to be provided in accordance with IEC 60825-1 and its Amendments 1 and 2, as well as 21 CFR 1010 and 1040.10(g).

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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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