



VCOM Module User Manual

Part Number 1200221L1



901 Explorer Boulevard
P.O. Box 140000
Huntsville, AL 35814-4000
(256) 963-8000

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WARNING

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.

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Chapter 1 Introduction

VOICE COMPRESSION MODULE OVERVIEW

The Voice Compression Module (VCOM Module) combines with other ATLAS components to implement a voice over frame relay (VoFR) capability in the ATLAS 800^{PLUS} series of Integrated Access Systems. The VCOM Module occupies a single slot in the ATLAS chassis. You can order the VCOM Module with support for 8, 16, 24, or 32 simultaneously compressed calls.

FUNCTIONAL DESCRIPTION

The VCOM Module installs into any available slot in the ATLAS 800^{PLUS} chassis. You can view the module status from the ATLAS front panel (see Chapter 4 of the *ATLAS 800^{PLUS} User Manual*). You can also use the terminal menu to provide additional status information, configure the module, and download application software. Access the terminal menu either via a VT-100 terminal connected to the ATLAS Base Unit's control port or via a Telnet session established through the Base Unit's Ethernet port.

VOICE COMPRESSION RESOURCES

- The VCOM Module ordering options provide 8, 16, 24, or 32 voice compression resources.
- The VCOM Module provides automatic selection of CCITT Standard or ADTRAN-proprietary voice compression algorithms based on endpoint configuration.
- The VCOM Module supports FAX at 14400 bps.
- The VCOM Module includes dual-tone, multi-frequency (DTMF) generation and detection.
- The VCOM Module enables and disables individual voice compression resources.

PHYSICAL DESCRIPTION

The VCOM Module provides no external interfaces. Other ATLAS components provide both the network and customer interfaces. An internal bus exchanges information between the ATLAS chassis and the VCOM Module. See Figure 1-1 for an illustration of the VCOM Module.

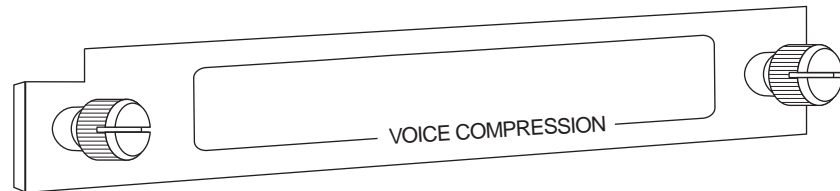


Figure 1-1. VCOM Module

RELATED DOCUMENTS

The following documents contain additional information about the ATLAS frame relay feature:

- *ATLAS 800^{PLUS} User Manual* (P/N 61200226L1-1)
- *ATLAS Frame Relay User Manual* (P/N 61200263L1-1.1)

Chapter 2 Installation

UNPACK AND INSPECT

Carefully inspect the VCOM Module for shipping damages. If you suspect damage, file a claim immediately with the carrier and then contact ADTRAN Technical Support. If possible, keep the original shipping container for returning the VCOM Module for repair or for verification of shipping damage.

CONTENTS OF ADTRAN SHIPMENT

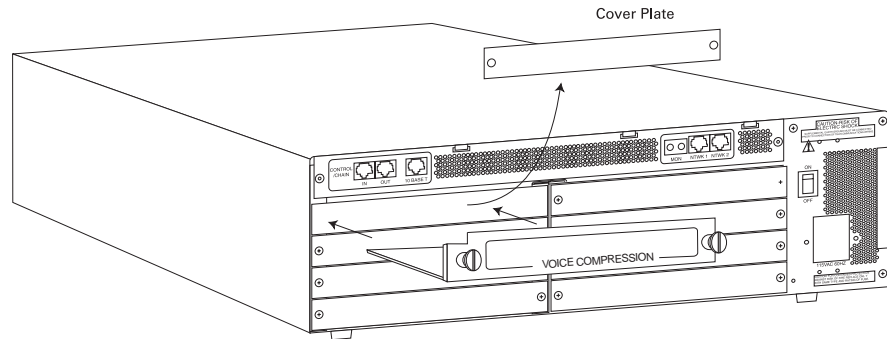
The ADTRAN shipment includes the following items:

- VCOM Module
- *VCOM Module User Manual*
(insert into main *ATLAS 800^{PLUS} User Manual*)

INSTALLING THE VCOM MODULE

To install the module, follow the procedure described below. Figure 2-1 shows the proper placement of the VCOM Module in the ATLAS chassis.

Instructions for Installing the VCOM Module	
Step	Action
1	On the rear of the ATLAS chassis, remove the cover plate from the slot into which you want to install the VCOM Module.
2	Slide the VCOM Module into the ATLAS chassis until the module is positioned firmly against the front of the ATLAS unit.
3	Fasten the thumbscrews at both edges of the option module faceplate.
4	Install any additional modules into the Base Unit, as specified in the Installation chapter of the <i>ATLAS User Manual</i> .

**Figure 2-1. VCOM Rear Chassis**

POWER-UP AND INITIALIZATION

After installing the VCOM Module into the ATLAS chassis, the front panel **STATUS** indicator blinks red, yellow, and green for a time. The **STATUS** indicator remains solid green when the VCOM Module is ready to use. At this time, you can invoke a system self-test; refer to the *ATLAS 800^{PLUS} User Manual* for details.



This start-up sequence may take up to two minutes.

FAILED SELF-TEST

The terminal menu self-test log records any self-test failures for the VCOM Module. Resources that fail self-test are disabled after power-up initialization is complete. Performing a hardware reset via the terminal menu may recover these failed resources.

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. See the last page of this manual for pertinent information.

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 a toll-free contact number.

OVERVIEW

You can configure or control the VCOM Module from any of several sources (see Table 3-1). The *ATLAS 800^{PLUS} User Manual* provides detailed instructions on operating each supported source. The remainder of this chapter describes the menu items available for operating the VCOM Module using the terminal menu.

Table 3-1. Sources for Controlling the VCOM Module

Source	Purpose
ATLAS Front Panel	For minimal configuration and status support.
Terminal Menu	For detailed configuration, status and diagnostics.

Security Passwords

You must have the appropriate password level to use the terminal menu to edit items. (See the section *Access Passwords* in the *ATLAS 800^{PLUS} User Manual* for detailed information on working with passwords.) Each menu description in this chapter indicates the password levels required for read and write access.

Security level 1 users can view and edit every available field.

Security level 5 users can view any field but they cannot edit.

TERMINAL MENU STRUCTURE

ATLAS uses a hierarchical menu to access all of its features. The top-most menu level leads to submenus that are grouped by functionality (see the menu tree in Figure 3-1). All submenu items display in the VT-100 terminal window.

The **Modules** terminal menu configures and controls the VCOM Module. The **Modules** submenu, **Type**, shows the VCOM Module as **VCOM** (see

Figure 3-2). The following sections describe the **Modules** menu and its **VCOM** submenus.

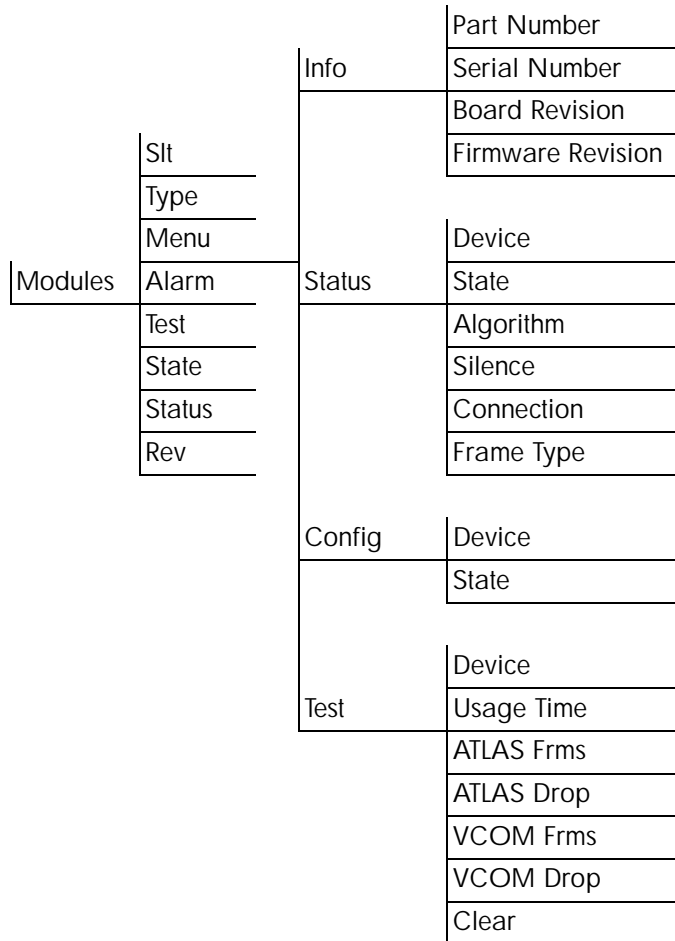


Figure 3-1. VCOM Menu Tree

MODULES MENU DESCRIPTIONS

> SLT

Read Security: 5

(Slot) Displays the number of available slots in the ATLAS chassis. **Slot 0** refers to the ATLAS Base Unit.

> TYPE

Write Security: 3; Read Security: 5

Displays the module type currently installed in the slot or the module type you plan to install in the slot. If a VCOM Module is installed, the **Type** field automatically defaults to **VCOM** (the VCOM Module). Alternatively, you can use this field to preconfigure the system before installing a module by specifying the module type that will be installed into each slot.



*If a module is installed, **Type** automatically displays the name of the installed module; this name cannot be changed while the slot is occupied.*

> MENU

Read Security: 5

Displays additional status and configuration menus and submenus for various modules. To access the VCOM Module (**VCOM**), use the arrow keys to scroll over to the **Menu** column and down to **VCOM**; then press **Enter**. (A discussion of the menu items for this option begins with *VCOM Menus* on page 3-6.)

> ALARM

Read Security: 5

Indicates any alarm conditions on the VCOM Module. Press **Enter** in this field to open the **Alarm** menu.

> TEST

Read Security: 5

Indicates when the VCOM Module is executing a test. Press **Enter** in this field to open the **Test** menu.

> STATE**Read Security: 5**

Denotes the module as **Online** or **Offline**. Even though a module is physically installed, it must be marked **Online** for it to be considered an available resource.

Marking an installed module **Offline** may be useful during system troubleshooting. If you choose **Offline**, the module will not be in an alarm condition, but will display **Offline**.



*Only if **State** reads **Online** can the ATLAS use an installed module for any data movement.*

> STATUS**Read Security: 5**

Displays status information on the VCOM Module. Table 3-2 lists the status messages that might appear.

Table 3-2. Status Messages

Message	Meaning	Comments
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 it is not responding to the system controller's status polls.	This response indicates a problem in the system. It also shows if the module is not installed.
Empty	The system controller has neither detected any module in the option slot, nor has a module been manually enabled for this slot.	
Offline	The module is installed but has been manually changed to Offline by a user.	The module is still responding to the system controller status polls.
Offline / No Response	The module is installed but has been manually changed to Offline by a user. The module is not responding to the system controller's status polls.	This response indicates a problem in the system. It also shows when the module is not installed.
Not Ready	The module is installed and performing startup initialization.	The initialization of the VCOM Module should take less than two minutes.

- » **Serial Number** **Read Security: 5**
Displays the VCOM Module's serial number. ATLAS records the serial number along with any manual changes to the module's configuration (read-only). If a failed module is replaced with a different VCOM Module, ATLAS detects this module and resets the old configuration data.

- » **Board Revision** **Read Security: 5**
Displays the printed circuit board revision level for the VCOM Module (read-only).

- » **Firmware Revision** **Read Security: 5**
Displays the firmware revision level for the VCOM Module (read-only).

> STATUS

Displays submenus for available resources of the VCOM Module (see Figure 3-5).

```

AT820/Modules[5]/VCOM Menu/Status[8]
Status[1] ³ State      Busy
Status[2] ³ Algorithm  G.723.1 6.3 Kbps
Status[3] ³ Silence    Disable
Status[4] ³ Connection Link 2:16.3
Status[5] ³ Frame Type Voice
Status[6] ³
Status[7] ³
Status[8] ³
Status[9] ³
Status[10]³
Status[11]³
Status[12]³
Status[13]³
Status[14]³
Status[15]³
Status[16]³
Status[17]³
Status[18]³
Status[19]³
Status[20]³
Status[21]³
SYS: OK   CSU:ONLN  1:ONLN 2: -- 3: -- 4: -- 5:ONLN 6: -- 7: -- 8: --
VCOM Device Status          ^A=more ^Z=help 14:42

```

Figure 3-5. VCOM Menu: Status

- » **Device** **Read Security: 5**
Indicates the resource number of the VoFR device listed. On the VCOM Module, VoFR devices are numbered 1-32.

» **State****Read Security: 5**

Indicates the condition of the individual VoFR device (see Table 3-3).

Table 3-3. Status Conditions

Condition	Meaning
N/A	Not available. This device is not populated on the VCOM Module.
Available	This resource is available for use as a voice compression resource.
Busy	This resource is currently being used as a voice compression resource.
Testing	This resource is currently being tested and is not available for use.
Failed	This resource has failed testing and is not available for use.

» **Algorithm****Read Security: 5**

Denotes the voice compression algorithm being used by the VoFR device. Any VoFR device can use any available compression algorithm. When ATLAS chooses a VoFR device for a particular call, the voice compression algorithm is set to match the dial plan endpoint configuration (see Table 3-4). Refer to Chapter 5, *Dedicated Map and Dial Plan Menus*, in the *ATLAS Frame Relay User Manual* for more information.

Table 3-4. Voice Compression Algorithms

Algorithm	Meaning
N/A	Not available. This device has not been assigned a voice compression algorithm.
G.723.1	CCITT G.723.1 compression; 6.3 kbps bandwidth.
Netcoder	ADTRAN-proprietary NETCODER compression; 6.4 kbps bandwidth.



Some voice compression standards are proprietary and may be used only under specific licensing arrangements. ATLAS provides complete management of these licensed resources; therefore, users are not required to take additional steps to ensure conformance with licensing provisions. For example, ATLAS manages its resources so users never exceed the maximum licensed number of simultaneous connections. Refer to Chapter 3, Installation, in the ATLAS Frame Relay User Manual for details.

» **Silence****Read Security: 5**

Reduces total system bandwidth load.

Voice endpoints continue to originate frame relay traffic during periods of relative silence. The VCOM Module expects to receive such silence frames; therefore, silence compression is **Disabled** by default. Some voice end-

points can be configured so that no silence frames are transmitted during periods of relative silence. For compatibility with these devices, the VCOM Module can be configured to expect that silence suppression is **Enabled**; thus, no frame relay traffic is generated during periods of silence. Both voice endpoints must agree on the silence suppression setting. Refer to Chapter 5, *Dedicated Map and Dial Plan Menus*, in the *ATLAS Frame Relay User Manual* for more information.

» **Connection**

Read Security: 5

Helps identify a suspect VoFR device if a particular call reports poor quality. The displayed packet identifier and the dial plan endpoint identify the call using this VoFR device.

» **Frame Type**

Read Security: 5

Displays the kind of frame ATLAS receives from the frame relay endpoint connected to the VCOM channel, allowing users to monitor the kind of data being carried on the network and processed by ATLAS. (ATLAS interprets the most-recently received frame from the endpoint.)

During a voice connection, the frame type displays as **Voice**. For a FAX connection, a variety of frame types display. Initially, **Voice** displays indicating that although the call has completed, the answering FAX machine has not yet announced its 2100HZ tone. After completing the 2100Hz, both FAX endpoints repeat a V.21 and V.xx cycle for each page of the FAX document.

Each packet the VCOM Module receives from its connected frame relay endpoint is classified into one of the following groups:

Blank	No frame has yet been received from the endpoint, or a FAX connection is between protocol states.
DTMF	Dual-tone, multi frequency (DTMF) digit received.
Voice	Receiving voice frames. A connection to a FAX endpoint shows a VOICE status until the FAX protocol is established.
2100Hz tone	FAX single-frequency tone detected indicating the beginning of a FAX session.
V.21	FAX single-frequency tone detected indicating the beginning of a FAX page.
V.27ter (2400 bps)	FAX data reception of 2400 bps using protocol V.27ter.
V.27ter (4800 bps)	FAX data reception of 4800 bps using protocol V.27ter.
V.29 (7200 bps)	FAX data reception of 7200 bps using protocol V.29.
V.29 (9600 bps)	FAX data reception of 9600 bps using protocol V.29.
V.33 (12000 bps)	FAX data reception of 12000 bps using protocol V.33.
V.33 (14400 bps)	FAX data reception of 14400 bps using protocol V.33.

> CONFIG

Provides diagnostic tools for suspected problems; under normal operation, users do not configure the VoFR devices (see Figure 3-6).

```

ATLAS 800 Plus/Modules151/UCOM Menu/Config
Info Device State
Status 1 Enabled
Config 2 Enabled
Test 3 Enabled
4 Enabled
5 Enabled
6 Enabled
7 Enabled
8 Enabled
9 Enabled
10 Enabled
11 Enabled
12 Enabled
13 Enabled
14 Enabled
15 Enabled
16 Enabled
17 Enabled
18 Enabled
19 Enabled
20 Enabled
SYS: OK CSU:ONLN 1: -- 2: -- 3: -- 4: -- 5:ONLN 6: -- 7: -- 8: --
Configure UCOM devices H=more Z=help 8:13

```

Figure 3-6. VCOM Menu: Config

» Device**Read Security: 5**

Identifies the VoFR device on the VCOM Module. VoFR devices are numbered 1—32.

» State**Write Security: 3; Read Security: 5**

Controls the configuration state of the individual VoFR device. The VCOM Module determines the initial configuration state of each device. ATLAS uses this configuration information to determine which VoFR devices are functional and may be used; which are defective and should not be used; or which are not present on the module and should not be used. Users who suspect an individual VoFR device of improper operation can manually disable that device to prevent ATLAS from attempting to use it. Table 3-5 defines the possible states.

Table 3-5. Possible Configuration States

State	Meaning
Deferred	Devices which fail built-in testing are automatically marked as <i>Deferred</i> , indicating that ATLAS declines to use the device.
Available	The device is properly functioning and can be used when required. ATLAS automatically marks devices that pass built-in testing as <i>Available</i> .
Disabled	Marking a device as <i>Disabled</i> prevents ATLAS from attempting to use it. You can mark a device currently in use as disabled without disturbing the connection, but the device will not be eligible for use in future calls until you re-mark it as <i>Available</i> . You might want to do this if you suspect that a particular device is malfunctioning and do not want any calls routed to it.

> TEST

The **Test** menu (see Figure 3-7) requires no user action during normal operation. However, ATLAS and the VCOM Module make various **Test** performance measurements available to the user to gain insight into the low-level functioning of the VCOM Module. If a malfunction is suspected on the VCOM module, ADTRAN service personnel can use this menu to locate the problem.

This menu is documented here in the interest of completeness. The values automatically reset each time the VCOM Module is installed into the ATLAS chassis. These values are also cleared whenever the ATLAS controller is rebooted.

Device	Usage Time	ATLAS Frms	ATLAS Drop	VCOM Frms	VCOM Drop	Clear
1	0.000	0	0	0	0	<+>
2	0.000	0	0	0	0	<+>
3	0.000	0	0	0	0	<+>
4	0.000	0	0	0	0	<+>
5	0.000	0	0	0	0	<+>
6	0.000	0	0	0	0	<+>
7	0.000	0	0	0	0	<+>
8	55020.490	1829467	0	5309008	0	<+>
9	0.000	0	0	0	0	<+>
10	0.000	0	0	0	0	<+>
11	0.000	0	0	0	0	<+>
12	0.000	0	0	0	0	<+>
13	0.000	0	0	0	0	<+>
14	0.000	0	0	0	0	<+>
15	0.000	0	0	0	0	<+>
16	0.000	0	0	0	0	<+>
17	0.000	0	0	0	0	<+>
18	0.000	0	0	0	0	<+>
19	0.000	0	0	0	0	<+>
20	0.000	0	0	0	0	<+>

SYS: OK CPU: UNLN 1: -- 2: -- 3: -- 4: -- 5: UNLN 6: -- 7: -- 8: --
 test individual VCOM devices H=more ^Z=help 8:14

Figure 3-7. VCOM Menu: Test

» Device

Read Security: 5

Identifies the VoFR device.

» Usage Time

Read Security: 5

Measures the total elapsed time that a VoFR device has the status **BUSY**. The time is expressed with millisecond precision. Available VoFR devices are assigned new connections using a round-robin technique where all other available VoFR devices must be used before a given device is assigned a new connection. This scheme tends to use all VoFR devices evenly. If a given device shows significantly less elapsed usage time than other VoFR devices on the same VCOM Module, that device may be faulty.

» ATLAS Frms

Read Security: 5

(ATLAS Frames) Counts every frame that ATLAS sends to or receives from the VoFR device. This count indicates activity but does not indicate the actual amount of frame relay data exchanged. The total number of frames handled by the VoFR device is given by the following equation:

$$Frames_{ATLASTotal} = Frames_{ATLAS} + Frames_{ATLASDropped}$$

See the **ATLAS Drop** definition below for a description of the

$Frames_{ATLASDropped}$ term.

» **ATLAS Drop****Read Security: 5**

(ATLAS Frames Dropped) Counter-measures each frame that is dropped or discarded during communication between the ATLAS and the VoFR device. The exchange protocol is designed so that *no* frames should be discarded during this operation. A consistent pattern of dropped frames by a given VoFR device may indicate a faulty VoFR device or an overloaded ATLAS system.



The discarded frame indicated by this value does not reflect network-level performance management, but indicates an anomalous condition within the ATLAS unit. Persistently dropped frames may indicate a problem with the ATLAS unit or VCOM Module.

» **VCOM Frms****Read Security: 5**

Counts every frame successfully sent to or received from the ATLAS System Controller. This is an indication of activity but does not indicate the actual amount of frame relay data exchanged. The following equation gives the total number of frames handled for this VoFR device by the VCOM Module:

$$Frames_{VCOMTotal} = Frames_{VCOM} + Frames_{VCOMDropped}$$

See the **VCOM Drop** definition below for a description of the $Frames_{VCOMDropped}$ term.

» **VCOM Drop****Read Security: 5**

Counter-measures each frame dropped or discarded by VCOM Module during communication with the ATLAS System Controller about a VoFR device. The exchange protocol is designed so that *no* frames should be discarded during this operation. A consistent pattern of dropped frames by a given VoFR device may indicate a faulty VoFR device or an overloaded ATLAS system.



The discarded frame indicated by this value does not reflect network-level performance management but indicates an anomalous condition within the ATLAS unit. Persistently dropped frames may indicate a problem with the ATLAS unit or the VCOM module.

» **Clear****Read Security: 5; Write Security: 3**

Resets the elapsed usage time and frame counters for this VoFR device. Ordinarily, users won't reset these performance measurements. However, this feature can be useful when testing that a suspected problem has been resolved and when zeroing the various counters would make observing future events easier.



Resetting these performance counters has no effect on the performance values accessible via the SNMP network management interface.

ATLAS FEATURES USED WITH VCOM MODULES

In addition to the **VCOM** menu items, the ATLAS 800^{PLUS} system provides additional services that operate in conjunction with the VCOM Module: **Factory Restore** and **System Self-Test**.

Factory Restore

The factory default settings for the VCOM Module can be restored from the terminal menus.

To restore all of the factory default settings for the VCOM Module, press the **F** key while the terminal cursor is positioned over the **Sl**t (Slot) number on the **Modules** menu.

To restore the factory default setting for only a single field, press the **F** key while the terminal cursor is positioned over that particular field.

System Self-Test

System Self-Test, a submenu of the ATLAS main menu item **System Utility**, executes both the VCOM Module internal test and the ATLAS internal test. The results of the self-test are displayed on the LCD display on the ATLAS front panel. For additional information on self-test, see the *ATLAS User Manual*.

To execute the test, when **System Self-Test** displays, place the cursor on it and press **Enter**. The unit continuously changes the display on the self-test log screen until all test results are shown.

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Product Support Information

Presales 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 Customer 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
Progress Center
Building #6 Suite 690
Huntsville, Alabama 35807

RMA # _____

