



# **FT100S**

## **Installation and Operation Manual**



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## **FCC REQUIREMENTS**

This equipment complies with Part 68 of FCC Rules. Please note the following:

When you order service, the telephone company needs to know:

A. The Facility Interface Code:

04DU9-BN (1.544 Mbps superframe format (SF) without line power)  
04DU9-DN (1.544 Mbps SF and B8ZS without line power)  
04DU9-1KN (1.544 Mbps ANSI ESF without line power)  
04DU9-1SN (1.544 Mbps ANSI ESF and B8ZS without line power)

B. The Service Order Code: 6.0N

A signal power affidavit will be required to guarantee encoded analog content and billing protection unless this unit is used in combination with an XD type device or no encoded analog signals and billing information are transmitted. A SAMPLE AFFIDAVIT is attached. For most uses, the second box is appropriate.

C. The USOC Jack Required: RJ48C

In addition, if requested, please inform the telephone company of the make, model number and FCC registration number, which are on the label.

The telephone company may change technical operations or procedures affecting your equipment. You will be notified of changes in advance to give you ample time to maintain uninterrupted telephone service.

If you experience trouble with this telephone equipment, please contact

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for information on obtaining service or repairs. The telephone company may ask that you disconnect this equipment from the network until the problem has been resolved. If your equipment continues to disrupt the network the telephone company may temporarily disconnect service. If this occurs you will be informed of your right to file a complaint with the FCC.

### **WARNING**

This equipment uses, generates, and can radiate radio frequency energy interfering with radio communications if not installed and used in accordance with the instruction manual. It has been tested and complies with the limits for a Class A computing device according to FCC Rules, Part 15. Operation of this equipment in a residential area may cause interference. If it does, you must correct the cause of the interference. Shielded cables may be necessary with this unit to ensure compliance with the Class A limits.

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.

## **SPECIAL REQUIREMENTS FOR CANADA**

Certain requirements exist for data communication products manufactured for use in Canada. Principle among these requirements is the application of the IC label as described below. However, certain data communication products do not require the IC label nor adherence to IC requirements. If this is the case the IC label will not be affixed to the units.

## **INDUSTRY CANADA (IC) REQUIREMENTS**

IC labels are affixed to each unit sold in Canada. This label has the certification number for that particular unit. The numbers are different for each model.

The Industry Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational, and safety requirements. IC does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment. For their own protection users should ensure that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

### **CAUTION**

Users should not attempt to make installation connections themselves, but should contact the appropriate electric inspection authority or electrician.

## **CANADIAN EMISSION REQUIREMENTS**

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

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# Chapter 1

## Introduction

### GENERAL

The Telenetics FT 100S Fractional T1 CSU/DSU combines a single channel, fractional T1 DSU with a T1 ESF CSU. The unit interfaces customer premise data and voice equipment to a T1 transmission facility. High speed workstations, local and wide area networks (WANs), Private Branch Exchanges (PBXs), facsimiles, and host computers are examples of customer equipment which may communicate over public or private T1 networks using the FT 100S.

### FUNCTIONAL DESCRIPTION

The FT 100S receives serial data from the customer Data Terminal Equipment (DTE) and multiplexes it onto a 1.544 Mbps DS-1 signal. The DS-1 signal interfaces to the T1 network via an integral ESF CSU. The DTE ports enable data rates from 56 kbps to 1.536 Mbps. The unit complies with DTE interface standards for V.35 and supports all Fractional T1 applications.

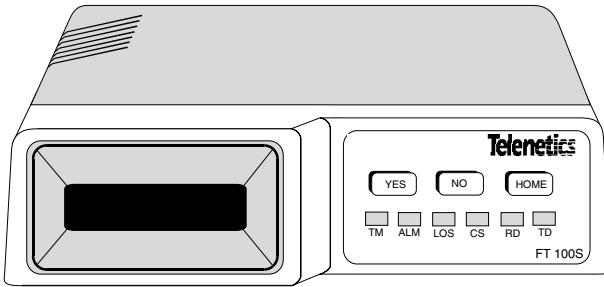
Network management and configuration for the FT 100S are provided by several methods. A Liquid Crystal Display (LCD) front panel accesses all configuration and diagnostic options. An RS-232 rear panel interface labeled **CONTROL** allows configuring and testing the unit via terminal, computer, or remotely via modem. When the RM16M model is installed in the LocalView Shelf, configuration and diagnostics are accessible via the LocalView terminal. Operating parameters are stored in nonvolatile memory.

## PHYSICAL DESCRIPTION

The FT 100S can be either a standalone desktop unit or a shelf mount model.

### Front Panel

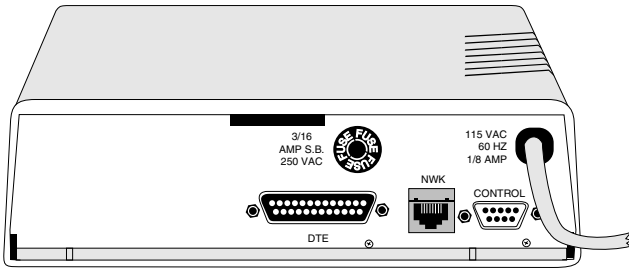
Three front panel pushbuttons, YES, NO, and HOME, enable user input. A front panel 32-character LCD allows menu driven user operation and real time unit status displays. DTE signal status can be monitored by six LEDs and the LCD on the front panel (Figure 1-1).



*Figure 1-1  
Front Panel*

## **Rear Panel**

The rear panel (Figure 1-2) contains a power cord, fuse, an 8-pin RJ48C network interface connector, a 9-pin D-type interface connector for external control, and one 25-pin D-type DTE connectors. Since the FT 100S connects directly to the T1 network, it does not include an ON/OFF power switch.



***Figure 1-2  
Rear Panel***

## **FEATURES**

- UDS and Telenetics LocalView Shelf compatible
- V.35 synchronous interface
- All standard data rates:  $n \times 56$  kbps,  $n \times 64$  kbps (where  $n$  = number 1 to 24 of DS0 time slots-- 1.536 Mbps max)
- Fractional T1 compatible
- Uniform synthesized DTE transmit and receive clocks
- Flexible timing options
- Integral CSU
- B8ZS clear channel capability
- ESF or SF framing modes
- ESF diagnostics per AT&T 54016 and ANSI T1.403
- Built-in network and per channel loopback test capability
- Front panel LED status display for DTE ports
- Configuration and diagnostic options via: Front panel LCD, RS-232 control port, or Motorola LocalView



## Chapter 2 Installation

### GENERAL

This chapter provides installation information for the FT 100S. If changing hardware options to meet system requirements, refer to Chapter 3 before installation.

#### **Note**

*When requesting T1 network service, personnel operating this equipment must complete the affidavit in the front of this manual and file it with the telephone company providing service.*

### RECEIPT INSPECTION

Inspect the equipment carefully for damage that may have occurred in shipment. If there is damage or material shortage, contact the shipping agent and Telenetics authorized agent for advice and assistance. Retain the shipping container and packing material for possible future shipment.

The FT 100S arrives with the following components:

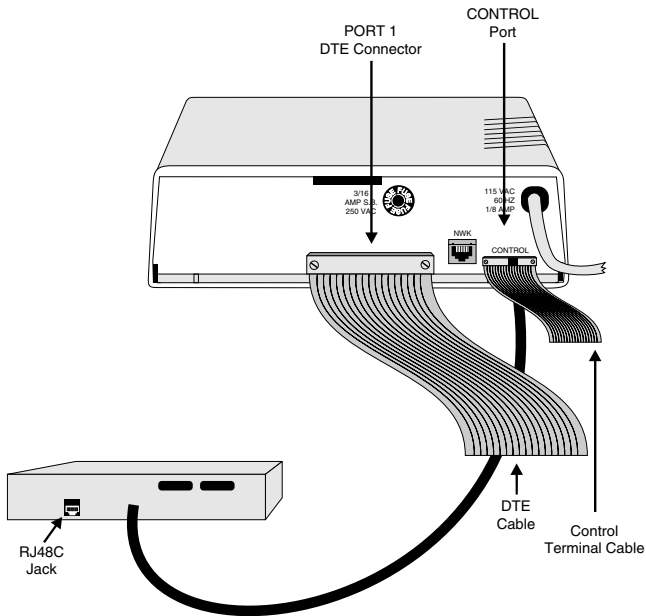
- Standalone housing containing two main circuit boards
- Two user specified piggyback interface boards/adapters
- Power transformer with cable
- T1 line cables
- V.35 adapter (included with V.35 unit)
- User's Guide

The following components must be supplied by the user:

- RS-449 adapter
- Control port adapter

### SITE PREPARATION

The installation area should be clean, well-lighted, and free from extremes of temperature, humidity, appreciable shock, and vibration. Allow sufficient space at the rear of the unit for cable clearance and air flow. See Figure 2-1.



**Figure 2-1**  
**Installation**

## CONNECTIONS

### Note

*Before connecting the unit to the network or the DTE, determine whether the factory setting for Network Transmit LBO is set as required or must be changed. Refer to Chapter 3.*

### FT 100S to Network

Network T1 line connections are made through a standard 8-pin RJ48C jack labeled **NWK** on the rear panel. Table 2-1 list pin connections for the network connector.

To connect the unit to the network,

*Table 2-1. Network Connector Pin Functions*

<b>RJ48C Pin</b>	<b>Function</b>
1	Network receive ring (R1)
2	Network receive tip (T1)
3	Not used
4	Network transmit (R)
5	Network transmit (T)
6	Not used
7, 8	Ground

1. Insert one end of the supplied cable into the unit's NWK jack.
2. Insert the other end into the RJ48C on the T1 Network interface connector.

### FT 100S to Remote Control Device

The 9-pin D-type male connector labeled **CONTROL** on the rear panel connects to the terminal that controls FT 100S operation, or to a modem connected to a remote terminal that controls the unit.

The interface is compatible with EIA RS-232 serial data operation and has pin functions like a DCE interface.

This is the same type of connector with the same pin connections as found on IBM PC/AT personal computers and compatibles so that standard cables can be used.

Pin connections for this interface are shown in Table 2-2.

**Table 2-2. Control Port Connector Pin Functions**

DB9 Pin	Function
1	Data carrier detect
2	Receive data
3	Transmit data
4	Data terminal ready
5	Ground
6	Data set ready
7	Request to send
8	Clear to send
9	Not used

To connect the unit to the network,

1. Insert one end of the cable into the unit's CONTROL port.
2. Insert the other end into the RS-232 connector on the controlling equipment.

### FT 100S to DTE

The 25-pin D-type female connector on the rear panel connect to the DTE. Table 2-3 and Table 2-4 show pin connections for the optional DTE connector available.

To connect the unit to the DTE,

1. Insert the DTE cable into the DTE connector on the unit.
2. Insert the opposite end into the designated DTE.
3. Secure the screws to complete the connection.

### V.35 Adapter Installation

The V.35 adapter is provided with the FT 100S. Optional adapters are available for converting the DTE connector to a 34-pin V.35 type connector or to a 37-pin RS-449 type connector. You can use the RS-449 adapter. The RS-449 adapter is not provided with the FT 100S. Pin connections for the V.35 and RS-449 adapters are listed in Table 2-3 and Table 2-4.

**Table 2-3. RS-530 / RS-449 Pin Functions**

RS-530 (DB25) Pin	RS-449 (DB37) Pin	Function
1	1	Protective ground
2	4	Transmit data A
3	6	Receive data A
4	7	Request to send A
5	9	Clear to send A
6	11	Data set ready A
7	19	Signal ground
8	13	Receive line signal detect A
9	26	Receive clock B
10	31	Receive line signal detect B
11	35	External transmit clock B
12	23	Transmit clock B
13	27	Clear to send B

**Table 2-3. RS-530 / RS-449 Pin Functions (Continued)**

14	22	Transmit data B
15	5	Transmit clock A
16	24	Receive data B
17	8	Receive clock A
18	10	Local loopback
19	25	Request to send B
20	12	Data terminal ready A
21	14	Remote loopback
22	29	Data set ready B
23	30	Data terminal ready B
24	17	External transmit clock A
25	18	Test mode

**Table 2-4. V.35 Functions (Part Number 5003769-01)**

V.35 (DB25) Connector Pin	V.35 (34 pin V.35) Adapter Pin	Function
1	A	Protective ground
2	P	Transmit data A
3	R	Receive data A
4	C	Request to send
5	D	Clear to send
6	E	Data set ready
7	B	Signal ground
8	F	Receive line signal detect
9-12	--	Not used
13	AA/a	Transmit clock B
14	S	Transmit data B
15	Y	Transmit clock A
16	T	Receive data B
17	V	Receive clock A
18	J	Local loopback
19	X	Receive clock B

**Table 2-4. V.35 Functions (Part Number 5003769-01)**

20	H	Data terminal ready
21	BB/b	Remote loopback
22	--	Not used
23	W	Ext transmit clock B
24	U	Ext transmit clock A
25	K	Test mode

**POWER**

Power is supplied through a 6-foot line cord with a grounded 3-wire plug (attached to the unit). If chassis ground is available through the third prong of the plug, a separate ground wire is not required.





# Chapter 3

## Hardware Configuration

### GENERAL

The FT 100S is factory configured to current industry standards. Because of the number of possible applications, the unit will require some option changes to fit a particular application.

This chapter describes the options that are configured with hardware on the printed circuit board (PCB). Hardware options are selected by two plug-on straps, a dip switch, and installing the interface adapter card. To access these options on the standalone unit, the cover must first be removed.

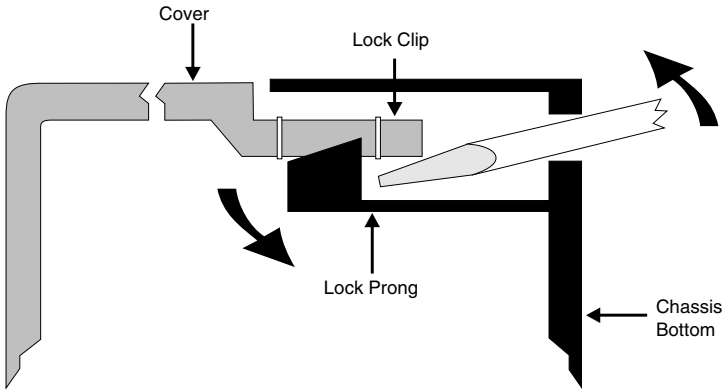
### COVER REMOVAL



#### **Warning**

*Do not remove the cover unless the power cord is unplugged.*

1. Place the unit on its side on a flat surface.
2. Insert a medium size flat screwdriver blade in one of the bottom rear latch slots. Do not push the screwdriver but lightly pry the handle away from the unit as shown in Figure 3-1. This disengages the lock prong from the latch locks.
3. Assist removal by pushing the cover from the chassis with your fingers on the unit rear edges. Repeat this procedure with the remaining latch slots.
4. To replace the cover, align the latch locks, rear guide grooves, and front lock tabs.
5. Press the cover in place until the latch locks engage the lock prongs.

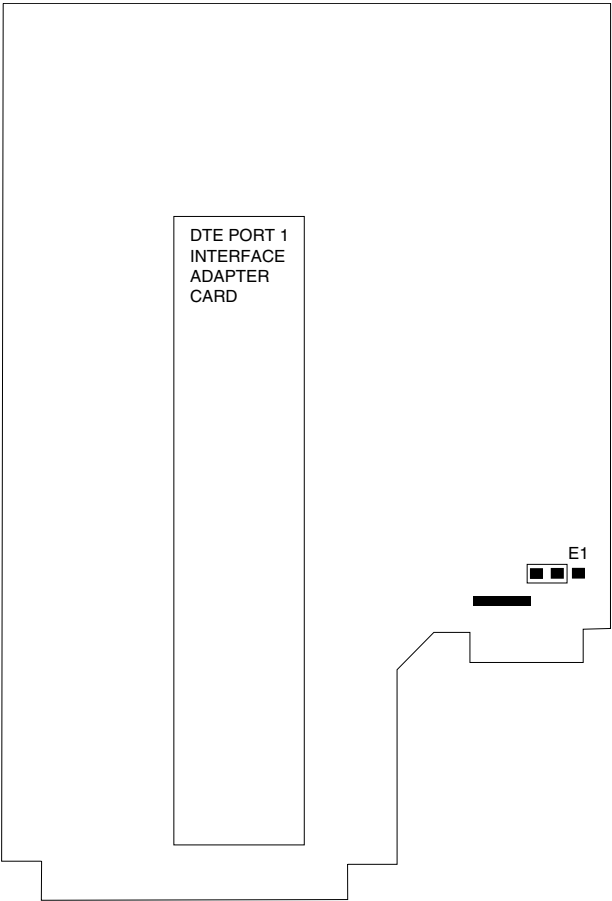


**Figure 3-1**  
**Cover Removal**

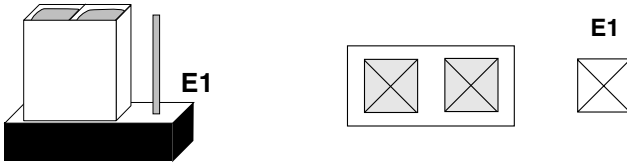
### **CHANGING OPTION SETTINGS**

Figure 3-2 shows the positions of the option straps, the dip switch, and the interface adapter card on the main PCB. Figure 3-3 shows a typical strap application.

- To change a strap setting, lift the jumper strap off and insert it in the new position.



**Figure 3-2**  
*Strap and Adapter Card Locations*



**Figure 3-3**  
**Strap Application**

### Grounding

Signal ground is normally separated from chassis ground. If necessary, signal ground can be connected to chassis ground by moving the strap to E1.

### DTE INTERFACE OPTIONS

Several standard DTE interfaces are available.

Normally, the FT 100S is purchased with the required interface already installed. However, if application requirements change, the unit can be reconfigured.

The DTE interface type is selected by

- installing the appropriate adapter card onto the main printed circuit board and
- if required, installing an adapter for converting the DTE connector on the rear panel.

### Installing an Interface Card

The interface adapter card is located on the main printed circuit card as shown in Figure 3-2.

To remove a card, remove the stand off screws and carefully lift both ends of the card vertically to unplug the card.

Since the available interface adapter cards are used on various Tele-netics products, they may contain switches and straps that must be set according to the product on which they're to be used. For the FT 100S, the settings are described in the table below. Option cards that were installed at the factory should already be configured properly.

<b>V.35 Card</b>	<b>RS-530/449 Card</b>	
#4563699 or 4563956	#4563507	#4563137
Switches 3, 4, 6 ON 1, 2, 5, 7, 8, OFF	Strapped for CHNL	Strapped for TM

To install a card,

1. Ensure the card is configured correctly
2. Align the connectors
3. Firmly press the adapter card down at both ends until the card fully seats, and
4. Re-install stand off screws.

### **Using a Conversion Adapter**

A V.35 or RS-449 connector conversion adapter can be attached to the rear panel DTE connector. These adapters convert the existing 25-pin D-type DTE connector to a 34-pin V.35 connector or 37-pin RS-449 connector.



# Chapter 4

## Front Panel Option Selection

### GENERAL

FT 100S 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 100S 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
<b>M A I N  1</b>	Port Status Display?	Line Status:	Mode / Line Code / Framing / Receive Status	
		Port 1 Status	Mode / Interface / Data Rate	
<b>M A I N  2</b>	Diagnostic 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 DS0 Display	Channel Data ## nnnnnnn	channels 1-24
		Performance History Display?	Error Free Seconds?	nn% (0-100)
			Error Events:	nn (0-65565)
24 Hours Total?	ES / BES / SES / UAS / LOFC / LCVS (1-900 each)			
15 Minute Interval Data?				
<b>M A I N  3</b>	Configuration Options?	T1 Line Options?	Framing	SF / ESF *
			Line Code	AMI * / B8ZS
			Bit Stuffing	Enable Disable *
			ESF (PRM) Transmission	Enable Disable *



Table 4-1. Menu Options (Continued)

MAIN MENU	SUBMENU	SUBMENU ITEM	OPTION
M A I N  3  C O N T		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 LBO	CSU: 0, -7.5dB, -15dB DSX: 0-133 ft, 133-266 ft, 266-399 ft, 399-533 ft, 533-655 ft
		DTE Port Options? (V.35 or RS-530 interface card)	Select # of Time Slots
	Select Rate Multiple		56K bps 64K bps *
	Select Time Slots		Alternating Contiguous *
	Select Starting Time Slot		1 * - 24
	Transmit Clock Source		Internal * External
	Transmit Clock Polarity		Normal * Inverted
	Receive Clock Polarity		Normal * Inverted
	CTS Mode		Normal * Forced On
	RLSD Mode		Normal * Forced On
	TM Mode		Normal * Forced Off

**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? <i>Cont.</i> (V.35 or RS-530 interface card)	LL Mode	Enable / Disable *
			RL Mode	Enable / Disable *
			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

\* factory default settings

### Powerup Displays

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

FT 100S  
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 100S  
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 100S 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 100S / 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 100S 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 1 Status:**  
*Mode Interface Data Rate*

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

<b>Status Field</b>	<b>Mode</b>	<b>Interface</b>	<b>Data Rate</b>
Possible Status	NORM LTL RTL RL RLTP RAL TP	V.35 RS-530	56K - 1536K

The Mode field displays the present operating mode of all FT 100S DTE port:

- 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 the DTE port (Chapter 3).

The Data Rate field displays the selected data bit rate for the 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 LINE 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 100S 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.

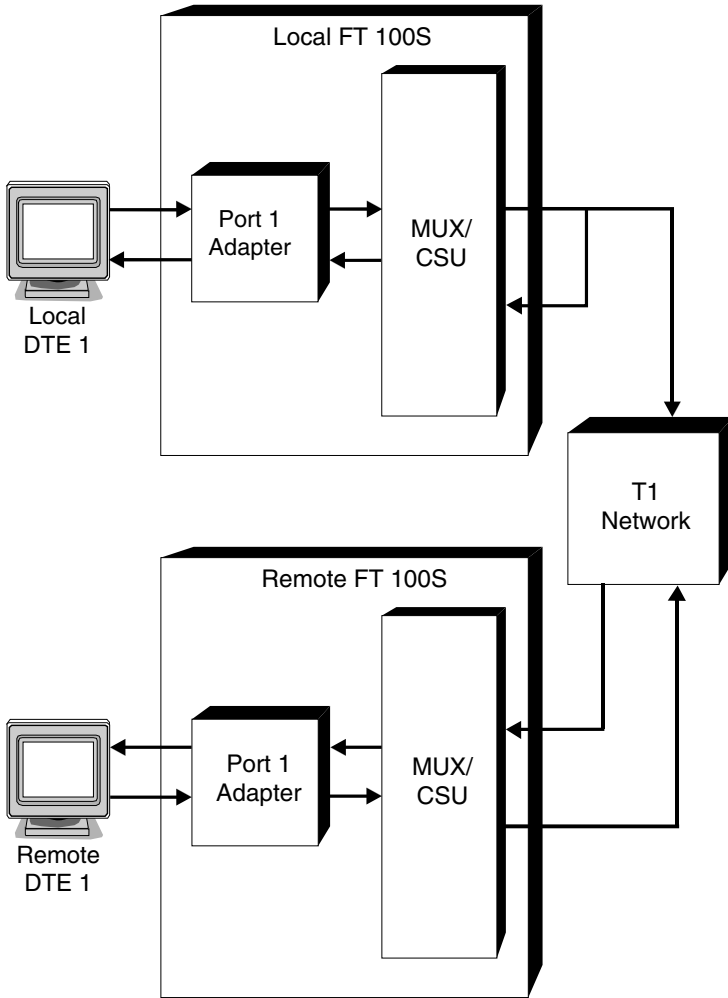
All TM LEDs light to indicate a T1 test in progress. Other LEDs function normally.

**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 100S, 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 100S 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 100S 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.



















































































































































































































