

Chapter 4

Front Panel Option Selection

GENERAL

FT 100 configuration options, operating status, and diagnostics can be observed or changed using the front panel pushbuttons with the LCD. The unit can also be controlled by the control port described in Chapter 6, or by the LocalView terminal when installed in the LocalView shelf.

LCD MENUS

Three main menus provide:

- Port status displays
- Diagnostic options
- Configuration options

Each main menu is supported by submenus, items, and options. While most menu items allow selecting different options, some only display the current status of a signal or function. These provide status monitoring for such features as receive signal frame synchronization and alarm reporting.

Table 4-1 lists all menus.

Using the Pushbuttons to Select Options

Generally, pressing NO scrolls vertically down the columns in Table 4-1 and pressing YES advances horizontally across the columns. Pressing HOME returns to the submenu or main menu header.

If the pushbuttons are pressed and held, the FT 100 automatically scrolls through the menu at a rate of about 4 display advances per second. Options are selected by pressing the YES/NO pushbuttons in answer to prompts or questions. In some cases, option fields on the LCD blink. If this occurs and the displayed selection for the option should be changed, press NO to display another selection. If the displayed selection is the setting required, press YES to select it and advance to the next option field or submenu.

Table 4-1. Menu Options

MAIN MENU	SUBMENU	SUBMENU ITEM	OPTION	
M A I N 1	Port Status Display?	Line Status:	Mode / Line Code / Framing / Receive Status	
		Port xx Status	Mode / Interface / Data Rate	
M A I N 2	Diag- nostic Options	T1 Tests?	T1 Local Loopback?	YES / NO
			T1 Network Loopback?	YES / NO
			Remote CSU Loopback?	YES / NO
	DTE Port Tests?	Local Terminal Loopback?	YES / NO	
		Remote Terminal Loopback?	YES / NO	
		Remote Loopback?	YES / NO	
		Remote Loopback with Test Pattern?	YES / NO	
		Test Pattern Test?	YES / NO	
	Monitor DSO Display	Channel Data ## nnnnnnnn	channels 1-24	
	Performance History Display?	Error Free Seconds?	nn% (0-100)	
		Error Free Events:	nn (0-65565)	
24 Hours Total?		ES / BES / SES / UAS / LOFC / LCVS (1-900 each)		
15 Minute Interval Data?				

Table 4-1. Menu Options (Continued)

MAIN MENU	SUBMENU	SUBMENU ITEM	OPTION
M A I N 3	T1 Line Options?	Framing	SF / ESF
		Line Code	AMI / B8ZS
		Bit Stuffing	Enable Disable
		ESF (PRM) Transmission	Enable Disable
		ESF (AT&T) Mode	Enable Disable
		Timing	Loop / Internal / Port 1 / Port 2 / External (Port 2)
		Line LB	Enable / Disable
		Payload LB	Enable / Disable
		Idle Code	FF / 7F
		Yellow Alarm	Enable / Disable
		CSU/DSU	CSU: 0, -7.5dB, -15dB DSX: 0-133ft, 133-266ft, 266-399ft, 399-533ft, 533-655ft
		Select Port #	1/2
		DTE Port Options? (V.35, RS530, or RS232 interface card)	Select # of Time Slots
	Select Rate Multiple		56K bps 64K bps
	Select DS0 Grouping		Alternating Contiguous
	Select Starting Time Slot		1-24
	Transmit Clock Source		Internal External
	Receive Clock Polarity		Normal Inverted
	CTS Mode		Normal/Forced On

Table 4-1. Menu Options (Continued)

MAIN MENU	SUBMENU	SUBMENU ITEM	OPTION	
M A I N 3 C O N T	Configu- ration Options? Cont.	DTE Port Options? Cont. (V.35, RS530, or RS232 interface card)	TM Mode	Normal/Forced Off
			LL Mode	Enable / Disable
			RL Mode	Enable / Disable
			Remotely Activated Loopback	Enable Disable
		DTE Port Options? Cont. (DS-1 interface card)	Select # of Time Slots	0 - 24
			Select Rate Multiple	56K bps / 64K bps
			Select DS0 Grouping	Alternating Contiguous
			Select DS0 Starting	1 - 24
			Select DS-1 Line Length	0-133, / 133-266 / 266-399 / 399-533 / 533-655 feet
			Signaling	Enable / Disable
	Yellow Alarm		Enable / Disable	
	T1 Framing		SF / ESF	
	Line Code		AMI / B8ZS	
	Remotely Activated Loopback	Enable Disable		
	Control Port Options?	Mode	Terminal Computer LocalView	
			Baud Rate	300 600 1200 2400 4800 9600 19200
		Local Echo	On / Off	
		Status	Lock / Unlock	
		Set Time?	Set time	
		Set Date?	Set data	

Powerup Displays

On powerup, the FT 100 displays a sign-on message for 2 seconds which includes the software version number:

FT 100
VERSION x.xx

During this time, the unit performs a self diagnostic test. If the test fails, a message appears describing the malfunction. If the unit passes the test, the product name displays:

FT 100
T1 ESF CSU/DSU

PUSHBUTTON ACTION:

YES- None

NO- Advances to PORT STATUS DISPLAY?

HOME- Redisplays software version message.

PORT STATUS DISPLAY MAIN MENU 1

Port Status
Display?

This menu contains display-only messages for monitoring the status of the line and DTE ports.

PUSHBUTTON ACTION:

YES- Advances to LINE STATUS: display

NO- Advances to DIAGNOSTIC OPTIONS? menu

HOME- Returns to the FT 100 T1 CSU/DSU main menu header

Line Status

Line Status:

Mode LC Fram Rec Status

The line status display indicates the present status of the FT 100 / T1 network interface. The display includes the four status fields shown in the following table.

Status Field	Mode	Line Code	Framing	Receive Status
Possible Status	NORM	AMI	SF	SYNC
	LLB	B8Z	Fe	LOS
	NLB			AIS
	RLU			YEL
	PLB			
RCLB				

The Mode field displays the present operating mode of the T1 network interface. Mode status indications are:

- NORM Normal operation
- LLB Local loopback
- NLB Network loopback
- RLU Remote loop up
- PLB Payload loopback
- RCLB Remote CSU loopback

The Line Code field displays the T1 line code option selected during configuration. To change the selection, refer to CONFIGURATION OPTIONS MAIN MENU 3 later in this chapter. Indications are:

- AMI Alternate mark inversion
- B8Z Binary 8-zero substitution

The Framing field displays the T1 framing option selected during configuration. Refer to CONFIGURATION OPTIONS MAIN MENU 3 later in this chapter. The framing status indications are:

- SF Superframe (D4) framing
- Fe Extended superframe (ESF) framing

The Receive Status field displays the status of the FT 100 T1 network receiver. The receive status indications are:

- SYNC Frame synchronization is established.
- LOS Loss of synchronization
- AIS Alarm indication signal (unframed all ones) is being received.
- YEL Yellow alarm signal is being received.

PUSHBUTTON ACTION:

YES- None

NO- Advances to Port 1 Status:

HOME- Returns to PORT STATUS DISPLAY? menu

DTE Status

Port xx Status:

Mode Interface Data Rate

This display indicates the selected DTE port status. The three fields of the display are:

Status Field	Mode	Interface	Data Rate
Possible Status	NORM	V.35	56K - 1536K
	LTL	RS530	
	RTL	DS-1	
	RL	RS232	
	RLTP		
	RAL		
	TP		

The Mode field displays the present operating mode of all FT 100 or FT 100EX DTE ports:

- NORM Normal operation

- LTL Local terminal loopback test
- RTL Remote terminal loopback test
- RL Remote loopback test
- RLTP Remote loopback w/test pattern
- RAL Remotely activated loopback test
- TP Test pattern test

The Interface field displays the DTE interface configuration that was selected during hardware configuration for that particular port (Chapter 3).

The Data Rate field displays the selected data bit rate for that particular DTE port. Rate values can range from 56 kbps to 1,536 kbps. Refer to the CONFIGURATION OPTIONS MAIN MENU 3 description in this chapter to change the data rate.

PUSHBUTTON ACTION:

YES- None

NO- Advances to PORT 2 STATUS

HOME- Returns to PORT STATUS DISPLAY? menu

DIAGNOSTIC OPTIONS MAIN MENU 2

Diagnostic
Options?

This menu accesses the diagnostic tests, which are divided into four submenus:

- T1 tests
- DTE port tests
- DS0 monitor
- Performance history display

PUSHBUTTON ACTION:

YES- Advances to T1 TESTS? submenu

NO- Advances to CONFIGURATION OPTIONS? menu

HOME- Returns to the FT 100 T1 CSU/DSU main menu header

T1 TESTS

T1 Tests?

The T1 line test modes include

- T1 Local Loopback
- T1 Network Loopback
- Remote CSU Loopback.

PUSHBUTTON ACTION:

YES- Advances to T1 LOCAL LOOPBACK? test mode

NO- Advances to DTE PORT TESTS? submenu

HOME- Returns to DIAGNOSTICS OPTIONS? menu

T1 Local Loopback

T1 Local Loopback?

Figure 4-1 shows the unit in Local Loopback. This test loops the network T1 transmitter output to the receiver input at the network interface. Since the entire T1 data payload is looped back, the DTE port is also looped back. This allows the local DTE to test the local unit. The looped back T1 signal is also transmitted to the network to keep the network active.

All TM LEDs light to indicate a T1 test in progress. Other LEDs function normally.

PUSHBUTTON ACTION:

YES- Enters Local Loopback; advances to T1 LOCAL IN PROGRESS - END?

NO- Advances to next test mode T1 NETWORK LOOPBACK?

HOME- Returns to T1 TESTS? submenu

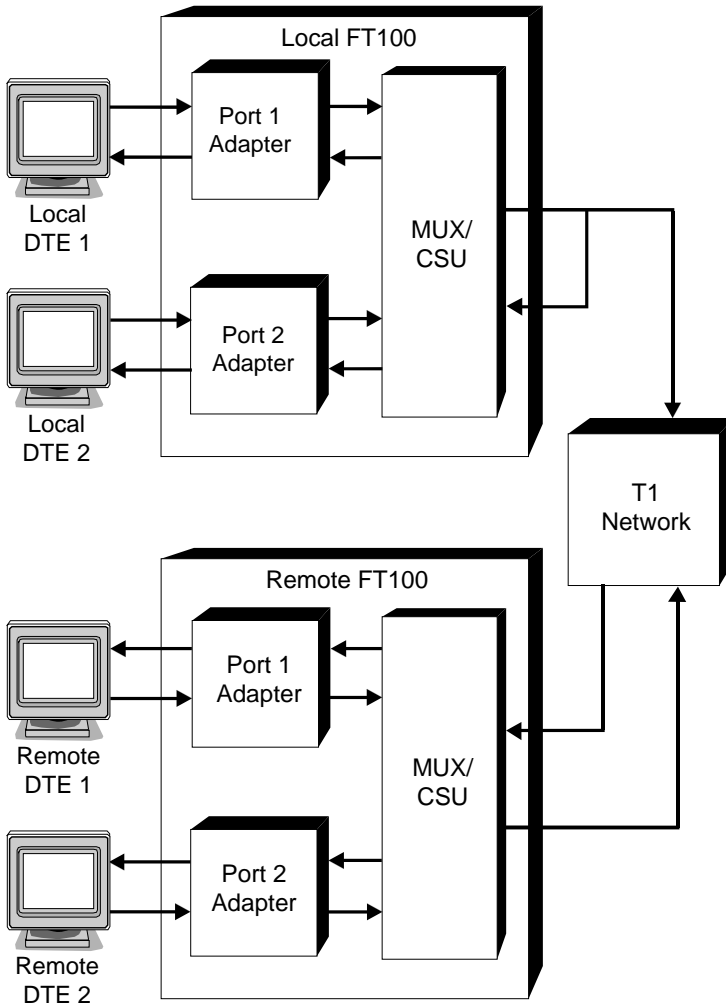


Figure 4-1
T1 Local Loopback

T1 Network Loopback

T1 Network
Loopback?

Figure 4-2 shows the unit in Network Loopback. The T1 network received signal is looped back to the network transmitter and also passed to the DTE port. The DTE port transmit signal is blocked. This allows testing the T1 network from a remote FT 100, a remote CSU, or from the telephone company central office.

All TM LEDs light to indicate a T1 test in progress. Other LEDs function normally.

PUSHBUTTON ACTION:

YES- Enters network loopback; advances to T1 NETWORK LOOP IN PROGRESS - END?

NO- Advances to Remote CSU Loopback?

HOME- Returns to T1 TESTS? submenu

Remote CSU Loopback

Remote CSU
Loopback?

Figure 4-3 shows the unit in Remote CSU Loopback. When initiated, the local FT 100 transmits a loop-up code causing the remote unit to enter Remotely Activated Network Loopback. The loop-up code is transmitted until the remote unit enters loopback. The local unit then resumes normal operation. The remote unit enters loopback after the loop-up code has been received for at least 4 seconds.

The FT 100 responds to the standard CSU inband loop codes and out-of-band ESF loop codes received on the FDL. When the loop-up code is detected, the unit initiates a T1 network loopback. The loopback is terminated when the loop-down code is received.

When Remote CSU Loopback is terminated, a loop-down code is transmitted causing the remote unit to return to normal operation.

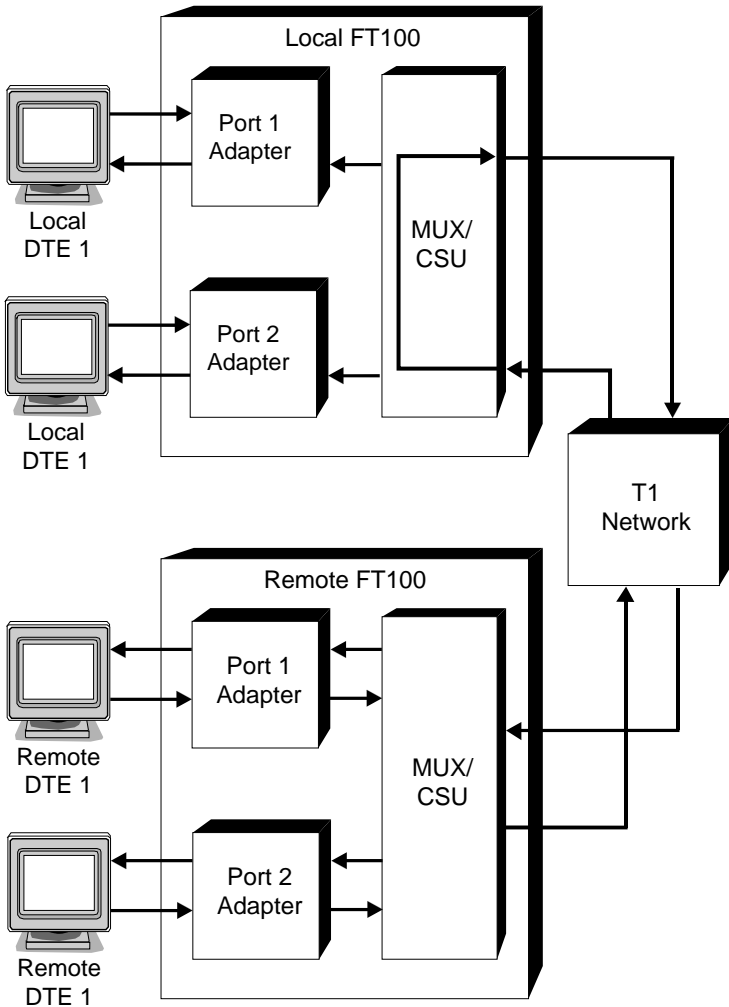


Figure 4-2
T1 Network Loopback

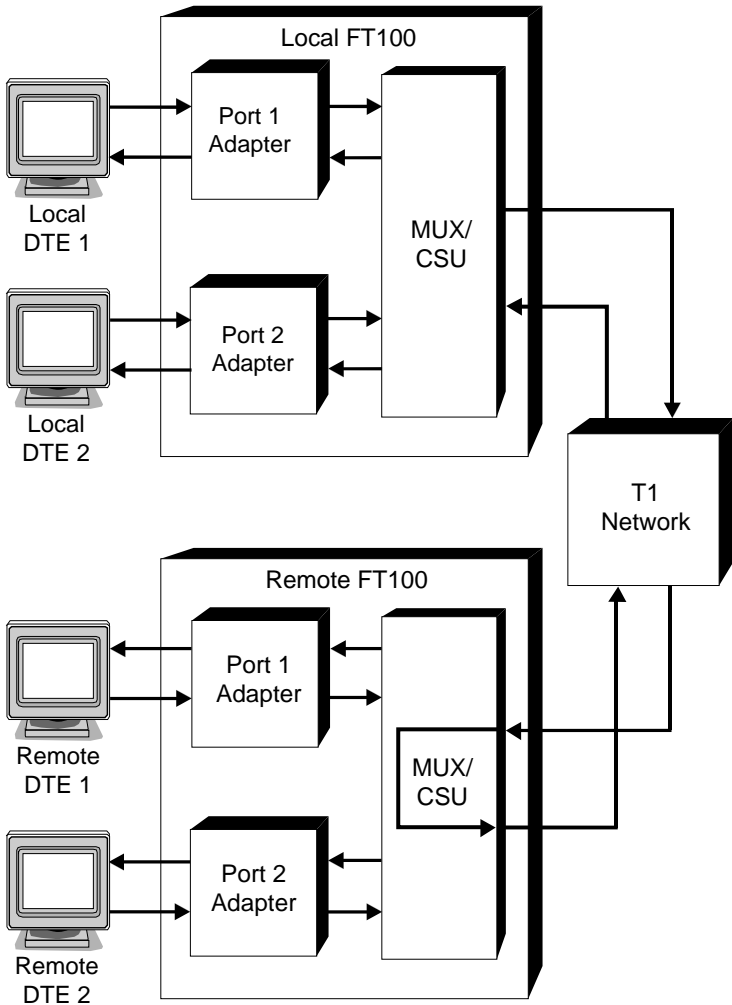


Figure 4-3
Remote CSU Loopback

The loop-up and loop-down codes are compatible with AT&T and ANSI inband loop codes. Therefore, the remote unit can be another FT 100 or a standard CSU device.

Loop-up set code -- repeating bit pattern 10000. Loop-down reset code -
- repeating bit pattern 100.

All TM LEDs light to indicate a T1 test is in progress. Other LEDs function normally.

PUSHBUTTON ACTION:

YES- Initiates Remote CSU loopback; advances to Remote CSU
Loop in progress - End?

NO/

HOME- Returns to T1 Test? submenu

DTE PORT TESTS

DTE Port Tests?

PUSHBUTTON ACTION:

YES- Advances to the first test mode PORT 1 TESTS?

NO- Advances to MONITOR DS0 DISPLAY? submenu

HOME- Returns to DIAGNOSTIC OPTIONS? menu

Port xx Tests?

This submenu display accesses these DTE port test modes:

- Local Terminal Loopback
- Test Pattern
- Remote Loopback
- Remote Terminal Loopback

PUSHBUTTON ACTION:

YES- Advances to the first test mode LOCAL TERMINAL
LOOPBACK?

- NO- Advances to the next port number
- HOME- Returns to DTE PORT TEST? menu

DTE Port Local Terminal Loopback

Port 1 Loc Term
Loopback?

Figure 4-4 shows DTE port 1 in Local Terminal Loopback. Transmit data from the DTE is looped back to the DTE received data line. This allows testing the FT 100 interface adapter card and the cabling to the DTE port from the DTE.

The TM LED lights to indicate a test in progress. Other LEDs function normally.

PUSHBUTTON ACTION:

- YES- Enters local terminal loopback; advances to LOC TERM IN PROGRESS-END
- NO- Advances to REM TERM LOOPBACK? test mode
- HOME- Returns to DTE PORT TESTS? submenu

DTE Port Remote Terminal Loopback

Port 1 Rem Term
Loopback?

Figure 4-5 shows the DTE port in Remote Terminal Loopback. Received data from the remote DTE is looped back to the remote DTE. The received data is also passed to the local DTE.

The TM LED lights to indicate a test in progress. Other LEDs function normally.

PUSHBUTTON ACTION:

- YES- Enters remote terminal loopback; advances to REM TERM LOOP IN PROGRESS-END?
- NO- Advances to REMOTE LOOPBACK? test mode
- HOME- Returns to DTE PORT TESTS? submenu

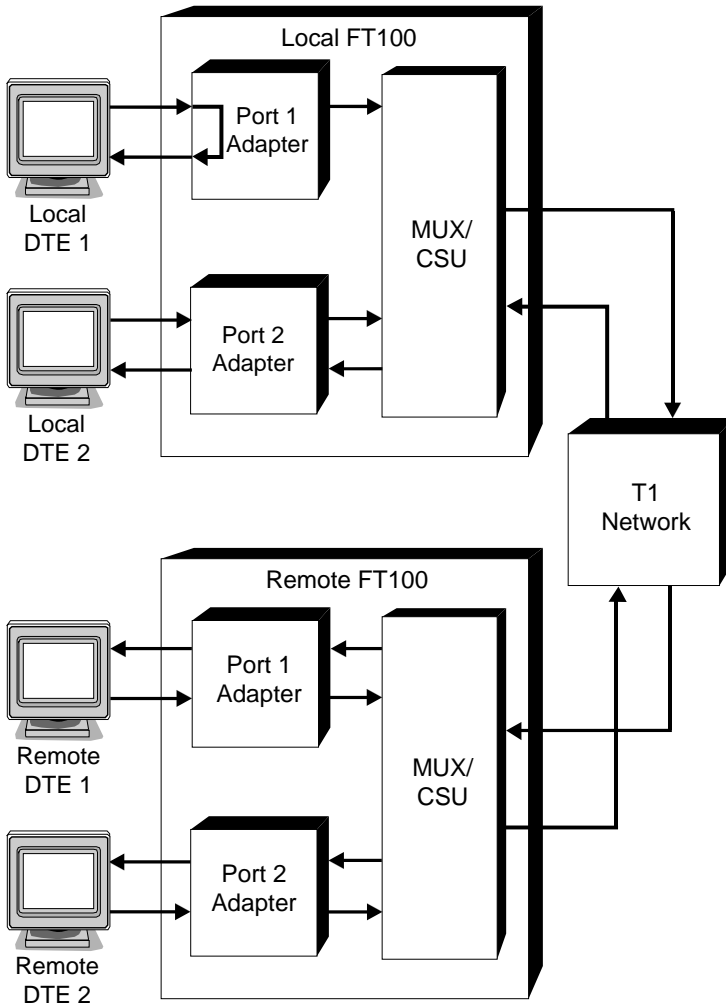


Figure 4-4
Remote CSU Loopback

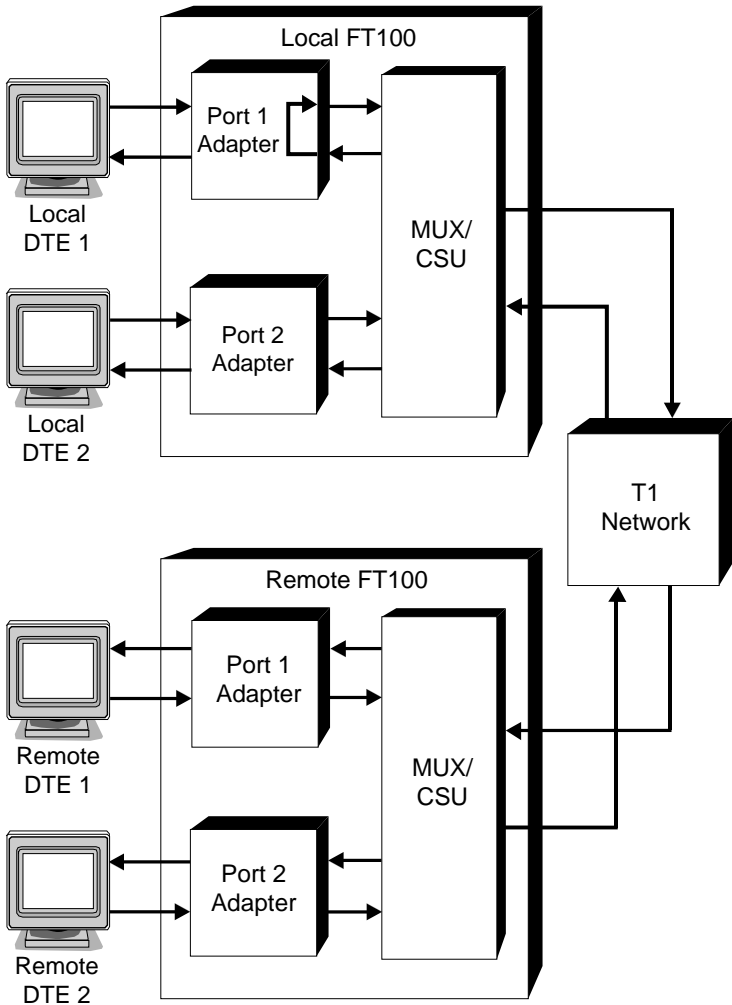


Figure 4-5
Port 1 Remote Terminal Loopback

DTE Port Remote Loopback

Port 1 Remote
Loopback

Figure 4-6 shows DTE port 1 in Remote Loopback. The local FT 100 puts the DTE port on the remote FT 100 in remote terminal loopback by sending a (5 bit) repeating pattern (11110) transmitted inband for at least 5 seconds.

The loop pattern continues until the local FT 100 recognizes that the remote FT 100 is looped. As an option, the local DTE signal may be replaced by an internally generated test pattern.

The test pattern is transmitted to the remote FT 100 and monitored by the local FT 100 for errors indicated by an LCD message.

The TM LED lights to indicate a test in progress. On the remote FT 100, the TM LED blinks to indicate a remotely activated test in progress. Other LEDs function normally.

PUSHBUTTON ACTION:

- YES- Enters remote loopback; advances to WITH TEST PATTERN?
- NO- Advances to TEST PAT TEST? mode
- HOME- Returns to DTE PORT TESTS? submenu

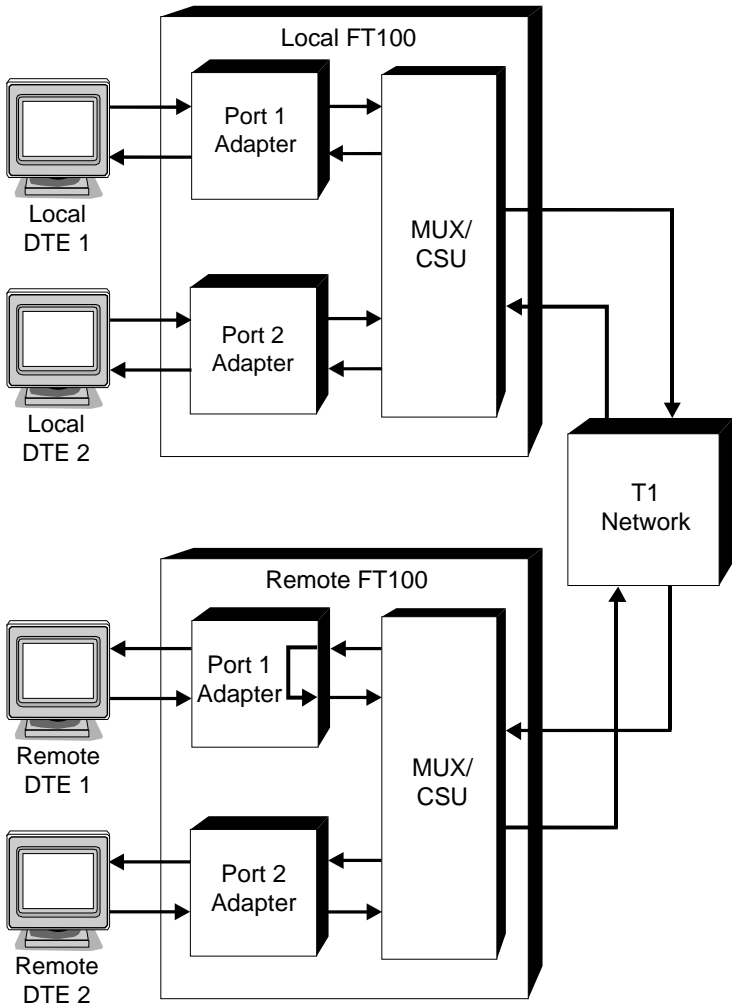


Figure 4-6
Port 1 Remote Loopback

With Test
Pattern?

If a test pattern is selected with Remote Loopback, the local unit transmits a 511 test pattern and monitors the receive data signal for this test pattern. Error information is recorded and can be displayed (see Test Pattern Test).

PUSHBUTTON ACTION:

- YES- Sends a loop-up pattern to remote DSU with test pattern and advances to ATTEMPTING TO LOOP REMOTE DSU display
- NO- Sends loop-up pattern to remote DSU without test pattern and advances to ATTEMPTING TO LOOP REMOTE DSU display
- HOME- Returns to DTE PORT TESTS? submenu

Attempting to
Loop Remote DSU

The local FT 100 is sending a loop pattern and waiting for an indication that the remote unit has entered loopback mode.

If the local unit does not receive the indication, it sends the loop-up code indefinitely until commanded otherwise.

A message appears on the LCD when the remote unit responds successfully followed by the IN PROGRESS-END? display.

PUSHBUTTON ACTION:

- YES- None
- NO/
- HOME- Sends loopdown pattern and returns to test request display

Port 1 (xxx)
In Progress - End?

The control port is in a test mode where *xxx* is either "Rem w /TP" or "Remote." If Remote Loopback with a Test Pattern is selected, the local unit is also sending and monitoring a 511 test pattern.

PUSHBUTTON ACTION:

- YES- Sends loopdown pattern and returns to test request display
- NO- Advances to BIT ERROR display
- HOME- Returns to DTE PORT TESTS? submenu

Looping Down
Remote DSU

The local unit is sending a sequence requesting the remote unit to leave the loopback mode.

The loop-down code is a 5 bit repeating pattern (11100).

PUSHBUTTON ACTION:

- YES/NO/
- HOME- Returns to DTE PORT TESTS? submenu

If the unit has been put into a loopback mode by a remote unit, this display appears:

DTE Remotely
Looped up - End?

PUSHBUTTON ACTION:

- YES- Takes the unit out of loopback mode, but if the remote unit continues to send the loop-up pattern, the unit returns to loopback mode after a few seconds
- NO- None
- HOME- Returns to DTE PORT TESTS? submenu

DTE Port Test Pattern

Test Pattern
Test?

Figure 4-7 shows the DTE port in the Test Pattern Test. DTE transmitted data is replaced by an internally generated 511 test pattern and sent to the remote FT 100. Also, local receive data is monitored for the same test pattern. An LCD message indicates detected test pattern errors.

The TM LED lights to indicate a test mode in progress. Other LEDs function normally.

PUSHBUTTON ACTION:

YES- Enters test pattern test; advances to TEST PATTERN IN PROGRESS - END?

NO/

HOME- Returns to DTE PORT TESTS? submenu

Test In Progress

XXX
In Progress-End?

This display indicates a test is in progress. XXX represents the particular test mode.

PUSHBUTTON ACTION:

YES- Terminates the test

NO- Advances to next test menu

HOME- Returns to top of the present test menu

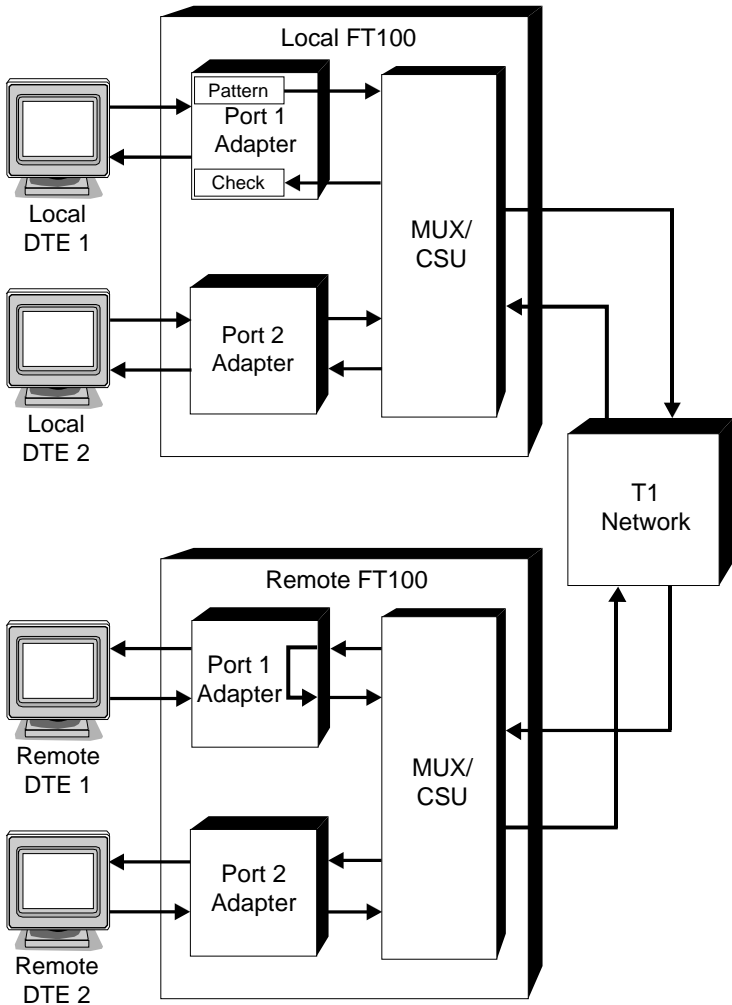


Figure 4-7
Port 1 Test Pattern Test

Bit Errors Display

Port 1 Test Pat
Bit Errors: *nnnnnn*

When a test includes a test pattern (RLTP or TP), this display shows the number of errored bits received since the test was entered or restarted.

PUSHBUTTON ACTION:

YES- No action

NO- Advances to average BER display

HOME- Returns to the top of the present test menu

Average Bit Error Rate Display

Port 1 Test Pat
Avg. BER: *n.nE-nn*

This display shows the average number of errored bits received since the test was entered or restarted. The value appears in exponential notation.

Avg Ber = # of bit errors
total bits received

PUSHBUTTON ACTION:

YES- No action

NO- Advances to the elapsed seconds display

HOME- Returns to the top of the present test menu

Elapsed Seconds Display

Port 1 Test Pat
Elapsed Sec.: *nnnn*

This display shows the number of seconds that have elapsed since the test was entered or restarted.

PUSHBUTTON ACTION:

- YES- No action
- NO- Advances to RESTART TEST?
- HOME- Returns to the top of the present test menu

Restart Test Display

Port 1 Test Pat
Restart Test?

The user can reset the bit error count, average BER, and elapsed seconds for the test pattern tests if desired.

PUSHBUTTON ACTION:

- YES- Restarts the error counters and returns to the BIT ERRORS display
- NO/
- HOME- Returns to the top of the present test menu

SELF TEST

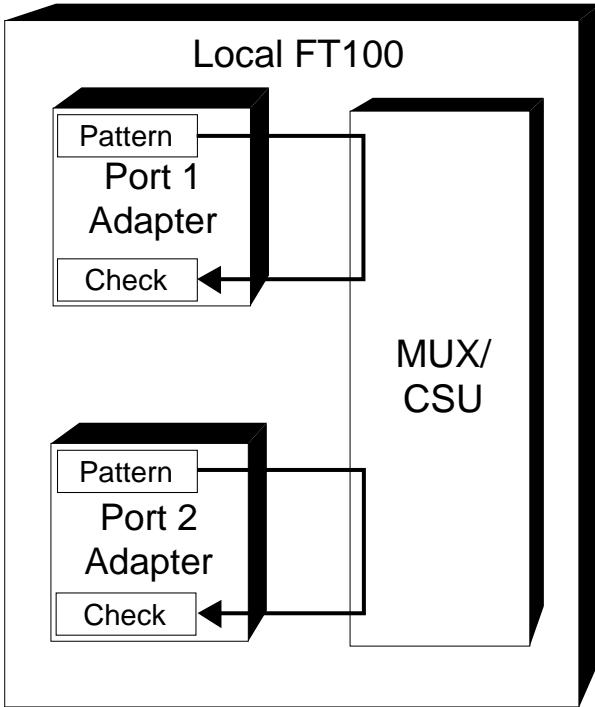
To execute a self test, enter the T1 LOCAL LOOPBACK MODE, then the DTE TEST PATTERN MODE as described earlier in this section. Figure 4-8 shows the FT 100 in self test.



Note

All ports may be put into the DTE TEST PATTERN MODE simultaneously.

To terminate the self test, press the HOME pushbutton twice.



*Figure 4-8
Self Test*

DS0 MONITOR

Monitor DS0
Display?

The user can monitor activity on any selected DS0 data channel on the T1 network receive signal. Data displays on the LCD in an 8-bit field with the least significant bit to the right.

Use the YES/NO pushbuttons to select the DS0 channel number as described following the display diagram below.

PUSHBUTTON ACTION:

- YES- Enters DS0 monitor display
- NO- Advances to the PERFORMANCE HISTORY DISPLAY? submenu
- HOME- Returns to DIAGNOSTIC OPTIONS? menu

Channel Data
nnnnnnnn

PUSHBUTTON ACTION:

- YES- Decrements the displayed channel number # # - # # = 1 to 24
- NO- Increments the displayed channel number # #
- HOME- Returns to the MONITOR DS0 DISPLAY? submenu

PERFORMANCE HISTORY

Performance
History Display?

The FT 100 continuously monitors the network received signal for various error conditions. This information is accumulated, it is stored in nonvolatile memory, and it can be accessed and displayed on the LCD as well as via the external control port on the controlling DTE monitor. Refer to Chapter 6 for a description of performance history access by the control port.

The Performance History submenu first accesses these two error events:

- % Error free seconds
- Error count

PUSHBUTTON ACTION:

- YES- Advances to ERROR FREE SECS: display
- NO/
- HOME- Returns to DIAGNOSTIC OPTIONS? menu

% Error Free Seconds

Error Free Secs:
nn %

The percentage of error free seconds for the past 24 hours is displayed.

It is defined as

$$nn = (\# \text{ of error free seconds}) / (\# \text{ of total seconds}) \times 100$$

PUSHBUTTON ACTION:

YES- None

NO- Advances to the ERROR COUNT DISPLAY?

HOME- Returns to PERFORMANCE HISTORY DISPLAY?
submenu

Error Events

Error Events:
nnn

This display indicates the total error event count *nnn* since the last time the count was reset.

If ESF framing is selected, an error event is either a CRC error or an Out of Frame Error (OOF).

If SF framing is selected, an error event is either a bipolar violation (BPV) or an OOF error.

PUSHBUTTON ACTION:

YES- None

NO- Advances to the CURRENT INTERVAL DISPLAY?

HOME- Returns to PERFORMANCE HISTORY DISPLAY?
submenu

Timed Error Data

Performance history is accumulated and stored in intervals of 15 minutes each for a maximum of 24 hours (96 intervals).

24 Hour Totals

15 Min Interval
Data?

These menus access displays recording error totals within

- the last 24 hours
- the current 15 minute interval
- or any 15 minute interval during the past 24 hour period.

The following error count displays may be accessed:

Interval ES
nnn

Interval BES
nnn

Interval SES
nnn

Interval UAS
nnn

Interval LOFC
nnn

Interval LCVS
nnn

The first column distinguishes the time option menu for that data. (The first column of each of the Current Interval displays includes the current interval second, 1 to 900.)

The second column records the total error count *nnn* per the specific type of error data:

ES Errored seconds
BES Bursty errored seconds
SES Severely error seconds

UAS Unavailable seconds
LOFC Loss of frame count
LCVS Line code violation seconds

15 Min Interval
Data?

Interval # # ?

The time menu prompt also accesses an prompt which allows the user to indicate which 15 minute interval (01-96) in the last 24 hours should be displayed.

PUSHBUTTON ACTION:

- YES- At each of the "menu" prompts (*current, 24 hours, or any 15 minutes*), YES advances to the first error count display within the "menu." Within a time option menu, YES advances to the same error data type in the next interval. For example, if BES of interval 2 is currently displayed, pushing YES will advance to BES of interval 3.
- NO- At "menu" prompts, NO scrolls through the time option "menus;" within a time option "menu," NO advances through the six error count displays.
- HOME- Returns to PERFORMANCE HISTORY DISPLAY? submenu

CONFIGURATION OPTIONS MAIN MENU 3

Configuration
Options?

This menu allows displaying and changing how the unit is configured to operate.

The four submenus are:

- T1 line options
- DTE port options
- Control port options
- Set time and date

PUSHBUTTON ACTION:

YES- Advances to T1 LINE OPTIONS? submenu

NO/

HOME- Returns to the FT 100 T1 CSU/DSU main menu header

T1 LINE OPTIONS

T1 Line
Options?

This submenu allows viewing and changing the FT 100 / T1 line operating characteristics.

Options accessed by this submenu include:

- T1 framing
- T1 line code
- ESF PRM transmission
- ESF reporting per 54016
- Timing
- Line loopback
- Payload loopback
- Idle code

PUSHBUTTON ACTION:

YES- Advance to T1 framing option display: T1 FRAMING = SF (ESF) CHANGE IT?

NO- Advances to DTE PORT OPTIONS? submenu

HOME- Returns to CONFIGURATION OPTIONS? menu

T1 Framing

T1 Framing = ESF
Change It?

The T1 network signal framing mode can be set to either Superframe (SF or D4) or Extended Superframe (ESF) mode.

PUSHBUTTON ACTION:

- YES- Toggles between ESF and SF(D4)
- NO- Saves option selected
- HOME- Returns to T1 LINE OPTIONS? submenu

Line Code

Line Code = AMI
Change It?

Select one of two options for the network T1 line code:

- AMI Alternate mark inversion
- B8ZS Binary 8-zero substitution: With B8ZS, a bipolar violation sequence replaces strings of 8 zeros in the transmit data and insures a minimum ones density to the network.

PUSHBUTTON ACTION:

- YES- Toggles between AMI and B8ZS
- NO- Saves option selected and advances to PRM option
- HOME- Returns to T1 LINE OPTIONS? submenu

Bit Stuffing

Bit Stuffing = EN
Change It?

Bit stuffing for the network T1 line can be DISABLED or ENABLED when using the AMI line code option. This option does not apply to the B8ZS line code option.

PUSHBUTTON ACTION:

- YES- Toggles between DISABLE and ENABLE
- NO- Saves option selected and advances to advances to PRM option
- HOME- Returns to T1 LINE OPTIONS submenu

ANSI Performance History

ESF (PRM) = OFF
Change It?

ESF FRAMING OPTION ONLY

Enable or disable transmission of the performance report message (PRM) defined by ANSI T1.403. When enabled, the PRM is transmitted toward the network once per second on the facility data link (FDL). The PRM contains error performance data accumulated during the previous 4 seconds.

PUSHBUTTON ACTION:

- YES- Toggles between on and off
- NO- Saves option selected and advances to ESF AT&T mode option
- HOME- Returns to T1 LINE OPTIONS? submenu

AT&T Performance History

ESF (AT&T) = OFF
Change It?

ESF FRAMING OPTION ONLY

Enable or disable ESF error reporting as defined by AT&T publication 54016. ESF error reporting allows central office equipment to request the error performance history from the unit via the FDL. When the request is received, the unit transmits the 24-hour performance history to the central office also via the FDL.

PUSHBUTTON ACTION:

- YES- Toggles between on and off
- NO- Saves option selected and advances to TIMING option

HOME- Returns to T1 LINE OPTIONS? submenu

Timing

Timing = LOOP
Change It?

This option selects the timing mode. Selections are:

- | | |
|-------------------|--|
| Loop | The unit synchronizes all timing and clocks to the network T1 receive signal. In this mode, the unit supplies transmit and receive clocks to the DTE port. This is the most common selection when the unit is connected to a telephone company T1 service. |
| Internal | The unit synchronizes all timing and clocks to an internally generated timing source. In this mode, the unit supplies transmit and receive clocks to the DTE port. |
| Port 1 or 2 | The unit synchronizes all timing and clocks to the selected DTE's external transmit clock. |
| External (Port 2) | The unit synchronizes all timing and clocks to a 1.544 MHz external clock provided as an input to port 2. |

Either internal or DTE port timing can be useful in applications where the unit is directly connected to another FT 100 or T1 multiplexer, such as in local area networks and central office bypass connections. In these applications, only one unit should be selected for internal or DTE port timing while the other is selected for loop timing.

PUSHBUTTON ACTION:

- | | |
|-------|--|
| YES- | Scrolls timing options |
| NO- | Saves option selected and advances to LINE LB option |
| HOME- | Returns to T1 LINE O PTIONS? submenu |

Line Loopback

Line LB = DIS
Change It?

If Line Loopback is enabled, the unit enters into a network loopback when a Line Loopback code is detected on the network. This signal allows easier fault diagnosis by the T1 service provider. When this option is disabled, the unit ignores an incoming Line Loopback code.

PUSHBUTTON ACTION:

- YES- Toggles between enabled and disabled
- NO- Saves selected option and advances to PAYLOAD LB option
- HOME- Returns to T1 LINE OPTIONS? submenu

Payload Loopback

Payload LB = DIS
Change It?

This option is similar to Line Loopback except that the contents of the DS0s are reframed before being transmitted back out on the network.

PUSHBUTTON ACTION:

- YES- Toggles between enabled and disabled
- NO- Saves selected options and advances to IDLE CODE option
- HOME- Returns to T1 LINE OPTIONS? submenu

Idle Code

Idle Code = FF
Change It?

Select the FF pattern for all ones or the 7F pattern to be inserted into unused DS0s.

PUSHBUTTON ACTION:

- YES- Toggles between idle code FF and 7F
- NO- Saves selected option and advances to Yellow Alarm

HOME- Returns to T1 LINE OPTIONS? submenu

Yellow Alarm

Yellow Alm = DIS
Change It?

This option setting determines whether or not Yellow Alarms will be sent out on the network.

PUSHBUTTON ACTION:

YES- Toggles between enabled and disabled

NO/

HOME - Returns to T1 LINE OPTIONS? submenu

NETWORK LINE INTERFACE

<Interface>, <LBO>
Change It?

This option setting determines the T1 network line interface which may be either CSU or DSX-1.

When the CSU T1 network line interface is selected, the amount of line build-out (LBO) must also be selected. LBO is an artificial line circuit that provides line attenuation. The amount of LBO depends on the distance to the last T1 line repeater. The telephone company providing the service determines the amount of LBO required. The following ranges are available:

- 0 dB
- -7.5 dB
- -15dB

When the DSX-1 T1 network interface is selected, the line build-up is determined according to the line length. The following ranges are available:

- 0-133 ft
- 133-266 ft
- 266-399 ft
- 399-533 ft
- 533-655 ft

DTE PORT OPTIONS

V.35, RS-530, or RS-232 Interface Card

DTE Port
Options?

This submenu allows viewing and changing the DTE ports operating characteristics. Options accessed by this submenu include

- Port data rate
- DS0 time slot assignment
- Transmit clock source
- Transmit clock polarity
- Receive clock polarity
- Interface control signal options

PUSHBUTTON ACTION:

- YES- Advances to the port data rate display
NO- Advances to CONTROL PORT OPTIONS? submenu
HOME- Returns to CONFIGURATION OPTIONS? menu



Note

The following options are displayed in blinking fields on the LCD. The option displayed is the present option selected. Pressing NO scrolls through the selections. When the desired selection is displayed, press YES.

Port Data Rate

Port xx <type>
nn x rr = <rate>

The xx blinks to prompt the user to either modify Port xx settings or advance to the next port.

PUSHBUTTON ACTION:

- YES- Select Port xx and advances to data rate selection for this port
NO- Advances to next port
HOME- Returns to DTE PORT OPTIONS? submenu|

Select the data rate from 56 kbps to 1.536 Mbps with the following simple multiplication:

$$nn \quad (\text{number of DS0 time slots})$$
$$x \quad rr \quad (\text{rate multiple: 56 or 64 kbps})$$
$$= \text{data rate}$$

The *nn* blinks to prompt the user to confirm the current number of DS0 time slots or to increment the number.

PUSHBUTTON ACTION:

- YES- Selects the number of DS0 time slots *nn* and blinks the rate multiple *rr*
- NO- Increments the number of DS0 time slots *nn*
- HOME- Returns to Port Number Selection

The display remains but the pushbutton action will now act differently so that the rate multiple can be changed:

Port *xx* <*type*>
nn x *rr* <*rate*>

PUSHBUTTON ACTION:

- YES- Selects the rate multiple *rr* and advances to DS0 time slot assignment display
- NO- Toggles rate multiple between 56 and 64 kbps
- HOME- Returns to Port Number Selection

DS0 Grouping

Port *xx* <*type*>
xxxx CH: *ff* to *ll*

This display allows assigning DS0 time slots to the selected port.

- xxxx*= alternating or contiguous DS0 channels
- ff*= first DS0 channel number
- ll*= last DS0 channel used by the selected port -- automatically determined by *ff* and port data rate display *nm* selection

xxxx blinks to prompt the user to confirm the current selection or toggle to the other one.

PUSHBUTTON ACTION:

- YES- Selects alternating or contiguous DS0 assignment *xxxx* and blinks the starting DS0 number *ff*
- NO- Toggles between ALT and CONT DS0 assignment modes
- HOME- Returns to Port Number Selection

Port *xx* <*type*>
xxx CH: *ff* to *ll*

PUSHBUTTON ACTION:

- YES- Selects the first DS0 channel number *ff* and advances to the transmit clock source display
- NO- Increments the starting DS0 number *ff* and displays the ending DS0 number *ll*
- HOME- Returns to Port Number Selection

Transmit Clock Source

Port *xx* <*type*>
Tx CLK = <*source*>

This display selects the DTE transmit clock source:

- Internal** The unit uses the transmit clock output to clock DTE transmit data into the transmit buffer. Where the DTE is located near the unit, internal clock is usually selected.
- External** The unit uses the external transmit clock from the DTE to clock DTE data. In applications with a high bit rate and a long DTE cable, it may be necessary to use the external clock option.

In external clock operation, the transmit clock output from the unit is routed to the DTE and sent back to the unit along with the data line. This eliminates any phase misalignment between the clock and data signal due to cable phase delay and insures a proper signal / clock relationship at the unit input.

PUSHBUTTON ACTION:

- YES- Selects the displayed option and advances to transmit clock polarity display
- NO- Toggles between INTERNAL and EXTERNAL options
- HOME- Returns to Port Number Selection

Transmit Clock Polarity

Port xx <type>
Tx CLK = <polarity>

PUSHBUTTON ACTION:

- YES- Selects the displayed clock polarity option and advances to receive clock polarity display
- NO- Toggles between NORMAL and INVERT options
- HOME- Returns to Port Number Selection

Receive Clock Polarity

Port xx <type>
Rx CLK = <polarity>

PUSHBUTTON ACTION:

- YES- Selects the displayed clock polarity option and advances to the CTS signal operation display
- NO- Toggles between NORMAL and INVERT options
- HOME- Returns to Port Number Selection

CTS Signal Operation

Port xx <type>
CTS = <mode>

The CTS output may be selected for normal operation or forced on. When normal is selected, CTS is asserted approximately 10 ms after RTS is received.

PUSHBUTTON ACTION:

- YES- Selects the displayed CTS operation mode and advances to the RLSD signal operation display
- NO- Toggles between NORMAL and FORCED ON
- HOME- Returns to Port Number Selection

RLSD Signal Operation

Port xx <type>
RLSD = <mode>

Select normal or forced on operation for RLSD output. Selecting normal turns RLSD on when the FT 100 T1 receiver has acquired frame synchronization and off when frame synchronization is lost or no signal is present.

PUSHBUTTON ACTION:

- YES- Selects the displayed RLSD operation mode and advances to DSR signal operation display
- NO- Toggles between NORMAL and FORCED ON
- HOME- Returns to Port Number Selection

DSR Signal Operation

Port xx <type>
DSR = <mode>

Select normal or forced on operation for DSR output. Selecting normal turns DSR on when the FT 100 T1 receiver has acquired frame synchronization and off when frame synchronization is lost or no signal is present.

PUSHBUTTON ACTION:

- YES- Selects the displayed DSR operation mode and advances to TM signal operation
- NO- Toggles between NORMAL and FORCED ON
- HOME- Returns to Port Number Selection

TM Signal Operation

Port xx <type>
TM = <mode>

The TM signal indicates to the DTE that the unit is in a test mode. Select normal or forced off operation for TM output. Selecting normal turns TM on if the unit is in a test mode.

PUSHBUTTON ACTION:

- YES- Selects the displayed TM operation and advances LL signal operation
- NO- Toggles between NORMAL and FORCED OFF
- HOME- Returns to Port Number Selection

LL Signal Operation

Port xx <type>
LL = <mode>

This option determines whether the unit acknowledges or ignores an LL signal from the DTE.

If enabled, the LL signal causes the DTE port to enter Local Terminal Loopback. Otherwise, the LL signal is ignored.

PUSHBUTTON ACTION:

- YES- Selects the displayed LL operation mode and RL signal operation
- NO- Toggles between ENABLE and DISABLE
- HOME- Returns to Port Number Selection

RL Signal Operation

Port xx <type>
RL = <mode>

This option determines whether the unit acknowledges or ignores an RL signal from the DTE.

If enabled, the RL signal causes the DTE port to enter Remote Terminal Loopback. Otherwise, the RL signal is ignored.

PUSHBUTTON ACTION:

- YES- Selects displayed RL operation mode
- NO- Toggles between ENABLE and DISABLE
- HOME- Returns to Port Number Selection

Remote Loopback Operation

Port *xx* <*type*>
RA/RTL =<*mode*>

This option determines whether the unit acknowledges or ignores a loop-up pattern from the remote CSU/DSU.

Enable The unit goes into Remote Terminal Loopback when the loop sequence is detected.

Disable The unit ignores the sequence.

PUSHBUTTON ACTION:

- YES- Selects displayed RA/RTL mode
- NO- Toggles between ENABLE and DISABLE
- HOME- Returns to Port Number Selection

DS-1 Interface

Port *xx* (DS-1)
of CH = *nn*

The *xx* blinks to prompt the user to either modify port *xx* settings or advance to the next port.

PUSHBUTTON ACTION:

- YES- Select Port *xx* and advances to # of channel selection for this port
- NO- Advances to next port

HOME- Returns to DTE PORT OPTIONS? submenu

Port *xx* (DS-1)
of CH = *nn*

The *nn* blinks to prompt the user to either modify the # of channels selected for Port *xx* or accept the current number and advance to the next port option.

PUSHBUTTON ACTION:

YES- Advances to rate multiple option

NO- Increment the number of channels selected for Port *xx*

HOME- Returns to Port Number Selection

Port *xx* (DS-1)
xx, *xx*K CHANGES

PUSHBUTTON ACTION:

YES- Advances to DS0 grouping option

NO- Toggles between 56K and 64K bps

HOME- Returns to Port Number Selection

Port *xx* (DS-1)
xxxx CH: *ff* to *ll*

This display allows assigning DS0 time slots to the selected port.

xxxx= alternating or contiguous DS0 channels

f = first DS0 channel number

ll= last DS0 channel used by the selected port -- automatically determined

xxxx blinks to prompt the user to confirm the current selection or toggle to the other one.

PUSHBUTTON ACTION:

- YES- Selects DS0 assignment and blinks the starting DS0 number
- NO- Toggles between ALT and CONT DS0 assignment modes
- HOME- Returns to Port Number Selection

Port xx (DS-1)
xxxx CH: ff to ll

PUSHBUTTON ACTION:

- YES- Selects the first DS0 channel number *ff* and advances to line length display
- NO- Increments the starting and ending DS0 numbers *ff* and *ll*
- HOME- Returns to Port Number Selection

Port xx (DS-1)
Len = *kk* - *mm* FT

This display allows setting the line build-out for the DS-1 card interface according to the displayed line length. The following ranges are available:

- 0-133 ft.
- 133-266 ft.
- 266-399 ft.
- 399-533 ft.
- 533-655 ft.

PUSHBUTTON ACTION:

- YES- Accept current line length selection and advances to signaling option
- NO- Advances to the next range of line lengths
- HOME- Returns to Port Number Selection

Port xx (DS-1)
Signaling = *DIS*

This display setting determines whether or not signaling information is passed from the network to the DTE.

PUSHBUTTON ACTION:

- YES- Accept current selection and advances to Yellow Alarm display
- NO- Toggles between ENABLE AND DISABLE
- HOME- Returns to Port Number Selection

Port xx (DS-1)
Yellow Alm = *DIS*

This option determines whether or not a yellow alarm is sent back to the DTE upon receiving AIS or LOS from the DTE which is serviced by this particular DS-1 interface.

PUSHBUTTON ACTION:

- YES- Accept current setting and advances to T1 setting display
- NO- Toggles between ENABLE AND DISABLE
- HOME- Returns to Port Number Selection

Port xx (DS-1)
T1 Framing = *SF*

This option selects the type of framing that is used between the DSU and DTE.

PUSHBUTTON ACTION:

- YES- Advances to line code selection
- NO- Toggles between SF and ESF framing
- HOME- Returns to Port Number Selection

Port xx (DS-1)
Line Code = *AMI*

This option determines the line coding that is used between the DSU and DTE.

PUSHBUTTON ACTION:

- YES- Accept current selection and advances to RA/RTL display
- NO- Toggles between AMI and B8ZS

HOME- Returns to Port Number Selection

Port xx (DS-1)
RA/RTL = DISABLE

This option determines whether or not this particular port responds to a remotely activated remote terminal loopback.

PUSHBUTTON ACTION:

YES- Returns to Port Number Selection menu

NO- Toggles between ENABLE AND DISABLE

HOME- Returns to Port Number Selection menu

CONTROL PORT OPTIONS

Control Port
Options?

This submenu allows selecting the control port operating characteristics. The unit can be externally controlled by a terminal or computer connected to the rear panel RS-232 **CONTROL** port or by the Local-View terminal when installed in the Motorola LocalView shelf. Chapter 6 describes control port operation.

The options are:

- Control mode
- Baud rate
- Local echo
- Status

PUSHBUTTON ACTION:

YES- Advances to control mode

NO- Advances to SET TIME submenu

HOME- Returns to CONFIGURATION OPTIONS? menu

Control Mode

Mode = <mode>
Change It?

The control port mode options are:

Terminal allows operation with a standard ASCII terminal or computer connected to the control port. Responses from the unit are formatted ASCII text screens.

Computer allows operation with a computer or modem connected to the control port. Responses from the unit are short unformatted ASCII messages.

LocalView allows operation with the LocalView Management System when installed in a LocalView shelf. In this mode, the rear panel control port is not used.

PUSHBUTTON ACTION:

YES- Scrolls the options

NO- Selects the displayed mode and advances to the baud rate option

HOME- Returns to CONTROL PORT OPTIONS? submenu

Baud Rate

Bit Rate = <rate>
Change It?

The baud rate options are:

- 300
- 600
- 1200
- 400
- 4800
- 9600
- 19200

PUSHBUTTON ACTION:

- YES- Scrolls through the baud rate options
- NO- Advances to LOCAL ECHO
- HOME- Returns to CONTROL PORT OPTIONS? submenu

Local Echo

Local Echo = ON
change It/

This option determines whether or not the unit echoes characters back to the control port terminal.

PUSHBUTTON ACTION:

- YES- Toggles between on and off
- NO- Advances to control port status
- HOME- Returns to CONFIGURATION OPTIONS? menu

SETTING A PASSWORD

Status = Unlock
Change It?

This submenu gives the user the option of requiring a password for remote access to the unit via the control port.

When the status is "Lock" the control port will prompt the user to enter the password. Refer to Chapter 6 for details on password operation and settings.

When unlocked no password prompt is displayed on the control terminal.

PUSHBUTTON ACTION:

- YES- Toggles between lock and unlock.
- NO/
- HOME- Returns to CONFIGURATION OPTIONS? menu

SET TIME AND DATE

These options allow setting the realtime clock to the current time and date. The unit uses the realtime clock for performance history time and date stamping. When the performance history is accessed through the control port, the time and date are displayed along with the error history.

hh : mm : ss
Set Time?

PUSHBUTTON ACTION:

- YES- Advances to hour display; accepts current setting for hour, minute, second displays
- NO- Advances to SET DATE? option; in hour, minute, second displays, increments digits for setting
- HOME- Returns to CONFIGURATION OPTIONS? menu

Month dd, year
Set Date?

PUSHBUTTON ACTION:

- YES- Advances to month display; accepts current setting for month, day, and year displays
- NO- Returns to CONFIGURATION OPTIONS? menu; in month, day, and year displays, increments digits for setting
- HOME- Returns to CONFIGURATION OPTIONS? menu

