PARADYNE®

8922 POTS Card
Installation and User's Guide

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Contents

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Product Documentation Online

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Select *Library → Technical Manuals.*

Document Number	Document Title
8400-A2-GB20	*Shelf Concentration and Processing (SCP) Card User's Guide*
8400-A2-GZ40	*Shelf Concentration and Processing (SCP) Card Installation Instructions*
8400-A3-GB21	*8620 and 8820 Broadband Access Concentrators TL1 Reference*
8400-A3-GB22	*8620 and 8820 Broadband Access Concentrators Command Line Interface (CLI) Reference*
8620-A2-GN20	*8620 Broadband Access Concentrator Installation Guide*
8820-A2-GN20	*8820 Broadband Access Concentrator Installation Guide*

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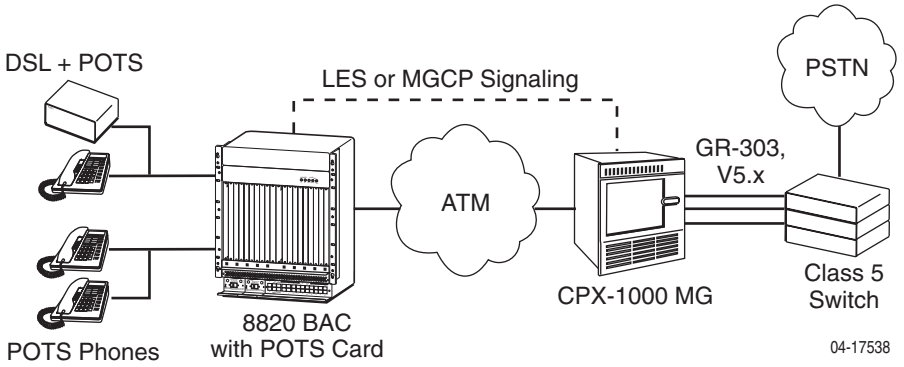
8922 POTS Card Description

The 8922 POTS (Plain Old Telephone Service) card can be used in any 8620 or 8820 Broadband Access Concentrator (BAC) managed by a Shelf Concentration and Processing (SCP) card. The model 8820-A2-520 BAC is required for test access.



Physical Description

Each 8922 POTS card connects through one 50-position Telco connector (RJ21X) on the rear of the chassis. The card supports:

- 24 POTS ports
- Standard 2-wire single party service
- Loop start
- DTMF and Pulse
- 5 REN
- G.711 PCM, G.726 ADPCM, G.729 CELP
- Test access for connection to an external test head (with Test Access System Interface Module)
- Custom Local Area Signaling Services

For a complete list of supported features, see *Technical Specifications* on page 20.

Installation Overview

In the course of installing the 8922 POTS card, you will:

- ❑ Obtain the applicable cable; refer to *Cabling* on page 9.
- ❑ Make sure the BAC is installed and power is supplied to the chassis.
- ❑ Install the card in the BAC.
- ❑ Connect to a 66 Block or other termination point.
- ❑ Configure your POTS card and IADs using the web or TL1 interface. Refer to the SCP card's online Help or the *8620 and 8820 Broadband Access Concentrators TL1 Reference* for configuration information.

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

Installing POTS Cards

⚠ 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. If you are not sure of the proper static control precautions, contact your service representative.

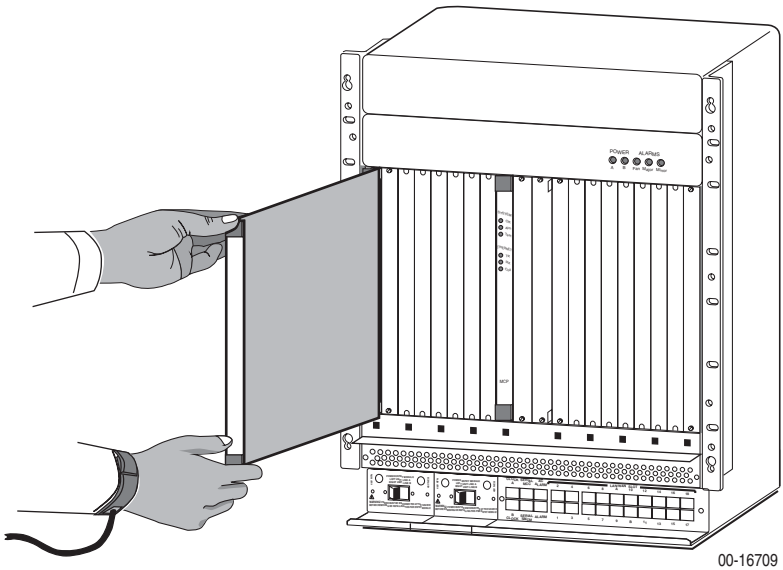
A POTS card can be installed in, removed from, and replaced in a BAC without disrupting service to the other cards in the chassis.

▶ Procedure

To install the POTS card:

1. Determine in which slot the unit will be installed. Verify that cards in adjacent slots have been fastened.
2. Remove the filler plate from the installation slot and store for possible later use.

3. Holding the POTS card vertically with component side facing right, insert it into the top and bottom card guides.



CAUTION:

Do not force the unit into the slot. This could damage the backplane connectors. If the card does not seat properly, remove the card and reinstall it. If it still does not seat properly, call your service representative.

4. Slide the unit into the slot until the power and network connectors seat firmly in the mating connectors on the backplane.

   The unit performs a power-on self-test. All of the LEDs turn ON and OFF briefly. When the self-test is completed successfully, the SYSTEM OK LED begins to pulse.

   If the LED is not pulsing, notify your service representative. See *Front Panel LEDs* on page 8.

5. Secure the unit by fastening the screws at each end of the faceplate.

Front Panel LEDs

The following table describes the meaning and states of the LEDs on the front panel.

Type	LED	LED is . . . *	Indicating . . .
SYSTEM	OK	Green, On	Card failure. System processing functions have stopped.
		Off	No power to card.
		Green, Pulsing	Card is functioning normally.
	Alrm	Amber, On	Alarm is present on the card.
		Off	Normal operation, no alarms.
	Test	Amber, On	Test in progress.
		Off	Normal operation, no tests.
SYS BUS	TX	Off	Inactive.
		Green, Fast Blinking	Cells are being transmitted.
	RX	Off	Inactive, link down.
		Green, Fast Blinking	Cells are being received.
	LOC	Yellow, On	Loss Of Clock. ATM bus clock signal is not present.
		Off	Normal operation.
VOICE PORT	VOICE PORT	Green, On	At least one port is enabled and no ports are in the off-hook state.
		Green, Blinking	At least one port is enabled and in the off-hook state.
		Off	No ports are enabled.

* Pulsing: LED turns off momentarily once per second.
Fast Blinking: LED turns off and on in equal duration 4 times per second.

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Cabling

The POTS card normally is connected to a 66 Block using a straight-through cable with two RJ21X plugs. The cable you need depends on the hardware configuration of the 66 Block or other connection point. See Table 3, RJ21X Connector Pinouts, on page 19.

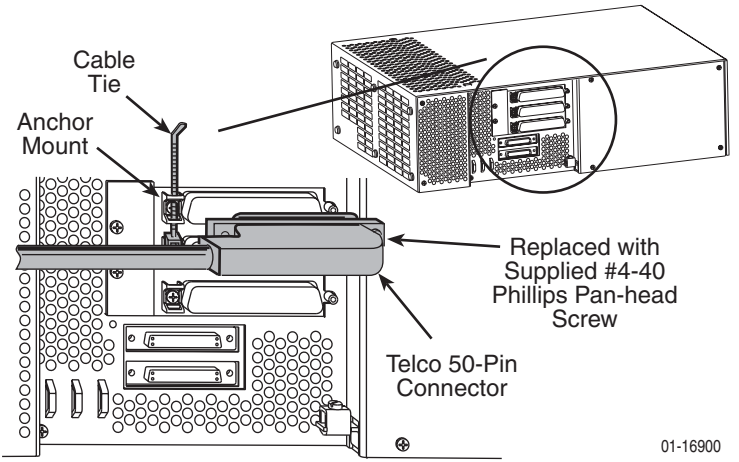
Attach the cable to the 50-pin Telco jack on the back of the DSLAM that is associated with the slot the POTS card resides in.

Fastening the Cable with Cable Ties

▶ Procedure

To fasten the Telco connector to the chassis using the provided cable ties:

1. Replace the longer captive screw on the cable connector with the #4-40 Phillips pan-head screw shipped in a plastic bag with the BAC chassis.
2. Locate the connector on the back of the chassis that corresponds with the slot where you installed the POTS card. Connectors are labeled 1–3 on the 8620 chassis, and 1–18 on the 8820 chassis.
3. Plug the Telco 50-pin cable into the appropriate connector.
4. Thread the provided cable tie through the anchor mount on the end of the connector where the cable will lie. Tighten the cable tie around the connector and cut off any excess.



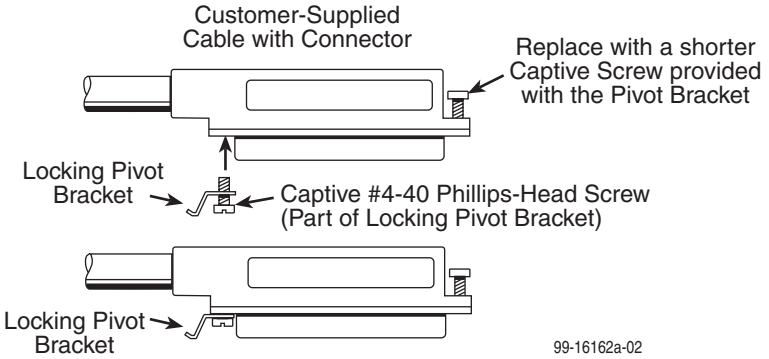
5. Secure the other end of the Telco 50-pin cable by tightening the captive pan-head screw.

Fastening a Cable with Locking Pivot Brackets

▶ Procedure

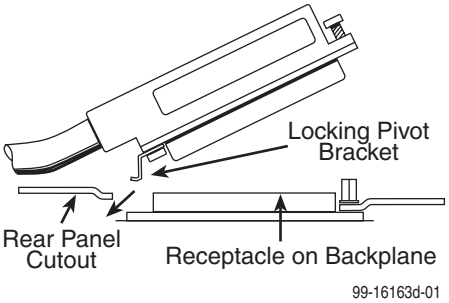
To fasten a Telco connector to the chassis with locking pivot brackets:

1. Replace the longer captive screw on the cable connector with the #4-40 Phillips pan-head screw shipped in a plastic bag with the BAC chassis.
2. Install the locking pivot bracket onto the cable end of the connector using the captive screw, as illustrated below.

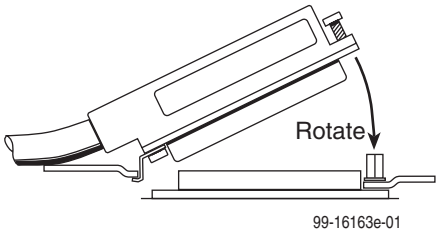


3. Locate the connector on the back of the chassis that corresponds with the slot where you installed the POTS card. Connectors are labeled 1–3 on the 8620 chassis, and 1–18 on the 8820 chassis.

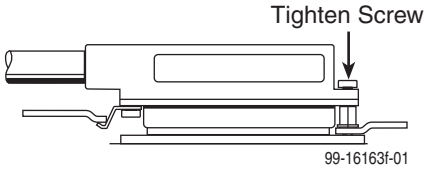
4. Insert the bottom edge of the locking pivot bracket inside the lower edge of the rear panel cutout next to that connector.



5. Align the two connectors.
6. Rotate the connector until it is fully seated.



7. Tighten the captive screw on the top of the cable's connector.



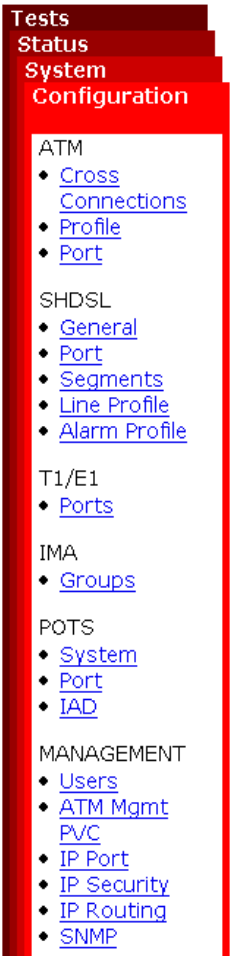
Web Interface

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. The default address is 10.10.10.10:

3. A login window appears. Enter the User ID and Password, and click on OK. The web interface screen appears.
4. Click on the Configuration menu tab. The configuration screens listed depend on the types of line cards and SCP card installed in the chassis.



Web Interface – Configuration

The following list shows the web interface Configuration screens most likely to require modification, along with some of the fields found on each screen. What fields are displayed depends on whether the SCP card has an ATM or IP interface. Refer to the online Help for information.

- **Configuration → POTS → System**
  - Region
- **Configuration → POTS → Port**
  - Port Label
  - Administrative State
  - G.729 Voice Coder (IP)
  - Preferred Voice Coder (IP)
  - Preferred Packetization Period (IP)
  - Voice Silence Suppression (IP)
  - Signaling Type
  - TX Gain
  - RX Gain

- **Configuration → POTS → IAD**
  - Identification
  - Administrative State
  - Gateway Protocol (ATM interface only)
  - ATM Forum Predefined Profile (ATM)
  - Upstream Connection Slot (ATM)
  - Upstream Connection Port (ATM)
  - Upstream Connection VPI (ATM)
  - Upstream Connection VCI (ATM)
  - Profile Name (ATM)
  - Signaling Protocol (IP)
  - DiffServ Codepoint Signaling Traffic (IP)
  - DiffServ Codepoint Bearer Traffic (IP)
  - 802.1p Priority Signaling Traffic (IP)
  - 802.1p Priority Bearer Traffic (IP)
  - RTP Port Base (IP)
  - IP Address (IP)
  - Subnet Mask (IP)
  - Default Gateway (IP)
- **Configuration → POTS → MGCP** (IP interface only)
  - Local MGCP Signaling Port
  - RFC 2833 Loop Signaling
  - Endpoint Identifier Format
  - IAD Domain Name
  - Call Agent Name
  - Call Agent IP Address
  - Call Agent Port
  - Endpoint Name

Web Interface – Status

The following list shows the web interface Status screens related to the POTS card, with some of the fields displayed. Refer to the online Help for information.

- **Status → IAD**
  - Operational Status
  - Uplink VCC (ATM)
  - LES Capability (ATM)
  - ATM Forum Predefined Profile (ATM)
  - Signaling Protocol (IP)
  - Local IP Address (IP)
  - Signaling Port (IP)

- **Status → POTS** (IP interface only)
  - — Operational Status
  - — Hook Status
  - — Active Call Agent
  - — Call Agent Name
  - — Call Agent IP Address
  - — Call Agent Signaling Port
  - — Total Calls
  - — Total Calls Failed
- **Status → IAD Statistics** (ATM interface only)
  - — Common Part Sublayer (CPS) Packets Received
  - — CPS Packets Transmitted
  - — CPS Errors
  - — Total Calls

Web Interface – Tests

The POTS card supports 2-wire and 4-wire Metallic Test Access Unit (MTAU) tests when mounted in a model 8820-A2-520 or 8820-A2-530 BAC. Refer to the online Help for information.

- **Tests → MTAU**
  - — Split Access Point
  - — Split Access Point (Facility)
  - — Split Access Point (Equipment)
  - — Monitor (High Impedance)
  - — Monitor (Bridge Mode)

TL1 Interface

SCP cards with an ATM uplink support a Transaction Language 1 (TL1) interface. To use TL1 to configure, monitor, or test the 8922 POTS card:

1. Connect a PC with a terminal emulation program to the SERIAL SCP jack of your BAC. This gives you access to the TL1 interface.
2. Log in to the SCP card using the ACT-USER command:

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

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

Command Line Interface

SCP cards with an IP uplink support a proprietary Command Line Interface (CLI). To use the CLI to configure, monitor, or test the 8922 POTS card:

1. Connect a PC with a terminal emulation program to the SERIAL SCP jack of your BAC. This gives you access to the CLI.
2. Log in to the SCP card at the login prompt:

   ```
   login> SUPERUSER
   password> ASN#1500
   ```

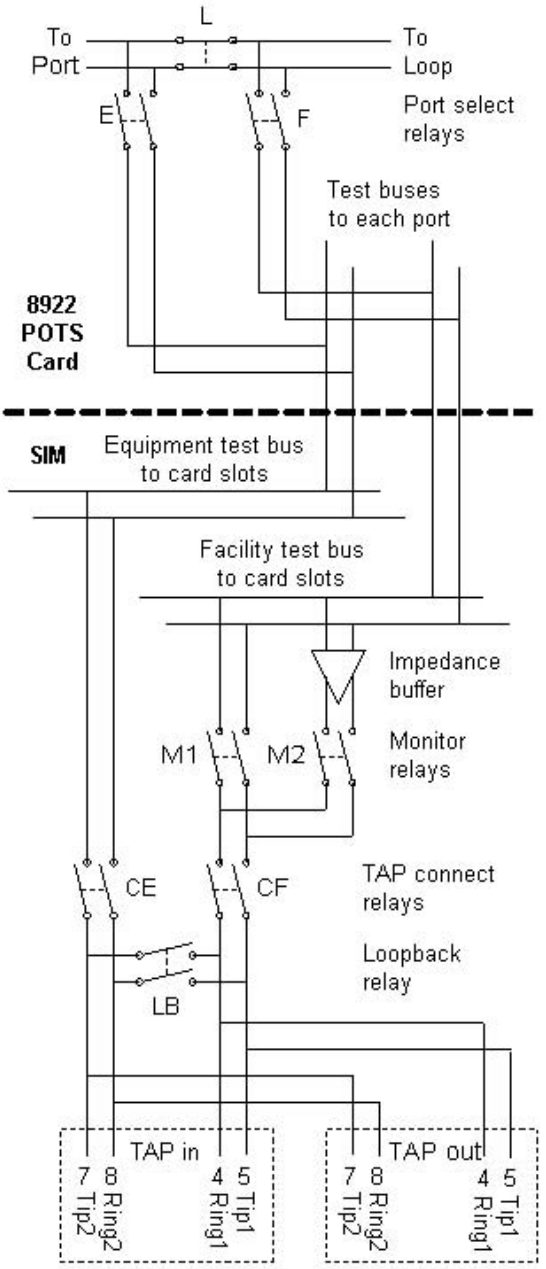
   The default password appears as asterisks on your screen.

Test Access Path (TAP) Architecture

The Test Access System Interface Module (SIM) of the 8820-A2-520 or 8820-A2-530 BAC supports a Test Access Path (TAP) for MTAU testing. The TAP can be configured in either a 2-wire or a 4-wire configuration.

Each TAP connector pair is an IN/OUT pair with the respective pins connected directly to each other for daisy chaining. When configured as a 4-wire TAP, pins 7 and 8 connect to the Equipment path (looking in toward the port under test) and pins 4 and 5 connect to the Facility path (looking out toward the loop under test). When configured as a 2-wire TAP, only pins 4 and 5 are used and the TAP can be commanded to look toward either the Facility or Equipment path.

The schematic diagram below shows the TAP architecture of the SIM and the POTS card.



The relay states associated with the TL1 commands are shown in Table 1 for a 4-wire configuration, and in Table 2 for a 2-wire configuration.

Table 1. Relay States In 4-wire Configuration

State or Command	CE	CF	LB	M1	M2	E	L	F
Default (no test)	open	open	open	open	open	open	closed	open
CHG-SPLIT	closed	closed	open	closed	open	closed	open	closed
CHG-SPLIT-LILO E	closed	open	open	open	open	closed	open	open
CHG-SPLIT-LILO F	open	closed	open	closed	open	open	open	closed
CONN-LPACC-MET	open	open	closed	open	open	open	closed	open
CONN-MON	open	closed	open	closed	open	closed	open	closed
CONN-TACC-MET	open	closed	open	open	closed	closed	open	closed
DISC-TACC	open	open	open	open	open	open	closed	open

Table 2. Relay States In 2-wire Configuration

State or Command	CE	CF	LB	M1	M2	E	L	F
Default (no test)	open	open	open	open	open	open	closed	open
CHG-SPLIT	open	closed	open	closed	open	open	open	closed
CHG-SPLIT-LILO E	closed	open	closed	open	open	closed	open	open
CHG-SPLIT-LILO F	open	closed	open	closed	open	open	open	closed
CONN-LPACC-MET	open	open	closed	open	open	open	closed	open
CONN-MON	open	closed	open	closed	open	closed	open	closed
CONN-TACC-MET	open	closed	open	open	closed	closed	open	closed
DISC-TACC	open	open	open	open	open	open	closed	open

TL1 Interface and CLI Test Commands

The TL1 interface supported by SCP cards with an ATM uplink and CLI supported by SCP cards with an IP uplink include the following commands related to MTAU and POTS testing:

- **TL1: CHG-SPLIT**
  CLI: test mtau chg-split – If the mode is 2-Wire, this command splits the access point and provides Look-Out connections to the Facility pair. If the mode is 4-Wire, it splits the access point and provides simultaneous Look-In/Look-Out for the Equipment and Facility pairs.

- **TL1: CHG-SPLIT-LILO**
  CLI: test mtau chg-split-lilo – If the specified direction is Equipment and the mode is 2-Wire, this command splits the access point and provides a Look-In connection to the Facility pair. If the specified direction is Equipment and the mode is 4-Wire, it splits the access point and provides a Look-In connection to the Equipment pair. If the specified direction is Facility, it splits the access point and provides a Look-Out connection to the Facility pair.

- **TL1: CONN-LPACC-MET**
  CLI: test mtau conn-lpacc-met – Establishes an association between a port and an active metallic test, and configures the test access mode for 2-wire or 4-wire.

- **TL1: CONN-MON**
  CLI: test mtau conn-mon – Establishes a bridged connection between the Facility pair of the test jack and the selected unsplit line.

- **TL1: CONN-TACC-MET**
  CLI: test mtau conn-tacc-met – Provides a high-impedance monitoring connection between the Facility pair of the test jack and the selected unsplit line.

- **TL1: DISC-TACC**
  CLI: test mtau disc-tacc – Stops a test and restores any existing split, resetting the test access point to its original configuration before the CONN-LPACC-MET command.

- **TL1: REPT-STAT** – This is a user-issued heartbeat command. If a REPT-STAT is not received within the timeout interval of 75 seconds, the current test is aborted, isolating the test jacks. The CLI equivalent is to submit the same test command again.

- **CLI: test pots-port loopback start** – This command causes a test of the voice service on a POTS port to start. The loopback is towards the network (uplink) interface. The test will run for a period of 75 seconds.

- **CLI: test pots-port loopback stop** – This command causes a test of the voice service on a POTS port to stop prior to the test timeout period.

- **CLI: test pots-port ring-signal** – This command initiates a manual Ring Signal on the specified port.

See the *8620 and 8820 Broadband Access Concentrators TL1 Interface Reference* and the *8620 and 8820 Broadband Access Concentrators Command Line Interface Reference* for more information.

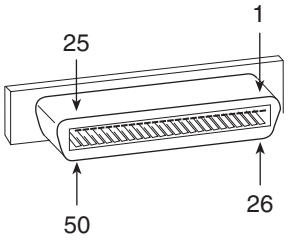
RJ21X (CA21A) Connector Pin Assignments

On the 8620 or 8820 BAC is a 50-pin RJ21X (CA21A) Telco connector, labeled DSL Ports 1–24, associated with the slot where the POTS card resides. It provides the 2-wire interface from each POTS port to the 66 Block.

Table 3 lists the pin assignments for each of these interfaces. Pins 25 and 50 are not used.

Table 3. RJ21X Connector Pinouts

POTS Port	Connector Pins (Ring, Tip)
1	1, 26
2	2, 27
3	3, 28
4	4, 29
5	5, 30
6	6, 31
7	7, 32
8	8, 33
9	9, 34
10	10, 35
11	11, 36
12	12, 37
13	13, 38
14	14, 39
15	15, 40
16	16, 41
17	17, 42
18	18, 43
19	19, 44
20	20, 45
21	21, 46
22	22, 47
23	23, 48
24	24, 49



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Technical Specifications

Table 4. Technical Specifications

Specifications	Criteria
Approvals	
Safety Certifications	Refer to the equipment's label for approvals on product.
Physical Environment	
Operating temperature	–40° to 149° F (–40° to 65° C)
Storage temperature	–40° F to 158° F (–40° C to 70° C)
Relative humidity	5% to 95% (noncondensing)
Shock and vibration	Withstands normal shipping and handling.
POTS Interface	
Signaling	Loop-start, single party POTS service per GR-506
Transmission	GR-507
Dialing	DTMF and pulse dialing per GR-506
Loops	1500 Ohms
Power	48V power is distributed through the BAC chassis backplane.
Power Dissipation	Idle: 17.7 W 6 lines off-hook: 24.9 W 24 lines off-hook: 46.3 W
Size	■ Length: 10.4 inches (26.42 cm) ■ Height: 11.15 inches (28.32 cm) ■ Width: 1.0 inches (2.54 cm)
Test Access	■ 2-wire and 4-wire integrated MTAU per GR-818 ■ MTAU TL1 command support per GR-834
Voice Processing	
Encoding	G.711 (64 kbps PCM), G.726 (32 kbps ADPCM)
Echo Cancellation	G.168
VoATM Protocol	LES CAS per af-vmoa-145.001
Weight	Approximately 1.7 lbs. (0.77 kg)

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