



DBUINTERFACE OPTIONMODULE
(MULTIPOINT)

Part Number 1200089L2# HS

USER MANUAL

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**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.

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

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Chapter 1

Introduction

DIAL BACKUP OVERVIEW

The Dial Backup (DBU) Interface Option Module is one of the option modules available for use with the ADTRAN TSU 100/600.

The DBU interface option module installs in the option slot of the TSU 100/600 and provides a DTE interface capable of interfacing to various dial backup devices. It utilizes the full bandwidth of the dial backup network to backup a single data port in a TSU 100/600. When backing up multiple data ports, the DBU will rob an 8 kbps channel to maintain data alignment.



CAUTION

The DBU must be installed in slot 2 of the TSU 600.

DIAL BACKUP FUNCTIONAL DESCRIPTION

The DBU interface option module operates in the option slot of the TSU 100/600 and is under the control of the TSU 100/600. The DBU is configured from the front panel or by T-Watch, an external PC program. The internal menus for its configuration are part of the DBU card and are automatically installed when the DBU interface option module is plugged into the TSU 100/600.



CAUTION

The DBU operates only with TSU 100 code Rev K or higher and TSU 600 code Rev E or higher.

FEATURES OF THE DBU INTERFACE OPTION MODULE

The main features of the DBU Interface Option Module include the following:

- Operates using 1 to 24 DS0s
- Includes an elastic store for absorption of rate variations
- Accepts a plug-on port
- Provides backup multiple TSU 100 / 600 data ports
- Provides TSU timing locked to backup network when backup function is active
- Operates by menu for easy configuration
- Offers weekend and time-of-day backup disable
- Performs an extensive self test

INTERFACES

The DBU Interface Option Module uses the following interfaces:

- CCITT V.35 electrical (differential)
- Connector - V.35 Winchester
- Loopbacks - Local (toward the DCE)

COMPATIBILITY

The DBU Interface Option Module has been tested with the following external DCE devices:

- ADTRANDSU
- ISU 2x64 (ADTRAN)
- ISU 128 (ADTRAN)
- ISU 512 (ADTRAN)

DIAL BACKUP OPTION MODULE SPECIFICATIONS

DTE Interface

CCITT V.35 Synchronous

Rates

56 kbps to 1.536 Mbps in 56 kbps or 64 kbps increments

Clocking

Derived from the external DCE device

Tests

- Local Loopback menu activated
- Interface Test - causes dial out to be activated
- Self Test

Connector

Winchester (V.35), female

PHYSICAL DESCRIPTION

The DBU is a module which plugs into the option slot in the rear of the TSU 100/600; see Figure 1-1.

The rear panel of the option module includes a plastic plug over a cutout for a plug-on option card. This allows a plug-on board to be added to the option module, creating an additional port. The PORT X.1 and X.2 indication is linked to the port numbering philosophy of the TSU 100/600 product family. The X represents the slot number, into which the option module is plugged. For the TSU 100 there is only one option slot. Therefore the port designation would be 1.1 and, if a plug-on V.35 is present, port 1.2. In a TSU 600 with six option slots, these port numbers would be port 1.1 to port 6.1. The numbers appear in the front panel LCD menu displays.



In the TSU 600, the Dial Backup option card must be used in slot 2.

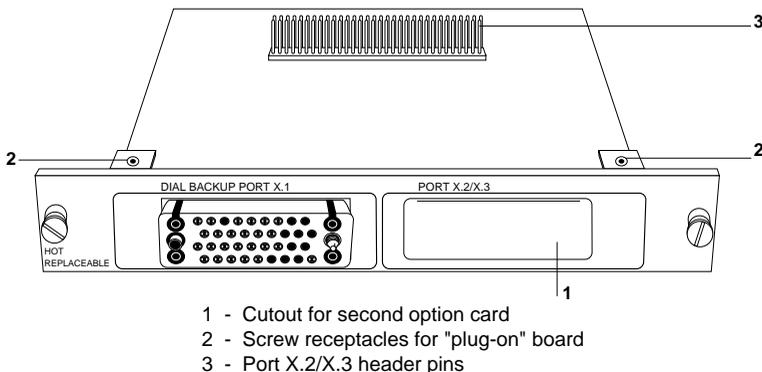


Figure 1-1
DBU Option Module

Chapter 2

Installation

UNPACK & INSPECT

Carefully inspect the DBU 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 for use in shipping the DBU module back for repair or for verification of damage during shipment.

ADTRAN Shipments

The ADTRAN shipment includes the following materials:

- DBU Module
- DBU User Manual (to be inserted into main TSU 100/600 user manual)

Customer Provides

The customer provides the following:

- DTE cable

INSTALLING THE OPTION MODULE

Placement of the Option Module

Figure 2-1 is representative of the action required for proper placement of the option module. Perform the following steps to install the option module:

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



For the TSU 600, the DBU module must be in option slot 2.

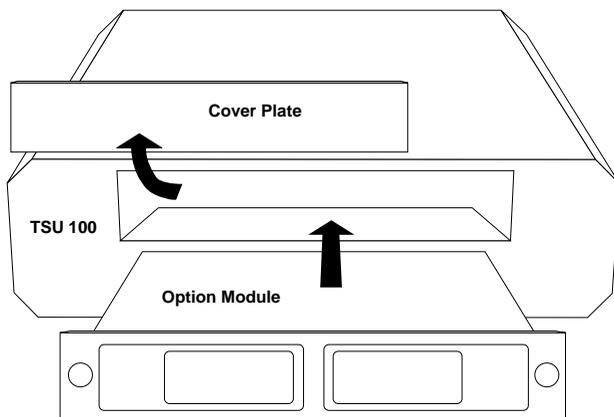


Figure 2-1
Installing the Option Module

Power Connection

Each option module derives power from the base TSU 100/600 unit. Power to the TSU 100/600 is supplied by a captive eight-foot power cord.

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, Repair, and Return Policy Procedure at the end of this manual.

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

For Service, RMA requests, or more information, contact one of the numbers listed at the end of this manual.

WIRING

The DBU option module has a V.35 Winchester-style connection as defined in Table 2-A.

Table 2-A
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 DTE from 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) from DCE
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

CONFIGURING EXTERNAL DCE

The external DCE is configured as follows:

Originate DCE

1. DTR - Dial number if on
2. CTS - Follows RTS
3. CD - Normal

Answer DCE

1. DTR - Answer if on
2. CTS - Follows RTS
3. CD - Normal

The number to be dialed when DTR is On must be entered in the originating DCE.

Consult the manual for your external DCE device in setting the above configuration.

POWER-UP INITIALIZATION

No initialization input is required. Upon power-up, any previously configured setting for the DBU is automatically restored.

When the configuration is successfully restored, the LED labeled **OK** in the **MODULE** group on the front panel turns *On*. For more information, see the section *Front Panel Operation*, in the chapter *Operation*, of the *TSU 100 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 DBU is controlled as part of the TSU 100/600 using the same methods as described in the TSU 100/600 user manual.

Front Panel Indicators/Buttons

Refer to the description of the TSU 100/600 front panel indicators and buttons in the TSU 100/600 user manual.

Menu Structure

The DBU menus appear as a subset of, and operate the same as, menus for the TSU 100/600. The menus are accessed by selecting 1 DIALBU under the PORT menu items.

Figure 3-1 shows the TSU 100/600 Main menu with the PORT menu items in bold italics.

Figure A-1 in appendix *TSU 100 Menu Tree* in the *TSU 100 User Manual* is a complete menu tree diagram.

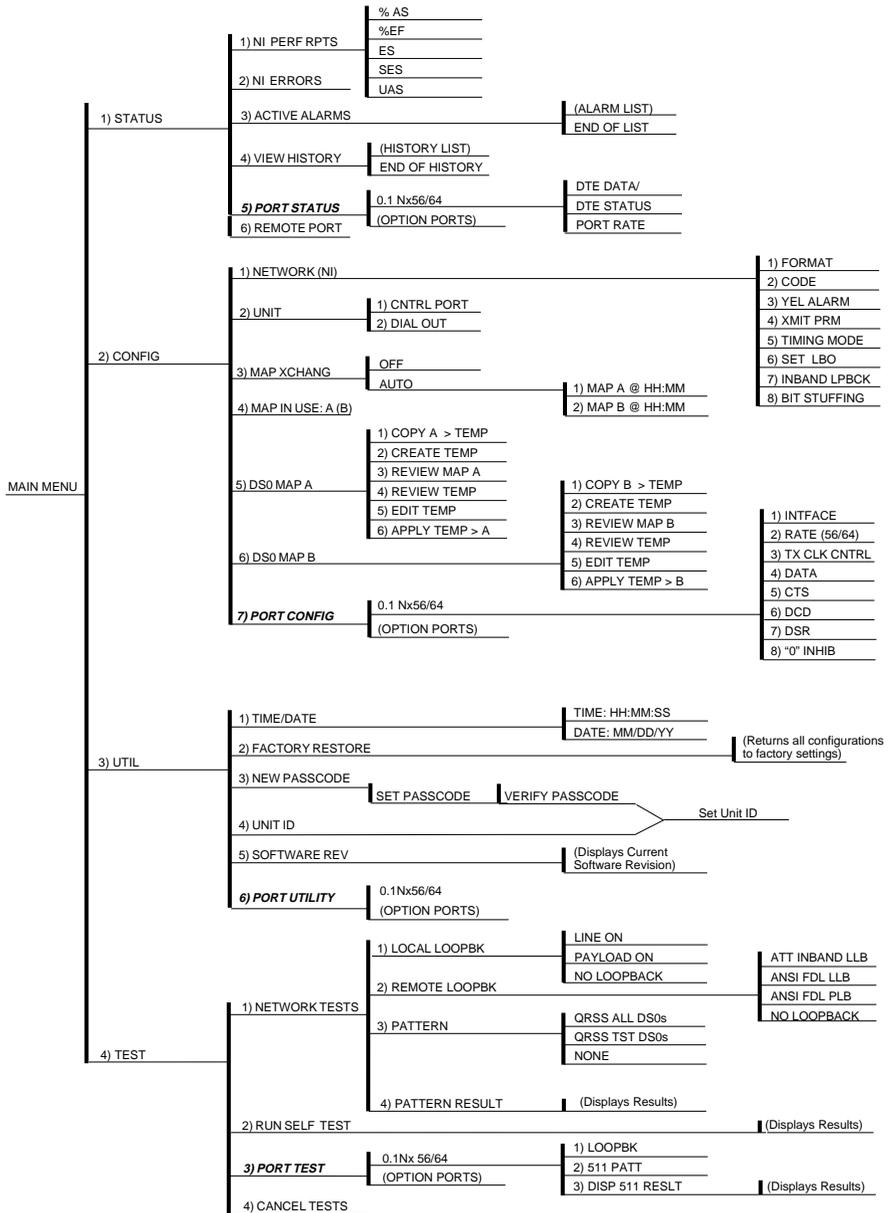


Figure 3-1
TSU 100 Main Menu Tree

DBU MENUS ARE ALL SUBMENUS

The DBU menus are accessed from, and operated the same as, menus for the TSU 100. As shown in the menu items in bold italics in Figure 3-1, the DBU items are submenu choices of the four Main menus.

Each of the DBU submenu items is shown in Figure 3-2 and discussed in the following paragraphs. All are accessed by the same method.

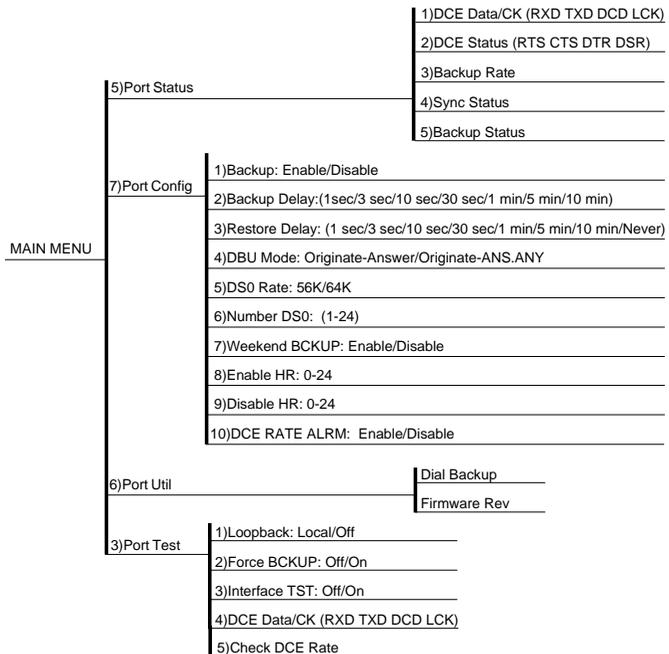


Figure 3-2
DBU Option Card Menu Tree

Operation

With the cursor on one of the four Main menu choices, press the **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.

5)PORT STATUS, SUBMENU OF 1)STATUS

The Status menu branch provides the ability to view the status of the TSU 100 operation. It displays the status of the monitored signal line on the DBU option board and the backup rate for which the DBU card is configured.

Operation

To display Figure 3-3 on the TSU 100, start with the cursor on Main menu item 1)STATUS and do the following:

1. Press the **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 5) PORT STATUS and press the **Enter** key. This displays the first available port.
3. Use the scroll keys to identify 1.1 DIALBU and press the **Enter** key.

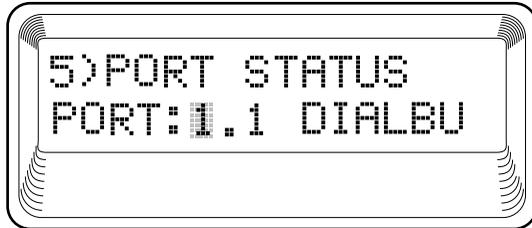


Figure 3-3
Port Status Submenu

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

DBU Status

Select 1.1 DIALBU

- 1) DCE DATA/CK
- 2) DCE STATUS
- 3) BACKUP RATE
- 4) SYNC Status
- 5) Backup Status

DCE DATA/CK: 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
LCK	Lock status of the phase locked loop

DCE Status: 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

Backup Rate: Displays the data rate to which the DBU port is configured to Backup.

SYNC Status: Displays an indication of sync between the near end TSU and the far end TSU. An asterisk indicates when each end is in sync (see Figure 3-4).

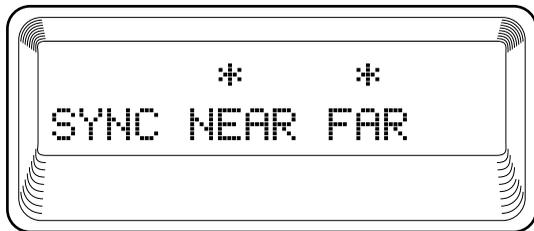


Figure 3-4
SYNC Status Window

Backup Status: Indicates the current state of Backup:

Backup - IDLE	No backup attempt in progress
Backup - ATTEMPT	Backup started, but no Carrier Detect from external DCE
Backup - ACTIVE	Backup Mode and external DCE has carrier detect.

Exit the displays as described in the *TSU 100 User Manual*.

7)PORT CONFIG, SUBMENU OF 2)CONFIG

The 7)PORT CONFIG submenu is used for configuration of the DIALBU option module.

Operation

To display Figure 3-5 on the TSU 100, starting with the cursor on Main menu item 2)CONFIG, do the following:

1. Press the **Enter** or the number **2** key. This displays the first two Configuration submenu items with the cursor on 1)NETWORK (NI).
2. Use the **Scroll Down** key to place the cursor on 7)PORT CONFIG and press the **Enter** key.
3. Use the scroll keys to identify 1.1 DIALBU. Only the bottom line of the display changes.

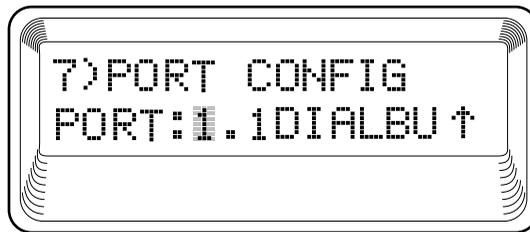


Figure 3-5
Port Configuration Submenu

To select Port Configuration, press the **Enter** key. This displays the first of 10 submenu items. They are:

1. **BACKUP: (ENABLE/DISABLE)** - This selects the global Enable and Disable for the DBU option card.
2. **BACKUP DELAY: (1 sec, 3 sec, 10 sec, 30 sec, 1 min, 5 min, 10 min)** - This selects the time allowed to elapse between the network going into alarm and the backup beginning.
3. **RESTORE DELAY: (1 sec, 3 sec, 10 sec, 30 sec, 1 min, 5 min, 10 min, never)** - This selects the time that elapses between the network going out of alarm and the backup call being taken down. If *never* is selected, the user must deactivate the backup mode.

4. The DBU can activate backup in two basic modes: Single End Failure or Both End Failure:

Single End Failure (Mode: ORIG / ANS.ANY) - In this mode, a network failure detected at either end of the circuit causes a backup to be activated. The DBU at the failed end initiates a call to the opposite end which goes into backup mode upon receiving a call. This is particularly useful for Fractional T1 applications where a failure at one end cannot be reported to the other end.



CAUTION

In this mode, the unit will go into backup mode on any received call, even a wrong number.

Both End Failure (Mode: ORIGINATE or ANSWER) - In this mode, both ends of the circuit must detect a network failure before backup is activated. One DBU is set to Originate and the other to Answer. Upon a network failure, only the Originate DBU initiates backup by dialing the Answer end. Once called, the Answer DBU goes into backup mode only if a network failure is detected. This is ideal for full T1 point-to-point applications where a failure at one end is reported to the other end (Yellow alarm). This eliminates the possibility of a wrong number initiating a backup.



NOTE

Only the DBU set to ORIGINATE activates a backup for network failure. The ANSWER DBU must also detect network failure to go into backup mode.

5. DS0 RATE: (56K/64K) - This selects the rate for the DS0 to be used on the backup network. If 64K/DS0 is desired for an ISDN backup, confirm that the dial up ISDN network is provisioned for 64K clear channel access.

6. NUMBER DS0: (1-24) - The number of DS0s that are backed up is entered by using the numeric keypad on the front of the TSU 100/600. Verify that the two above settings do not exceed available bandwidth. This can be done from Port Status -> Backup Rate. Verify displayed backup rate matches the available bandwidth on the dialup network.
7. WEEKEND BACKUP: (ENABLE/DISABLE) - If no backup is desired from midnight Friday to midnight Sunday, set this selection to DISABLE, otherwise to ENABLE.
8. ENABLE HR: (1-24) - The hour that the backup will be enabled can be entered from the numeric keyboard.
9. DISABLE HR: (1-24) - The hour that the backup will be disabled can be entered from the numeric keypad.
0. DCE RATE ALARM: (ENABLE/DISABLE) - When this alarm is enabled, the DBU will monitor the clock being received from the external DCE while not in backup. When the alarm is disabled, the clock will only be checked when CTS goes high during backup.



NOTE

For items 7, 8, and 9 to function properly, verify that the time and date in the TSU 100/600 are set correctly. Consult the TSU 100/600 user manual for instructions on setting date and time.

Map B of the TSU 100/600 is used as the backup map. The data ports to be backed up should be mapped in DS0 1 and in contiguous DS0s until the full bandwidth of the Dialup Network is allocated.



NOTE

For configuration of an external DCE see the section Configuring the External DCE in the chapter Installation.

3)FACTORY RESTORE, SUBMENU OF 3)UTIL

This selection is used to restore the factory default settings for all Dial Backup 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 3)FACT RESTORE, press the **Enter** key.

7)PORT UTILITY, SUBMENU OF 3)UTIL

The 7)PORT UTILITY submenu is used primarily 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 Figure 3-6 on the TSU 100, do the following:

1. Follow the standard operating procedure to access the 3)UTIL menu items.
2. With the cursor on 7)PORT UTILITY, press the **Enter** key. This displays the first available port.

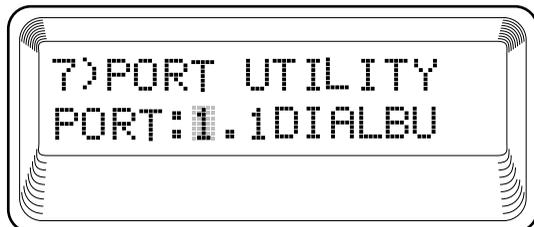


Figure 3-6
Port Utility Submenu

To display the port name and the firmware version installed as shown in Figure 3-7, 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 the **Enter** key.

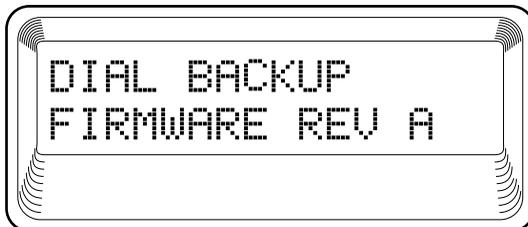


Figure 3-7

Display of Port Name and Firmware Version

Press the **Cancel** key to exit or to select another port.

2)RUN SELF TEST, SUBMENU OF 4)TEST

This menu item is used to execute both the internal test of the TSU 100/600 and the DBU. The results of the Self Test are shown on the TSU 100 display. For additional information on Self Test, see the chapter *Operation* of the TSU 100/600 user manuals.

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 SELFTEST, press the **Enter** key. This results in a changing TSU 100 display, showing 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 100 display.



NOTE

Operation

The execution of port tests disrupts normal data flow in the port being tested.

To display Figure 3-8 on the TSU 100, start with the cursor on 3)PORT TEST and press the **Enter** or number 3 key. This displays the available ports.

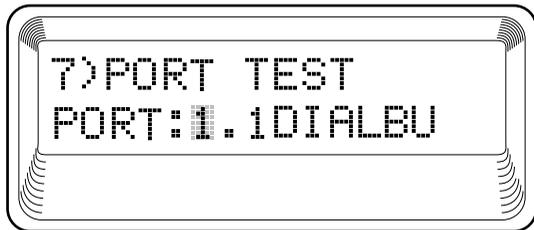


Figure 3-8
Port Test Submenu

DIALBU: The Nx interface offers the following test functions:

- 1) LOOPBK: (OFF/LOCAL) Initiates a loopback towards the DCE.
- 2) FORCE BCKUP: (OFF/ON) - This section is used to force a backup to occur even if the NI is not in alarm.
- 3) INTERFACE TST: (OFF/ON) - This test causes the DCE to dial its stored number. This is useful to determine if the external DCE is correctly configured.

- 4) DCE DATA /CK - Allows status of DCD and LCK to be monitored while the INTERFACE TST is on. If the dial up network is correctly configured, there should be an asterisk over DCD and LCK.
- 5) CHECK DCE RATE - Measures the clock rate provided by the external DCE to the Dial Backup option card. If this test is performed during an active backup, data will temporarily be disrupted.

Appendix A

Dial Backup System Messages

The Dial Backup system messages are the following:

- **RATE MISMATCH** - The dial backup configured rate does not match the rate provided by the DCE.
- **PLL Alarm** - The Phase Locked Loop (PLL) is unable to lock on the clock provided by the DCE interface.
- **Zeros Alarm** - All 0s data being sent to the DCE interface.
- **Data Path Alarm** - Error in propagation of data through the FIFOS.
- **DCE Rate Alarm** - The clock provided by the external DCE does not match the current configuration.

Product Support Information

Presales Inquiries and Applications Support

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

Applications Engineering (800) 615-1176
Sales (800) 827-0807

Post-Sale Support

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

Technical Support (800) 726-8663

Repair and Return

If ADTRAN Technical Support determines that a repair is needed, Technical Support will coordinate with the Return Material Authorization (RMA) department to issue an RMA number. For information regarding equipment currently in house or possible fees associated with repair, contact RMA directly at the following number:

RMA Department (205) 971-8722

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

ADTRAN, Inc.
RMA Department
901 Explorer Boulevard
P. O. Box 070020
Huntsville, Alabama 35807

RMA # _____

DBU (MULTIPOINT) QUICKSTART GUIDE

Follow the steps provided in this guide to install and test the DBU.

1. INSTALL DBU

Install the DBU module in slot 2 of the TSU 600 or slot 1 of the TSU 100/120.

2. VERIFY SOFTWARE REVISION

Verify the TSU 100/600 code revision:

- TSU 600 code must be Rev. G or higher.
- TSU 100 code must be Rev. P or higher.
- TSU 120 code must be Rev. E or higher.

If Code revision is incorrect, contact ADTRAN Customer Service at (800) 726-8663.

3. CONFIGURE THE TSU 100/600/120

Configure the TSU 100/600/120 for operation.

4. DETERMINE DESIRED OPERATING MODE

The DBU can activate backup in two basic modes: Single End Failure or Both End Failure.

Single End Failure (Mode: ORIG/ANS ANY)

In this mode, a network failure detected at either end of the circuit causes a backup to be activated. The DBU at the failed end initiates a call to the opposite end which goes into backup mode upon receiving a call. This is particularly useful for Fractional T1 applications where a failure at one end cannot be reported to the other end.



In this mode, the unit will go into backup mode on any received call, even a wrong number.

CAUTION

Both End Failure

(Mode ORIGINATE or ANSWER)

In this mode, both ends of the circuit must detect a network failure before backup is activated. One DBU is set to Originate and the other to Answer.

Upon a network failure, only the Originate DBU initiates backup by dialing the Answer end. Once called, the Answer DBU goes into backup mode only if a network failure is detected. This is ideal for full T1 point-to-point applications where a failure at one end is reported to the other end (Yellow alarm). This eliminates the possibility of a wrong number initiating a backup.

5. CONFIGURE DBU AND DCE

Single End Failure Configuration

DCE (Both Ends)	DBU (Both Ends)
DTR - Dial if on	BACKUP: ENABLE
DCD - Normal	DBU MODE: ORIG/ANS ANY
DSR - Off Idle + Test	Set number of DS0s to backup (1-24)
CTS - Follow RTS	Set rate per DS0 (56K or 64K)

Both End Failure Configuration

Set the external DCE V.35 interface to the following modes:

Originate Unit	Answer Unit
DTR - Dial if on	DTR - Answer if on
DCD - Normal	DCD - Normal
DSR - OFF idle + test	DSR - OFF idle + test
CTS - Follow RTS	CTS - Follow RTS

Set the DBU configuration

CONFIGURE => PORT CONFIG => X.1 DIALBU:

Originate Unit	Answer Unit
BACKUP: ENABLE	BACKUP: ENABLE
DBU MODE: ORIGINATE	DBU MODE: ANSWER
Set number of DS0s to backup (1-24)	Set number of DS0s to backup (1-24)
Set rate per DS0 (56K or 64K)	Set rate per DS0 (56K or 64K)

6. VERIFY BACKUP DATA RATE

Verify that the rate the DBU is configured for matches that of the external DCE for both the answer and the originate unit.

- The DBU configured rate is found under STATUS => PORT STATUS => 3)BACKUP RATE.
- The clock provided by the external DCE is measured by TEST => PORT TEST =>5)CHECK DCE RATE.



If these two numbers do not match, check the configuration of the DBU and the external DCE.

NOTE

7. CONFIGURE BACKUP MAP

Configure Map B of the TSU 100/600/120. The ports to be backed up are mapped in DS0 1, continuing for the number of DS0s to equal the bandwidth of the backup DCE.

8. TEST OPERATION

This test is used to verify the integrity of the backup line prior to use.

Single End Failure Mode

To test the backup, perform the following steps:

- Loop up the Nx56/64 at the far end unit by sending remote V.54 loopback from the Nx56/64 being backed up in the local end unit. (V.54 loopback cannot be sent over the backup link.)
- Turn on 511 pattern generation in the Nx56/64 in the local end unit and verify sync.
- In the local unit DBU, set TEST => PORT TEST => 2)FORCE BCKUP to ON. This causes a dial backup connection to be established.



Data on the T1 circuit is disrupted for the duration of this test.

- Verify that after the backup is established, the Nx56/64 in the local unit again has 511 pattern sync.
- In the local unit DBU, set TEST => PORT TEST => 2)FORCE BCKUP to OFF. This causes the dial backup connection to be disconnected.
- Turn off 511 pattern generation in the Nx56/64 in the local unit.
- Loop down the Nx56/64 in the far end unit by turning off V.54 Loopback from the Nx56/64 in the local unit.

Both End Failure Mode

To test the backup, perform the following steps:

- Follow steps (a) and (b), above, from the ORIGINATE or ANSWER unit.
- Disconnect the T1 interface cable, causing a network failure at both ends.
- Follow step (d), above.
- Reconnect the T1 interface cable. Verify that the CSU LEDs show OK.
- Follow step (f), above.
- Follow step (g), above.

9. PRODUCT SUPPORT INFORMATION

Presales Inquiries and Applications Support

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

Applications Engineering (800) 615-1176
Sales (800) 827-0807

Post-Sale Support

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

Technical Support (800) 726-8663

Repair and Return

If ADTRAN Technical Support determines that a repair is needed, Technical Support will coordinate with the Return Material Authorization (RMA) department to issue an RMA number. For information regarding equipment currently in house or possible fees associated with repair, contact RMA directly at the following number:

RMA Department (205) 971-8722

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

ADTRAN, Inc.
RMA Department
901 Explorer Boulevard
P.O. Box 070020
Huntsville, Alabama 35807

RMA # _____

NOTICE

The Dial Backup Option Module (p/n 1200.089L2) operates only in TSU's meeting the following requirements.

TSU Type	Minimum Software Revision for Multiport Backup
TSU 100	P
TSU 120	E
TSU 600	G
TSU 600L2	A
HSU 100	Not Supported
HSU 600	Not Supported

TSU Type	Hardware Requirements
TSU 100	If multiple data ports are being backed up, DS0 number 1 must be mapped to a second generation Nx56/64(p/n 1202.054L1) in the backup map.
TSU 120	No Special Requirements
TSU 600	Same as the TSU 100, and the DBU must be installed in slot 2.
TSU 600L2	Same as the TSU 100, and the DBU must be installed in slot 2.

For further assistance, please contact ADTRAN Technical Support at 1-800-726-8663.

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