

# Octal BRI/U Module User Manual

Part Number 1200186L2



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#### ADTRAN Year 2000 (Y2K) Readiness Disclosure

ADTRAN has established a Year 2000 program to ensure that our products will correctly function in the new millennium. ADTRAN warrants that all products meet Year 2000 specifications regardless of model or revision. Information about ADTRAN's Year 2000 compliance program is available at the following:

Product Matrix www.adtran.com/y2kfax.html

E-mail year2000@adtran.com

Faxback Document Line (256) 963-8200

Y2K plans and product certifications are listed in the Product Matrix (see

above).

**Y2K Project Line** (256) 963-2200

### FCC regulations require that the following information be provided in this manual to the customer:

- 1. This equipment complies with Part 68 of the FCC rules. The required label is affixed to the bottom of the chassis.
- 2. An FCC-compliant telephone cord and modular plug is provided with this equipment. This equipment is designed to be connected to the telephone network or premises wiring using a compatible modular jack which is Part 68-compliant. See Chapter 2, Installation, for details.
- 3. If your telephone equipment (Octal BRI/U Module) 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 isn't practical, you will be notified as soon as possible. You will be advised of your right to file a complaint with the FCC.
- 4. Your telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the proper operation of your equipment. If they do, you will be given advance notice to give you an opportunity to maintain uninterrupted service.
- 5. If you experience trouble with this equipment (Octal BRI/U Module), please contact ADTRAN at (256) 963-8000 for repair/warranty information. The telephone company may ask you to disconnect this equipment from the network until the problem has been corrected or until you are sure the equipment is not malfunctioning.
- 6. This unit contains no user-serviceable parts.
- 7. The following information may be required when applying to your local telephone company for leased line facilities.

Service Type	REN/SOC	FIC	USOC
Basic Rate ISDN	6.0N	02IS5	RJ-48C

#### Federal Communications Commission (FCC) Radio Frequency Interference Statement

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 frequencies. 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.

Shielded cables must be used with this unit to ensure compliance with Class A FCC limits.



Change or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

#### **Affidavit Requirements for Connection to Digital Services**

- An affidavit is required to be given to the telephone company whenever digital terminal equipment
  without encoded analog content and billing protection is used to transmit digital signals containing encoded analog content which are intended for eventual conversion into voiceband analog signals and transmitted on the network.
- The affidavit shall affirm that either no encoded analog content or billing information is being transmitted or that the output of the device meets Part 68 encoded analog content or billing protection specifications.
- End user/customer will be responsible for filing an affidavit with the local exchange carrier when connecting unprotected customer premise equipment (CPE) to 1.544 Mbps or subrate digital services.
- Until such time as subrate digital terminal equipment is registered for voice applications, the affidavit requirement for subrate services is waived.

### Affidavit for Connection of Customer Premises Equipment to 1.544 Mbps and/or Subrate Digital Services

For the	e work to be performed in the certified territory of	(telco name)
State o	f	
Count	y of	
I,	(name),	(business address),
	(telephone number) being duly sworn, state:	
1.544 N plies v	responsibility for the operation and maintenance of the terminal equipmed helps and/or subrate digital services. The terminal equipment to with Part 68 of the FCC rules except for the encoded analog content and bil ns. With respect to encoded analog content and billing protection:	o be connected com-
di	ttest that all operations associated with the establishment, maintenance, a gital CPE with respect to analog content and encoded billing protection in sly complies with Part 68 of the FCC Rules and Regulations.	
	e digital CPE does not transmit digital signals containing encoded analog formation which is intended to be decoded within the telecommunications	
	e encoded analog content and billing protection is factory set and is not ur stomer.	nder the control of the
nance,	that the operator(s)/maintainer(s) of the digital CPE responsible for the earnd adjustment of the encoded analog content and billing information has form these functions by successfully having completed one of the following:	s (have) been trained
( ) A.	A training course provided by the manufacturer/grantee of the equipme analog signals; or	ent used to encode
() B.	A training course provided by the customer or authorized representative	e, using training mate-

	rials and instructions provide analog signals; or	ed by the manufacturer/grantee of the equipment used to encode			
() C.		arse (e.g., trade school or technical institution) recognized by the equipment used to encode analog signals; or			
( ) D.	D. In lieu of the preceding training requirements, the operator(s)/maintainer(s) is (are) under the control of a supervisor trained in accordance with (circle one) above.				
I agree compli	to provide ance with the information as p	(telco's name) with proper documentation to demonstrate provided in the preceding paragraph, if so requested.			
		_Signature			
		_Title			
		_ Date			
Transci	ribed and sworn to before me				
This	, day of,				
Notary	Public	-			
My cor	nmission expires:				

#### **Canadian Equipment Limitations**



The Industry Canada Certification label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational, and safety requirements. The Department of Commerce 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. In some cases, the company's inside wiring associated with a single line individual service may be extended by means of a certified connector assembly (telephone extension cord). 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 made by an authorized Canadian maintenance facility 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 the user 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 waterpipe system, if present, are connected together. This precaution may be particularly important in rural areas.



Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or an electrician, as appropriate.

The Load Number (LN) assigned to each terminal device denotes the percentage of the total load to be connected to a telephone loop which is used by the device, to prevent overloading. The termination on a loop may consist of any combination of devices subject only to the equipment that the total of the LNs of all devices does not exceed 100.

The ringer equivalence number (REN) assigned to each terminal adapter is used to determine the total number of devices that may be connected to each circuit. The sum of the RENs from all devices in the circuit should not exceed a total of 5.0.

#### **Warranty and Customer Service**

ADTRAN will replace or repair this product within five years from the date of shipment if the product does not meet its published specification, or if it fails while in service. For detailed warranty, repair, and return information, refer to the ADTRAN Equipment Warranty and Repair and Return Policy Procedure (see the last page of this manual).

A return material authorization (RMA) is required prior to returning equipment to ADTRAN.

For service, RMA requests, or more information, see the last page of this manual for the toll-free contact number.

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### Chapter 1 Introduction

#### **OCTAL BRI/U MODULE OVERVIEW**

The Octal BRI/U Module is a member of the ATLAS family of integrated access products, providing eight Basic Rate ISDN (BRI) U interfaces, each capable of operating in either NT or LT mode. Any port can deliver timing for the system.

The Octal BRI/U Module combines with the ATLAS system and other ATLAS modules to support requirements calling for multiple BRI circuits. As many Octal BRI/U Modules can be installed in a system as can be physically accommodated in the ATLAS chassis. Figure 1-1 shows a sample application of the Octal BRI/U Module.

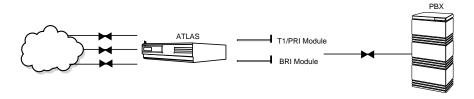


Figure 1-1. Octal BRI/U System

When combined with the ATLAS system and, optionally, one or more Quad T1/PRI Modules (P/N 1200185L2 and 1200185L3), the Octal BRI/U Module can implement an ISDN access switch, combining multiple BRI circuits into one or more Primary Rate ISDN (PRI) circuits.

#### **NEBS COMPLIANCE**

The ATLAS Octal BRI/U Module (P/N 1200186L2) complies with the NEBS (Network Equipment Building System) Level III specification for GR-1089-CORE and GR-63-CORE. This means that the ATLAS Octal BRI/U Module will perform normally under certain electrical and physical stresses without posing a safety hazard to its users. However, when applications require NEBS compliance, this module should be used in the ATLAS 810 PLUS (a NEBS-compliant version of the ATLAS 800 PLUS).

#### **FUNCTIONAL DESCRIPTION**

The Octal BRI/U Module installs in any available option slot in the ATLAS chassis. You can view the status of the module itself, as well as the circuits to which it interfaces, from the ATLAS front panel. Additional status information is available via the terminal menus, accessible through either a VT-100 terminal connected to the ATLAS control port, or via a Telnet session established through the Base Unit's Ethernet port. Use the terminal menu to configure the Octal BRI/U Module and to download application software.

#### **FEATURES**

Features of the Octal BRI/U Module are listed here:

- Eight BRI U Interfaces
- · Near-end and far-end block error monitoring
- Can use any port as a timing source for the entire system
- Hot swappable
- NT and LT mode support
- Maximum distance of 18,000 feet

#### **OCTAL BRI/U MODULE SPECIFICATIONS**

Each port of the Octal BRI/U Module conforms to the following specifications:

Line rate

160 kbps data rate (80 kbaud signaling +/-5 ppm)

Line codes

2B1Q

• Framing options

Framing per ANSI T1.601-1992

Clock source tests

Allows any Octal BRI/U Module port to be the master timing source

Tests

Power-on, circuit self-test line loopback, port loopback (internal toward system)

- Line loopback (VT-100/remote/in-band)
- BRI switch supported support for the following switches:
  - \* AT&T 5ESS (NT or LT)
  - \* Nortel DMS-100 (NT or LT)
  - \* National ISDN-1
- Report line performance data via SNMP in RFC1406 format

#### Connectors

**RJ-45** 

#### **PHYSICAL DESCRIPTION**

The Octal BRI/U Module (see Figure 1-2) plugs into any available option slot in the rear of the ATLAS chassis.

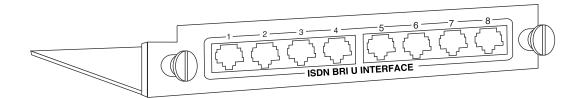


Figure 1-2. Octal BRI/U Option Module

The label over each RJ-45 connector refers to the port on the Octal BRI/U Module.

### Chapter 2 Installation

#### BEFORE INSTALLING THE OCTAL BRI/U MODULE

Carefully unpack and inspect the Octal BRI/U Module for shipping damages. If you suspect damage occurred during shipping, file a claim immediately with the carrier and then contact ADTRAN Technical Support (see the last page of this manual for pertinent information). If possible, keep the original shipping container for returning the Octal BRI/U Module for repair or for verification of shipping damage.

#### **Shipping Contents**

The ADTRAN shipment includes the following items:

- Octal BRI/U Module
- Octal BRI/U Module *User Manual* (insert into the *ATLAS User Manual*)
- Eight RJ-45-to-RJ-11 cables, ADTRAN P/N: 3125M007

#### **INSTALLING THE OCTAL BRI/U MODULE**

Figure 2-1 represents the actions required to properly install the Octal BRI/U Module, as described in the Step/Action table below.

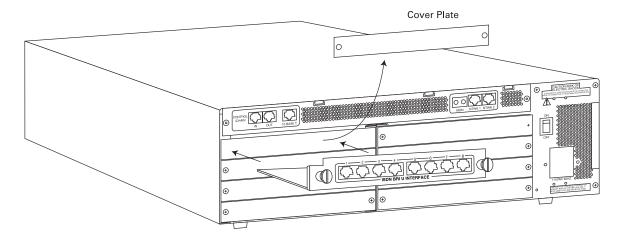


Figure 2-1. Installing the Octal BRI/U Module

Instructions for Installing the Octal BRI/U Module		
Step	Action	
1	Remove the cover plate from the appropriate option slot in the ATLAS rear panel.	
2	Slide the Octal BRI/U Module into the option slot until the module is firmly positioned against the front of the chassis.	
3	Secure the thumbscrews at both edges of the module.	
4	Connect the cables to the associated device(s).	
5	Complete installation of remaining modules and Base Unit as specified in the Installation chapter of the ATLAS User Manual.	



To ensure that the thumbscrews are securely fastened, use a screwdriver to tighten them.

#### **WIRING**

Each module port uses a single RJ-45 jack to connect to a U interface circuit. Table 2-1 shows the network pinout connection. The required wiring connection follows:

Connector Type (USOC) RJ-45

**Table 2-1. Network Pinout Connection** 

PIN	NAME	DESCRIPTION
1, 2, 3, 6, 7, 8	Unused	_
4	Ring	Ring to and from the Network Interface
5	Tip	Tip to and from the Network Interface

#### POWER UP AND INITIALIZATION

The Octal BRI/U Module requires no initialization input during the power-up sequence, as described in the *ATLAS User Manual*. Any previously configured setting for the Octal BRI/U Module is automatically restored upon power-up.

#### **Failed Self-Test**

If the Octal BRI/U Module fails self-test, a message will be displayed on the LCD (800 system only) and the terminal menu self-test log. See the *ATLAS User Manual* for details.

#### **Operation Alarms**

The red ALARM LED (located with the Module LEDs on the front panel) illuminates when an alarm condition is detected. An interface alarm is shown for each port in the alarm menu of the Octal BRI/U Module.

### Chapter 3 Operation

#### **OVERVIEW**

You can control and configure the Octal BRI/U Module from a variety of sources, including the following:

- The ATLAS front panel, providing minimal configuration and status support (ATLAS 800 systems only)
- The terminal menus, allowing detailed configuration, status, and diagnostics
- SNMP, primarily for reporting alarm conditions and system status

The remainder of this section describes the menu items presented when managing the Octal BRI/U Module via the terminal menu.

Access the terminal menu using either a VT-100 terminal attached to the ATLAS Base Unit's control port or a Telnet session established through the Base Unit's Ethernet port. The *ATLAS User Manual* provides detailed instructions on the operation of each of these management approaches.



To edit items in the terminal menu, you must have the appropriate password level. Each menu description in this section indicates the password level required for write and read access. See "Access Passwords" in the **ATLAS User Manual** for detailed information on working with passwords. Security level 0 users can view and edit every available field. Security level 5 users can view any field but cannot edit.

#### **TERMINAL MENU STRUCTURE**

ATLAS uses a hierarchical menu structure to provide access to all of its features. The top-most menu level leads to submenus which are grouped by functionality. All menu items display in the terminal window. To access the Octal BRI/U Module, activate the MODULES menu. The following sections describe the menu items for the MODULES menu.



Refer to the **ATLAS User Manual** for detailed instructions on navigating through the terminal menu.

#### **MODULES**

The ATLAS system controller automatically detects the presence of the Octal BRI/U Module when it is installed in the system. To see the menus for the Octal BRI/U Module via the terminal menu, use the arrow keys to scroll to the Modules menu and press **ENTER** to access the module choices. Figure 3-1 shows the Modules menu (see also the menu tree in Figure 3-2). The following sections describe all the Modules' menu options.

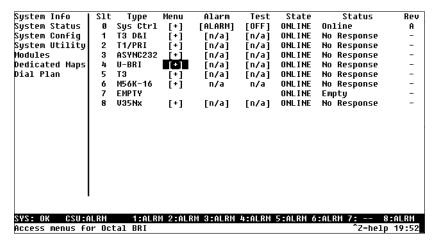


Figure 3-1. Modules Menu

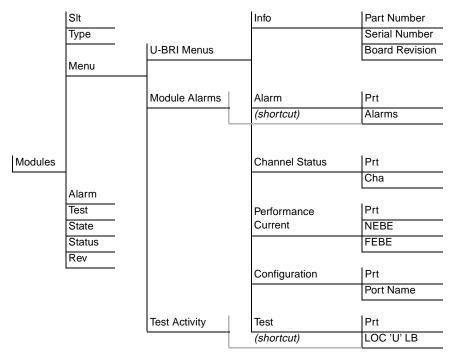


Figure 3-2. Menu Tree for Octal BRI/U Modules Menu

**SLT** Read security: 5

Displays the number of the available slots in the ATLAS chassis. Slot 0 refers to the ATLAS unit. This field is read-only.

TYPE Write security: 3; Read security: 5

Displays the type of module actually installed in the slot or the type of module you plan to install in the slot. If an Octal BRI/U Module is installed, the Type field automatically defaults to U-BRI (the Octal BRI/U Module). You can use this field to preconfigure a system before actually installing modules by simply specifying the module that you want to install in each slot.



TYPE automatically displays the name of an installed module. If you want to change this field to a different type of module, you must set TYPE to EMPTY before selecting the other module.

MENU

Displays additional status and configuration menus for the selected module.

(To access the submenus for this item, use the arrow keys to scroll to the MENU column for the module you want to edit, and press Enter.) For detailed infor-

mation on each submenu item, see the section *Modules/Menu* on page 3-4.

**ALARM** Read security: 5

Displays an alarm condition on the Octal BRI/U Module. Press **Enter** in this field to activate the menu.

**TEST** Read security: 5

Displays test name if the Octal BRI/U Module is executing a test. Press

**Enter** in this field to activate the menu.

Displays module status as either **Online** of **Offline**. Even though a module is physically installed, it must be marked as online for it to be considered an available resource. This field allows an installed module to be marked as offline, which may be useful in system troubleshooting. If you choose **Offline**, the module will not be in alarm condition, but will display **Offline**.



Once a module is installed, **STATE** must be set to **ONLINE** in order for ATLAS to use the module for any data bandwidth.

STATE

**STATUS** This read-only field provides status information on the Octal BRI/U Module.

The following messages may display:

**ONLINE** The module is enabled, and is responding to the system controller's status

polls. This is the normal response of the system.

**No Response** The module is enabled, but is not responding to the system controller's sta-

tus polls. This response indicates either a problem in the system or that the

module is not installed.

**EMPTY** The system controller has not detected the presence of a module in the slot,

nor has a module been manually enabled for this option slot.

**OFFLINE** The module is installed, but has been taken offline by a user. The module is

still responding to controller polls.

Offline/No Response The module is installed, but has been taken offline by a user. The module is

not responding to polls.

**REV** This read-only field displays the hardware revision of the Octal BRI/U Module.

#### MODULES/MENU

Figure 3-3 shows the menu options available for the Octal BRI/U Module (see also the menu tree in Figure 3-2 on page 3-2). The following sections describe these options.

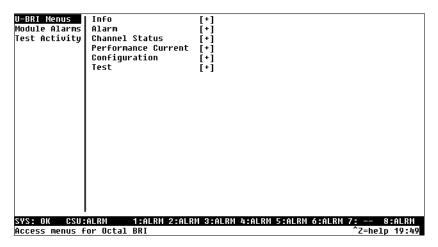


Figure 3-3. Octal BRI/U Module Menu Options

**U-BRI MENUS** Accesses additional submenus.

INFO Provides information about module part number, serial number, and board

revision.

PART NUMBER

Displays the part number of the module (read only).

**SERIAL NUMBER** 

Displays the serial number of the module (read only).

**BOARD REVISION** 

Displays the PCB revision (read only).

ALARM Displays alarm conditions including the port number (PRT) and the alarm

type (ALARMS).

CHANNEL STATUS Displays the channel status (**CHA**) of each of the eight Octal BRI/U Module ports (**PRT**). The following symbols may display:

Unallocated channel

Inactive channel

**B** Active B channel

PERFORMANCE CURRENT The Performance Current field displays a count of Near-End Block Errors

(NEBE) and Far-End Block Errors (FEBE) for each port (Prt).

**CONFIGURATION** Allows the user to personally identify each port with an appropriate name.

TEST Activates a local loopback toward the U interface (LOC "U" LB) for each port

(Prt). The loopback options include **B1** LOOPBACK, a **B2** LOOPBACK, or **ALL**.

**MODULE ALARMS** Provides a shortcut to the **ALARM** menu (see *Alarm* on page 3-5).

**TEST ACTIVITY** Provides a shortcut to the **TEST** menu (see *Test* on page 3-5).

#### ATLAS FEATURES USED WITH OCTAL BRI/U MODULE OPTIONS

Two additional ATLAS menu items can operate in conjunction with the Octal BRI/U Module: FACTORY RESTORE and RUN SELFTEST.

#### FACTORY RESTORE

You can restore the factory default settings for an Octal BRI/U Module by pressing **F** either while the cursor is over the **SLT** number (this action restores the factory settings for all of the module options) or while the cursor is over an individual field (this action restores factory settings only for the particular field).

#### **RUN SELFTEST**

**RUN SELFTEST**, a submenu of the ATLAS main menu item **TEST**, executes both the Octal BRI/U Module internal test and the ATLAS internal test. For additional information on **RUN SELFTEST**, see the *ATLAS User Manual*.

When **Run Selftest** displays, place the cursor on it and press **Enter** to execute the test. The unit continuously changes the display on the self-test log screen until all test results are shown.

### Appendix A Dial Plan Interface Configuration

The IFCE CONFIG option for the DIAL PLAN menu (see Figure A-1) sets configuration parameters for the endpoint. These parameters vary by the type of port selected. The following section describes the configuration options available for the Octal BRI/U Module. The DIAL PLAN menus are only accessible when using terminal mode. To access these options, select DIAL PLAN from the ATLAS menu.

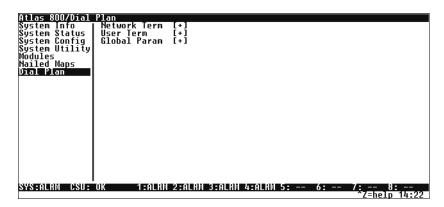


Figure A-1. Dial Plan Menus

#### OCTAL BRI/U MODULE INTERFACE CONFIGURATION

This section describes the network and user termination configuration settings for the Octal BRI/U Module when using the **DIAL PLAN** menus. The following configurations are provided here:

- Octal BRI/U Module: Network Termination on page A-1
- Octal BRI/U Module: User Termination on page A-3

#### OCTAL BRI/U MODULE: NETWORK TERMINATION

The Octal BRI/U Module can interface directly with the network (PSTN). When you are working in the network termination section of the **DIAL PLAN** menu, and **SLT** is defined as a U-BRI module, the following interface configuration options are available:

#### **SWITCH TYPE**

Write security: 2; Read security: 5

Defines the type of ISDN switch to which the port is connected. If connected to another ATLAS, both need to be set to the same switch type. Choices include the following:

- Lucent 5E
- Northern DMS 100
- National-ISDN

#### **SPID LIST**

Write security: 2; Read security: 5

Defines to ATLAS the parameters, PHONE NUMBER and SPID NUMBER. To properly operate with a network (PSTN) ISDN switch, the BRI interface must have Service Profile Identifiers (SPIDs) and phone number(s) that match the SPID(s) and phone number(s) which have been programmed into the ISDN switch for this line. Each BRI may have one or more phone num-

bers and SPIDs.

PHONE NUMBER

The phone number(s) assigned to this BRI phone line.

**SPID NUMBER** 

The SPID number(s) that matches the SPID number(s) which have been set in the network's ISDN switch (or in the PBX) for this BRI line. A SPID must be entered for each phone number.

**CALLS** 

The number of calls (1 or 2) which can be received or sent on this number/ SPID.

D64, D56, AUDIO, SPEECH

These options reflect what the network has provisioned for this SPID. If the BRI was purchased with different services provisioned for the SPIDs, then the call must match the services supported.

#### OCTAL BRI/U MODULE: USER TERMINATION

The Octal BRI/U Module acts like the network while interfacing to user equipment (terminal adapters). When you are working in the network termination section of the **DIAL PLAN** menu and **SLT** is defined as a U-BRI module, the following interface configuration options are available:

#### **SWITCH TYPE**

Write security: 2; Read security: 5

Defines the type of ISDN switch that the port will simulate. If connected to another ATLAS, both need to be set to the same type. The following options are available:

- Lucent 5E
- Northern DMS 100
- National-ISDN

#### **SPID LIST**

Write security: 2; Read security: 5

The port, acting as the network, must use a SPID and a phone number in order to satisfy the ISDN connection protocol expected by the user's Terminal Adapter (TA).

#### **PHONE NUMBER**

The phone number(s) assigned to this BRI phone line.

#### SPID NUMBER

Defines the SPID number(s) used for this BRI line. Although the value of the SPID is not significant, a SPID must be entered for each phone number. For convenience, the SPID can be set to be the same as the phone number.

Octal BRI/U Module Module does not support autoSPID detection software which some terminal adapters offer.

#### **C**ALLS

For User terminations, the number of calls is fixed at 2.

### D64, D56, AUDIO, SPEECH

These options reflect what the network has provisioned for this SPID. If the BRI was purchased with different services provisioned for the SPIDs, then the call must match the services supported.

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#### **Product Support Information**

#### **Pre-sales Inquiries and Applications Support**

Please contact your local distributor, ADTRAN Applications Engineering, or ADTRAN Sales:

Applications Engineering (800) 615-1176 Sales (800) 827-0807

#### **Post-Sale Support**

Please contact your local distributor first. If your local distributor cannot help, please contact ADTRAN Technical Support and have the unit serial number available.

Technical Support (888) 4ADTRAN

#### Repair and Return

If ADTRAN Technical Support determines that a repair is needed, Technical Support will coordinate with the Custom and Product Service (CAPS) department to issue an RMA number. For information regarding equipment currently in house or possible fees associated with repair, contact CAPS directly at the following number:

CAPS Department (256) 963-8722

Identify the RMA number clearly on the package (below address), and return to the following address:

ADTRAN Customer and Product Service 6767 Old Madison Pike Building #6 Suite 690 Huntsville, Alabama 35807