# ADTRAN

# NxT1 HSSI/V.35 Module
## User Manual

**Part Number 1200771L1**

**ADTRAN**

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

**NOTE** — *Notes provide additional useful information.*

**CAUTION** — *Cautions signify information that could prevent service interruption.*

**WARNING** — *Warnings provide information that could prevent damage to the equipment or endangerment to human life.*

## Safety Instructions

When using your telephone equipment, please follow these basic safety precautions to reduce the risk of fire, electrical shock, or personal injury:

1. Do not use this product near water, such as a bathtub, wash bowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool.

2. Avoid using a telephone (other than a cordless-type) during an electrical storm. There is a remote risk of shock from lightning.

3. Do not use the telephone to report a gas leak in the vicinity of the leak.

4. Use only the power cord, power supply, and/or batteries indicated in the manual. Do not dispose of batteries in a fire. They may explode. Check with local codes for special disposal instructions.

### Save These Important Safety Instructions

## Affidavit Requirements for Connection to Digital Services

- An affidavit is required to be given to the telephone company whenever digital terminal equipment without encoded analog content and billing protection is used to transmit digital signals containing encoded analog content which are intended for eventual conversion into voiceband analog signals and transmitted on the network.

- The affidavit shall affirm that either no encoded analog content or billing information is being transmitted or that the output of the device meets Part 68 encoded analog content or billing protection specifications.

- End user/customer will be responsible for filing an affidavit with the local exchange carrier when connecting unprotected customer premise equipment (CPE) to 1.544 Mbps or subrate digital services.

Until such time as subrate digital terminal equipment is registered for voice applications, the affidavit requirement for subrate services is waived.

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

For the work to be performed in the certified territory of _____ (telco name)

State of _____

County of _____

I, _____ (name), _____ (business
address),

_____ (telephone number) being duly sworn, state:

I have responsibility for the operation and maintenance of the terminal equipment to be
connected to 1.544 Mbps and/or _____ subrate digital services. The terminal equipment to be
connected complies with Part 68 of the FCC rules except for the encoded analog content and
billing protection specifications. With respect to encoded analog content and billing protection:

( ) I attest that all operations associated with the establishment, maintenance, and adjustment of the
digital CPE with respect to analog content and encoded billing protection information
continuously complies with Part 68 of the FCC Rules and Regulations.

( ) The digital CPE does not transmit digital signals containing encoded analog content or billing
information which is intended to be decoded within the telecommunications network.

( ) The encoded analog content and billing protection is factory set and is not under the control of the
customer.

I attest that the operator(s)/maintainer(s) of the digital CPE responsible for the establishment,
maintenance, and adjustment of the encoded analog content and billing information has (have)
been trained to perform these functions by successfully having completed one of the following
(check appropriate blocks):

( ) A.  A training course provided by the manufacturer/grantee of the equipment used to encode
analog signals; or

( ) B.  A training course provided by the customer or authorized representative, using training
materials and instructions provided by the manufacturer/grantee of the equipment used to
encode analog signals; or

( ) C.  An independent training course (e.g., trade school or technical institution) recognized by the
manufacturer/grantee of the equipment used to encode analog signals; or

( ) D.  In lieu of the preceding training requirements, the operator(s)/maintainer(s) is (are) under the
control of a supervisor trained in accordance with _____ (circle one) above.

I agree to provide _____ (telco's name) with proper documentation to demonstrate compliance with the information as provided in the preceding paragraph, if so requested.

_____ Signature

_____ Title

_____ Date

Transcribed and sworn to before me

This _____ day of _____, _____

_____

Notary Public

My commission expires:

_____

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

1. This equipment complies with Part 68 of FCC rules. On the back of the equipment housing is a label showing the FCC registration number and ringer equivalence number (REN). If requested, provide this information to the telephone company.

2. If this equipment causes harm to the telephone network, the telephone company may temporarily discontinue service. If possible, advance notification is given; otherwise, notification is given as soon as possible. The telephone company will advise the customer of the right to file a complaint with the FCC.

3. The telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the proper operation of this equipment. Advance notification and the opportunity to maintain uninterrupted service are given.

4. If experiencing difficulty with this equipment, please contact ADTRAN for repair and warranty information. The telephone company may require this equipment to be disconnected from the network until the problem is corrected or it is certain the equipment is not malfunctioning.

5. This unit contains no user-serviceable parts.

6. An FCC compliant telephone cord with a modular plug is provided with this equipment. This equipment is designed to be connected to the telephone network or premises wiring using an FCC compatible modular jack, which is Part 68 compliant.

7. The following information may be required when applying to the local telephone company for leased line facilities:

| Service Type | SOC | REN | FIC | USOC |
|---|---|---|---|---|
| 1.544 Mbps–SF | 04DU9.BN | N/A | 6.0N | RJ-48C |
| SF and B8ZS | 04DU9.DN | ↓ | ↓ | ↓ |
| ESF | 04DU9.1KN | | | |
| ESF and B8ZS | 04DU9.1SN | | | |

8. The REN is useful in determining the quantity of devices you may connect to your telephone line and still have all of those devices ring when your number is called. In most areas, the sum of the RENs of all devices should not exceed five. To be certain of the number of devices you may connect to your line as determined by the REN, call your telephone company to determine the maximum REN for your calling area.

9. This equipment may not be used on coin service provided by the telephone company. Connection to party lines is subject to state tariffs. Contact your state public utility commission or corporation commission for information.

## Federal Communications Commission Radio Frequency Interference Statement

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

**WARNING**  *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.*

## Industry Canada Compliance Information

Notice: The Industry Canada label applied to the product (identified by the Industry Canada logo or the "IC:" in front of the certification/registration number) signifies that the Industry Canada technical specifications were met.

Notice: The Ringer Equivalence Number (REN) for this terminal equipment is supplied in the documentation or on the product labeling/markings. The REN assigned to each terminal device indicates the maximum number of terminals that can be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the RENs of all the devices should not exceed five (5).

## Canadian Emissions Requirements

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus as set out in the interference-causing equipment standard entitled "Digital Apparatus," ICES-003 of the Department of Communications.

Cet appareil nuerique respecte les limites de bruits radioelectriques applicables aux appareils numeriques de Class A prescrites dans la norme sur le materiel brouilleur: "Appareils Numeriques," NMB-003 edictee par le ministre des Communications.

## Warranty and Customer Service

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

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

For service, RMA requests, or further information, contact one of the numbers listed at the end of this section.

## LIMITED PRODUCT WARRANTY

ADTRAN warrants that for five years from the date of shipment to Customer, all products manufactured by ADTRAN will be free from defects in materials and workmanship. ADTRAN also warrants that products will conform to the applicable specifications and drawings for such products, as contained in the Product Manual or in ADTRAN's internal specifications and drawings for such products (which may or may not be reflected in the Product Manual). This warranty only applies if Customer gives ADTRAN written notice of defects during the warranty period. Upon such notice, ADTRAN will, at its option, either repair or replace the defective item. If ADTRAN is unable, in a reasonable time, to repair or replace any equipment to a condition as warranted, Customer is entitled to a full refund of the purchase price upon return of the equipment to ADTRAN. This warranty applies only to the original purchaser and is not transferable without ADTRAN's express written permission. This warranty becomes null and void if Customer modifies or alters the equipment in any way, other than as specifically authorized by ADTRAN.

EXCEPT FOR THE LIMITED WARRANTY DESCRIBED ABOVE, THE FOREGOING CONSTITUTES THE SOLE AND EXCLUSIVE REMEDY OF THE CUSTOMER AND THE EXCLUSIVE LIABILITY OF ADTRAN AND IS IN LIEU OF ANY AND ALL OTHER WARRANTIES (EXPRESSED OR IMPLIED). ADTRAN SPECIFICALLY DISCLAIMS ALL OTHER WARRANTIES, INCLUDING (WITHOUT LIMITATION), ALL WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. SOME STATES DO NOT ALLOW THE EXCLUSION OF IMPLIED WARRANTIES, SO THIS EXCLUSION MAY NOT APPLY TO CUSTOMER.

In no event will ADTRAN or its suppliers be liable to Customer for any incidental, special, punitive, exemplary or consequential damages experienced by either Customer or a third party (including, but not limited to, loss of data or information, loss of profits, or loss of use). ADTRAN is not liable for damages for any cause whatsoever (whether based in contract, tort, or otherwise) in excess of the amount paid for the item. Some states do not allow the limitation or exclusion of liability for incidental or consequential damages, so the above limitation or exclusion may not apply to Customer.

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## Customer Service, Product Support Information, and Training

ADTRAN will repair and return this product if within five years from the date of shipment the product does not meet its published specification or the product fails while in service.

A return material authorization (RMA) is required prior to returning equipment to ADTRAN. For service, RMA requests, training, or more information, use the contact information given below.

### Repair and Return

If you determine that a repair is needed, please contact our Customer and Product Service (CAPS) department to have an RMA number issued. CAPS should also be contacted to obtain information regarding equipment currently in house or possible fees associated with repair.

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 Blvd. (East Tower)
Huntsville, Alabama 35806

RMA # _____

### Pre-Sales Inquiries and Applications Support

Your reseller should serve as the first point of contact for support. If additional pre-sales support is needed, the ADTRAN Support web site provides a variety of support services such as a searchable knowledge base, latest product documentation, application briefs, case studies, and a link to submit a question to an Applications Engineer. All of this, and more, is available at:

http://support.adtran.com

When needed, further pre-sales assistance is available by calling our Applications Engineering Department.

Applications Engineering   (800) 615-1176

**Post-Sale Support**

Your reseller should serve as the first point of contact for support. If additional support is needed, the ADTRAN Support web site provides a variety of support services such as a searchable knowledge base, updated firmware releases, latest product documentation, service request ticket generation and trouble-shooting tools. All of this, and more, is available at:

http://support.adtran.com

When needed, further pre-sales assistance is available by calling our Technical Support Center. Please have your unit serial number available when you call.

| | |
|---|---|
| Technical Support | (888) 4ADTRAN |

**Installation and Maintenance Support**

The ADTRAN Custom Extended Services (ACES) program offers multiple types and levels of installation and maintenance services which allow you to choose the kind of assistance you need. This support is available at:

http://www.adtran.com/aces

For questions, call the ACES Help Desk.

| | |
|---|---|
| ACES Help Desk | (888) 874-ACES (2237) |

**Training**

The Enterprise Network (EN) Technical Training Department offers training on our most popular products. These courses include overviews on product features and functions while covering applications of ADTRAN's product lines. ADTRAN provides a variety of training options, including customized training and courses taught at our facilities or at your site. For more information about training, please contact your Territory Manager or the Enterprise Training Coordinator.

| | |
|---|---|
| Training Phone | (800) 615-1176, ext. 7500 |
| Training Fax | (256) 963-6700 |
| Training Email | training@adtran.com |

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# Introduction

## NXT1 HSSI/V.35 MODULE OVERVIEW

The NxT1 HSSI/V.35 Module is a member of the ATLAS 800 family of integrated access products that supports aggregating point-to-point T1 bandwidth (from 2 to 8 T1s) to a single logical datastream available on the high speed serial interface (HSSI) of the module. The HSSI interface is delivered using a standard 50-pin SCSI-II connector. Alternately, an optional adapter cable may be purchased (ADTRAN P/N 31251081) to convert the HSSI interface to a single V.35 interface when needed. When using the NxT1 HSSI/V.35 Module in a V.35 configuration, up to 4 T1s of aggregated bandwidth is supported.

The inverse multiplexing capacity of the module accommodates eight T1s, and the module automatically adjusts the data rate to the HSSI/V.35 port upon loss of one or more T1 circuits. In addition to the HSSI port, four T1 ports are included on the module itself, while alternate T1 ports can be provided using other ATLAS 800 T1 or T3 modules. The NxT1 HSSI/V.35 Module combines with the ATLAS 800 Series base units (ATLAS 800$^{PLUS}$ and ATLAS 890 only) and other ATLAS modules to support applications calling for increased point-to-point T1 bandwidth. Figure 1-1 shows a sample application of the NxT1 HSSI/V.35 Module.
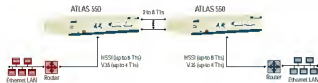


**Figure 1-1. NxT1 HSSI/V.35 System**

When combined with the supported ATLAS 800 Series base units and, optionally, one or more Quad T1/PRI or T3 Modules, the NxT1 HSSI/V.35 Module can implement high-speed point-to-point connectivity, combining multiple T1 circuits into one logical channel on the HSSI/V.35 interface.

# FUNCTIONAL DESCRIPTION

The NxT1 HSSI/V.35 Module installs in any available option slot in the supported ATLAS 800 Series units. You can view the status of the module itself, as well as the circuits to which it interfaces, from the front panel (ATLAS 800$^{PLUS}$ only). Additional status information is available via the terminal menus, accessible through either a VT-100 terminal connected to the ATLAS 800 Series control port, or via a Telnet session established through the unit's Ethernet port. Use the terminal menu to configure the NxT1 HSSI/V.35 Module and to download application software.

# FEATURES

Features of the NxT1 HSSI/V.35 Module are listed here:

• Standard SCSI-II 50-pin connector for HSSI interface

• Optional V.35 interface using adapter cable (ADTRAN P/N 3125I081)

• Hot swappable

• Maximum distance 6,000 feet (DS-1), 655 feet (DSX-1) when using 24 gauge conductor

# NXT1 HSSI/V.35 MODULE SPECIFICATIONS

Each T1 port of the NxT1 HSSI/V.35 Module conforms to the following specifications:

**Line Rate**

1.544 Mbps ± 75 bps

**Framing**

D4, SF or ESF per ANSI t1.403 and AT& T TR 54016

**Line Coding**

• B8ZS (Bipolar Eight Zero Substitution)

• AMI (Alternate Mark Inversion)

**Alarms**

Loss of Signal (LOS), Red, Yellow, Blue

**Tests**

Line or payload loopback (Local and Remote)

**Connectors**

RJ-48C

The HSSI port of the NxT1 HSSI/V.35 Module conforms to the following specifications:

**Line Rate**

Up to 11.04 Mbps

**T1 Links**

1 to 8 Total T1 Links (in any combination of module T1 interfaces and other T1/T3 modules)

**Connector**

50 pin SCSI-II Female

The V.35 interface of the NxT1 HSSI/V.35 Module (using the optional adapter cable) conforms to the following specifications:

**Line Rate**

Up to 5.52 Mbps

**T1 Links**

1 to 4 Total T1 Links (in any combination of module T1 interfaces and other T1/T3 modules)

**Connector**

V.35 Winchester

## PHYSICAL DESCRIPTION

The NxT1 HSSI/V.35 Module (see Figure 1-2) plugs into any available option slot in the rear of the supported ATLAS 800 Series units.



**Figure 1-2. NxT1 HSSI/V.35 Option Module**

The label over each RJ-48C connector refers to the port on the NxT1 HSSI/V.35 Module.

Chapter 2    # Installation

## BEFORE INSTALLING THE NXT1 HSSI/V.35 MODULE

Carefully unpack and inspect the NxT1 HSSI/V.35 Module for shipping damages. If you suspect damage occurred during shipping, file a claim immediately with the carrier and then contact ADTRAN Technical Support (see the front pages of this manual for pertinent information). If possible, keep the original shipping container for returning the NxT1 HSSI/V.35 Module for repair or for verification of shipping damage.

## Shipping Contents

The ADTRAN shipment includes the following items:

- NxT1 HSSI/V.35 Module
- NxT1 HSSI/V.35 Module Quick Start Guide
- NxT1 HSSI/V.35 Module *User Manual* (insert into the *ATLAS 800 Series User Manual*)
- Four RJ-48 to RJ-48 cables (6 ft)

An optional SCSI-II to V.35 adapter cable is available (ADTRAN P/N 31251081) for applications requiring a V.35 interface.

## INSTALLING THE NXT1 HSSI/V.35 MODULE

Figure 2-1 represents the actions required to properly install the NxT1 HSSI/V.35 Module, as described in the Step/Action table below.
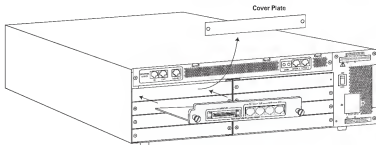


**Figure 2-1. Installing the NxT1 HSSI/V.35 Module**

| Instructions for Installing the NxT1 HSSI/V.35 Module | |
|---|---|
| **Step** | **Action** |
| 1 | Remove the cover plate from the appropriate option slot in the ATLAS 800 Series chassis rear panel. |
| 2 | Slide the NxT1 HSSI/V.35 Module into the option slot until the module is firmly positioned against the front of the chassis. |
| 3 | Secure the thumbscrews at both edges of the module. |
| 4 | Connect the cables to the associated device(s). |
| 5 | Complete installation of remaining modules and Base Unit as specified in the Installation chapter of the *ATLAS 800 Series User Manual.* |

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

## WIRING

Each module T1 port uses a single RJ-48C jack to connect to a T1 circuit. Table 2-1 shows the T1 pinout connection. The required wiring connection follows:

Connector Type          (USOC) RJ-48C

**Table 2-1. T1 Pinout Connection**

| PIN | NAME | DESCRIPTION |
|-----|------|-------------|
| 1 | R1 RXDATA | Receive data from the network ring |
| 2 | T1 RXDATA | Receive data from the network tip |
| 3, 6, 7, 8 | Unused | n/ a |
| 4 | R TXDATA | Send data towards the network ring |
| 5 | T TXDATA | Send data towards the network tip |

The HSSI/V.35 interface uses a single SCSI-II 50 pin connector with an optional V.35 adapter cable. Table 2-2 shows the SCSI-II connector pinout.

Connector Type          50 pin SCSI-II Female

**Table 2-2. HSSI/V.35 (SCSI-50) Pinout**

| PIN (+ side) | PIN (- side) | DIRECTION | DESCRIPTION |
|--------------|--------------|-----------|-------------|
| 1 | 26 | — | HSSI SG - Signal Ground |
| 2 | 27 | O | HSSI RT - Receive Timing |
| 3 | 28 | O | HSSI CA - DCE Available |
| 4 | 29 | O | HSSI RD - Receive Data |
| 5 | 30 | O | HSSI LC - Loopback Circuit C |
| 6 | 31 | O | HSSI ST - Send Timing |
| 7 | 32 | — | HSSI SG - Signal Ground |
| 8 | 33 | I | HSSI TA - DTE Available |
| 9 | 34 | I | HSSI TT - Terminal Timing |
| 10 | 35 | I | HSSI LA - Loopback Circuit A |
| 11 | 36 | I | HSSI SD - Send Data |
| 12 | 37 | I | HSSI LB - Loopback Circuit B |
| 13 | 38 | | HSSI SG - Signal Ground |

Table 2-2. HSSI/V.35 (SCSI-50) Pinout (Continued)

| PIN (+ side) | PIN (- side) | DIRECTION | DESCRIPTION |
|---|---|---|---|
| — | 39 | — | Anciliary to DCE (Reserved) |
| 14 | — | I | V.35 RTS - Request to Send |
| 15 | 40 | I | V.35 TT Terminal Timing |
| 16 | 41 | I | V.35 SD Send Data |
| — | 42 | O | V.35 DCD - Data Carrier Detect |
| 17-18 | 43 | — | Anciliary to DCE (Reserved) |
| 19 | 44 | — | HSSI SG - Signal Ground |
| 20 | 45 | O | V.35 ST - Send Timing |
| 21 | 46 | O | V.35 RT - Receive Timing |
| 22 | 47 | O | V.35 RD - Receive Data |
| 23 | — | O | V.35 CTS - Clear to Send |
| — | 48 | I | V.35 Ground/Present |
| 24 | 49 | O | HSSI TM - Test Mode |
| 25 | 50 | — | HSSI SG - Signal Ground |

## POWER UP AND INITIALIZATION

The NxT1 HSSI/V.35 Module requires no initialization input during the
power-up sequence, as described in the *ATLAS 800 Series User Manual*.
Any previously configured setting for the NxT1 HSSI/V.35 Module is auto-
matically restored upon power-up.

## Failed Self-Test

If the NxT1 HSSI/V.35 Module fails self-test, a message will be displayed
on the LCD and the terminal menu self-test log during power-up. See the
appropriate *ATLAS 800 Series User Manual* for details.

## Operation Alarms

The red ALARM LED (located with the Module LEDs on the front panel)
illuminates when an alarm condition is detected.

Chapter 3 **Operation**

## OVERVIEW

You can control and configure the NxT1 HSSI/V.35 Module from a variety of sources, including the following:

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

The remainder of this section describes the menu items presented when managing the NxT1 HSSI/V.35 Module via the terminal menu.

Access the terminal menu using either a VT-100 terminal attached to the ATLAS 800 Series Base Unit's control port or a Telnet session established through the Base Unit's Ethernet port. The *ATLAS 800 Series User Manual* provides detailed instructions on the operation of each of these management approaches.

> **NOTE**
>
> *To edit items in the terminal menu, you must have the appropriate password level. Each menu description in this section indicates the password level required for write and read access. See "Access Passwords" in the appropriate ATLAS 800 Series User Manual for detailed information on working with passwords. Security level 0 users can view and edit every available field. Security level 5 users can view any field but cannot edit.*

## TERMINAL MENU STRUCTURE

ATLAS 800 Series uses a hierarchical menu structure to provide access to all of its features. The top-most menu level leads to submenus which are grouped by functionality. All menu items display in the terminal window. To access the NxT1 HSSI/V.35 Module, activate the **MODULES** menu. The following sections describe the menu items for the **MODULES** menu.

> **NOTE**
>
> *Refer to the appropriate ATLAS 800 Series User Manual for detailed instructions on navigating through the terminal menu.*

**MODULES**    The ATLAS 800 Series system controller automatically detects the presence
of the NxT1 HSSI/V.35 Module when it is installed in the system. To see the
menus for the NxT1 HSSI/V.35 Module use the terminal menu, use the arrow
keys to scroll to the Modules menu and press ENTER to access the module
choices. Figure 3-1 shows the Modules menu (see also the menu tree in
Table 3-1 on page 29). The following sections describe all the Modules'
menu options.



**Figure 3-1. Modules Menu**

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**Menu Tree for NxT1 HSSI/V.35 Modules Menu**

- Modules
  - Slt
  - Type
  - Menu — NxT1 HSSI Menus
    - Info
      - Part Number
      - Serial Number
      - Assembly Revision
      - Firmware Revision
    - T1 Enable
      - Enabled
      - Disabled
    - T1 Menus*
      - Alarm Status
        - Prt
        - Rx Level
          - LOS
          - RED
          - YELLOW
          - BLUE
          - DS0 Alarm
      - Performance (Curr, 15Min, 24Hr)
        - Prt
          - Prt
            - CLR
            - ES
            - BES
            - SES
            - SEFS
            - LOFC
            - CSS
            - UAS
            - LCV
            - PCV
            - LES
      - Config
        - Prt
        - Port Name
        - Frame
        - Code
      - Test
        - Prt
          - Tx Yel
        - Loc LB
          - LBO
    - IMUX Menus
      - Config
        - Prt
        - Grp Assoc
        - Scramble
    - HSSI Menus
      - Status
        - Loopback
        - LA
        - LB
        - TA
      - Config
        - Tx Clk
          - Rx Rate
        - CA
          - Tx Rate
        - LC
  - Alarm — Module Alarms
  - Test
  - State
  - Rev

*The T1 menus are only visible when T1 Enable is set to Enabled.

**Table 3-1. Menu Tree for NxT1 HSSI/V.35 Modules Menu**

| | |
|---|---|
| **SLT** | **Read security: 5**<br>Displays the number of the available slots in the ATLAS 800 Series chassis. Slot 0 refers to the ATLAS 800 Series unit. This field is read-only. |
| **TYPE** | **Write security: 3; Read security: 5**<br>Displays the type of module actually installed in the slot or the type of module you plan to install in the slot. If an NxT1 HSSI/V.35 Module is installed, the Type field automatically defaults to **NxT1 HSSI** (the NxT1 HSSI/V.35 Module). You can use this field to preconfigure a system before actually |

installing modules by simply specifying the module that you want to install in each slot.

---

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

---

**MENU**            Displays additional status and configuration menus for the selected module. (To access the submenus for this item, use the arrow keys to scroll to the **MENU** column for the module you want to edit, and press **Enter**.) For detailed information on each submenu item, see the section *Modules/Menu* on page 31.

**ALARM**           **Read security: 5**
Displays an alarm condition on the NxT1 HSSI/V.35 Module. Press **Enter** in this field to activate the menu.

**TEST**            **Read security: 5**
Displays test name if the NxT1 HSSI/V.35 Module is executing a test. Press **Enter** in this field to activate the menu.

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

---

| | |
|---|---|
| **NOTE** | *Once a module is installed,* **STATE** *must be set to* **ONLINE** *in order for the ATLAS 800 Series unit to use the module for any data bandwidth.* |

---

**STATUS**          This read-only field provides status information on the NxT1 HSSI/V.35 Module. The following messages may display:

   **ONLINE**       The module is enabled, and is responding to the system controller's status polls. This is the normal response of the system.

   **NO RESPONSE**  The module is enabled, but is not responding to the system controller's status polls. This response indicates either a problem in the system or that the module is not installed.

---

**EMPTY**          The system controller has not detected the presence of a module in the slot, nor has a module been manually enabled for this option slot.

**OFFLINE**        The module is installed, but has been taken offline by a user. The module is still responding to controller polls.

**OFFLINE/NO RESPONSE**    The module is installed, but has been taken offline by a user. The module is not responding to polls.

**REV**          This read-only field displays the hardware revision of the NxT1 HSSI/V.35 Module.

**MODULES/MENU**    Figure 3-2 shows the menu options available for the NxT1 HSSI/V.35 Module (see also the menu tree in Table 3-1 on page 29). The following sections describe these options.
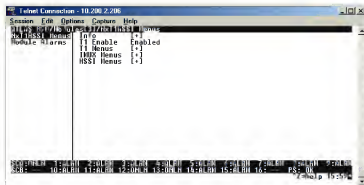


**Figure 3-2. NxT1 HSSI/V.35 Module Menu Options**

**NxT1 HSSI OPTION MODULE**

The NxT1 HSSI Option Module system controller automatically detects the presence of the NxT1 HSSI Option Module when it is installed in the system (listed as **NxT1 HSSI**). To see the menus for the NxT1 HSSI Option Module via the terminal menu, use the arrow keys to scroll to the **MODULES** menu and press <Enter> to access the module choices. V.35 is available when using the optional adapter cable (ADTRAN P/N 31251081). Some of the following menus do not apply when configured for V.35 mode.

**INFO**

Read security: 5

Provides information about the module part number, serial number and assembly revision.

**PART NUMBER**
Read security: 5
Displays the part number of the module.

**SERIAL NUMBER**
Read security: 5
Displays the serial number of the module.

**ASSEMBLY REVISION**
Read security: 5
Displays the assembly revision.

**FIRMWARE REVISION**
Read security: 5
Displays the current firmware revision of the NxT1 HSSI Option Module.

**T1 ENABLE**

Write Security: 3; Read Security: 5
Configures the NxT1 HSSI Option Module to activate the module's four built-inT1 interfaces. When configuring the module to use more than four T1s from other installed T1/T3 modules, this field should be set to **DISABLED**.

> **NOTE**
>
> *The NxT1 HSSI/V.35 Module's four built-in T1 interfaces are activated collectively as a bundle. Setting the **T1 ENABLE** menu to **ENABLED** allows you to map from any/all of the built-in T1 ports to the HSSI interface. Setting the **T1 ENABLE** menu to **DISABLED** requires ALL of the T1s mapped to the HSSI interface to be from other installed T1/T3 modules.*

**T1 MENUS**   **Read Security: 5**
Provides information about the four T1 interfaces located on the NxT1 HSSI Option Module. This menu is only visible when **T1 ENABLE** is set to **ENABLED**.

### ALARMS
**Read security: 5**
Displays an alarm condition on the ATLAS 550 unit. Press <Enter> to access this menu item.

#### LOS
Indicates a loss of signal detected on port interface.

#### RED
Indicates inability to frame data received on the port. Alternately referred to as Out of Frame (OOF).

#### YELLOW
Receiving remote alarm (RAI) on port.

#### BLUE
Receiving unframed all ones from the port Alarm Indicator Signal (AIS).

#### DS0 ALARM
Displays per-DS0 alarm status; that is, at least one DS0 channel is in alarm if an asterisk (*) appears. These alarms usually indicate the failure to receive the protocol that has been configured for the DS0.

#### RX LEVEL
(Receive Level) Indicates the strength of the signal (in dB) received on the port.

### PERFORMANCE
**Write security: 3; Read security: 5**
The performance fields (either current, 15-minute total, or 24-hour total) provide status on key performance measures as specified in ANSI T1.403 and AT&T TR54016 for the T1/PRI port. All fields except **CLR** are read-only. The monitored parameters include the following:

#### PRT
Displays the port number

#### CLR
Clears performance information for the selected port

#### ES
Errored Second (ES) is a second with one or more error events OR one or more Out Of Frame events OR one or more Controlled Slips

#### BES
Bursty Errored Second (BES) is a second with more than one, but less than 320 error events

---

**SES**
Severely Errored Second (SES) is a second with 320 or more error events OR one or more Out Of Frame events

**SEFS**
Severely Errored Frame Second is a second that contains four consecutive errored framing patterns.

**LOFC**
Loss of Frame Count is a count of seconds in which a valid framing pattern could not be obtained.

**CSS**
Controlled Slip Second

**UAS**
Unavailable Second

**LCV**
Line Code Violation

**PCV**
Path Code Violation

**LES**
Line Errored Second

## CONFIGURATION
**Write security: 3; Read security: 5**
All of the following configurable parameters apply to whether the port is connected to a Primary Rate ISDN circuit or a channelized T1 circuit.

### PRT
Displays the port number.

### PORT NAME
Accepts any alpha-numeric name up to 16 characters long, to uniquely identify each port on the NxT1 HSSI/V.35 Module.

### FRAME
**Write security: 2; Read security: 5**
This field must be set to match the frame format of the circuit to which it is connected, available from the network supplier. Choose either **D4** or **ESF**.

### CODE
**Write security: 2; Read security: 5**
Set this field to match the line code of the circuit to which it is connected (this information is available from the network supplier). Choose either **AMI** or **B8ZS**.

### TX YEL
Controls the transmitting of yellow alarms. Choose either **ON** or **OFF**.

### Tx PRM

Controls the sending of performance report messaging (PRM) data on the facility data link (FDL). The PRM data continues to be collected even if **XMIT PRM** is turned off (possible only with ESF format). Choose either **ON** or **OFF**.

### LBO

**Write security: 2; Read security: 5**

Selects the Line Build Out (LBO) for the network interface. The LBO setting determines the amplitude of the transmitted signal. For short haul (intra-building) applications, choose from the ft options. For long haul (out of plant) applications, choose from the dB options. When you select this item, a list of choices displays. Select the appropriate option.

### TEST

**Write security: 3; Read security: 5**

These options initiate different types of tests and display test results.

#### PRT

Displays the port number.

#### Loc LB

**Write security: 4; Read security: 5**

Causes loopback on near-end (local) port (see Figure 3-3). The following options are available:

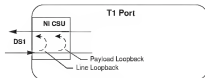| LINE | Metallic loopback |
| PAYLD | Payload loopback - framing and clocking are regenerated |



**Figure 3-3.  T1 Loopback Test Diagram**

**IMUX MENUS**     Read Security: 5

Contains the inverse muxing configuration parameters for the NxT1 HSSI Option Module.

**CONFIG**
**Read Security: 5; Write Security: 5**
Contains parameters to include T1 data streams to the HSSI interface.

**PRT**
Displays the port number for the T1s mapped to the NxT1 HSSI interface. Ports 1 through 4 are the T1 interfaces located on the NxT1 HSSI Option Module. Ports 5 through 8 are T1s mapped to the NxT1 HSSI Option Module in the Dedicated Maps.

**GROUP ASSOCIATION**
Associates T1s (either mapped to this card and/or the on-board T1s) with the HSSI interface data stream. To add the T1 to the data stream, select the **GROUP1** option.

**SCRAMBLE**
Enabling the **SCRAMBLE** option configures the NxT1 HSSI Module to prevent ones density violations when transmitting ADTRAN IMUX headers on a T1 circuit with AMI line coding.

> **WARNING** *Use extreme caution when disabling the* **SCRAMBLE** *option. ADTRAN recommends enabling the* **SCRAMBLE** *option for normal use.*

**HSSI MENUS**  Read Security: 5
Provides status, configuration, and testing parameters for the 50-pin SCSI-II HSSI interface.

**STATUS**
**Read Security: 5**
Displays the current loopback status of the HSSI interface

**LOOPBACK**
Displays the current loopback status of the HSSI interface. The following loopback options are possible (see Figure 3-4 on page 37):

**LOCAL DTE LOOPBACK**
A local DTE loopback occurs at the DTE port of the DCE, and is used to test the link between the DTE and DCE (NxT1HSSI module).

**LOCAL LINE LOOPBACK**
A local line loopback occurs in the IMUX engine and is used to test functionality between the DTE and the IMUX engine.

**REMOTE LINE LOOPBACK**
A remote line loopback occurs at the T1 interface and is used to test functionality between the DTE and the T1 interfaces.
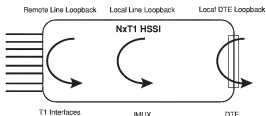
**Figure 3-4. HSSI Interface Loopback Test Diagram**

**LA AND LB**
(Not applicable in V.35 mode.)

Displays the status of the loopback circuit A and B signals. LA and LB are asserted by the DTE to enable a loopback on the DCE and its associated data communications channel. Four possible loopback options are available:

| LA | LB | Loopback |
|-----|-----|------------------------------|
| Off | Off | No Loopback Active |
| On | On | Local DTE Loopback is Active |
| On | Off | Local Line Loopback is Active |
| Off | On | Remote Line Loopback is Active |

**TA**
Displays the status of the data Terminal equipment Available signal. TA will be asserted by the DTE (independently of CA) when the DTE is prepared to both send and receive data to and from the DCE. Valid data transmission should not commence until CA has also been asserted by the DCE. If the data communications channel requires a keep alive data pattern when the DTE is disconnected, then the DCE shall supply this pattern while TA is deasserted.

When using the NxT1 HSSI Module (1200346L2 only) in V.35 mode, TA displays the status of the Request to Send (RTS) signal. When RTS is active in a V.35 configuration, Clear to Send (CTS) is also active.

**Rx Rate and Tx Rate**
Displays the current average receive and transmit data rate on the HSSI interface.

**Config**
**Read Security: 5**
Provides configuration parameters for the HSSI interface including data clocking.

**NOTE**

*When using the NxT1 HSSI/V.35 Module in V.35 mode, Data Set Ready (DSR) and Data Carrier Detect (DCD) are always active.*

**Tx Clock**

Controls the clock used by the NxT1 HSSI/V.35 Module to accept the transmit (TX) data from the DTE. This is usually set to Normal. If the interface cable is long, causing a phase shift in the data, the clock can be set to Inverted. This switches the phase of the clock, which compensates for a long cable.

**CA**
(Not applicable in V.35 mode.)

Asserts the data Communications equipment Available signal from the DCE. CA will be asserted by the DCE, independently of TA, when the DCE is prepared to both send and receive data to and from the DTE. This indicates that the DCE has obtained a valid data communications channel. Data transmission should not commence until TA has also been asserted by the DTE.

**LC**
(Not applicable in V.35 mode.)

Enables the Loopback Circuit C signal from the DCE. LC is an optional loopback request signal from the DCE to the DTE, requesting the DTE provide a loopback path to the DCE.

# ATLAS FEATURES USED WITH NXT1 HSSI/V.35 MODULE OPTIONS

Two additional ATLAS 800 Series menu items can operate in conjunction with the NxT1 HSSI/V.35 Module: **FACTORY RESTORE** and **RUN SELFTEST**.

## FACTORY RESTORE

You can restore the factory default settings for an NxT1 HSSI/V.35 Module by pressing F either while the cursor is over the **SLT** number (this action restores the factory settings for all of the module options) or while the cursor is over an individual field (this action restores factory settings only for the particular field).

## RUN SELFTEST

**RUN SELFTEST**, a submenu of the ATLAS 800 Series main menu item **TEST**, executes both the NxT1 HSSI/V.35 Module internal test and the ATLAS 800 Series internal test. For additional information on **RUN SELFTEST**, see the *ATLAS 800 Series User Manual*.

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

# Dedicated Maps Configuration

The DEDICATED MAPS menu assigns dedicated connections between any two ports in the ATLAS 800 Series Base Unit. This section describes the DEDICATED MAPS menu items (see Figure A-1). These options are module-dependent; that is, the menu items available depend on the module selected.
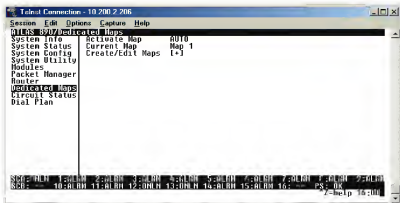
**Figure A-1. Dedicated Maps Menu**

**ACTIVATE MAP**

Write security:3; Read security:5

Activates a dedicated map—automatically or manually. You can have up to five different dedicated maps, each with an optionally specified name. The configuration choices are:

**AUTO**

Automatically activates a particular dedicated map at the time and day specified in the ACTIVATE TIME field.

**MAPS 1 THROUGH 5**

Allows you to manually activate a specific dedicated map. To manually activate a dedicated map, highlight the ACTIVATE MAP field, press <Enter>, and choose the desired dedicated map from the popup menu list.

**CURRENT MAP**

**Read security:5**
Displays the name of the currently active dedicated map (read only).

**CREATE/EDIT MAPS**

**Write security:3; Read security:5**
Creates new maps and defines settings, as well as edits existing maps. To add a new map, position the cursor in the index column and press <1>. NxT1 HSSI/V.35 Module automatically names the maps in the sequence in which they are created. You can change the names with **MAP NAME**.

**#**
Displays the index number of the available maps.

**MAP NAME**
**Write security: 3; Read security: 5**
Displays the name of the dedicated map. The name can contain up to 57 alpha-numeric characters, including spaces and special characters. To edit the name, press <Enter> and type in the new name.

**SORT TO/FROM**
**Write security: 3; Read security: 5**
Specifies sort order based on the end points set in **CONNECTS/FROM CONFIG** and **CONNECTS/TO CONFIG**. You can also turn **OFF** this option. The sort feature is helpful when you are attempting to find a particular connection in a large connection list.

**CONNECTS**
Enters the dedicated map connections. Press <Enter> to activate the submenus.

---

> **NOTE**
>
> *Some of the options available in this submenu change depending on the type of modules selected in the FROM or TO fields. For more information on these submenus, refer to the individual module discussions in this section.*

---

> **NOTE**
>
> *You must return to DEDICATED MAPS in the MAIN MENU for changes to take effect.*

---

**FROM SLT**
**Write security:3; Read security:5**
Specifies the slot to use for the **FROM** connection. When you select this option, a list of all of the slots and the modules installed in the slots displays. Select the appropriate slot and press <Enter>.

**PORT**
**Write security:3; Read security:5**
Specifies the port to use for the **FROM** connection. When you select this option, a list of ports and module types appears. Select the appropriate port and module type, and press <Enter>.

### TO SLOT

**Write security:3; Read security:5**

Specifies the slot to use for the second end of a connection. Select this option, and a list of all of the slots and the modules installed in the slots displays. Pick the appropriate slot and press <Enter>.

### PORT

**Write security:3; Read security:5**

Specifies the port to use for the second end of a connection. When you select this option, a list of ports and module types appears. Select the appropriate port and module type, and press <Enter>.

### FROM CONFIG

**Write security:3; Read security:5**

Specifies the configuration for the **FROM** connection. The selections displayed in this field are based on the type of module selected in the **FROM SLT** option. For detailed information on submenus for a particular module type, please refer to the dedicated maps menu discussion for the appropriate network, option, or resource module.

### TO CONFIG

**Write security:3; Read security:5**

Specifies the configuration for the **TO** connection. The selections displayed in this field are based on the type of module selected in the **TO SLT** option. For detailed information on submenus for a particular module type, please refer to the dedicated maps menu discussion for the appropriate network, option, or resource module.

### SIG

**Write security:3; Read security:5**

Specifies whether the NxT1 HSSI/V.35 Module uses active Robbed-Bit Signaling (RBS) on the connection. Selecting **ON** allows the NxT1 HSSI/V.35 Module to preserve signaling bits between the two endpoints of the connection. Selecting **OFF** ignores the signaling bits of the connection. This selection is automatically set to **OFF** when RBS does not apply. For example, a T1-to-Nx connection is set to **OFF**.

### ACTIVATE TIME

**Write security:3; Read security: 5**

Sets the time when the map becomes active if you have selected **AUTO** in the **ACTIVATE MAP** field. Enter this time in hh:mm:ss 24-hour format.

### ENBL DAY

**Security level: 3; Read security: 5**

Specifies which days of the week the map is active.

---

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# NxT1 HSSI
# OPTION MODULE

**CONNECTS**     Write Security: 3; Read Security: 5

Enters the dedicated map connections. Press <Enter> to activate the sub-menus.

> *The NxT1 HSSI/V.35 Module supports connects from the module's four built-in T1 ports as well as other installed T1/T3 Modules. Enabling the built-in ports by setting the* **T1 ENABLE** *field to* **ENABLED** *(see* **T1 ENABLE** *on page 32) allows only four T1s from other T1/T3 modules to be mapped to the HSSI interface in addition to the module's four built-in ports. When the module's built-in T1 ports are active, only ports 5–8 will be displayed in the available* **SLOT/PEP** *field.*

### TO/FROM CONFIG
Write Security: 3; Read Security: 5

Specifies the configuration for the To/From connection. The following selection applies to the NxT1 HSSI Option Module when connected to a port on a T1 Module. This is the only valid application for the NxT1 HSSI Option Module.

#### DS0 SELECTION
Defines DS0s for the T1 port. Use this field to define the DS0s for this connection.

> *For the NxT1 HSSI Module, any entry in the DS0 selection field that is less than 24 DS0s is disregarded. The NxT1 HSSI Module requires the use of all 24 DS0s on a T1 for proper operation.*

#### DS0s AVAILABLE
Indicates which DS0s of the T1 are assigned. DS0 assignment is based on the following levels:

##### DIGIT 0-9
This DS0 is available. The digit that displays in this field represents the last digit of the DS0 number.

##### *
This DS0 has been requested for this connection, but the DS0 is not yet activated for this port.

##### !
This DS0 is used by this port in this connection and is currently activated.

##### s
This DS0 is used in the switched **DIAL PLAN**.

**S**

This DS0 is used in the switched DIAL PLAN and conflicts with this connection.

**N**

This DS0 is already used in this DEDICATED MAP.

**N**

This DS0 is already used in this DEDICATED MAP and conflicts with this connection.

### T1 TROUBLE CODE SERVICE

Sets known values in the signaling bits and the data field for outgoing DS0s which are cross-connected to a T1 port experiencing alarms.

The trunk conditioning process consists of a 2.5 second transmission (indicating call termination), followed by a continuous transmission signaling the final condition as chosen by the user. This selection is only valid for T1 ports having RBS set to ON.

This option defines to the NxT1 HSSI/V.35 Module the type of signaling being used on the trunk: E&M, LS/GS Network or User, SW56, or Custom.

### T1 TROUBLE CODE VALUE

Displays the Hex value of the 2.5 second pre alarm transmission.

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