

**PRISM 3301
Intelligent T3
CSU/DSU**

**August 1999
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FCC Requirements

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

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:


- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference. 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 the Class A FCC limits.*

Canadian Emissions Requirements

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

 *For the DC-powered units only, end users should use existing battery sources or a CSA-certified power supply.*

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques (de la class A) prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

Warranty

Verilink's product warranty covers repair or replacement of all equipment under normal use for a five-year period from date of shipment. Replacement products may be new or reconditioned. Any replaced or repaired product or part has a ninety (90) day warranty or the remainder of the initial warranty period, whichever is longer. Our in-house Repair Center services on a standard 10-workday-turnaround basis.

Customer Service

Verilink offers the following services:

- System Engineers at regional sales offices for network design and planning assistance (800) 837-4546
- Technical Assistance Center for free 24×7 telephone support during installation, maintenance, and troubleshooting at (800) 285-2755 and support@verilink.com
- Return Materials Authorization (RMA) (800) 926-0085, ext. 2282
- Maintenance contracts and leasing plans (800) 837-4546, ext. 206

- Technical Training on network concepts and Verilink products at (800) 837-4546, ext. 346 and training@verilink.com
- Web site at www.verilink.com
- FAX-On-Demand at (800) 957-5465

Returning Products

A product must be assigned a Return Materials Authorization (RMA) number before it is sent to Verilink for repair. An RMA number is issued by Verilink Customer Service at (800) 926-0085, ext. 2282.

Safety Precautions

When handling this equipment, follow these basic safety precautions to reduce the risk of electric shock and injury:

- Follow all warnings and instructions marked on the product and in the manual.
- Unplug the hardware from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a slightly damp cloth for cleaning.
- Do not place this product on an unstable cart, stand, or table. It may fall, causing serious damage to the product.
- Slots in the unit are provided for ventilation to protect it from overheating. These openings must not be blocked or covered. Never place this product near a radiator or heat register.
- This product should be operated only from the type of power source indicated on the marking label and manual. If you are unsure of the type of power supply you are using, consult your dealer or local power company.
- Do not allow anything to rest on the power cord. Do not locate this product where the cord interferes with the free movement of people.
- Do not overload wall outlets and extension cords, as this can result in fire or electric shock.
- Never push objects of any kind into the unit. They may touch dangerous voltage points or short out parts that could result in fire or electric shock. Never spill liquid of any kind on this equipment.
- Unplug the equipment from the wall outlet and refer servicing to qualified service personnel under the following conditions:
 - When the power supply cord or plug is damaged or frayed.
 - If liquid has been spilled into the product.
 - If the product has been exposed to rain or water.
 - If the product has been dropped or if the housing has been damaged.

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ABOUT THIS GUIDE

What is a Reference Manual?

This is a reference manual. It provides information about unit installation, configuration, testing, and troubleshooting on a function-by-function basis. It is not a user's guide containing step-by-step procedures. This manual contains specific information about commands, menu fields, ports, etc. Unless otherwise noted, the information in this manual applies only to the Verilink PRISM 3301 (also referred to as the unit).





Where to go for information

The chapters and appendices in this manual are arranged for quick reference. It is not necessary to read previous chapters to understand the subsequent chapters.

- 1 *General* - This chapter provides an introduction of the product including unit features and specifications.
 - 2 *Installation* - This chapter describes unit configuration including port and interface connections, DIP switch settings, and powering.
 - 3 *Front Panel Interface* - This chapter describes the LEDs and conventions accessed through the front panel interface.
 - 4 *Terminal Interface* - This chapter describes the menu screens and conventions accessed through a VT100 interface.
- A *MIB Reference* - This appendix defines all MIB commands and responses for the unit.
- B *Ordering Information and Optional Equipment* - This appendix lists ordering information and optional equipment.

Conventions

The following table lists the conventions used throughout this manual.

Convention	Description
	<i>Notices</i> call attention to important features or instructions.
	<i>Cautions</i> alert you to personal safety risk, system damage, or data loss.
	<i>Warnings</i> alert you to the risk of severe personal injury.
Enter versus Type	When the word <i>enter</i> is used in this manual, it means type something, then press the Return or Enter key. Do not press the Return or Enter key when an instruction simply says <i>type</i> .
Syntax versus Command	<p>When the word <i>syntax</i> is used in this manual, it indicates that the general form of a command syntax is provided. The command syntax must be evaluated and the appropriate port, path, value, address, or string supplied.</p> <p>Example:</p> <p>Enable RIP by using the following syntax:</p> <pre>SETDefault !<port> -RIP CONTROL = Listen</pre> <p>In this example, a port number must be supplied for !<port>.</p> <p>When the word <i>command</i> is used in this manual, it indicates that all variables in the command have been supplied and the command can be entered as shown in text.</p> <p>Example:</p> <p>Remove the IP address by entering the following command:</p> <pre>SETDefault !0 -IP NETaddr = 0.0.0.0</pre> <p> For consistency and clarity, the full form syntax (upper- and lowercase letters) is shown. However, the abbreviated form of a command can be entered by typing only the uppercase portion. The command can be entered in either upper- or lowercase letters at the prompt.</p>
Text represented as screen display	<p>This typeface is used to represent displays that appear on the terminal screen and command syntax, for example:</p> <pre>NetLogin:</pre>
Text represented as commands	<p>This typeface is used to represent commands that the user enters, for example:</p> <pre>SETDefault !0 -IP NETaddr = 0.0.0.0</pre>
Keys	<p>When specific keys are referred to in the text, they are called out by their labels, such as the Return key or the Escape key, or they may be shown as Return or Escape. Unlabeled keys, such as spacebar, are not capitalized.</p> <p>If two or more keys are to be pressed simultaneously, the keys are linked with a plus sign (+), for example:</p> <p>Press Ctrl+C to copy selected text into a paste buffer.</p>
<i>Italics</i>	<i>Italics</i> denote <i>new terms</i> or <i>emphasis</i> .
<u>underline</u>	Default settings are underlined.

Specifications

Network Interface	Line Rate:	44.736 Mbps (\pm 20 ppm)
	Line Framing:	C-Bit Parity Framing
	Line Code:	B3ZS (Bipolar with 3-Zero Substitution)
	LBO:	0-100 ft, 150-300 ft, 300-450 ft
	Impedance:	75 Ω (\pm 5% Resistive) Network
	Connectors:	BNC, female
Equipment Interface	DTE Port:	High-speed Serial Interface (HSSI) 50-pin Amplitude Shielded (female)
	Data Rates:	3.16, 6.32, 12.63, 18.95, 25.26, 31.58, 37.89, and 44.21 Mbps
Management Interfaces	Connection:	Two (RS-232) 9-pin D-type (female)
	Compatibility:	EIA/TIA-574
	Data Rates:	1200; 2400; 4800; 9,600; and 19,200 bps
MIBS	PRISM 3301	full
	TXPORT	full
	RFC 1407	partial, see RFC 1407 MIB on page 30
Diagnostics	Performance:	Monitoring per AT&T TR 54014
	Alarm Report:	time, date, and type
	History:	100 entries
	Loopbacks:	far unit line loopback, near unit local loop, near unit DTE loop, and remote line loop up
Alarms	Activation:	Enable/Disable
	Reporting:	Front Panel LEDs, Audible Alarm, 100-Message Alarm Queue in Memory
Power	110 VAC:	less than 7 watts
Mechanical	Mounting:	desktop or horizontal rack
	Dimensions:	17" (43.18 cm) wide 1.75" (4.45 cm) high 12" (30.48 cm) deep
	Weight:	6.4 pounds (2.10 kg)

Environmental	Operating Temp:	32° to 122°F (0° to 50°C)
	Humidity:	10% to 90% (non-condensing)
Compatibility	AT&T TR 54014:	May 1992
Industry Listings	FCC Compliance:	Part 15 Class A, Subpart B
	U.S. Safety:	UL 1459 2 nd Edition/UL 1950 2 nd Edition
	Canadian Safety:	CSA C22.2 No. 225-M90 CSA C22.2 No. 950-M89

2

INSTALLATION

This chapter contains information and instructions required to install the PRISM 3301. Included are initial inspection procedures, mounting instructions, port connectors, switch settings, and powering information.

Unpacking and Inspection

Upon receiving this shipment, inspect the shipping container and contents. If the contents of the shipment are incomplete or, if there is mechanical damage or defect, notify Verilink Customer Service. If the shipping container or cushioning material is damaged, notify the carrier and Verilink immediately and make a notation on the delivery receipt that the container was damaged (if possible, obtain the signature and name of the person making delivery). Retain the packaging material until the contents of the shipment have been checked for completeness and the instrument has been checked both mechanically and electrically.

Supplied Materials

The PRISM 3301 product is shipped from the factory with the following items.

- ◆ Two BNC cables (male/male)
- ◆ AC power cord
- ◆ HSSI data cable (male/male)
- ◆ Supervisory cable
- ◆ T3 terminal adapter kit
- ◆ Rack mount hardware for 19-inch equipment racks
- ◆ Reference manual
- ◆ Configuration guide

For specific applications, additional cables and adapters may be required. The interface requirements of any application may be met by using the appropriate cable. Standard cables and Verilink ordering numbers are listed on page 47. If necessary, contact Verilink for assistance in cable selection.

After unpacking and confirming the contents, place the unit on a flat surface, allowing enough space to verify the hardware configuration. Also verify that the power receptacle on the rear panel is compatible with your power source.

Rack Mounting

The PRISM 3301 is housed in a metal case intended for desktop installation. The rack-mount hardware included in your shipment allows the unit to be mounted into a standard 19-inch (33.02 cm) rack.

The PRISM 3301 has mounting brackets for front or mid-mounting. Figure 2-1 is an example of a unit flush mounted in a 19-inch rack.

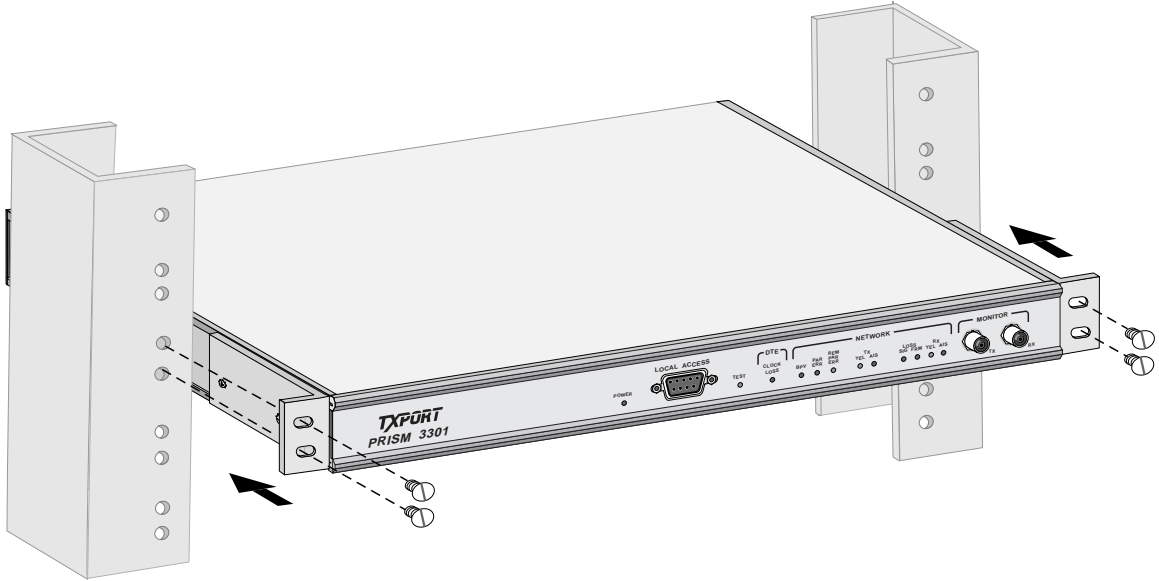


Figure 2-1 PRISM 3301 Rack Mount (flush)

To configure the unit for an offset mount, rotate the mounting brackets so that the mounting brackets are toward the rear of the unit as shown in Figure 2-2.

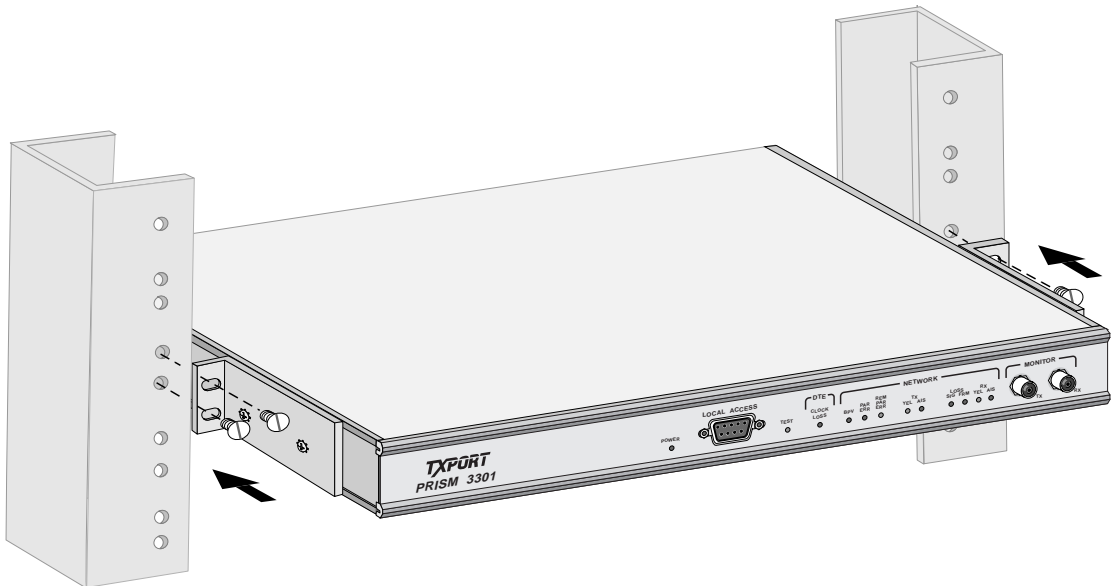


Figure 2-2 Mounting Bracket Location for Offset Mount

Front Panel Port Connections

The PRISM 3301 contains a local access port and two BNC access jacks on the front panel for monitoring and user interaction.

Local Access

The local access port (located on the front panel) requires an RS-232, DB-9 male connector to connect to an ASCII terminal or computer running a terminal emulation software package at speeds of 1200, 2400, 4800, 9600, or 19,200 bps. This port can be configured as dial-in/dial-out. The PRISM 3301 automatically answers any incoming calls. If a value is entered into the *Dial String* field, it attempts to place a call to the designated number. Once a connection is established, the unit sends an ASCII alarm string containing the date, time, alarm description, and application identification. If a connection is not established, the COA routine continues for up to six attempts.

Monitor

The two BNC access jacks labeled Tx and Rx on the front panel allow for non-intrusive monitoring of the network signal.

Rear Panel Port Connections

The PRISM 3301 contains an AC-power receptacle, a grounding stud, a T3 network interface with backup unit connectors, a high-speed serial interface (HSSI) DTE interface, and an RS-232 network management port with embedded SNMP.

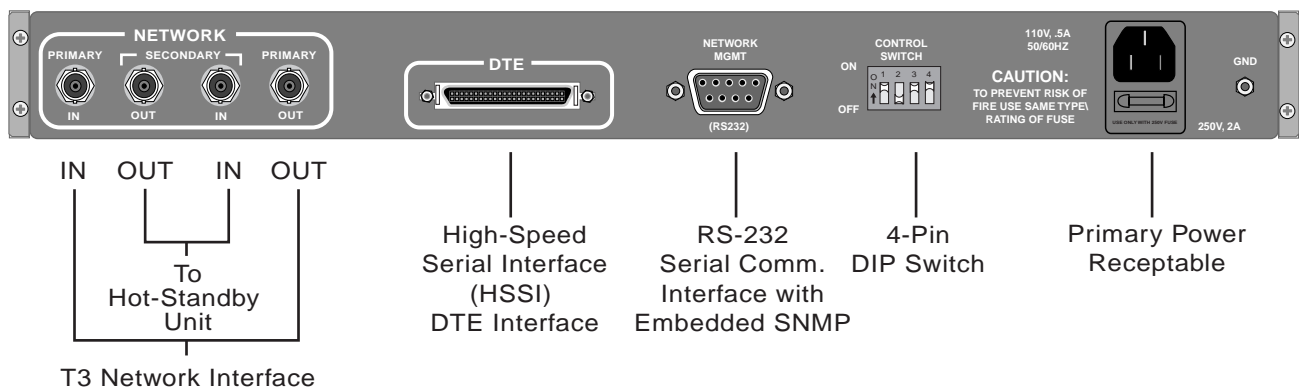


Figure 2-3 PRISM 3301 Rear Panel

Network

The T3 network interface connects the PRISM 3301 to a T3 network. The backup unit connectors allow the DS3 line to be switched to a backup unit in the event of power outage, watchdog failure, or CPU self-test failure.

The primary connections require cables with 75Ω BNC connectors to the T3 facility. The secondary connections require cables with 75Ω BNC connectors to the hot-standby unit.

DTE

The High-speed Serial Interface (HSSI) port transmits data to and receives data from DTE equipment at data rates of 3.16, 6.32, 12.63, 18.95, 25.26, 31.58, 37.70, and 44.21 Mbps. The DTE port requires a cable with an Amplimite 50-pin male connector. The pinout for the HSSI DTE interface is provided in Table 2-1.


 *FCC rules require interconnecting cables carrying high-speed data be shielded appropriately minimizing radio frequency interference.*

Table 2-1 HSSI DTE Interface

Pin (+)	Pin (-)	Function	Direction
1	26	SG (Signal Ground)	
2	27	RT (Receive Timing)	From 3301
3	28	CA (DCE Available)	From 3301
4	29	RD (Receive Data)	From 3301
5	30	LC (Loopback Circuit C)	From 3301
6	31	ST (Send Timing)	From 3301
7	32	SG (Signal Ground)	
8	33	TA (DTE Available)	To 3301
9	34	TT (Terminal Timing)	To 3301
10	35	LA (Loopback Circuit A)	To 3301
11	36	SD (send Data)	To 3301
12	37	LB (Loopback Circuit B)	To 3301
13	38	SG (Signal Ground)	
14-18	39-43	Reserved	
19	44	SG (Signal Ground)	
20-23	45-48	Reserved	
24	49	TM (Test Mode)	From 3301
25	50	SG (Signal Ground)	

Network Management

The network management port is an RS-232 COM port connecting the PRISM 3301 to either a terminal, an external modem, or terminal server for remote configuration, testing, and alarm reporting and monitoring. This port is supported by a DB-9 female connector per EIA/TIA-574 specification.

An RS-232 DB-9 male connector is needed to connect this port to a dial-up modem (Hayes SmartModem or equivalent), or a PC. Make sure the connector supports DTR and DCD signals.

Table 2-2 RS-232C COM Port

Pin	Signal	Input/Output
1	DCD	In
2	RD	In
3	TD	Out
4	DTR	Out
5	GND	



This port supports only the Receive Data, Transmit Data, Data Terminal Ready, and Data Carrier Detect leads.

Table 2-3 Supported Interchange Circuits

Function	Direction
Transmitted Data	From DTE to DCE
Received Data	From DCE to DTE
Data Terminal Ready	From DTE to DCE
Data Carrier Detect	From DCE to DTE

Notes:
 DCE Ready is terminated and ignored.
 CTS is not supported (no connection).
 Ring Indicator is not supported (no connection).

Control Switch The hardware configuration is set using a dual in-line package (DIP) switch (S1) located on the rear of the unit as shown in Figure 2-3. Each switch allows configuring simple settings at power-up. Figure 2-4 displays the available options and their locations on S1.

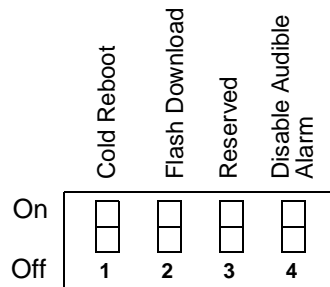


Figure 2-4 Switch S1

S1-1

When set to On, S1-1 forces the PRISM 3301 to perform a cold reboot at power up. The factory default settings are loaded which deletes any customer-specific configuration data or password information.

S1-2

When set to On, S1-2 the PRISM 3301 enters Flash download mode during a power cycle or system reset.

S1-3

This switch is reserved.

S1-4

When set to On, S1-4 silences the audible alarm of the Alarm Cut-Off (ACO) switch.

AC Power The PRISM 3301 requires a 110-volt AC power supply. The rear panel power receptacle is an industry standard male recessed receptacle with grounding pin. The grounding pin is a safety feature. Do not defeat the purpose of the grounding plug. If the plug does not fit into the outlet, contact the facility manager or a qualified electrician to replace the outlet with a properly-grounded outlet. The power block contains a 2 amp, slow blow 250 V fuse.



To avoid an electrical shock hazard, remove power connections to the PRISM 3301 during installation. If the fuse opens, replace it with a 250 V, 2 amp, slow blow fuse.

To connect the 110 VAC power cord:


- 1 Firmly connect the socket end of the supplied power cable to the recessed power receptacle located at the rear of the unit.
- 2 Plug the other end of the power cord into the three-hole, grounded AC outlet.

Ground Stud A ground stud located on the rear panel allows for a chassis ground when necessary.

3

FRONT PANEL INTERFACE

The PRISM 3301 front panel contains twelve LEDs indicating unit status. The alarm messages associated with these indicators, including a date and time stamp, are recorded one at a time in the Alarm Queue. Up to 100 alarm messages can be stored in the alarm queue. When the alarm queue is full, the 101st message is added and the 1st message is deleted. The Alarm Queue can be displayed using the ASCII terminal command line interface or Verilink Manager. See Chapter 4 on page 15 for more information concerning the PRISM 3301 terminal interface.

 Whenever the PRISM 3301 encounters a failure on the near-end, it sends one or more DS3/E3 alarm messages to the far-end announcing the near-end condition. The following alarms are listed in order of priority (highest to lowest).

1. DS3 LOS/HBER
2. DS3 Out-of-Frame
3. DS3 AIS Received
4. DS3 Equipment Failure

Power

This LED is illuminated when there is power to the unit and the power supply is operating normally.

Test

This LED is illuminated when the unit is in either Local DTE Loopback, Local Line Loopback, Remote Line Loopback, or Remote Line Loop Up test mode.

If the T3 signal has been re-routed to the auxiliary BNC connector through a user command, the TEST LED blinks once a second.

DTE Clock Loss

The PRISM 3301 reports DTE Clock Loss when the unit stops receiving the Transmit Timing (TT) clock sent by the DTE. This is the Send Timing (ST) sent by the PRISM 3301 and turned around by the DTE. When the unit again receives the transmit clock, the alarm is cleared.

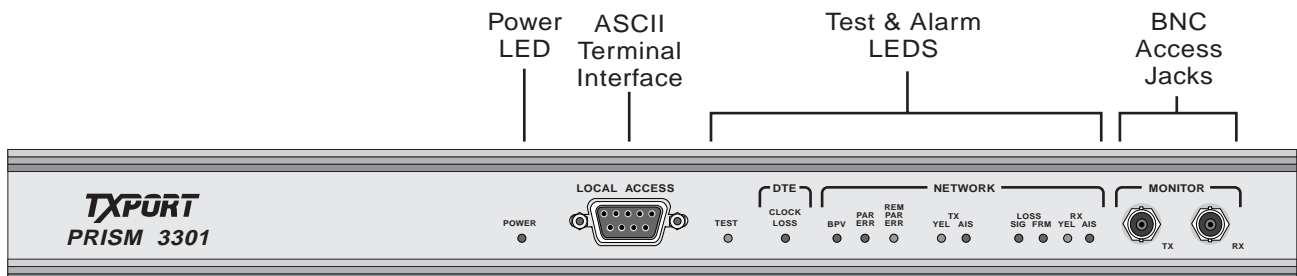


Figure 3-1 Front Panel LED Indicators

- BPV** A BPV error (also known as a Line Code Violation) is two consecutive pulses of the same polarity. The event is reported when a BPV rate greater than 10^{-6} occurs over a one-second interval. The event ends when the BPV rate is less than 10^{-7} .
- PAR ERR** A Parity Error is reported when the C-bit parity error rate exceeds the rate of 10^{-6} for 10 minutes. The event ends when the parity error rate is less than 10^{-7} over a 10-minute interval.
- REM PAR ERR** The PRISM 3301 reports to the remote unit if a Parity Error (as described above) occurs.
- TX YEL** The PRISM 3301 generates a transmit yellow alarm signal by toggling the X-bits in the DS3 signal. The value of the X-bits to indicate a yellow alarm is user-selectable. Receiving the Yellow Alarm is not an alarm condition, but an advisory one. The condition is deactivated when the yellow alarm is no longer received in the incoming signals.
- TX AIS** A Transmit Alarm Indication Signal is a signal transmitted in place of the normal signal to maintain transmission continuity and to indicate to the destination terminal that there is a transmission fault at or upstream from the source terminal. The AIS is detected when the Bit Error Rate is 10^{-3} or more. The condition is deactivated when the ones density of the incoming signal, valid framing, and parity meet the requirement.
- LOSS SIG** The PRISM 3301 reports an input Signal Loss condition when it encounters 128 consecutive zeros. When this condition is ended by a pulse, the alarm is cancelled.
- LOSS FRM** This error condition is reported by the PRISM 3301 when three errors in 16 consecutive F-bits are detected or when there is an error in the M-bit pattern in two out of three or two out of four consecutive M-frames. This continues until 16 errorless F-bits; followed by three errorless M-bits or nine errorless M-bits have been detected.
- RX YEL** The PRISM 3301 generates a receive yellow alarm signal by toggling the X-bits in the DS3 signal. The value of the X-bits to indicate a yellow alarm is user-selectable. Receiving the Yellow Alarm is not an alarm condition, but an advisory one. The condition is deactivated when the yellow alarm is no longer received in the incoming signals.
- RX AIS** A Receive Alarm Indication Signal is a signal transmitted in place of the normal signal to maintain transmission continuity and to indicate to the destination terminal that there is a transmission fault at or upstream from the source terminal. The AIS is detected when the Bit Error Rate is 10^{-3} or more. The condition is deactivated when the ones density of the incoming signal, valid framing, and parity meet the requirement.

Table 3-1 DTE and Network Alarm Conditions and Responses

Alarm Type	LED Signal(s)	Description	Operator Response
Loss of DTE Clock	TxAIS DTE CLK LOSS	Send AIS Alarm on the Network Output Signal	Log alarm in the alarm queue (including printing the message on the ASCII terminal).
Loss of Input	Tx YELLOW Network LOS	Yellow Alarm on the Network Output Signal	Send all 1s to the DTE port. Turn off CA signal of the DTE port if configured. Log alarm in the alarm queue.
DS3 Frame Loss	Tx YELLOW Network OOF	Yellow Alarm on the Network Output Signal	Send all 1s to the DTE port. Turn off CA signal of the DTE port if configured. Log alarm in the alarm queue.
AIS	Network Rx AIS		Send all 1s to the DTE port. Turn off CA signal of the DTE port if configured. Log event in the alarm queue.
Yellow Alarm	Network Rx Yellow		Turn off CA signal of the DTE port configured. Log the event in the alarm queue.
BPV	BPV		Log the event in the alarm queue.
Parity Error	Parity Error		Log the event in the alarm queue.
Remote Parity Error	Remote Parity Error		Log the event in the alarm queue.

4

TERMINAL INTERFACE

The PRISM 3301 can be managed using an ASCII terminal or a personal computer running terminal emulation software or SNMP. The PRISM 3301 is configured by setting parameters for the network interface, the DTE interface, and the local and network management ports.

In addition to unit configuration capabilities, the PRISM 3301 can generate alarm messages, perform system tests and diagnostic loopbacks. Loopbacks include local DTE, local line, remote line, and remote line loop up.



Whenever the PRISM 3301 encounters a failure on the near-end, it sends one or more DS3/E3 alarm messages to the far-end announcing the near-end condition. The following alarms are listed in order of priority (highest to lowest).

1. DS3 LOS/HBER
2. DS3 Out-of-Frame
3. DS3 AIS Received
4. DS3 Equipment Failure

Modem Compatibility

The PRISM 3301 requires a modem supporting the AT command set. The modem must be configured for *hang-up on loss of DTR* and *live DCD reporting*. If the modem cannot be configured externally (via DIP switches, etc.), the necessary commands can be entered into the PRISM 3301 using the SET [SUPERVISORY/SLIP] INIT-STRING command.

The PRISM 3301 can communicate with a modem at speeds up to 19.2 kbps, however, handshaking (RTS/CTS) might not be supported. For best results, the unit and modem speeds should be less than or equal to the actual modem line rate.

The terminal interface is a firmware application program embedded in the PRISM 3301 which allows customizing the unit. This information can be accessed through the Local Access port on the front of the unit (page 10) using a terminal or terminal emulator or through the SLIP port on the rear of the unit using a telnet session.

Interface Start-up

Once a compatible terminal is properly connected to the unit, A terminal interface session is started by pressing the Enter key. The unit responds with a prompt. Type the command LOGIN followed by the password (the factory default is ROOT).

```
Local>LOGIN XXXX
```

If a password has been previously established, enter the correct password to continue the session. *The password is case-sensitive.* After entering a valid password, the unit responds with the message:

```
Password verified: privilege level is X.
```

The unit can now be configured using the ASCII interface. For an explanation of the privilege levels, see the SET ADMINISTRATION PASSWORD command on page 19.

To establish a password, see SET ADMINISTRATION PASSWORD command on page 19.

Configuration Commands

The ASCII terminal interface provides a command line mode for configuring and monitoring the PRISM 3301. These commands are Set, Get, Query, Test, Reset, and Reboot.



To see a quick reference list of available keywords, press Shift+?.

Set Commands

The SET commands configure the PRISM 3301 system parameters. Each command is followed by one or more keywords with each keyword being separated by a space.

SET NET LBO

This command sets the line build-out (LBO) for the DS3 interface. The LBO on the network interface sets the strength of the signal sent into the network by the TXPORT 3301. Correct setting of this parameter ensures proper operation of both the DTE and the network. An incorrect setting can result in unreliable operation and for interference between user services.

0 = 0 to 150 feet

150 = 150 to 300 feet

300 = 300 to 450 feet

SET NET YELLOW-X-BIT

This command sets the representation of the yellow alarm. Both of the X bits can be set to 0 or 1 to represent the yellow alarm. The choices are 0 or 1.

SET NET AIS PATTERN

This command sets the presentation of the AIS alarm. AIS can be presented in two forms: one is the standard DS3 blue alarm which alternates 1s and 0s (1010...); the other form is all 1s used by MCI.

The choices are BLUE or FAO. Select BLUE for a standard DS3 blue alarm pattern of alternating 1s and 0s; select FAO (Frame All Ones) for a pattern of all 1s.

SET NET AIS RX-STUFFING

This command sets the AIS Rx-Stuffing option. The choices are ON or OFF.

SET NET AIS TX-XBIT

This command sets the AIS TX-Xbit option. The choices are 0 and 1.

SET DTE RATE

This command configures the High-speed Serial Interface (HSSI) data rate. The DTE rate is usually set with the SET MAP command.

3 - 3.158 Mbps

6 - 6.316 Mbps

12 - 12.631 Mbps

18 - 18.947 Mbps

25 - 25.263 Mbps

31 - 31.578 Mbps

37 - 37.894 Mbps

44 - 44.210 Mbps

SET DTE CA

This command indicates what error conditions send a signal to the DTE.

LOS (Loss of Signal)

OOF (Out Of Frame)

RXAIS (Receive AIS signal)

RXYELLOW (Receive Yellow alarm).

SET DSU

Primary: T3 signals to/from the network are routed to the HSSI DTE port and the auxiliary connectors located on the front of the unit are disconnected.

Secondary: Hands off the T3 signals to and from the network to a separate PRISM 3301. The HSSI DTE port becomes inactive.

SET MAP

This command assigns the M-frame timeslots (1–7). This command uses the format *<Slot #>*,*<Slot #>*-*<Slot #>*.

SET SUPERVISORY MODE

This command configures the supervisory port mode to either Direct or Modem.

SET SUPERVISORY BAUD

This command configures the supervisory port baud rate to 1.2, 2.4, 4.8, 9.6, 19.2 kbps.

SET SUPERVISORY COA

This command enables the Call-Out on Alarm (COA). The choices are On and Off.

SET SUPERVISORY DIAL-STRING

This command establishes the AT command dial string.

SET SUPERVISORY HANGUP-STRING

This command establishes the AT command hang-up string.

SET SUPERVISORY INIT-STRING

This command establishes the AT command initialization string.

SET SLIP

This command configures the network management (rear) port.

SET SLIP MODE

This command configures the network management port to either Direct or Modem.

SET SLIP BAUD

This command configures the network management port baud rate to 1.2, 2.4, 4.8, 9.6, or 19.2 kbps.

SET SLIP DIAL-STRING

This command establishes the AT command dial string.

SET SLIP HANGUP-STRING

This command establishes the AT command hang-up string.

SET SLIP INIT-STRING

This command establishes the AT command initialization string.

SET SLIP FILTER

Index option of 1-4. After selecting the option, enter the IP address.

SET SLIP UNIT-ADDRESS

This command establishes the unit IP address.

SET SLIP SUBNET-MASK

This command establishes the unit subnet mask IP address.

SET SLIP ROUTER-ADDRESS

This command establishes the unit router IP address.

SET SNMP READ-COMMUNITY

This command establishes the SNMP read-community with a string of up to 58 characters.

SET SNMP WRITE-COMMUNITY

This command establishes the SNMP write-community with a string of up to 58 characters.

SET SNMP TRAP

Option of 1-6. After selecting the option, enter the IP address.

SET SNMP SYSTEM

This command establishes the physical location (Location), point-of-contact (Name), and (Contact) of the unit. Each field has a string of up to 58 characters.

SET SCRAMBLER

This command configures the scrambler to On or Off. When set to On, a 7-bit or 10-bit scrambler is enabled. The choices are 7 and 10.

SET PROGRAM EPROM

This command sets the unit to run the program from EPROM on next power-up or reboot.

SET PROGRAM EPROM

This command sets the unit to run the program from Flash on next power-up or reboot.

SET ADMINISTRATION PASSWORD {password} NAME {name} LEVEL {1,2,3}

This command/keyword combination adds a new user to the database. Name is the user's name (up to 12 alphabetic characters). Double quotes are used when blank spaces are in the name (e.g., "Joe Smith"). Level is the user's access level. The choices are 1, 2 or 3, with 3 being the highest level. The factory default password is ROOT.

SET ADMINISTRATION PASSWORD {password} DELETE

This command/keyword combination removes a user and the associated password from the database. Only a user with an access level of 3 can perform this operation. All password characters are case sensitive with legal characters being a-z, A-Z, and 0-9.

SET ADMINISTRATION PASSWORD {password} CHANGE

This command/keyword combination changes the password for the current (logged-in) user. Once the command is entered, the unit prompts entering the current password. Once Enter is pressed, the unit prompts for the new password. All password characters are case sensitive with legal characters being a-z, A-Z, and 0-9.

SET ADMINISTRATION TOD

This command sets the date and time. This sets the system's real-time clock including the date (mm/dd/yy hh:mm:ss).

SET ADMINISTRATION UNITID

This command sets the Local Unit ID number (up to eight numeric characters) used for network-management purposes.

SET ADMINISTRATION CIRCUIT

This command sets the circuit number (up to 24 alphanumeric characters) used for network management purposes. (optional)

SET ADMINISTRATION APPLICATION

This command sets the Application ID number (up to 24 alphanumeric characters) used for network management purposes. (optional)

SET AUDIBLE

This command enables or disables the audible alarm. When enabled, this setting can be overridden with the ACO switch (S1-4 on page 9).

SET DATALINK EIC

This command initializes the Equipment Identification Code for the near-end unit. This command accepts up to ten alphanumeric characters and can include embedded spaces if the string is enclosed in double quotes.

SET DATALINK LIC

This command initializes the Location Identification Code for the near-end unit. This command accepts up to 11 alphanumeric characters and can include embedded spaces if the string is enclosed in double quotes.

SET DATALINK FIC

This command initializes the Frame Identification Code for the near-end unit. This command accepts up to ten alphanumeric characters and can include embedded spaces if the string is enclosed in double quotes.

SET DATALINK UIC

This command initializes the Unit Identification Code for the near-end unit. This command accepts up to six alphanumeric characters and can include embedded spaces if the string is enclosed in double quotes.

SET DATALINK PATH-MESSAGE

This command initializes the Path Identification Message for the near-end unit. This command accepts up to 38 alphanumeric characters and can include embedded spaces if the string is enclosed in double quotes.

SET DATALINK IDLE-MESSAGE

This command initializes the Idle Signal Identification Message for the near-end unit. This command accepts up to 38 alphanumeric characters and can include embedded spaces if the string is enclosed in double quotes.

SET DATALINK TEST-MESSAGE

This command initializes the Test Signal Identification Message for the near-end unit. This command accepts up to 38 alphanumeric characters and can include embedded spaces if the string is enclosed in double quotes.

SET DATALINK TERMINAL DTE

This command initializes the terminal type for the near-end unit as DTE.

SET DATALINK TERMINAL CARRIER

This command initializes the terminal type for the near-end unit as Carrier.

Get Commands

The PRISM 3301 detects and responds to alarm conditions per AT&T TR 54014 requirements and provides audible and visual indication of alarm conditions. The GET commands display the current configuration settings. Each command is followed by one or more keywords with each keyword being separated by a space.

GET NET

This command displays the network configuration settings.

GET DTE

This command displays the DTE configuration settings.

GET SUPERVISORY

This command displays the Supervisory configuration settings.

GET SLIP

This command displays the SLIP configuration settings.

GET SNMP

This command displays the SNMP configuration settings.

GET MAP

This command displays the map configuration settings.

GET STATUS

This command displays the status.

GET SCRAMBLER

This command displays the scrambler configuration settings.

GET PROGRAM

This command displays the program configuration settings.

GET ADMINISTRATION

This command displays the administration configuration settings.

GET AUDIBLE

This command displays the audible configuration settings.

GET DATALINK

This command displays the near-end data elements transmitted over the FDL.

Equipment ID Code. Transmitted in all three FDL messages.

Location ID Code. Transmitted in all three FDL messages.

Frame ID Code. Transmitted in all three FDL messages.

Unit. Transmitted in all three FDL messages.

Path ID Message. Only transmitted as part of the Path Identification Message.

Idle Signal ID Message. Only transmitted as part of the Idle Signal Identification Message.

Test Signal ID Message. Only transmitted as part of the Test Signal Identification Message.

Terminal Type. Transmitted in all three FDL messages.

GET FAR DATALINK

This command displays the far-end data elements that have been received over the FDL.

Equipment ID Code. Received in all three supported FDL messages. The last value received is displayed regardless of FDL message association.

Location ID Code. Received in all three supported FDL messages. The last value received is displayed regardless of FDL message association.

Frame ID Code. Received in all three supported FDL messages. The last value received is displayed regardless of FDL message association.

Unit. Received in all three supported FDL messages. The last value received is displayed regardless of FDL message association.

Path ID Message. Only received as part of the Path Identification Message.

Idle Signal ID Message. Only received as part of the Idle Signal Identification Message.

Test Signal ID Message. Only received as part of the Test Signal Identification Message.

Terminal Type. Received in all three supported FDL messages. The last value received is displayed regardless of FDL message association.

Query Commands

The QUERY commands are associated with the performance monitoring (per TR 54014) of the PRISM 3301. Performance data for these parameters are calculated and stored in the PRISM 3301 for accumulation periods of 15 minutes. At the end of this period, the value for each parameter is written to its history register and becomes available for review. A 24-hour history is maintained for each performance parameter. The QUERY commands retrieve information maintained in the system database. Each command is followed by one or more keywords with each keyword separated by a space.

QUERY ALARMS

This command retrieves an entire alarm/event queue of related information. The list displays one screen at a time. The following lists all the alarm and event messages generated by the PRISM 3301 and can be accessed through the QUERY ALARMS command.

- DTE Clock Loss
- DTE Clock Loss Clear
- Network Loss of Signal
- Network Loss of Signal Clear
- Network Out of Frame
- Network Out of Frame Clear
- Network Receiving AIS
- Network Receiving AIS Clear
- Network Receiving Yellow Alarm
- Network Receiving Yellow Alarm Clear
- Network BPV > 1E⁻⁶
- Network BPV > 1E⁻⁶ Clear
- Network Parity Error > 1E⁻⁶
- Network Parity Error > 1E⁻⁶ Clear
- Network Remote Parity Error
- Network Remote Parity Error Clear
- System Reset Cold
- System Reset Warm
- Network Transmitting AIS
- Network Transmitting AIS Clear
- Network Transmitting Yellow Alarm
- Network Transmitting Yellow Alarm Clear
- Local DTE Loopback Set from User
- Local DTE Loopback Clear from User
- Local DTE Loopback Set from HSSI
- Local DTE Loopback Clear from HSSI
- Local Line Loopback Set from User
- Local Line Loopback Clear from User
- Local Line Loopback Set from HSSI
- Local Line Loopback Clear from HSSI
- User Tx Remote Line Loop-up Code to FE

User Tx Remote Line Loop-down Code to FE
HSSI Tx Remote Line Loop-up Code to FE
HSSI Tx Remote Line Loop-down Code to FE
Remote Line Loopback Set From FE
Remote Line Loopback Clear from FE
Remote Line Loopback Set from NE
Remote Line Loopback Clear from NE
Internal Error
NVRAM Crc Check Failure
Code Eprom Checksum Failure
Xilinx Eprom Checksum Failure

QUERY LOOP

This command displays a summary of the Local DTE, Local Line, Remote Line, and Remote Line Request loopback conditions as either On or Off.

QUERY PERFORMANCE EFS

This command displays the performance data for Error Free Seconds. An Error Free Second for a DS3 channel is any second of transmission during which no bit errors are received. The proportion of error-free seconds is the ratio of one-second intervals not containing any bit errors to the total number of seconds in an observation period (usually 24 hours). This ratio is expressed as Percent Error-Free Seconds (%EFS).

QUERY PERFORMANCE ES

This command displays the performance data for Error Seconds. An Errored Second is any second during which one or more bits are in error, and includes detection of one or more M-frame Errors, Loss Of Signal (LOS), one or more Out Of Frame (OOF) conditions, or presence of an Alarm Indication Signal (AIS). Three types of Errored Seconds are monitored.

Errored Seconds - Type A (ES-A). A Type A Errored Second is one with exactly one errored M-frame, and no occurrence of any LOS, OOF, or AIS condition.

Errored Seconds - Type B (ES-B). A Type B Errored Second is one with more than one, but less than or equal to 44 errored M-frames, and no occurrence of any LOS, OOF, or AIS condition.

Errored Seconds - Type C (ES-C). A Type C Errored Second is one with more than 44 errored M-frames and/or an LOS, OOF, or AIS condition.

QUERY PERFORMANCE SES

Displays the performance data for Severely Errored Seconds. A Severely Errored Second is any second during which the Bit Error Rate is worse than 1×10^{-3} .

QUERY PERFORMANCE SFE

This command displays the performance data for Short Failure Event. A Short Failure Event (SFE) is a Failure Event lasting less than two minutes. A Failure Event begins with either 10 Severely Errored Seconds or three or more seconds of continuous loss of signal integrity (LOS, high BER, or AIS condition) and ends at the beginning of a 10 Severely Errored Second-free period.



During the power-up cycle, the entire performance database is cleared and data collection starts over.

Display Formats

The display format for the EFS, SES, and SFE is shown in Example A.

```
dd/mm/yyhh:mm:ss
Performance Data For Error Free Seconds:
  Valid Interval:  x   Current Seconds:          y
  24-Hour Total:  z   Error in Current Interval:  m
Interval  Start                               End           % of Errors
4         mm/dd/yy hh:mm:ss mm/dd/yy hh:mm:ss  nnn
3         mm/dd/yy hh:mm:ss mm/dd/yy hh:mm:ss  nnn
2         mm/dd/yy hh:mm:ss mm/dd/yy hh:mm:ss  nnn
1         mm/dd/yy hh:mm:ss mm/dd/yy hh:mm:ss  nnn
```

Figure 4-1 Example A

The display format for the ES only is shown in Example B.

```
dd/mm/yy          hh:mm:ss
Performance Data For Errored Seconds:
  Valid Interval:  x   Current Seconds:          y
  24-Hour Total:  z   Error in Current Interval:  m
Interval  Start                               End # of Errors
                                     A   B   C
```

Figure 4-2 Example B

The following definitions for x , y , z , and m are valid for Example A and Example B.


x is the total valid intervals collected in the performance monitoring history database. The maximum number for x is 96.

y is the total number of seconds in the current 15-minute interval. The maximum number for y is 900.

z is the total accumulated performance monitoring number in the last 24 hours, not including the current interval. (For Error Free Seconds, this is the total percentage of the Error Free Seconds in the last 24 hours.)

m is the total accumulated performance monitoring number in the current 15-minute interval. (For Error Free Seconds, this is the total percentage of the Error Free Seconds in the current 15-minute interval.)

Test Commands The TEST commands perform loop and system tests on the unit. The PRISM 3301 provides three loopback options to assist in diagnosing transmission difficulties. These loopbacks can isolate a specific section of the transmission line allowing accurate testing of line integrity and transmission devices. Each command is followed by one or more keywords with each keyword separated by a space.

 *Only one loopback can be performed at a time.*

TEST LOOP LOCAL DTE SET

This command performs a local DTE loopback test. The Local DTE Loopback can be initiated and cleared from either user interface. The Local DTE Loopback loops the incoming data from the local DTE back directly through the DTE connector interface, after the digital receive circuit, as shown in Figure 4-3. During the loopback, an AIS signal is sent to the network.

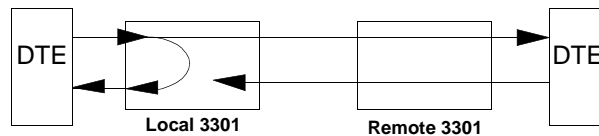


Figure 4-3 Local DTE Loopback

TEST LOOP LOCAL DTE CLEAR

This command clears the local DTE loopback test.

TEST LOOP LOCAL LINE SET

This command performs a local line loopback test. The Local Line Loopback can be activated and cleared from either user interface. The Local Line Loopback loops the DTE data back through the digital transmit and receive section of the PRISM 3301, as shown in Figure 4-4. When a local line loopback is active, an AIS signal is sent to the network.

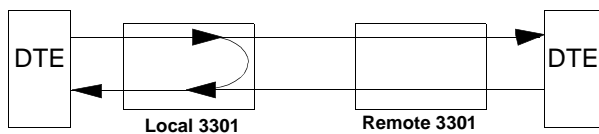


Figure 4-4 Local Line Loopback

TEST LOOP LOCAL LINE CLEAR

This command clears the local line loopback test.

TEST LOOP REMOTE SET

This command performs a remote loopback test.

TEST LOOP REMOTE CLEAR

This command clears the remote loopback test.

TEST LOOP REMOTE REQUEST

This command sends a pattern to the remote PRISM 3301 requesting it perform a remote line loopback. When the remote PRISM 3301 unit detects the loop request, it loops the network receive data back to the transmitting end after passing through the DS3 analog receiver circuit, as shown in Figure 4-5.

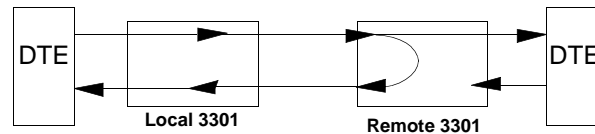


Figure 4-5 Remote Line Loopback

This loopback can be initialized by either the local or far-end unit using either user interface. When initiated at the local end, the loop code must be transmitted to the far end. During the loop test, all 1s are transmitted to the remote DTE from the remote PRISM 3301.

TEST LOOP REMOTE END

This command sends a pattern to the remote PRISM 3301 ending the remote line loopback.

TEST SYSTEM

This command reports the results of an on-going (background) system tests on the unit. The tests respond with a pass or fail report for the CODE EPROM and the NVRAM.

Reset Commands

The RESET commands are associated with the performance monitoring of the PRISM 3301 by resetting the unit alarm and performance data. Each command is followed by one or more keywords with each keyword being separated by a space.

RESET ALARMS

This command clears the alarm queue and the unit restarts the alarm accumulation. Alarm history is lost. User confirmation is required for this command.

RESET PERFORMANCE

This command resets the performance monitoring data base. There must be a user confirmation to execute this command.

Reboot Commands

The REBOOT commands perform a warm or cold boot. Each command is followed by one or more keywords with each keyword being separated by a space.

REBOOT COLD

This command resets the system configuration to the factory default values. All user-defined values are erased.

REBOOT WARM

This command restarts the unit without resetting the system configuration.

A

MIB REFERENCE

This unit has an embedded SNMP agent which can be accessed through the built-in SLIP interface. Through this interface, access is gained to the 3301 through telnet or SNMP. The telnet session is simply a connection to the user interface of the unit.

SNMP access to the unit is limited to Management Information Bases (MIBs) supported by the embedded SNMP agent. The SNMP agent supports MIB-II (RFC 1213), the latest DS3 MIB (RFC 1407), and a proprietary MIB. This appendix describes in detail how the embedded SNMP agent conforms to the RFCs.

The PRISM 3301 uses standard MIBs where applicable. There are instances where MIB files define variables and values that do not apply to the PRISM 3301 but have been left in the MIB for completeness.

MIB Loading Instructions

The MIBs were written using the standard ASN.1 notation. Any standard SNMP manager should be able to compile the MIBs. Although the exact procedure for loading MIBs may vary from one platform to another, the following basic steps are the same.

- 1 The SNMP manager has a directory for MIBs. Copy the files PRISM3301.MIB and TXPORT.MIB into this directory. The MIBs are sent out on a DOS-formatted diskette, therefore, a DOS2UNIX command may have to be used for UNIX workstations (typical directories are snmp_mibs for OpenView[®], bin for SunNet[™] Manager, and mibfiles for Castle Rock SNMPc[™]).
- 2 Start the SNMP manager if it is not already running. Select one of the menu selections (or selection subheadings) that contain the SNMP MIB operations (this is the Options subheading for HP OpenView and Config subheading for SNMPc).
- 3 Choose the option for LOADING or COMPILING MIBs. Specify which MIBs to load. If the manager only allows one MIB to be loaded at a time, load the file TXPORT.MIB before loading the PRISM3301.MIB.
- 4 Once the manager has successfully loaded the MIBs, the Verilink products can be managed. If there are any questions, please call Verilink Product Support.

RFC 1407 MIB

RFC 1407 is used to manage DS3/E3 interfaces, and in this case, a T3 interface. The following lists the objects that the 3301 supports.

dsx3ConfigTable { 1.3.6.1.2.1.10.18.6 } Implementation of the Near End Configuration Table is mandatory for all systems attached to a DS3/E3 interface.

Object Name	Object ID	User Access	Object Description	Get / Set
dsx3LineIndex	dsx3ConfigEntry 1	read-only	This object is the identifier of a DS3/E3 interface on a managed device. If there is an ifEntry directly associated with this and only this DS3/E3 interface, it should have the same value as ifIndex. Otherwise, number the dsx3LineIndices with a unique identifier following this rule: inside interfaces (e.g., equipment side) with even numbers and outside interfaces (e.g., network side) with odd numbers.	Returns the ifIndex of the specified DS3/E3 interface.
dsx3IfIndex	dsx3ConfigEntry 2	read-only	The value for this object is equal to the value of ifIndex from the Interfaces table of MIB II (RFC 1213).	Returns the ifIndex of the specified DS3 interface.
dsx3TimeElapsed	dsx3ConfigEntry 3	read-only	The number of seconds that have elapsed since the beginning of the near end current error-measurement period.	
dsx3ValidIntervals	dsx3ConfigEntry 4	read-only	The number of previous near end intervals for which valid data was collected. The value will be 96 unless the interface was brought online within the last 24 hours, in which case the value will be the number of complete 15 minute near end intervals since the interface has been online.	
dsx3LineType	dsx3ConfigEntry 5	read-write	This variable indicates the variety of DS3 C-bit or E3 application implementing this interface. The type of interface affects the interpretation of the usage and error statistics. The rate of DS3 is 44.736 Mbps and E3 is 34.368 Mbps. The dsx3ClearChannel value means that the C-bits are not used except for sending/receiving AIS.	4 - dsx3CbitParity (ANSI T1.107a-1989)
dsx3LineCoding	dsx3ConfigEntry 6	read-write	This variable describes the variety of Zero Code Suppression used on this interface, which in turn affects a number of its characteristics. dsx3B3ZS and e3HDB3 refer to the use of specified patterns of normal bits and bipolar violations which are used to replace sequences of zero bits of a specified length.	dsx3B8ZS(2) - the Network Coding is set to B8ZS. dsx3HDB3(3) - Network coding is set to HDB3

Object Name	Object ID	User Access	Object Description	Get / Set
dsx3SendCode	dsx3ConfigEntry 7	read-write	This variable indicates what type of code is being sent across the DS3/E3 interface by the device. (These are optional for E3 interfaces.)	dsx3SendNoCode(1) - the unit is not in a BERT Test and not sending a PLB or LLB loopup/loopdown request to the far end. dsx3SendLineCode(2) - the unit is transmitting an in-band LLB loopup signal. Since this occurs so quickly, this response probably will not be seen.
dsx3CircuitIdentifier	dsx3ConfigEntry 8	read-write	This variable contains the transmission vendor's circuit identifier, for the purpose of facilitating troubleshooting.	Returns the value of the Circuit Identifier for the unit, this is selectable in the Element Configuration Screen.
dsx3LoopbackConfig	dsx3ConfigEntry 9	read-write	This variable represents the loopback configuration of the DS3/E3 interface.	dsx3NoLoop(1) - the unit does not have any loops active. dsx3LineLoop(3) - the received signal at this interface does not go through the device (minimum penetration) but is looped back out.
dx3LineStatus	dsx3ConfigEntry 10	read-only	This variable indicates the Line Status of the interface. It contains loopback state information and failure state information. The dsx3LineStatus is a bit map represented as a sum, therefore, it can represent multiple failures and a loopback simultaneously (see dsx3LoopbackConfig object for the type of loopback). The dsx3NoAlarm should be set if and only if no other flag is set.	(1) dsx3NoAlarm - No alarm present (2) dsx3RcvRAIFailure - Receiving Yellow/Remote Alarm Indication (4) dsx3XmitRAIAlarm - Transmitting Yellow/Remote Alarm Indication (8) dsx3RevAIS - Receiving AIS failure state (16) dsx3XmitAIS - Transmitting AIS (32) dsx3LOF - Receiving LOF failure state (64) dsx3LOS - Receiving LOS failure state (128) dsx3LoopbackState - Looping the received signal (256) dsx3RcvTestCode - Receiving a Test Pattern (512) dsx3OtherFailure - Any line status not defined here
dsx3TransmitClockSource	dsx3ConfigEntry 11	read-write	The source of Transmit Clock is derived from the recovered receive clock of another DS3 interface.	loopTiming(1) - the Network Timing is set to Network Clock.

dsx3FarEndConfig { 1.3.6.1.2.1.10.18.9 } The DS3 Far End Configuration Table contains configuration information reported in the C-bits from the remote end. Implementation of this table is optional for all systems that attach to a DS3 Interface. However, only C-bit Parity and SYNTRAN DS3 applications have the capability (option) of providing this information.

Object Name	Object ID	User Access	Object Description	Get
dsx3FarEndLineIndex	dsx3FarEndEntry 1	read-only	The index value which uniquely identifies the DS3 interface to which this entry is applicable. The interface identified by a particular value of this index is the same interface as identified by the same value an dsx3LineIndex object instance.	
dsx3FarEndEquipCode	dsx3FarEndEntry 2	read-only	This is the Far End Equipment Identification code that describes the specific piece of equipment. It is sent within the Path Identification Message.	Returns the Far End Equipment Identification code.
dsx3FarEndLocationIDCode	dsx3FarEndEntry 3	read-write	This is the Far End Location Identification code that describes the specific location of the equipment. It is sent within the Path Identification Message.	Returns the Far End Location Identification code.
dsx3FarEndFrameIDCode	dsx3FarEndEntry 4	read-write	This is the Far End Frame Identification code that identifies where the equipment is located within a building at a given location. It is sent within the Path Identification Message.	Returns the Far End Frame Identification code.
dsx3FarEndUnitCode	dsx3FarEndEntry 5	read-write	This is the Far End code that identifies the equipment location within a bay. It is sent within the Path Identification Message.	Returns the Far End Unit code.
dsx3FarEndFacilityIDCode	dsx3FarEndEntry 6	read-write	This code identifies a specific Far End DS3 path. It is sent within the Path Identification Message.	Returns the Far End Facility ID code.

dsx3FracTable {1.3.6.1.2.1.10.18.13} Implementation of this group is optional. It is designed for those systems dividing a DS3/E3 into channels containing different data streams that are of local interest. The DS3/E3 fractional table identifies which DS3/E3 channels associated with a CSU are being used to support a logical interface, i.e., an entry in the interfaces table from the Internet-standard MIB.

For example, consider a DS3 device with four high-speed links carrying router traffic, a feed for voice, a feed for video, and a synchronous channel for a non-routed protocol. The allocation of channels, in the dsx3FracTable, is described as follows.

dsx3FracIfIndex.2. 1 = 3	dsx3FracIfIndex.2.15 = 4
dsx3FracIfIndex.2. 2 = 3	dsx3FracIfIndex.2.16 = 6
dsx3FracIfIndex.2. 3 = 3	dsx3FracIfIndex.2.17 = 6
dsx3FracIfIndex.2. 4 = 3	dsx3FracIfIndex.2.18 = 6
dsx3FracIfIndex.2. 5 = 3	dsx3FracIfIndex.2.19 = 6
dsx3FracIfIndex.2. 6 = 3	dsx3FracIfIndex.2.20 = 6
dsx3FracIfIndex.2. 7 = 4	dsx3FracIfIndex.2.21 = 6
dsx3FracIfIndex.2. 8 = 4	dsx3FracIfIndex.2.22 = 6
dsx3FracIfIndex.2. 9 = 4	dsx3FracIfIndex.2.23 = 6
dsx3FracIfIndex.2.10 = 4	dsx3FracIfIndex.2.24 = 6
dsx3FracIfIndex.2.11 = 4	dsx3FracIfIndex.2.25 = 6
dsx3FracIfIndex.2.12 = 5	dsx3FracIfIndex.2.26 = 6
dsx3FracIfIndex.2.13 = 5	dsx3FracIfIndex.2.27 = 6
dsx3FracIfIndex.2.14 = 5	dsx3FracIfIndex.2.28 = 6

There are 28 legal channels, numbered 1 through 28 for dsx3M23, dsx3SYNTRAN, dsx3CbitParity, and dsx3ClearChannel.

For e3Framed there are 16 legal channels, numbered 1 through 16. The channels (1...16) correspond directly to the equivalently numbered timeslots.

Object Name	Object ID	User Access	Object Description	Get	Set
dsx3FracIndex	dsx3FracEntry 1	read-only	The index value which uniquely identifies the DS3 interface to which this entry is applicable. The interface identified by a particular value of this index is the same interface as identified by the same value an dsx3LineIndex object instance.	(2) - Returns the ifIndex of the DS3 interface.	
dsx3FracNumber	dsx3FracEntry 2	read-only	The channel number for this entry.	Returns 0.	
dsx3FracIfIndex	dsx3FracEntry 3	read-write	An index value that uniquely identifies an interface. The interface identified by a particular value of this index is the same interface as identified by the same value an ifIndex object instance. If no interface is currently using a channel, the value should be zero. If a single interface occupies more than one time slot, that ifIndex value will be found in multiple time slots.	Returns 0.	Can assign the channel to an interface. NOTE: Please be very careful when using this function.

**PRISM
3301 MIB**

{ 1.3.6.1.4.1.425.2.8.1 } The PRISM 3301 proprietary MIB contains the Network, DTE, Current (current TR 54014 Performance Monitoring data), Interval (TR 54014 Performance Monitoring 15-Minute Intervals), and Total (TR 54014 Performance Monitoring 24-Hour Totals) tables.

t3NetTable { 1.3.6.1.4.1.425.2.8.1.1 } This table defines the PRISM 3301 Datalink Configuration, Status, and Control Objects.

Object Name	Object ID	User Access	Object Description
t3NetIndex	t3NetConfigEntry 1	read-only	The value for this object is equal to the value of IfIndex from the Interfaces table of MIB II (RFC 1213).
t3NetLBO	t3NetConfigEntry 2	read-write	Line buildout level for DS3 interface. 1 - lbo_0 2 - lbo_150 3 - lbo_300
t3NetYellowXBit	t3NetConfigEntry 3	read-write	Representation of the yellow alarm. 1 - off 2 - on
t3NetAISPattern	t3NetConfigEntry 4	read-write	AIS can be represented in two forms. One is the standard DS3 blue alarm with alternate 1's and 0's such as 1010....., and the other is all 1's used by MCI. The default is blue. 1 - blue 2 - FAO
t3NetAISRxStuff	t3NetConfigEntry 5	read-write	Controls the AIS Rx-Stuffing option. 1 - off 2 - on
t3AISTxXBit	t3NetConfigEntry 6	read-only	Controls the value of the X-bit when transmitting AIS. 1 - zero 2 - one
t3Map	t3NetConfigEntry 7	read-write	This object is bit mapped. Set bits to select active timeslots as follows: 1 - Timeslot 1 2 - Timeslot 2 4 - Timeslot 3 8 - Timeslot 4 16 - Timeslot 5 32 - Timeslot 6 64 - Timeslot 7 128 - (RESERVED, must be 1) Multiple bits can be set at the same time. Default all bits are set.
t3Scrambler	t3NetConfigEntry 8	read-write	Enable/Disable scrambler. The scrambler can be set for either 7 or 10 bit scrambling. The default is off. 1 - off 2 - bit-7 3 - bit-10
t3Dsu	t3NetConfigEntry 9	read-write	The PRISM 3301 has the capability to route the incoming T3 signal to a pair of AUX BNC connectors instead of to the DTE port. The values mean: 1 - Primary - The T3 signal path is to/from the DTE port. The AUX BNC connectors are inactive. 2 - Secondary - The T3 signal path is to/from the AUX BNC connectors. The DTE port is inactive.
t3NetLoopback	t3NetConfigEntry 10	read-write	This variable expands upon RFC1407 variable dsx3LoopbackConfig. 1 - dsx3NoLoop 3 - dsx3LineLoop 5 - dsx3FarProprietaryLoop - The unit at the other end was put into LINE loop by this unit using a proprietary C-bit message.
t3NetStatus	t3NetConfigEntry 11	read-only	This variable expands upon RFC1407 variable dsx3LineStatus. 1024 - t3BPV 2048 - t3Parity 4096 - t3RemoteParity 8192 - t3Other

t3DatalinkConfig { 1.3.6.1.4.1.425.2.8.1.2 } This table defines the PRISM 3301 Datalink Configuration, Status, and Control Objects.

Object Name	Object ID	User Access	Object Description
t3DatalinkIndex	t3DatalinkConfigEntry 1	read-write	The value for this object is equal to the value of IfIndex from the Interfaces table of MIB II (RFC 1213).
t3DatalinkEIC	t3DatalinkConfigEntry 2	read-write	A string containing the Equipment Identification Code (10 characters maximum).
t3DatalinkLIC	t3DatalinkConfigEntry 3	read-write	A string containing the Location Identification Code (11 chrs max).
t3DatalinkFIC	t3DatalinkConfigEntry 4	read-write	A string containing the Frame Identification Code (10 chrs max).
t3DatalinkUIC	t3DatalinkConfigEntry 5	read-write	A string containing the Unit Identification Code (6 chrs max).
t3DatalinkPID	t3DatalinkConfigEntry 6	read-write	A string containing the Path Identification (38 chrs max).
t3DatalinkISID	t3DatalinkConfigEntry 7	read-write	A string containing the Idle Signal Identification (38 chrs max).
t3DatalinkTSID	t3DatalinkConfigEntry 8	read-write	A string containing the Test Signal Identification (38 chrs max).
t3FarEndISID	t3DatalinkConfigEntry 9	read-only	A string containing the Far End Idle Signal Identification.
t3FarEndTSID	t3DatalinkConfigEntry 10	read-only	A string containing the Far End Test Signal Identification.
t3Terminal	t3DatalinkConfigEntry 11	read-write	The type of terminal. 1 - DTE 2 - Carrier

t3DteConfig { 1.3.6.1.4.1.425.2.8.1.3 } This table defines the PRISM 3301 DTE Configuration, Status, and Control Objects.

Object Name	Object ID	User Access	Object Description
t3DteIndex	t3DteConfigEntry 1	read-only	The value for this object is equal to the value of IfIndex from the Interfaces table of MIB II (RFC 1213).
t3DteRate	t3DteConfigEntry 2	read-write	HSSI data rate. Only r3158 and r6316 should be written. 1 - r3158 (3.158 MHz) 2 - r6316 (6.316 MHz) 3 - r12631 (12.631 MHz) 4 - r18947 (18.947 MHz) 5 - r25263 (25.263 MHz) 6 - r31578 (31.578 MHz) 7 - r37894 (37.894 MHz) 8 - r44210 (44.210 MHz)
t3DteCA	t3DteConfigEntry 3	read-write	This object is bit mapped. When the bit is set it is On, and Off when the bit is clear. 1 - Turn CA On/Off during LOS 2 - Turn CA On/Off during OOF 4 - Turn CA On/Off during RXAIS 8 - Turn CA On/Off during RXYELLOW This object can represent multiple setting simultaneously.
t3DteLoopback	t3DteConfigEntry 4	read-write	This variable represents the loopback configuration of the PRISM 3301's DTE interface. 1 - t3DteNoLoop - Not in the loopback state 2 - t3LocalDteLoop - DTE port is currently looped at the DTE interface 3 - t3LocalLineLoop - The DTE port is currently looped at the T3 interface
t3DteStatus	t3DteConfigEntry 5	read-write	This object is bit mapped. When the bit is set, it is On and Off when the bit is clear. The various bit positions are as follows. 1 - On if NO DTE alarms active 2 - On during DTE CLOCK LOSS 4 - On during other DTE alarm 8 - On if any DTE loopback is active This object can represent multiple settings simultaneously.

t3CurrentConfig { 1.3.6.1.4.1.425.2.8.1.4 } This table defines the PRISM 3301 (TR 54014) Performance Monitoring table.

Object Name	Object ID	User Access	Object Description
t3CurrentIndex	t3CurrentConfigEntry 1	read-only	The value for this object is equal to the value of IfIndex from the Interfaces table of MIB II (RFC 1213).
t3CurrentESA	t3CurrentConfigEntry 2	read-only	Errored Seconds Type A(ES-A) in the current 15 minute interval. An ES-A is a second with exactly one errored M-frame, and no occurrence of any LOS, OOF or AIS condition.
t3CurrentESB	t3CurrentConfigEntry 3	read-only	Errored Seconds Type B(ES-B) in the current 15 minute interval. An ES-B is a second with more than one, but less than or equal to 44 errored M-frames, and no occurrence of any LOS, OOF AIS condition.
t3CurrentESC	t3CurrentConfigEntry 4	read-only	Errored Seconds Type C(ES-C) in the current 15 minute interval. An ES-C is a second with more than 44 errored M-frames and/or an LOS, OOF or AIS condition.
t3CurrentPESF	t3CurrentConfigEntry 4	read-only	Percent Error-Free Seconds (PEFS) in the current 15 minute interval. An Error Free Second(EFS) for a DS3 channel is defined as any second of transmission in which no bit errors are received. In other words, all the 44,736,000 bits received in a second are received as transmitted. The proportion of error free seconds is the ratio of one-second intervals not containing any bit errors to the total number of seconds in an observation period, which is usually 24 hours. This proportion is expressed as PEFS.
t3CurrentSES	t3CurrentConfigEntry 6	read-only	Severely Errored Seconds(SES) in the current 15 minute interval. A severely errored second is defined as any second in which the bit error ratio is worse than 1×10^{-3} .
t3CurrentSFE	t3CurrentConfigEntry 7	read-only	Short Failure Event (SFE) in the current 15 minute interval. A failure event begins with either 10 SES, or 3 or more seconds of continuous loss of signal integrity (e.g., LOS, high bit error ratio, or AIS condition) and ends at the beginning of a 10 SES-free period.

t3IntervalConfig { 1.3.6.1.4.1.425.2.8.1.5 } The Interval Table contains various statistics collected by the PRISM 3301 over the previous 24 hours of operation. The past 24 hours are broken into 96 completed 15-minute intervals.

Object Name	Object ID	User Access	Object Description
t3IntervalIndex	t3IntervalConfigEntry 1	read-only	The value for this object is equal to the value of IfIndex from the Interfaces table of MIB II (RFC 1213).
t3IntervalNumber	t3IntervalConfigEntry 2	read-only	A number between 1 and 96, where 1 is the most recently completed 15 minutes interval and 96 is the least recently completed 15 minutes interval (assuming that all 96 intervals are valid).
t3IntervalESA	t3IntervalConfigEntry 3	read-only	Errored Seconds Type A(ES-A) in the specified individual 15 minute interval. An ES-A is a second with exactly one errored M-frame, and no occurrence of any LOS, OOF or AIS condition.
t3IntervalESB	t3IntervalConfigEntry 4	read-only	Errored Seconds Type B(ES-B) in the specified individual 15 minute interval. An ES-B is a second with more than one, but less than or equal to 44 errored M-frames, and no occurrence of any LOS, OOF AIS condition.
t3IntervalESC	t3IntervalConfigEntry 5	read-only	Errored Seconds Type C(ES-C) in the specified individual 15 minute interval. An ES-C is a second with more than 44 errored M-frames and/or an LOS, OOF or AIS condition.

Object Name	Object ID	User Access	Object Description
t3IntervalPEFS	t3IntervalConfigEntry 6	read-only	Percent Error-Free Seconds (PEFS) in the specified individual 15 minute interval. An Error Free Second(EFS) for a DS3 channel is defined as any second of transmission in which no bit errors are received. In other words, all the 44,736,000 bits received in a second are received as transmitted. The proportion of error free seconds is the ratio of one-second intervals not containing any bit errors to the total number of seconds in an observation period, which in this case is 15 minutes.
t3IntervalSES	t3IntervalConfigEntry 7	read-only	Severely Errored Seconds(SES) in the specified individual 15 minute interval. A severely errored second is defined as any second in which the bit error ratio is worse than 1×10^{-3} .
t3IntervalSFE	t3IntervalConfigEntry 8	read-only	Short Failure Event (SFE) in the specified individual 15 minute interval. A failure event begins with either 10 SES, or 3 or more seconds of continuous loss of signal integrity (e.g., LOS, high bit error ratio, or AIS condition) and ends at the beginning of a 10 SES-free period.

t3TotalConfig { 1.3.6.1.4.1.425.2.8.1.6 } The Total table contains the cumulative sum of the various performance parameters for the 24-hour period preceding the current interval.

Object Name	Object ID	User Access	Object Description
t3TotalIndex	t3TotalConfigEntry 1	read-only	The value for this object is equal to the value of IfIndex from the Interfaces table of MIB II (RFC 1213).
t3TotalESA	t3TotalConfigEntry 2	read-only	Total Errored Seconds Type A(ES-A) in the previous 24 hour interval. An ES-A is a second with exactly one errored M-frame, and no occurrence of any LOS, OOF or AIS condition.
t3TotalESB	t3TotalConfigEntry 3	read-only	Errored Seconds Type B(ES-B) in the previous 24 hour interval. An ES-B is a second with more than one, but less than or equal to 44 errored M-frames, and no occurrence of any LOS, OOF AIS condition.
t3TotalESC	t3TotalConfigEntry 4	read-only	Errored Seconds Type C(ES-C) in the previous 24 hour interval. An ES-C is a second with more than 44 errored M-frames and/or an LOS, OOF or AIS condition.
t3TotalPEFS	t3TotalConfigEntry 5	read-only	Percent Error-Free Seconds (PEFS) in the previous 24 hour interval. An Error Free Second(EFS) for a DS3 channel is defined as any second of transmission in which no bit errors are received. In other words, all the 44,736,000 bits received in a second are received as transmitted. The proportion of error free seconds is the ratio of one-second intervals not containing any bit errors to the total number of seconds in an observation period, which in this case is 24 hours.
t3TotalSES	t3TotalConfigEntry 6	read-only	Severely Errored Seconds(SES) in the previous 24 hour interval. A severely errored second is defined as any second in which the bit error ratio is worse than 1×10^{-3} .
t3TotalSFE	t3TotalConfigEntry 7	read-only	Short Failure Event (SFE) in the previous 24 hour interval. A failure event begins with either 10 SES, or 3 or more seconds of continuous loss of signal integrity (e.g., LOS, high bit error ratio, or AIS condition) and ends at the beginning of a 10 SES-free period.

TXPORT MIB { 1.3.6.1.4.1.425 } The TXPORT MIB includes information bases supported by Verilink products.

companyInfo { 1.3.6.1.4.1.425.1 } The company information table includes information pertaining to TxPORT such as company address, telephone numbers, and e-mail contacts.

Object Name	Object ID	User Access	Object Description	Get
companyName	companyinfo 1	read-only	Displays the company name.	“TxPORT”
companyStatement	companyinfo 2	read-only	Displays the company vision statement.	“Universal Access to Core Telecom Services.”
companyStreetAddr	companyinfo 3	read-only	Displays the TxPORT street address.	“127 Jetplex Circle”
companyCityState	companyinfo 4	read-only	Displays the location of TxPORT.	“Madison, AL”
companyTechService	companyinfo 5	read-only	Displays the Product Support number.	“1-800-285-2755”
companyInHouseSales	companyinfo 6	read-only	Displays number which inside sales can be reached.	“1-800-926-0085”
companyEmailAddr	companyinfo 7	read-only	Displays the information e-mail address.	“info@txport.com”

productInfo { 1.3.6.1.4.1.425.2 } This table lists the general product specific information applying only to the PRISM 3301.

Object Name	Object ID	User Access	Object Description	Get
productModelNumber	productInfo 1	read-only	Displays the product model number for the device currently being queried.	Model 3301
productModelDescr	productInfo 2	read-only	Displays a brief description of the product.	Site Controller
productElementId	productInfo 3	read-only	Displays the element ID of the unit.	Returns the Site Controller description.
productSoftwareRev	productInfo 4	read-only	Displays the software revision of the unit.	Returns the Site Controller software revision.
productHardwareRev	productInfo 5	read-only	Displays the hardware revision of the unit.	Returns the Site Controller hardware revision.
productSerialNum	productInfo 6	read-only	Displays the unit’s serial number.	Returns the Site Controller serial number.
productPhysicalAddress	productInfo 7	read-only	Displays the unit’s physical Ethernet address.	Returns the MAC for Ethernet or Token Ring.
productNmsAddress	productInfo 8	read-only	Displays the unit’s NMS address.	Returns 1.
optionCardIndex	productOption CardEntry 1	read-only	Displays the identifier of the option card.	Not applicable.
optionCardDescr	productOption CardEntry 2	read-only	Displays a brief description of the option card.	Ethernet option NIC, Token Ring option NIC, Internal Modem.
optionCardSoftwareRev	productOption CardEntry 3	read-only	Displays the software revision of the option card.	Not applicable.
optionCardHardwareRev	productOption CardEntry 4	read-only	Displays the hardware revision of the option card.	Not applicable.
optionCardPhysicalAddress	productOption CardEntry 5	read-only	Displays the physical address tied to the option card.	Not applicable.

Definition of Traps

Verilink products with SNMP support provide for detecting and reporting network alarms. When an alarm occurs, the SNMP agent sends a trap message (formatted per RFC 1157) to multiple destinations on the user's network. The generic trap type is enterpriseSpecific (generic-trap = 7).

Network problems often cause more than one alarm type. In this case, multiple trap messages are generated, each with a different specific-trap type.



Some alarm types do not apply to certain products.

The Trap-PDU has six mandatory fields as shown in the lower level of Figure A-1.

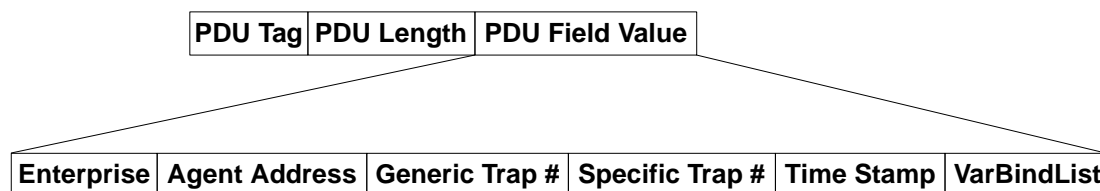


Figure A-1 Trap-PDU Format

The Enterprise field is composed of the Object Identifier of the MIB branch containing the trap definitions. Returns 1.3.6.1.4.1.425.4 txport traps.

The Agent Address Field is the agent's IP address unit. This further identifies the trap sender to the NMS receiving the trap.

The Generic Trap field contains an integer value that represents one of the standard predefined traps for SNMP.

The Specific Trap field contains trap values defined for a particular enterprise. The values in this field are defined in the txport.mib and the following tables. The list is broken down in specific sections to group trap definitions by use.

The Time Stamp field contains the time the trap was generated in the form of time ticks that have elapsed since the agent was initialized. The value is in units of hundredths of a second. ifIndex is typically provided in the Variable Binding List.

The Variable Bindings List contains supplemental implementation information when included in the Trap-PDU.

Enterprise Specific Traps

{ 1.3.6.1.4.1.425.4 } These traps apply to the PRISM 3301.

Trap ID	Trap Title	Description
900	SysResetCold	Unit has performed a Cold start.
901	SysResetWarm	Unit has performed a Warm start.
902	clearedNvramCrcCheckFail	Unit no longer detects a CRC error in it's NVRAM database.
903	clearedCodeEpromChecksumFail	Unit no longer detects a checksum error in it's Code EPROM.
904	clearedXilinxEpromChecksumFail	Unit no longer detects a checksum error in it's XILINX data.
905	NvramCrcCheckFail	Unit has detected a CRC error in it's NVRAM database.
906	CodeEpromChecksumFail	Unit has detected a checksum error in it's Code EPROM.
907	XilinxEpromChecksumFail	Unit has detected a checksum error in it's XILINX data.
920	clearedNetLOS	Network interface has cleared the LOS alarm.
921	clearedNetOOF	Network interface has cleared the OOF alarm.
922	clearedNetRxYel	Network interface has cleared the Rx Yellow alarm.
923	clearedNetTxYel	Network interface has cleared the Tx Yellow alarm.
924	clearedNetRxAIS	Network interface has cleared the Rx AIS alarm.
925	clearedNetTxAIS	Network interface has cleared the Tx AIS alarm.
926	clearedNetBPV	Network interface has cleared the BPV alarm.
927	clearedNetParity	Network interface has cleared the Parity alarm.
928	clearedNetRemoteParity	Network interface has cleared the Remote Parity alarm.
929	clearedDteLossOfClock	Network interface has cleared the Loss Of Clock alarm.
940	NetLOS	Network interface has set the LOS alarm.
941	NetOOF	Network interface has set the OOF alarm.
942	NetRxYel	Network interface has set the Rx Yellow alarm.
943	NetTxYel	Network interface has set the Tx Yellow alarm.
944	NetRxAIS	Network interface has set the Rx AIS alarm.
945	NetTxAIS	Network interface has set the Tx AIS alarm.
946	NetBPV	Network interface has set the BPV alarm.
947	NetParity	Network interface has set the Parity alarm.
948	NetRemoteParity	Network interface has set the Remote Parity alarm.
949	DteLossOfClock	Network interface has set the Loss Of Clock alarm.

B

ORDERING INFORMATION AND OPTIONAL EQUIPMENT

Ordering Information

The PRISM 3301 unit is available in only one configuration with the default part number as F-3301-001-111.

The unit comes with the following equipment: a power cord (33-00045), two BNC cables (33-000169), a supervisory cable (9-3301-025-1), a T3 terminal adapter kit (9-3301-009-1), a reference manual (34-00239) and a configuration guide (45-00109).

Optional Equipment

Optional equipment might be required for the installation and operation of the unit. Table B-1 lists the available optional equipment for the PRISM 3301.

Table B-1 Option Equipment for the PRISM 3301

Network Cables

9-1001-070-xxx	DDS cross-over kit
9-1544-619-xxx	Network
9-1001-004-xxx	LAN interface

RS-232 Cables

9-1001-211-xxx	DB-25 to DB-25 male to male, straight through
9-1001-212-xxx	DB-25 to DB-25 male to female, straight through
9-1001-044-xxx	DB-25 to DB-25 male to male, null modem

*xxx denotes the cable length (in feet).

Adapter Kit

9-3301-009-1	T3 Terminal Adapter Kit
9-1001-015-2	DB-25 female to 8-pin (modem to SUPV)
9-1001-016-1	DB-25 male to 8-pin (terminal to SUPV)
9-1001-016-2	DB-25 female to 8-pin (terminal to SUPV)

MIBs

9-1000-1000-1	TxPORT MIB
9-1000-4000-1	DDS MIB

Rack Mount Kits

9-3100-002-1	19-inch
9-3100-002-2	23-inch

Technical Documents

45-00109	PRISM 3301 Configuration Guide
45-00110	PRISM 3301 Flash Download Procedures
