ADTRAN

NxDBU
OPTION MODULE

User Manual

Part Number
1200158L1#HS
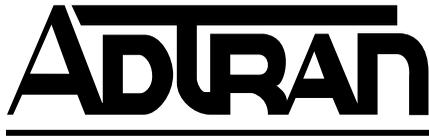
ADTRAN

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.*

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.

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

CAUTION

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.

Warranty and Customer Service

ADTRAN will replace or repair this product within five (5) 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 See 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 more information, contact ADTRAN Technical Support listed on the inside back page of this manual.

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Chapter 1   Introduction

Nx/DBU V.35 OPTION MODULE OVERVIEW

The Nx/DBU V.35 option module is one of the option modules available for use with the following TSU units:

- TSU 100
- TSU 120
- TSU 600
- TSU 610

The Nx/DBU V.35 option module installs in the option slot of the TSU units and provides an additional synchronous V.35 interface port with dial backup capability. When used in these products, this interface port allows an additional DTE to have access to the T1 service with dial backup capability in the event of a T1 failure.

In the remainder of this manual, the module will be called the Nx/DBU option module.

Functional Description

The Nx/DBU option module operates in the option slot of the TSU units and is under the control of the TSU. The Nx/DBU option module is configured from the front panel or by an external PC program. The internal menus for their configuration are part of the Nx/DBU option module and are automatically installed when the Nx/DBU is installed in a TSU unit.

FEATURES OF THE NX/DBU OPTION MODULE

Nx Features

- Data rates from 56 kbps to 2.048 mbps in 56K or 64K increments
- Includes an elastic store for adsorption of rate variations
- Executes and responds to V.54 looping codes
- Outputs a 50 percent duty cycle output clock at all rates
- Provides an inband control channel (8 kbps for network management communication)
- Generates and checks 511 test pattern toward network
- 511 pattern generator is capable of injecting errors

DBU Features

- Can verify integrity of dial-up network with a test pattern without disrupting T1 data
- Detect no data transitions on the data received from the network, with verify over inband channel
- User-definable delay between call retries if backup connection is not successfully established
- User-definable verification of dial up network (Daily Weekly, or On Command) without T1 data disruption
- Backup can be initiated by:

  - Alarm conditions on network (AIS, RAI, or Red Alarm)

  - Absence of data transitions for a user-defined delay

- Uses 8 kbps channel to check end-to-end connectivity before activating backup
- Disable backup based on hour of day and weekend
- Uses pattern to validate backup dial network

Features Common to the Nx and the DBU

The following features are common to the Nx and the DBU:

- Configurable by using a PC program (T-Watch)
- Menu operation for easy configuration
- Performs self-test of option card hardware
- Can install multiple Nx/DBU modules in a TSU 600
- Hot-swappable

Interfaces

The following interfaces are used with the Nx/DBU:

- Two CCITT V.35 electrical (differential)
- Two V.35 Winchester connectors

SPECIFICATIONS OF THE NX/DBU

Specifications: Nx56/64 (DCE Interface)

DCE Interface	CCITT V.35 synchronous
Rates	56 kbps to 2.048 mbps in 56K or 64K increments
Clock Options	Internal or internal-invert
Tests	Local loopback (bilateral) Remote loopback (V.54)
Test Pattern	511 with errored seconds display and error inject capability
Data Inversion	Menu selectable
1s Density Protection	Force 1s to network after one second of consecutive zeros from DTE
	User-selectable (On⁄Off)
CTS, DCD, DSR	Normal or Force On
Connector	Winchester (V.35), female

Specifications: DBU (DTE Interface)

DTE Interface	CCITT V.35 synchronous
Backup Delay	1 sec, 3 sec, 10 sec, 30 sec, 1 min, 5 min, 10 min
DBU Dialing	DTR dialing
Restore Delay	1 sec, 3 sec, 10 sec, 30 sec, 1 min, 5 min, 10 min, Never
Rates	56 kbps through 2.048 mbps in 56K or 64K increments
Clocking	Routes external DCE clocks to external DTE when active
Connector	Winchester (V.35) female
Test	Loopback to DCE Test dialup network Force dial backup

SPECIFICATIONS: NX56/64 AND DBU

Mechanical	Mechanically compatible with option slot of all TSUs
Environmental	Operating temperature from 0 °C to 45 °C
Tests	Extensive self-test

PHYSICAL DESCRIPTION

The Nx/DBU option module plugs into the option slot in the rear of the TSU family of products (see Figure 1-1).

The **PORT X.1** and **X.2** indication is linked to the port numbering philosophy of the TSU product family. The **X** represents the slot number into which the option module is plugged.

- The TSU 100 has one option slot; therefore the port designation is **1.1**.
- The TSU 120 has one option slot; therefore the port designation is **1.1**.
- The TSU 600 and TSU 610 each have six option slots; therefore the port numbers would be port **1.1** to port **6.1**. The numbers appear in the front panel LCD menu display.
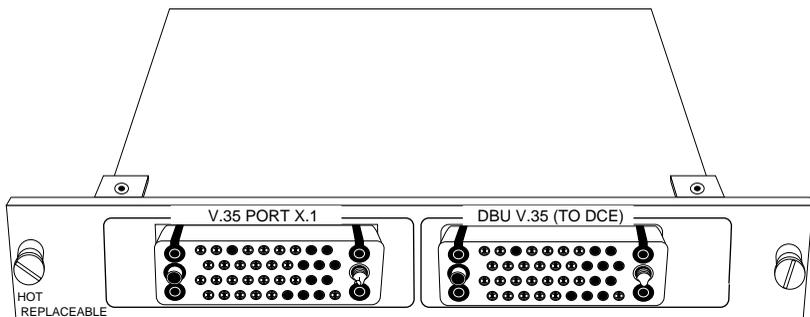
Figure 1-1. Nx/DBU Option Module

Chapter 2   # Installation

UNPACK & INSPECT

Carefully inspect the option module for any shipping damage. If damage is suspected, file a claim immediately with the carrier and then contact ADTRAN Technical Support. If possible, keep the original shipping container for use in shipping the option module back for repair or for verification of damage during shipment.

ADTRAN Shipments Include

- The Nx/DBU Option Module
- *The Nx/DBU Option Module User Manual* (to be inserted into main TSU user manual)

Customer Provides

- DTE cable
- DCE cable

INSTALLING THE OPTION MODULE

Placement of the Option Module

Figure 2-1 shows proper placement of the option module. Perform the following steps to install the option module:

1. Remove the cover plate from the TSU unit rear panel.

2. Slide the option module into the rear panel of the TSU unit until it is positioned firmly against the front of the unit.

3. Fasten the thumbscrews at both edges of the option module.
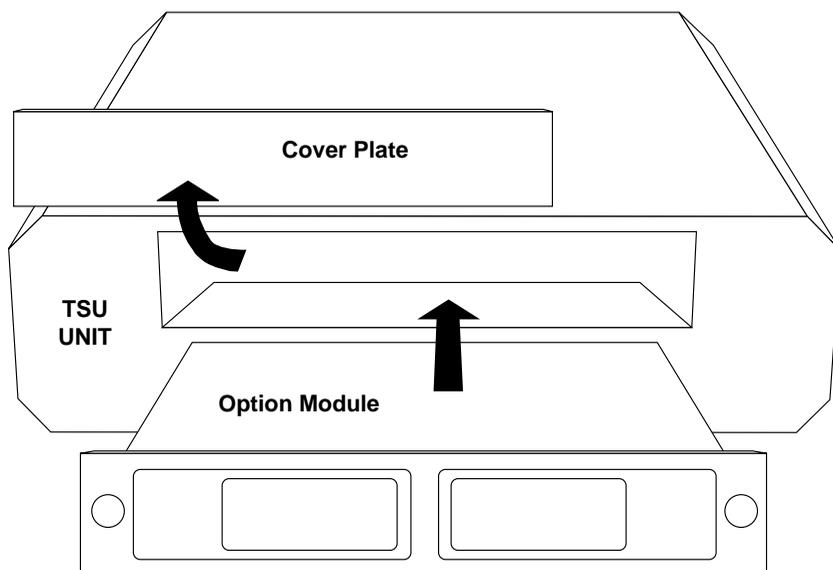
Figure 2-1. Installing the Option Module

Power Connection

Each option module derives power from the base TSU unit. Power to the TSU is supplied by a captive 8-foot power cord.

Wiring

The Nx/DBU option module has two V.35 Winchester-style connections. The Nx connections are defined in Table 2-1, below. The DBU connections are defined in Table 2-2 on page 2-4.

Table 2-1. Nx V.35 Winchester Pin Connection

Pin	CCITT	Description
A	101	Protective ground PG)
B	102	Signal ground (SG)
C	105	Request to send (RTS) from DTE
D	106	clear to send (CTS) to DTE
E	107	Data set ready (DSR) to DTE
F	109	Received line signal detector (DCD) to DTE
H	-	Data terminal ready (DTR) from DTE
J	-	Ring Indicator (RI)
L	-	Local loopback (LL) from DTE
N	-	Remote loopback (RL) from DTE
R	104	Received data (RD-A) to DTE
T	104	Received data (RD-B) to DTE
V	115	RX clock (RC-A) to DTE
X	115	RX clock (RC-B) to DTE
P	103	Transmitted data (TD-A) from DTE
S	103	Transmitted data (TD-B) from DTE
Y	114	TX clock (TC-A) to DTE
AA	114	TX clock (TC-B) to DTE
U	113	External TX clock (ETC-A) from DTE
W	113	External TX clock (ETC-B) from DTE
NN	-	Test mode (TM) to DTE

Table 2-2. DBU V.35 Winchester Pin Connection

Pin	CCITT	Description
A	101	Protective ground PG)
B	102	Signal ground (SG)
C	105	Request to send (RTS) to DCE
D	106	Clear to send (CTS) from DCE
E	107	Data set ready (DSR) to DCE
F	109	Received line signal detector (DCD) from DCE
H	-	Data terminal ready (DTR) to DCE
J	-	Ring Indicator (RI) from DCE
R	104	Received data (RD-A) from DCE
T	104	Received data (RD-B) from DCE
V	115	RX clock (RC-A) to DTE
X	115	RX clock (RC-B) from DCE
P	103	Transmitted data (TD-A) to DCE
S	103	Transmitted data (TD-B) to DCE
Y	114	TX clock (TC-A) from DCE
AA	114	TX clock (TC-B) from DCE

POWER-UP TESTING AND INITIALIZATION

The option module executes a self-test during the power-up sequence, as described in the TSU manual. No initialization input is required. Upon power-up, any previously configured setting for the option module is automatically restored.

When the self-test is complete and configuration is successfully restored, the LED labeled **OK** in the module group on the front panel turns **ON**. For more information on front panel operation, see the *Operation* chapter of the appropriate TSU user manual.

If any alarms are detected during operation, the red LED labeled **ALARM** in the module group on the front panel turns **ON**.

Chapter 3   Operation

OVERVIEW

The Nx/DBU option module is controlled as part of the TSU using the same methods as described in the appropriate TSU user manual.

Front Panel Indicators/Buttons

Refer to the description of the front panel indicators and buttons in the appropriate TSU user manual.

Menu Structure

The Nx/DBU option module menus appear as a subset of, and operate the same as, menus for the TSUs. The menus are accessed by selecting **1.1 Nx/DBU** under the **PORT** menu items.

The main menu for the TSU 100 is used for illustrative purposes. The main menus for the other TSU units operate in a similar way. Figure 3-1 on page 3-2 shows the TSU 100 main menu with the **PORT 1.1 Nx/DBU** menu items printed in ***bold, italicized*** letters.

A complete TSU 100 menu tree diagram is found in the *TSU 100 User Manual*.
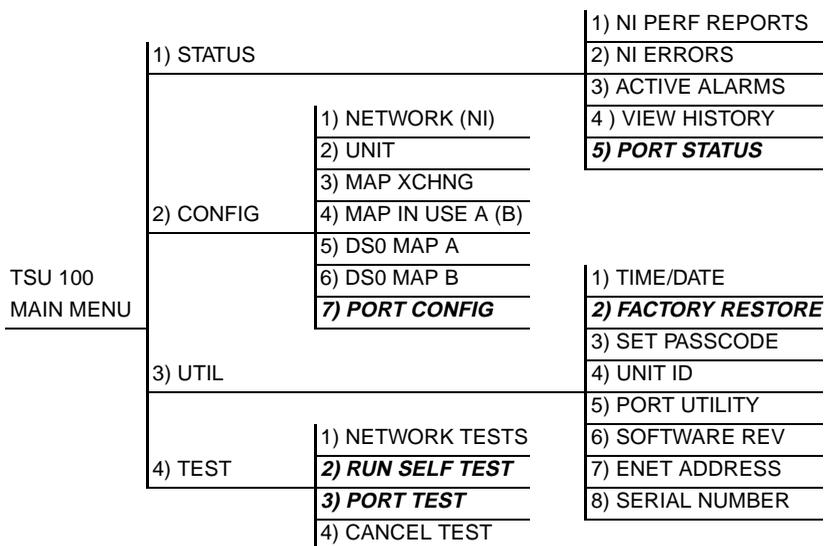
```
                                              1) NI PERF REPORTS
                      1) STATUS               2) NI ERRORS
                                              3) ACTIVE ALARMS
                            1) NETWORK (NI)   4 ) VIEW HISTORY
                            2) UNIT           5) PORT STATUS
                            3) MAP XCHNG
                      2) CONFIG  4) MAP IN USE A (B)
                            5) DS0 MAP A
  TSU 100                   6) DS0 MAP B      1) TIME/DATE
  MAIN MENU                 7) PORT CONFIG    2) FACTORY RESTORE
                                              3) SET PASSCODE
                      3) UTIL                 4) UNIT ID
                                              5) PORT UTILITY
                            1) NETWORK TESTS  6) SOFTWARE REV
                      4) TEST  2) RUN SELF TEST   7) ENET ADDRESS
                            3) PORT TEST      8) SERIAL NUMBER
                            4) CANCEL TEST
```

Figure 3-1. TSU 100 Main Menu Tree

Nx/DBU Menus Are All Submenus

The Nx/DBU option module menus are accessed from and operated the same as menus for the TSU 100. Menu items in the main menu in Figure 3-1 printed in bold italics are submenu choices for the Nx/DBU option module. See Figure 3-2 on page 3-3 for the menu tree for each of these submenu options. Each of the these submenu items is discussed in the following paragraphs. All are accessed by the same method.

Operation

With the cursor on one of the four main menu choices, press **Enter** or the number key. The results are a display of the first two submenu items with the cursor on the first item. Use the **scroll down** key to place the cursor on the desired item then press **Enter**. This displays the first two submenu choices. The Nx/DBU option module menu tree selections are discussed in the sections following Figure 3-2.
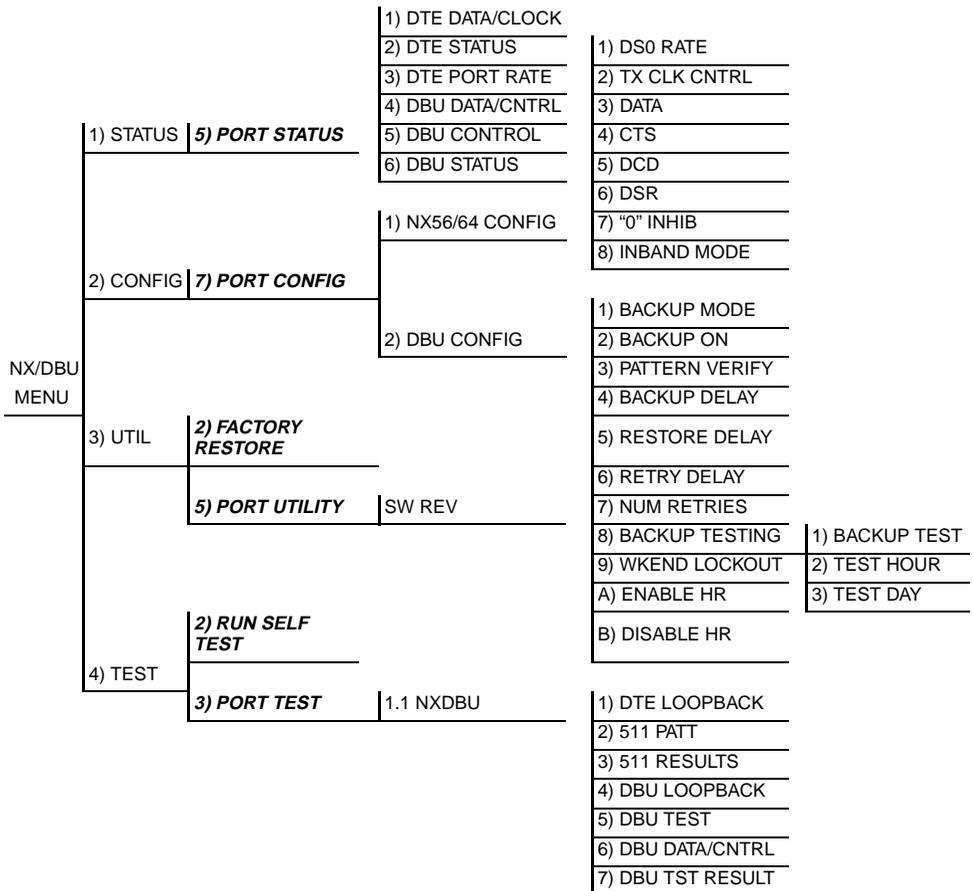
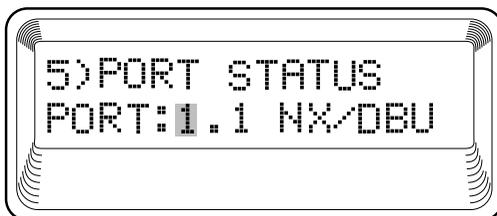**Figure 3-2. Nx/DBU Option Module Menu Tree**

5)PORT Status

The Status menu branch allows you to view the status of the TSU 100 operation. It displays the status of the monitored signal line on the Nx/DBU option module and the data rate for which the option module is configured.

Operation

To display Figure 3-3 on the TSU 100, starting with the cursor on main menu item **STATUS**, do the following:

1. Press **Enter** or the number **1** key. This displays the first two Status submenu items with the cursor on **1)NI PERF RPTS**.

2. Use the **Scroll Down** key to place the cursor on **PORT STATUS** and press **Enter**. This displays the first available port.

3. Use the scroll keys to find **1.1 Nx/DBU** and press **Enter**.

```
5)PORT STATUS
PORT:1.1 NX/DBU
```

Figure 3-3. Port Status Submenu

The base Nx interface offers the status screens listed in this manual. For other option modules, refer to the appropriate manual.

Nx/DBU Status Menu Options

Select the **1.1 Nx/DBU**. The following five menu options are available:

1)DTE DATA/CLOCK

Shows the status (active or not active) of the following lines:

TXD
Transmit data to the DTE

RXD
Receive data from the DTE

ETC
External transmit clock from DTE

LCK
Lock status of the phase locked loop

2)DTE STATUS

Shows the status (active or not active) of the following lines:

RTS
Request to send from DTE

CTS
Clear to send to DTE

DCD
Data carrier detect to DTE

DSR
Data set ready to DTE

3)DTE PORT RATE

Displays the data rate to which the Nx port is set.

4)DBU DATA/CNTRL

Shows the status (active or not active) of the following lines:

TXD
Transmit data to the DCE

RXD
Receive data from the DCE

DCD
Data carrier detect from DCE

RI
Ring indicate from DCE

5)DBU CONTROL

Shows the status (active or not active) of the following lines:

RTS
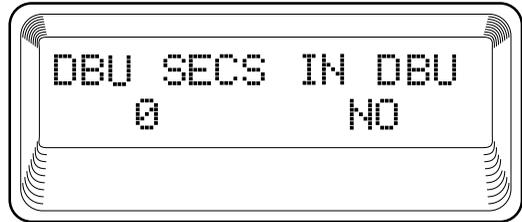Request to send to DCE

CTS
Clear to send from DCE

DTR
Data terminal ready to DCE

DSR
Data set ready from DCE

6)DBU STATUS

Shows current backup state (see Figure 3-4).

```
┌─────────────────────────────┐
│ ╔═══════════════════════════╗ │
│ ║  DBU  SECS  IN  DBU       ║ │
│ ║       0         NO        ║ │
│ ║                           ║ │
│ ╚═══════════════════════════╝ │
└─────────────────────────────┘
```

Figure 3-4. DBU Status Submenu

DBU SECS — Total seconds the option module has been in backup.

IN DBU - Yes — Module is in backup mode.

IN DBU - No — Module is not in backup mode.

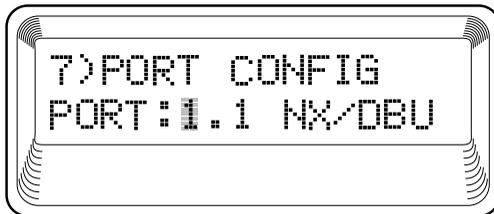To exit the display, see the the appropriate TSU user manual.

7)PORT CONFIG, Submenu of 2)CONFIG

The **7)PORT CONFIG** submenu is used for configuration of the Nx∕DBU option module.

Operation

To display the screen shown in Figure 3-5 on page 3-8, on the TSU 100, position the cursor on **CONFIG**, and do the following:

1. Press **Enter** or the number **2** key. This displays the first two Configuration submenu items with the cursor on **NETWORK (NI)**.

2. Use the **Scroll Down** key to place the cursor on **PORT CONFIG** and press **Enter**.

3. Use the scroll keys to identify **1.1 Nx/DBU** option module. Only the bottom line of the display changes.

```
  ┌─────────────────────────────┐
  │  ╱═══════════════════════╲  │
  │                             │
  │   7)PORT CONFIG             │
  │   PORT:1.1 NX/DBU           │
  │                             │
  │  ╲═══════════════════════╱  │
  └─────────────────────────────┘
```

Figure 3-5. Port Configuration Submenu

4. To select **PORT CONFIGURATION**, press **Enter**. This displays the following menu options:

    - **Nx56/64 CONFIG**

    - **DBU CONFIG**

5. Place the cursor over the desired option and press **Enter** to configure.

Menu options for the Nx56/64 and the DBU are given in the following pages.

1)Nx56/64 CONFIG Menu Options

Select the **1)Nx56/64** menu option to access the following eight menu options:

1)DS0 RATE

This sets the base rate of the interface. The actual data rate depends on the number of DS0s assigned to the DTE Data Rate Chart in the TSU 100 User Manual.
Choices - 56K or 64K

2)TX CLK CNTRL

Controls the clock used by the TSU 100 to accept the transmit (TX) data from the DTE. Normally this is set to **INTERNAL**.

If the interface cable is long, causing a phase shift in the data, the clock can be selected as **INT/INV** (Internal/Inverted). This switches the phase of the clock which should compensate for a long cable.
Choices - Normal or Invert

3)DATA

Used to control the inverting of the DTE data. This inversion can be useful when operating with a high level data link (HDLC) protocol. Often used as a means to ensure 1s density.
Choices - Normal or Invert

Table 3-1 shows the conditions which cause the port control signal to be deactivated.

Table 3-1. Normal Mode Operation

Signal	RTS	V.54 Loopback	511 Test ON	Self Test Active	Network test Active	No DS0 Mapped	Network Alarm*
CTS	Follows	Off	Off	Off	Off	Off	Off
DCD	-	-	-	Off	-	Off	Off
DSR	-	Off	Off	Off	Off	Off	-

- Do not care

*Until backup becomes active

4)CTS

Used to control characteristics of CTS.
Choices - Normal or Force On (see Table 3-1 on page 3-9).

5)DCD

Data Carrier Detect - Indicates to the DTE when a valid
signal is being received at the Network Interface.
Choices - Normal or Force On (see Table 3-1 on page 3-9).

6)DSR

Data Set Ready - This signal indicates to the DTE when
the DCE is turned On and ready for operation.
Choices - Normal or Force On (see Table 3-1 on page 3-9).

7)0 INHIB

If the Nx interface detects an uninterrupted string of 0s
being transmitted toward the network. If 0s are transmit-
ted for more than one second, then the TSU 100 forces 1s
towards the network.
Choices - On or Off

8)INBAND MODE

Inband Configuration Channel - Used to enable or dis-
able an 8 kbps remote configuration channel (see Figure
3-6 on page 3-11).

When this option is set to **ON**, the first DS0 mapped to the
Nx interface operates in 56K mode and the DTE clock
rate is reduced by 8 kbps. The TSU uses this 8 kbps chan-
nel to send and receive configuration data across a T1
span. As shown in Figure 3-6, this allows the PC con-
nected to the chain-in port on TSU 600 A to monitor/con-
figure both TSU 600 A and B. This feature is useful when
FDL connectivity is not available across the T1 span.

This 8 kbps channel is only taken out of the first DS0. If two 64K DS0s are mapped, the DTE rate would be 120 kbps instead of 128 kbps.
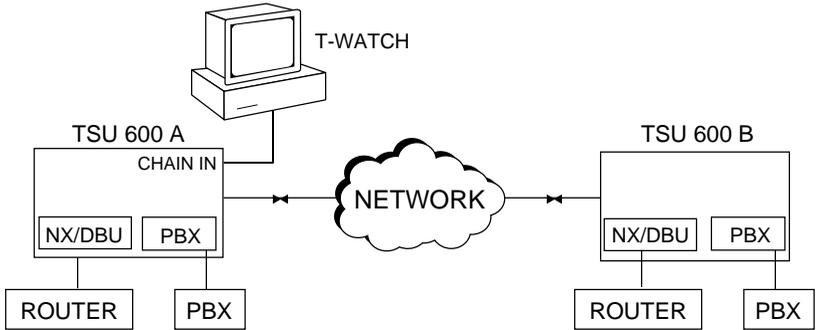
Figure 3-6. Inband Remote Configuration

When the inband configuration channel is enabled, the NxDBU uses the channel to verify end-to-end connectivity of the T1 network. This provides more robust monitoring of the primary network.

> **NOTE**
>
> *Enabling the inband channel is especially useful in networks where alarms are not passed end-to-end. In these circuits, the inband channel should be On for complete DBU protection.*

9)TX CLK SOURCE

Controls the clock used by the DTE. Normally this is set to **INTERNAL**. If the DTE provides a clock with TX data, the clock selection is set to **EXTERNAL**. The NX 56/64 will depend on an externally supplied clock to accept the TX data.
Choices - INTERNAL or EXTERNAL

DBU CONFIG Menu Options

Select the **DBU CONFIG** menu option to access the menu options discussed in this section.

1)Backup Mode

Originate
When a backup condition is detected, this end of the circuit activates the backup by initiating a call to the answer end.

Answer
This end of the circuit goes into backup when a call comes in and a backup condition is detected.

2)Backup On

This selects the conditions that use the Nx/DBU to initiate backup.

Net Fail
Backup occurs on Red Alarm, Yellow Alarm, Blue Alarm, and LOS.

Net/Data Fail

Backup occurs on the same conditions as Net Fail plus loss of data transitions on the data the Nx56/64 receives from the network.

> **NOTE** *When the inband channel is enabled, it is used to periodically verify the connection and detect backups. When enabled, this is the primary criteria used for detecting backup conditions.*

3)Pattern Verify

Enable/Disable

This selects whether or not the DBU will use its pattern generator and receiver to authenticate backup attempts. When the local and remote units are both Nx/DBUs, set to ENABLE; otherwise set to DISABLE.

4)Backup Delay

This selects the time allowed to elapse between the network going into alarm or no data transmissions and the backup beginning.
Choices: 1 sec, 3 sec, 10 sec, 30 sec, 1 min, 5 min, 10 min.

5)Restore Delay

This selects the time that elapses between the network going out of alarm or data and the backup call being taken down. If NEVER is selected, the user must deactivate the backup mode.
Choices: 1 sec, 3 sec, 10 sec, 30 sec, 1 min, 5 min, 10 min, never.

6)Retry Delay

This selects the time between redialing the external DCE after failed dial attempts.
Choices: 10 sec, 30 sec, 1 min, 5 min, 10 min

7)Num Retries

This selects the number of times the DBU will attempt to redial if unable to connect.
Choices: None, unlimited, 3 times, 10 times.

8)Backup Testing

This submenu sets the options for the automatic ISDN verification feature of the Nx/DBU. Verification of the backup circuit does not disrupt data of the T1.

Backup Test
This selects the frequency of automatic backup circuit verification by the DBU.
Choices: Manual, hourly, daily, weekly

Test Hour
This selects the hour of the day the backup test will occur
Choices: 0 to 23.

Test Day
If weekly backup test is selected, this option will select which day to perform the test.
Choices: Monday through Sunday

9)WKEND Lockout

If no backup is desired from midnight Friday to mid-night Sunday, set this selection to ON; otherwise set to OFF.
Choices: OFF, ON

A)Enable HR:

The hour that the backup will be enabled can be entered from the numeric keyboard.
Choices: 0 to 23

B)Disable HR:

> The hour that the backup will be disabled can be entered from the numeric keypad.
> Choices: 0 to 23

Trap in DBU:

> If traps are enabled (See Unit Configuration), this parameter will send either a single trap upon going into a DBU session or send repeated traps for the duration of the DBU session.
> Choices: Single; Repeated

NOTE *For items A and B to function properly, verify that the time and date in the TSU are set correctly. Consult the appropriate TSU user manual for instructions for setting date and time.*

---

2)FACTORY RESTORE, SUBMENU OF 3)UTIL

> This selection is used to restore the factory default settings for all pass-through option module parameters.

Operation

> To return the unit to the opening main menu with all the factory default settings restored, do the following:
>
> 1. Follow the standard operating procedure to access the **3)UTIL** menu items.
> 2. With the cursor on **2)FACT RESTORE**, press **Enter.**

5)PORT UTILITY, SUBMENU OF 3)UTIL

> The **5)PORT UTILITY** submenu is used to access the display of the current software information for each port installed in the unit. This information is required when requesting assistance from ADTRAN Technical Support or when updates are needed.

Operation

To display the screen on the TSU 100 shown in Figure 3-7, do the following:

1. Follow the standard operating procedure to access the **3)UTIL** menu items.

2. With the cursor on **5)PORT UTILITY**, press **Enter**. This displays the first available port.

```
5)PORT UTILITY
PORT:1.1 NX/DBU
```
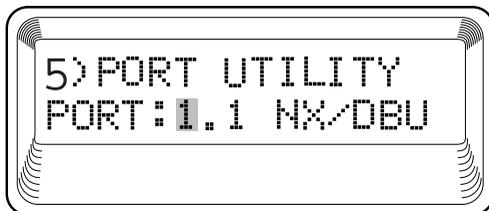
Figure 3-7. Port Utility Submenu

To display the port name and the software version installed as shown in Figure 3-8, do the following:

1. Use the scroll keys to move through the available ports, or enter the port number with the number key.

2. When the desired port name is displayed, press **Enter**.

3. Press **Cancel** to exit or to select another port.

```
NX/DBU FIRMWARE
VERSION
```
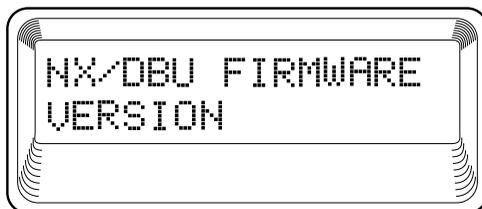
Figure 3-8. Port Name and Software Version

2)RUN SELF TEST, SUBMENU OF 4)TEST

This menu item is used to execute both the internal test of the TSU and of the Nx/DBU. The results of the self-test are shown on the TSU 100 display. For additional information on self-test, see the *Operation* chapter of the appropriate TSU user manual.

To activate a self-test, do the following:

1. Follow the standard operating procedure to access the **4)TEST** menu items.

2. With the cursor on **2)RUN SELF TEST**, press **Enter.** The TSU display shows the test outcome.

3)PORT TEST, SUBMENU OF 4)TEST

This menu item is used to activate testing of specific data ports. It also controls the activation of loopbacks and the initiation of data test patterns. Test results are shown on the TSU display.

CAUTION   *The execution of Port Tests disrupts normal data flow in the port being tested.*

Operation

To display Figure 3-9 on the TSU 100, place the cursor on **3)PORT TEST**, and press **Enter** or the number **3** key. This displays the available ports.


```
3)PORT TEST
PORT:1.1 NX/DBU
```
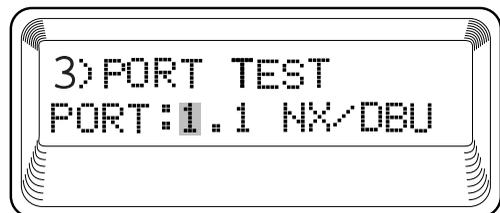
Figure 3-9. Port Test Submenu

1.1 Nx/DBU Menu Options

The **1.1 Nx/DBU** interface offers the following seven test functions:

1)DTE Loopback

Initiates a loopback.

PRT/LOCAL
The Nx port activates both a local loopback (back toward the DTE) and a port loopback when either is invoked.

REMOTE
The remote loopback causes a channelized V.54 code to be sent to the far end. The Nx at the far end activates a **PORT/LCL** loopback on detection of the V.54 code.

REM V.54 CONT
This loopback causes continuous V.54 code to be sent to the far end. The Nx at the far end activates a **PORT/LCL** loopback upon detection of the V.54 code.

OFF
The loop is deactivated.

NOTE

*The TSU checks the remote loopback activation by detecting a proper response from the remote end. While waiting for the response, the display shows **Looping**. If successful, the display changes to **Looped Up**. If unsuccessful, the display shows **Failed**.*

---

2)511 PATT

Activates the generation of the 511 test pattern toward the T1 network. Options are:

On
The pattern check circuitry is enabled and the test is started. The test is ended by selecting Off.

Off
The pattern generation and check is disabled.

3)511RESULTS

Displays the results of the 511 test indicated in menu selection **2)511 PATT**.

The results are in the form of the number of errored seconds. The error count can be cleared by pressing the **Clear** key (**Shift + 9**). A bit error may be inserted into the data stream by pressing the **2** key.

4)DBU LOOPBACK: (OFF/ON)

Initiates a loopback from the DBU towards the external DCE.

5)DBU TEST

This selection is used to force a backup to occur even if a backup condition does not exist.
Choices: TESTS OFF, FORCED BACKUP, INTERFACE TST

TESTS OFF
Turns off DBU tests.

FORCED BACKUP
Used to force a backup regardless of time-of-day lockouts or network conditions.

INTERFACE TST
This test causes the external DCE to dial its stored number. After the connection is established the DBU will

send a test pattern to verify the backup network. This test does not disrupt data or the primary network.

6)DBU DATA/CNTRL

Allows status of DCD and RI to be monitored while the **INTERFACE TST** is on. If the dial up network is correctly configured and dialed up, there should be an asterisk (*) over DCD.

7)DBU TST RESULT

When an interface test is active, this screen will show the total number of data blocks received and the number of blocks with errors (see Figure 3-10).
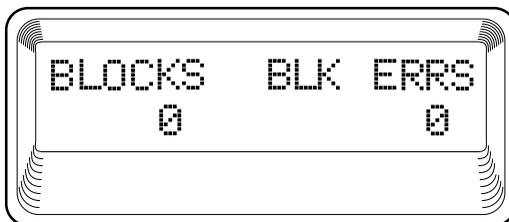
Figure 3-10. DBU TST Result Submenu

System Messages

ALARM MESSAGES

Network Interface (NI)

Red Alarm
NI unable to align frame with incoming signal

Yellow Alarm
Remote alarm indication (RAI) being received from the far end

Blue Alarm
Unframed all 1s (AIS) being received at NI

Loss of Signal
No signal detected at NI

Nx/DBU Option Module

Clock Slip
Difference in frequency of the data clock at the network and DTE

PLL Alarm
Unable to lock phase lock on the clock provided by the network interface

Zeros Alarm
All 0s data being sent to the network interface

No EXT Clock
No external transmit clock at DTE (when applicable)

STATUS MESSAGES

Network Interface (NI)

Payload On
Payload loopback activated

Line On
Line loopback activated

Loopback Off
All loopbacks deactivated

Factory Restore
Factory setting restored

Power On
Unit powered on

Self-Test
Internal self-test performed

Nx/DBU Option Module

Loop-Up
Data is looped back at both the network interface and the DTE interface of the card.

Remote Loop Up
Sending a V.54 pattern in an attempt to loop up a remote device.

511 Pattern On
Sending a 511 pattern towards the network interface

Loop Down
Data is no longer looped back at the network interface or the DTE interface

511 Pattern Off
No longer sending a 511 pattern towards the network interface

Index

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 an RMA number. For information regarding equipment currently in house or possible fees associated with repair, contact CaPS directly at the following number:

   CaPS Department   (256) 963-8722

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

     ADTRAN, Inc.
     CaPS Department
     6767 Old Madison Pike
     Progress Center
     Building #6, Suite 690
     Huntsville, AL 35807

RMA # _____