



DSX-1 Passthru Option Module

User Manual

61200055L1-1D
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Chapter 1 Introduction

PRODUCT OVERVIEW

The DSX-1 Passthru module is one of the secondary interface option modules available for use with the ADTRAN TSU 100/600. The DSX-1 Passthru option module should be selected to provide DSX-1 access for PBXs, or other equipment that use a DSX-1 interface. When used with a PBX, this interface permits the combination of voice and data in a single T1 stream. The user can select the bandwidth allocation for the DSX-1 Passthru module.

FUNCTIONAL DESCRIPTION

The DSX-1 Passthru module is designed to fit in the option slot of the TSU 100/600 and is subject to its operation and control. The DSX-1 Passthru is configured from the front panel of the TSU 100/600 or by an external personal computer (PC) program. The internal menus for its configuration are a part of the DSX-1 Passthru module and are automatically installed when the module is plugged into the unit.

Features

The DSX-1 Passthru option module has the following features:

- Operates using 1 to 24 DS0s
- Operates as a drop and pass-on or as a standard pass-on module
- Accommodates an additional plug-on (piggyback) interface such as the Nx56/64
- Includes an elastic store and controlled frame slip permitting loop timing on the network interface, as well as on the DSX-1 interface
- Provides timing for the TSU 100/600 as an option
- Displays menu options for easy configuration
- Executes an extensive self-test

Interfaces

The DSX-1 Passthru option module has the following interfaces:

- DSX-1 per ANSI T1.102
- Interface connectors RJ-48C and DB-15
- Alternate Mark Inversion (AMI) or Bipolar Return to Zero (B8ZS) coding
- ESF or SF (D4) formatting (independent of T1 facility interface)
- Line length up to 655 feet
- Line loopback (front panel/remote/inband)

DSX-1 Passthru Option Module Specifications

The DSX-1 Passthru option module conforms to the following specifications:

DSX-1 Interface	Per ANSI T1.102
Line Rate	1.544 Mbps
Capacity	1 to 24 DS0s (can be user configured, contiguous or non-contiguous)
Line Codes	AMI B8ZS
Framing Options	ESF per ANSI T1.403 and AT&T Publication TR 54016 D4 per AT&T Publication 62411
Line Length	Up to 655 ft in 110 ft steps
Clock Source	Allows PBX to be master timing source
Tests	Power-on circuit self-test line loopback Port loopback (internal toward MUX)
Connectors	DB-15 (female), RJ-45C

PHYSICAL DESCRIPTION

The DSX-1 Passthru is an option module which plugs into the option slot in the rear of the TSU 100/600. See Figure 1-1.

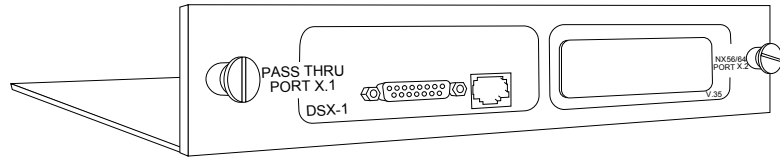


Figure 1-1. DSX-1 Passthru Option Module

The DSX-1 Passthru rear panel includes a plastic plug over a cutout for a V.35 connector. This allows a V.35 Nx56/64 interface plug-on card, part number 1200053L1, to be added to the DSX-1 Passthru module. The **PORT X.1** identification on the rear panel is linked to the port numbering philosophy of the TSU 100/600 product family. The **X** represents the slot number, and the **.1** indicates the port number. For the TSU 100/600 application, there is only one option slot. Therefore, the port designation for the DSX-1 Passthru port is 1.1. If added, the Nx56/64 port designation would be 1.2. These port numbers appear in the front panel LCD menu displays.

Chapter 2 **Installation and Operation**

UNPACK AND INSPECT

Carefully inspect the DSX-1 Passthru module for any shipping damage. If damage is suspected, file a claim immediately with the carrier and then contact ADTRAN Customer Service. If possible, keep the original shipping container to ship the DSX-1 Passthru module for repair or for verification of damage during shipment.

ADTRAN Shipments Include

The following items are included in the ADTRAN shipment:

- DSX-1 Passthru Option Module
- User Manual

Provided by Customer

The customer must provide the following:

- Cable for connection to PBX (either DB-15 or RJ type)

INSTALLING THE OPTION MODULE



Power to the TSU 100/600 should be off when installing the DSX-1 Passthru module.

Placement of the Option Module

Figure 2-1 represents the action required for proper placement of the option module.

1. Remove cover plate from the TSU 100/600 rear panel.
2. Slide the option module into the rear panel until it is positioned firmly against the front of the TSU 100/600.
3. Tighten the screws at both edges of option module.

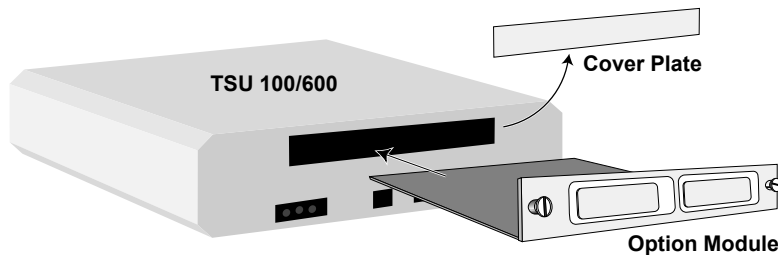


Figure 2-1. Installing Option Module

Power Connection

Each DSX-1 Passthru module derives power from the base TSU 100/600 unit. Power to the TSU 100/600 is supplied by a captive 8-foot power cord.

Wiring

The DSX-1 Passthru module offers two connectors for interfaces. Only one is used in an installation and each is connected to the same interface.

The required wiring connections are:

Connector Type (USOC) = RJ-48C

Part number = AMP # 555164-1

Table 2-1. Pinout Connectors for Eight-Position Modular Jack Interface

PIN	NAME	DESCRIPTION
1	R1 TXDATA-RING	Send Data Towards the DTE (PBX)
2	T RXDATA-TIP	Send Data Towards the DTE (PBX)
3	UNUSED	
4	R RXDATA-RING	Receive Data from the DTE (PBX)
5	T RXDATA-TIP	Receive Data from the DTE (PBX)
6,7,8	UNUSED	

Table 2-2. Pinout Connectors for 15 Pin “D” Shell Interface

PIN	NAME	DESCRIPTION
1	T RXDATA-TIP	Receive Data from the DTE (PBX)
2	FRAME GROUND	
3	T1 TXDATA-TIP	Send Data Towards the DTE (PBX)
4	FRAME GROUND	
5,6,7,8	UNUSED	
9	R RXDATA-RING	Receive Data from the DTE (PBX)
10	UNUSED	
11	R1 TXDATA-RING	Send Data Towards the DTE (PBX)
12,13, 14,15	UNUSED	

POWER-UP TESTING AND INITIALIZATION

The DSX-1 Passthru option module executes a self-test during the power-up sequence, as described in the *TSU 100/600 User Manual*. No initialization input is required. Any previously configured setting for the DSX-1 Passthru module is restored automatically upon power-up.

Successful Self-Test

The green **OK** LED, located with the module LEDs on the front panel, illuminates when a successful self-test is completed and the configuration is successfully restored. Refer to *Front Panel Operation* in the *TSU 100/600 User Manual*.

Failed Self-Test

If the DSX-1 Passthru module fails one or more of the self-tests a message is displayed in the LCD during power-up. Refer to *TSU 100/600 User Manual* for more information. Specific failures of the DSX-1 Passthru module are identified in the alarm listings in the *Appendix A. Passthru Failure Messages*.

Operation Alarms

The red **ALARM** LED with the module LEDs on the front panel illuminates when an alarm condition is detected.

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 specifications or if it fails while in service. For detailed warranty, repair, and return information refer to ADTRAN's Equipment Warranty, Repair and Return Policy Procedure.

A Return Material Authorization (RMA) is required prior to returning equipment to ADTRAN.

For service, RMA requests, or more information, contact one of the numbers on the last page of this manual.

Chapter 3 Operation

OVERVIEW

The DSX-1 Passthru module is controlled as part of the TSU 100/600 using the same methods as described in the user manual.

Refer to the *TSU 100/600 User Manual* for descriptions of the front panel indicators and buttons.

Menu Structure

When an option card is installed in the TSU 100/600, the unit adds it to the list of selectable options under the **Port** menu items. These menu items are shaded in the limited overview of the TSU 100 menu shown in Figure 3-1. The appendix, *TSU 100 Complete Menu*, of the *TSU 100/600 User Manual* shows a complete menu diagram.

Menu Operation

An option module must be selected from the listing in one of the **Port** menu options before its menus are applicable. With the cursor on one of the **Port** menu items, press **Enter** to display a list of the currently installed option modules. To activate menus for the DSX-1 Passthru option module scroll through the list to display **1.1 DSX PT** and press **Enter**.

Once the option module is selected, the DSX-1 Passthru menus appear as a subset of, and operate the same as, menus for the TSU 100/600. With the cursor on one of the TSU 100/600 four main menu choices press **Enter** or a menu number to display the first two submenu items.

Use the up and down arrows to place the cursor on the desired item and press **Enter** to display the first two submenu choices.

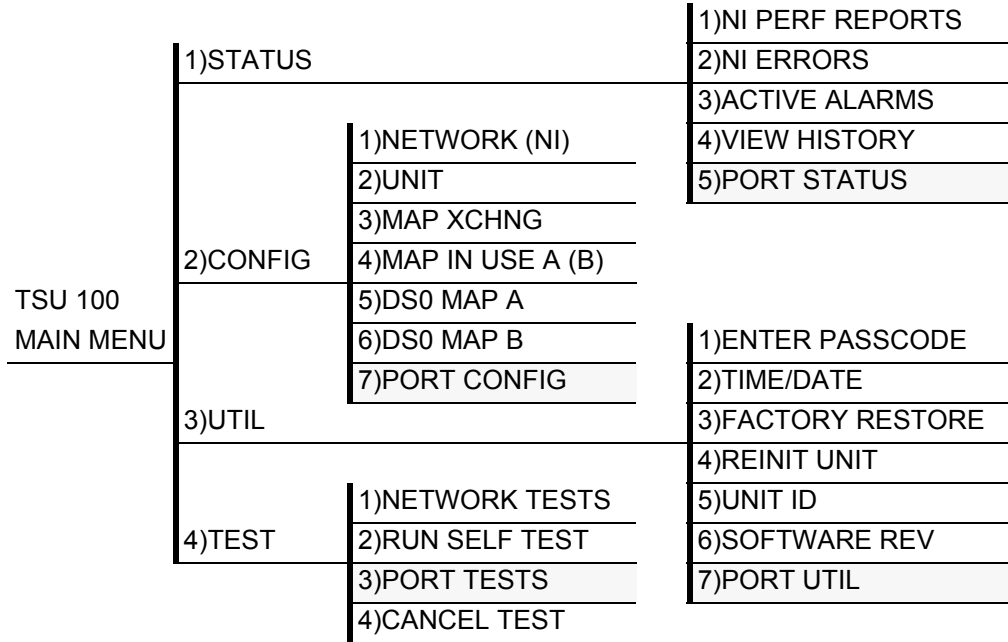


Figure 3-1. TSU 100 Main Menu

PASSTHRU MENU ITEMS

The DSX-1 Passthru menus are accessed from and operated the same as menus for the TSU 100/600. The DSX-1 Passthru items are submenu choices of the TSU 100/600 four main menus, as shown in Figure 3-1. For information on **Factory Restore** and **Run Self-Test**, refer to *TSU FEATURES USED WITH PASSTHRU OPTIONS* on page 3-17.

The DSX-1 Passthru menu items are:

- Port Status
- Port Configuration
- Port Utility
- Port Test

Port Status

Port Status, a submenu of TSU 100/600 main menu item **Status**, displays error information about the DSX-1 interface. There are four information fields. See Figure 3-2. An asterisk (*) indicates an item is active.

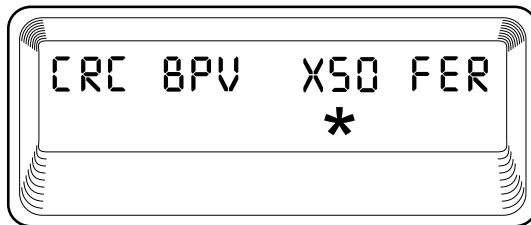


Figure 3-2. Port Status Display

CRC

An asterisk is displayed under the **CRC** if there are CRC errors in extended superframe format (ESF) mode. If the DSX-1 is configured for D4 Frame format, the LCD displays **n/a**.

BPV

An asterisk is displayed under the **BPV** if the DSX-1 is detecting bipolar violations.

XS0

An asterisk is displayed under the **XS0** if the DSX-1 Passthru is detecting excessive zeroes. (Eight consecutive zeroes in B8ZS or 16 consecutive zeroes in AMI.)

FER

An asterisk is displayed under the **FER** if the DSX-1 Passthru is detecting frame bit synchronization errors.

Port Configuration (PORT CONFIG)

PORT CONFIG, a submenu of TSU 100/600 main menu item Configuration, is used to configure the DSX-1 Passthru option module.

When **PORT CONFIG** is displayed, place the cursor on it and press **Enter** to activate. Scroll to display the desired configuration and activate by pressing **Enter**.

The unit displays the first of six submenu items. Table 3-A identifies the available selections for Port Configuration. Continue with standard operating procedures.

Format

Format sets the frame format for the DSX-1 Passthru.

Code

Code sets the data code for the DSX-1 Passthru.

Yellow (YEL) Alarm

YEL Alarm enables and disables the transmitting of yellow alarms.

Line Length (ft)

Line Length allows selection of the proper output level for the DSX-1 interface based on the length of the interface cable.

In-Band Loopback (INBAND LPBACK)

In-Band Loopback sets the DSX-1 Passthru to accept or reject in-band loopup and loopdown codes (per ANSI T1.403 specification) which may be sent to the card over the DSX-1 interface. This loopback is a line loopback.

Clock Source

Clock Source selects the clock source for transmission toward the PBX or device connected to the DSX-1 Passthru module.

Table 3-1. Port Configuration Parameters

MENU ITEM	PARAMETER CHOICES
Format	D4, ESF
Code	AMI, B8ZS
Yellow Alarm	Enable, Disable
Line Length	1-110, 110-220, 220-330, 330-440, 440-550, 550-655, >655
In-band Loopback	Accept, Reject
Clock Source	Network (NI), Secondary (SI)

Port Utility (PORT UTIL)

PORT UTIL, a submenu of the TSU 100/600 main menu item Utilities (**UTIL**) displays the current software information for each port installed in the unit. This information is required when requesting assistance from ADTRAN Customer Service or when updates are needed.

When **PORT UTIL** is displayed, place the cursor on it and press **Enter** to display the first available port.

Scroll to display **1.1 DSX1 PT**, and press **Enter** to activate. The unit displays the option module name and the software version installed. Press **Cancel** to exit or select another port.

Port Test

Port Test, a submenu of the TSU 100/600 main menu item **Test**, activates tests of the selected data ports. Selecting the DSX-1 Passthru displays two loopback tests available for this option module.

When **Port Test** is displayed, place the cursor on it and press **Enter** to display the first available port. Scroll to select **1.1 DSX1 PT** and press **Enter** to activate.

Loopback

Loopback activates the loopback function on the DSX-1 Passthru module. All ports contain a local loopback (toward the DTE) and a port loopback (toward the NI) as explained in the section *Function Description* of the *TSU 100/600 User Manual*.

Line Loopback

On the DSX-1 Passthru module, **Line Loopback** causes data received at the DSX-1 interface to be looped back toward the DTE (PBX) achieving a local loopback.

Port Loopback

The **Port Loopback** is internal and loops all data mapped to the DSX-1 Passthru back toward the network interface on the controller. **Loopback** (when used in conjunction with an external bit error rate tester (BERT) driving the network interface) exercises the entire data path from the network interface (NI) controller, through the DSX-1 Passthru option module, and back out the network interface controller. See Figure 3-3.

To deactivate **Loopback**, select **None** under the **1.1 DSX1 PT** submenu.

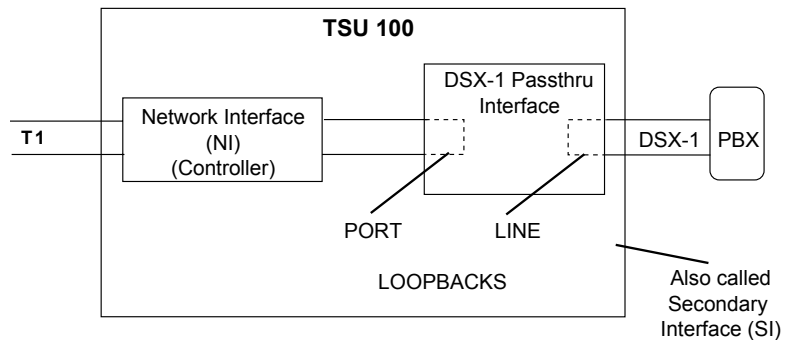


Figure 3-3. Diagram of Loopbacks

TSU FEATURES USED WITH PASSTHRU OPTIONS

In addition to the DSX-1 Passthru module menu items, two additional menu items of the TSU 100/600 may be operated in conjunction with the DSX-1 Passthru option module. These are **Factory Restore** and **Run Self-Test**.

Factory Restore

Factory Restore, a submenu of the TSU 100/600 main menu item Utilities (**UTIL**) restores the factory installed default setting for all DSX-1 Passthru option module parameters.

When **Factory Restore** is displayed, place the cursor on it and press **Enter** to restore preset factory defaults and return to the main TSU 100/600 menu.

Run Self-Test

Run Self-Test, a submenu of the TSU 100/600 main menu item **Test**, executes both the DSX-1 Passthru internal test and the TSU 100/600 internal test. The TSU 100/600 internal test is the same self-test executed upon power-up. The results of the self-test are displayed in the LCD. For additional information on **Self-Test**, refer to the *TSU 100/600 User Manual*.

When **Run Self-Test** is displayed, place the cursor on it and press **Enter** to execute the test. The unit continuously changes the display in the LCD window until all test results are shown.

Appendix A Passthru Failure Messages

FAILURE MESSAGES AT POWER-UP

The following messages indicate a probable component failure on the DSX-1 Passthru module:

EPROM CS	EPROM checksum error
RAM ERR	Static RAM error

PASSTHRU ALARM MESSAGES

The following messages indicate an alarm condition on the DSX-1 Passthru module:

Red Alarm	Not able to frame data coming from the DSX-1 interface; sometimes referred to as out of frame (OOF)
Yellow Alarm	Remote alarm indicator (RAI) being received from the DSX-1 interface
Blue Alarm	Receiving unframed all 1s from the DSX-1 interface, alarm indicator signal (AIS)
Loss of Signal	No signal detected from the DSX-1 interface

Product Support Information

Pre-Sales Inquiries and Applications Support

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

Applications Engineering (800) 615-1176

Sales (800) 827-0807

Post-Sale Support

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

Technical Support (888) 4ADTRAN

Repair and Return

If ADTRAN Technical Support determines that a repair is needed, Technical Support will coordinate with the Customer and Product Service (CAPS) department to issue a Return Material Authorization (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
901 Explorer Boulevard
Huntsville, AL 35806-2807

RMA # _____

