

# Chapter 6

## Control Port Operation

### GENERAL

The rear panel port labeled **CONTROL** provides the connection for configuration and status display via terminal monitor.

The control port is an EIA-232 compatible serial interface. Table 2-2 lists pin connections for this interface. The interface is the same as the serial I/O connector on AT style personal computers so that standard cables can be used.



#### **Note**

*Connection applications are shown in Figure 6-2 and Figure 6-3.*

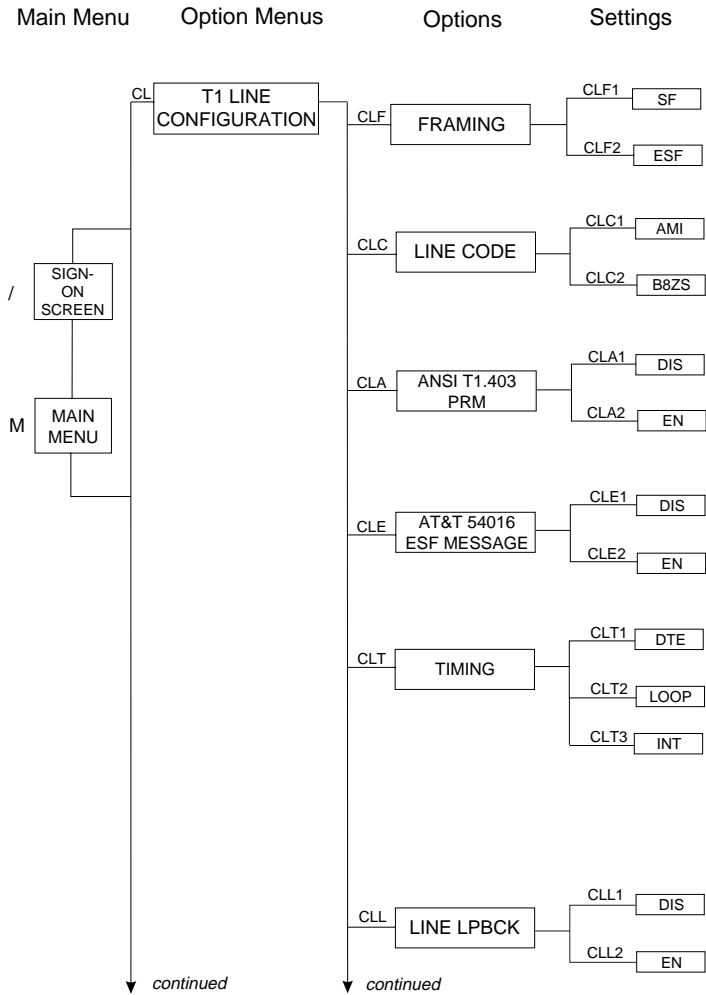
### Using Control Port Commands

Control port commands are entered from the control keyboard and consist of short character strings followed by a carriage return which select and display the various menus and options.

Figure 6-1 provides a menu flow chart indicating the access path via command through the available menus.

Any command or option choice can be entered from any screen. This feature allows easier configuration changes when the user is familiar with the command strings.

Refer to Chapter 4, Front Panel Option Selection, for further information on options.



**Figure 6-1**  
**Menu Flow Chart**

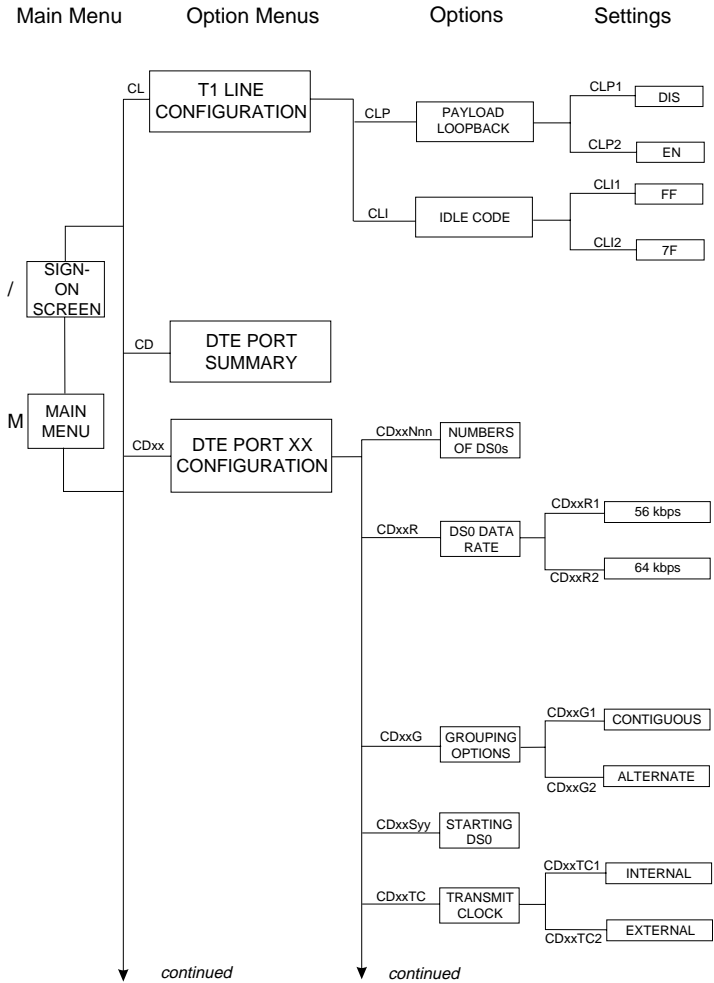
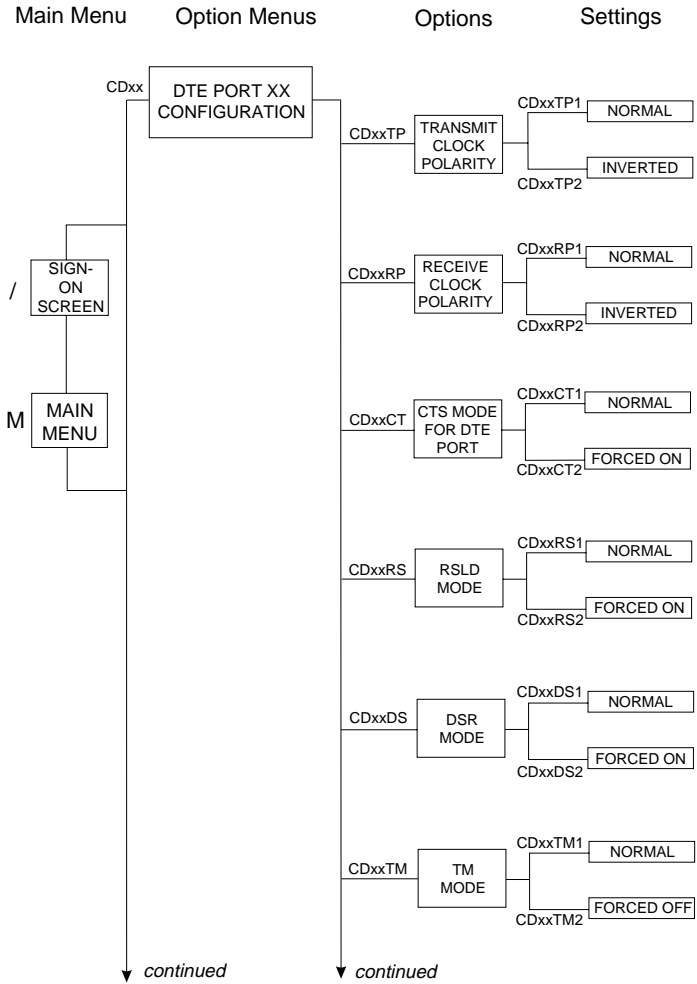


Figure 6-1 Cont.  
Menu Flow Chart



**Figure 6-1 Cont.**  
**Menu Flow Chart**

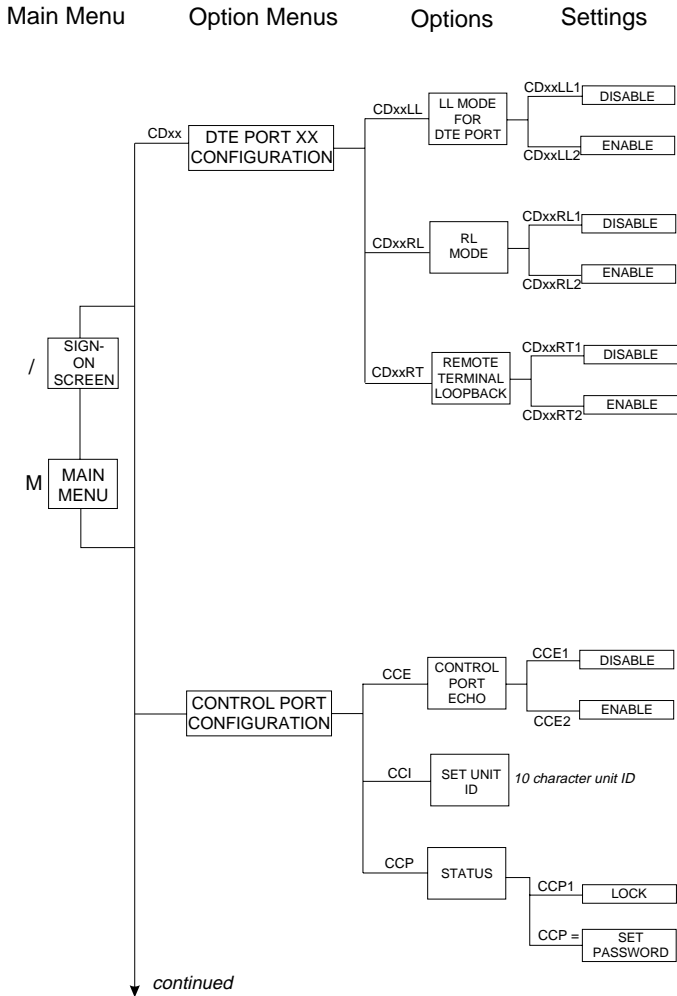
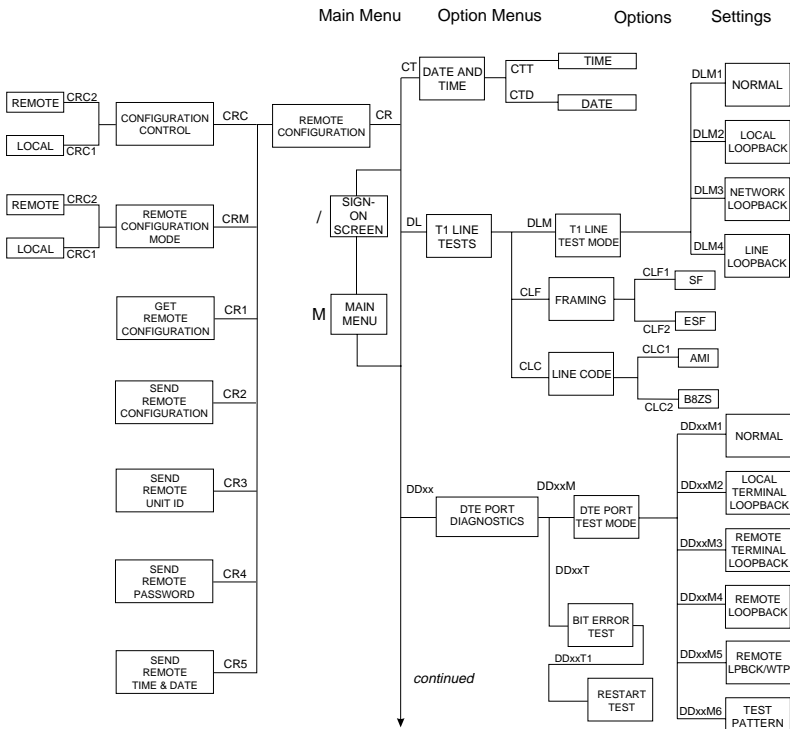
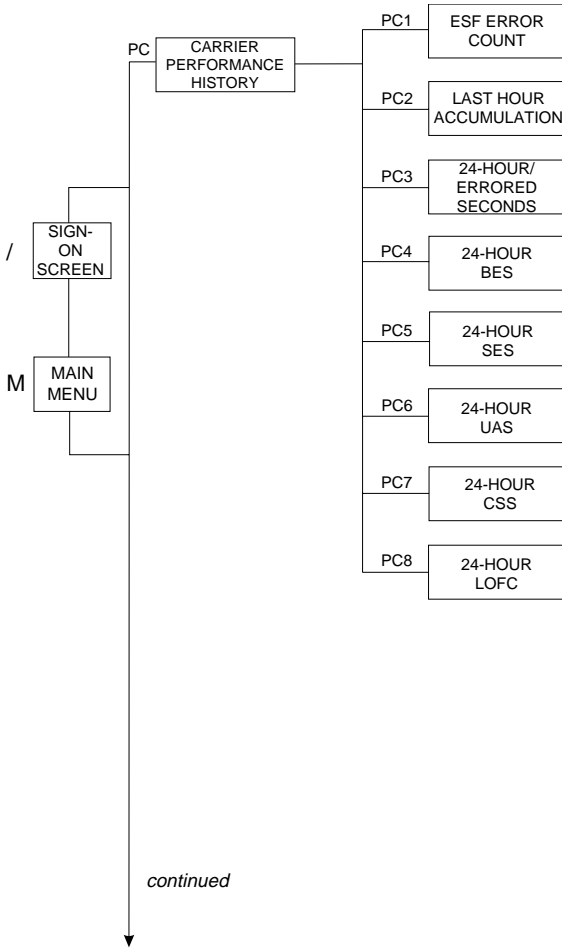


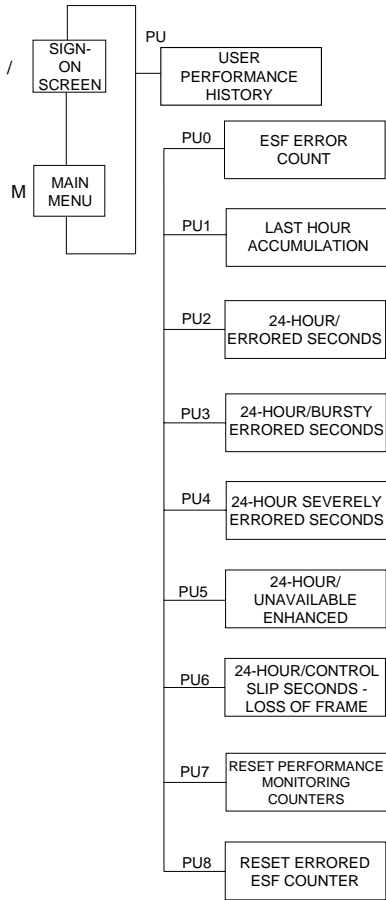
Figure 6-1 Cont.  
Menu Flow Chart



**Figure 6-1 Cont.**  
**Menu Flow Chart**



**Figure 6-1 Cont.**  
**Menu Flow Chart**



**Figure 6-1 Cont.**  
**Menu Flow Chart**



## **CONNECTING TO A TERMINAL**

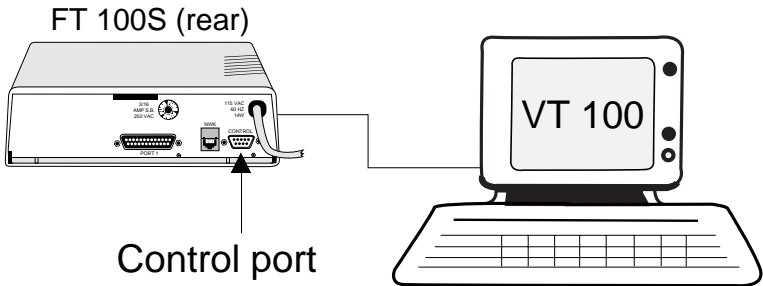
To operate the unit with a CRT terminal:

1. Connect the FT 100S control port to a terminal with a standard PC 25 pin to 9 pin conversion cable. Refer to Table 2-2 for pin connections.
2. Using the front panel, select terminal operation and the desired control port baud rate, and enable local character echo if desired.

Word length is fixed at 8 data bits with 1 stop bit and no parity.

3. Enter a / on the keyboard to display the sign-on screen:

The following illustration shows connection application to a terminal.



*Figure 6-2  
Terminal Connection*

### CONNECTING TO A MODEM

The FT 100S can be controlled remotely by a telephone line modem connected to the control port.

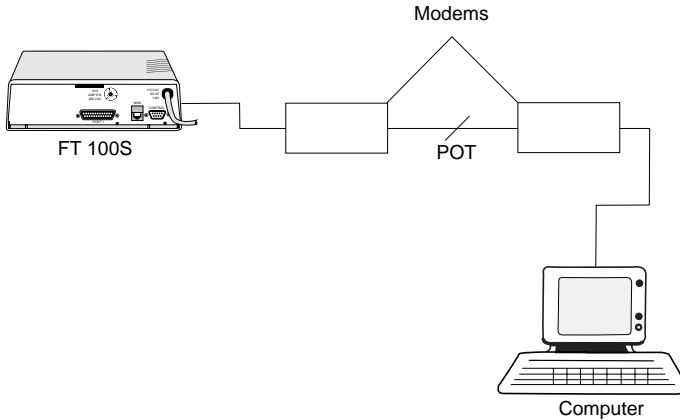
While not required, it is recommended that a modem with an error control protocol like MNP be used for remote control to prevent control command errors from accidentally reconfiguring the unit.

1. Connect a null modem device or crossover cable between the FT 100S control port and modem. Refer to Table 2-2 for control port pin connections.
2. Using the front panel, select terminal operation, the desired control port baud rate, and local echo if desired.

Word length is fixed at 8 data bits with 1 stop bit and no parity.

3. Enter a / on the keyboard to display the sign-on screen.

The following illustration shows connection application to a modem.



**Figure 6-3**  
**Modem Connection**

## **CONNECTING TO LOCALVIEW**

An FT 100S can be used in the LocalView System. To do this, select LocalView mode from the FT 100S front panel.

The FT 100S now operates under the control of the LocalView controller card using the device driven mode as described in the LocalView System User's Manual.

In LocalView, select the FT 100S. Operation and option selection for the FT 100S are the same as in direct communications between the unit and a terminal.

To end communications between the unit and LocalView, press the ESC key. The LocalView controller card returns to the LocalView Network Map.

## MAIN MENU

The Main Menu accesses all other menus, configuration commands, and option settings. After the illustrations of the first three menus, this manual discusses the menus without further illustrations.

Enter any command from any screen for faster configuration changes. You do not have to choose options only from the menu or option selections currently displayed. Appendix B lists all menus and options.

Enter M to display the Main Menu. See Figure 6-4.

```
.....
      TIME: 15:01:01          UDS/MOTOROLA          DATE: 12/05/96
                          FT100S
                          MAIN MENU
.....
      T1 LINE CONFIGURATION:  CL
      DTE PORT SUMMARY:      CD
      DTE PORT xx CONFIGURATION: CDxx
      CONTROL PORT CONFIGURATION: CC
      SET TIME & DATE:        CT
      REMOTE CONFIGURATION COMMANDS: CR

      T1 LINE DIAGNOSTICS:    DL
      DTE PORT xx DIAGNOSTICS: DDxx

      CARRIER PERFORMANCE HISTORY: PC
      USER PERFORMANCE HISTORY: PU
.....
ENTER SELECTION:
```

*Figure 6-4  
Main Menu*

Entering	Displays
CL	T1 Line Configuration Options: <ul style="list-style-type: none"><li>• Framing</li><li>• Line code</li><li>• ANSI.403 PRM</li><li>• AT&amp;T 54016 ESF message</li><li>• Timing</li><li>• Line loopback</li><li>• Payload loopback</li><li>• Idle code</li></ul>
Entering	Displays
CD	DTE Port Summary
CDxx	Port xx Configuration Options: <ul style="list-style-type: none"><li>• Numbers of DS0s</li><li>• Data rate</li><li>• Grouping options</li><li>• Starting DS0</li><li>• Transmit clock</li><li>• Transmit clock polarity</li><li>• Receive clock polarity</li><li>• CTS mode</li><li>• RSLD</li><li>• DSR</li><li>• TM</li><li>• Local loopback</li><li>• Remote loopback</li><li>• Remote terminal loopback</li></ul>
CC	Control Port Configuration Options: <ul style="list-style-type: none"><li>• Echo</li><li>• Status</li></ul>
CT	Time and Date Options

- DL            T1 Line Test Options:
- Normal, local loopback
  - Network loopback
  - Line loopback
  - Framing
  - Line code
- DDxx        the DTE Port Test Options:
- Local terminal loopback
  - Remote terminal loopback
  - Remote loopback with test pattern
  - Test pattern
- PC            Carrier Performance Options
- PU            User Performance Options

## **T1 LINE CONFIGURATION**

- Enter CL     to display the T1 Line Configuration Option Menu.
- Entering      Displays
- CLF          T1 Framing  
Select SF or ESF.
- CLC          T1 Line Code  
Select AMI or B8ZS.
- CLA          ANSI T1.403 PRM  
(Performance Report Message)  
Select disable or enable.
- CLE          AT&T ESF 54016 Message  
Select disable or enable.
- CLT          T1 Timing  
Select DTE, loop or internal.

CLL	Line Loopback Select enable or disable.
CLP	Payload Loopback Select enable or disable.
CLI	Idle code Select FF or 7F.

Example: To select the T1 Framing option,

Entering CLF at the ENTER SELECTION prompt displays the two choices for T1 framing:

Superframe (SF) or Extended superframe (ESF)

Entering CLF2 chooses ESF framing.

Figure 6-5 shows the screen after this sequence of commands.

```

=====
TIME: 15:01:48          UDS/MOTOROLA          DATE: 12/05/96
                        FT100S
                        LOCAL
                        T1 LINE CONFIGURATION MENU
=====
                        FRAMING : CLF  ESF
                        LINE CODE : CLC  B8ZS
                        ANSI T1.403 PRM : CLA  ENABLE
AT&T 54016 ESF MESSAGE : CLE  ENABLE
                        T1 TIMING : CLT  INTERNAL
                        LINE LOOPBACK : CLL  ENABLE
                        PAYLOAD LOOPBACK : CLP  ENABLE
                        IDLE CODE : CLI  FF
                        YELLOW ALARM : CLY  ENABLE
=====
ENTER SELECTION:

```

**Figure 6-5**  
**T1 Line Configuration Menu**

Any command can be used to display a menu or set another option can be selected at this point.





CDxxTC	Transmit Clock Select internal or external.
CDxxTP	Transmit Clock Polarity Select normal or inverted.
CDxxRP	Receive Clock Polarity Select normal or inverted.
CDxxCT	CTS Mode Select normal or forced on.
CDxxRS	RLSD Select normal or forced on.
CDxxDS	DSR Mode Select normal or forced on.
CDxxTM	TM (test) Mode Select normal or forced on.
CDxxLL	Local Loopback Select disable or enable.
Entering	Displays
CDxxRL	Remote Loopback Select disable or enable.
CDxxRT	Remote Terminal Loopback Select disable or enable.

## **CONTROL PORT CONFIGURATION**

Entering	Displays
CC	the Control Port Configuration Menu, which allows the user to select the desired external control port operating mode. The mode and bit rate are only displayed here. The echo option is selectable.
CCE	Echo Options. Select disable if double characters appear on terminal or enable if no characters appear.
CCI	Unit Identification Code Select up to 10 characters.
CCP	<p>Password: When the control port status is locked, the unit asks for the correct password upon initiating terminal control mode or locking the terminal. This prevents unauthorized users from altering option settings (applicable if a modem is used with the control port of the FT 100S). Entering the correct password unlocks the control port.</p> <p>If the control port status is unlocked, no password prompt appears.</p> <p>Set or change the password using the CCP=command in control mode. The control port may be locked or unlocked at any time from the LCD front panel.</p>

## **TIME AND DATE**

Entering	Displays
CT	the Update Time And Date Menu, which allows setting the time and date. The unit contains an onboard battery driven realtime clock used as the reference for error history reporting.
CTThh:mm:ss	to update the time, where hh is the hour, mm is the minute, and ss is the second.

CTDdd/mm/yy to update the date, where dd is the day, mm is the month, and yy is the year.

### **T1 LINE TEST OPTIONS**

Entering	Displays
DLM	the T1 Line Tests Menu, which allows initiating tests and monitoring the network portion of the unit. (Refer to “DIAGNOSTIC OPTIONS MAIN MENU 2” section in Chapter 4 section if needed.)
DLM1	to initiate a T1 Local Loopback.
DLM2	to initiate a T1 Network Loopback.
DLM3	to terminate T1 Loopbacks.
DLM4	to initiate a Line Loopback.

### **DTE PORT TESTS**

Entering	Displays
DDxxM	the DTE Port Test Menu. (Refer to “DIAGNOSTIC OPTIONS MAIN MENU 2” section in Chapter 4 section if needed.)
DDxxM1	to return to normal operation.
DDxxM2	to activate a Local Terminal Loopback.
DDxxM3	to activate a Remote Terminal Loopback.
DDxxM4	to activate a Remote Loopback.
DDxxM5	to activate a Remote Loopback with Test Pattern.
DDxxM6	to activate a Test Pattern.

## **PERFORMANCE HISTORY**

The FT 100S continuously monitors the network received signal for error conditions and alarms.

Performance history information is stored in nonvolatile memory and can be accessed and displayed by the local user or transmitted to a remote FT 100S or other T1 terminating facility used for network management.

Entering PC      carrier performance history

or

PU user performance history

displays the carrier or user performance history menu.

These two main menus for performance history are described after the sections that list and describe the various error conditions.

## **ERROR CONDITION CATEGORIES**

The unit monitors these error events:

- ESF error count
- SF error count
- Errored seconds
- Bursty errored seconds
- Severely errored seconds
- Unavailable seconds
- Loss of frame count
- Controlled slip second
- Line code violation seconds
- % error free seconds

### **Error Events**

ESF Error Count (ESF framing only) contains a count of ESF error events. An ESF error event is either a CRC error or an Out of Frame Error (OOF).

SF Error Count (SF framing only) contains a count of SF error events. An SF error event is either a bipolar violation (BPV) or an out of frame error.

Error Second (ES) is any second in which an ESF (or SF) error event occurred.

Bursty Errored Second (BES)

ESF framing is an errored second with more than one but less than 320 ESF error events with no OOF detected.

SF framing is an errored second with more than one but less than 320 SF error events with no OOF detected.

Severely Errored Second (SES)

ESF framing is an errored second either with an OOF detected or with 320 or more ESF errored events.

SF framing is an errored second either with an OOF detected or with 320 or more SF errored events.

Unavailable Second (UAS) is a count of seconds in which service is unavailable. An unavailable state is declared at the onset of 10 consecutive SES and is cleared at the onset of 10 consecutive seconds with no SES. Also, an unavailable state is declared during power off times of less than 24 hours. If the CSU power is off for more than 24 hours, all error history is reset.

Controlled Slip Second (CSS) any second with a replication or deletion of a DS1 frame. This data is not detected by the FT 100S, but can be retrieved from the AT&T 54016 compatible equipment.

Loss of Frame Count (LOFC) is the number of times a loss of frame is declared. Loss of frame is declared after 2.5 seconds of continuous loss of signal or OOF. Loss of frame is cleared after 2.5 seconds of no loss of signal or OOF.

Line Code Violation Second (LCVS) is any second with one or more bipolar violations. If B8ZS coding is selected, only bipolar violations which are not part of the B8ZS code are counted.

% Error Free Seconds is defined as  $\{(\# \text{ of error free seconds}) / (\# \text{ of total seconds}) \times 100\}$ . The # of total seconds is counted from the last error history reset to a maximum of 24 hours.

### **Error Reporting Menus**

The performance menus allow the user to select error history display options. Error data for the preceding 24 hours is accumulated in 15 minute intervals and stored in error history registers (nonvolatile memory). Two sets of error history registers are maintained by the unit.

### **ESF Per AT&T Pub 54016**

When selected for AT&T 54016 ESF mode, the two error history registers maintained by the unit are the following:

Carrier Error History Registers are reserved for use by the carrier or remote T1 interface. The Carrier (or far end T1 terminating equipment) can read these registers over the ESF Data Link (FDL) using the TABS protocol defined by AT&T 54016. The local user can obtain a display of the carrier's error history registers but cannot reset them.

User Error History Registers are for use by the local user. These registers can be displayed and reset if preferred by the local user.

### **ESF Per ANSI T1.403**

When selected for ANSI T1.403 ESF mode, the two error history registers are the following:

Local Error History Registers contains error data pertaining to the locally received signal from the network.

Carrier Error History Register contains error data pertaining to the remotely received signal. This error data is the accumulation of received Performance Report Messages (PRMs) received by the CSU from the network and is a measure of the error performance of the T1 line as observed by the T1 network receive equipment. The PRM protocol is described in ANSI Standard T1.403.

## **SF Error**

When SF framing is selected, the two error history reporting registers are the same as in AT&T 54016. The only difference is that the carrier cannot read the carrier registers since there is no FDL.

## **Local Error History ANSI T1.403**

The local performance history allows display of error history data accumulated by the local FT 100S when ANSI T1.403 ESF mode is selected.

The Local 1-Hour Performance Data screen displays a summary of error history accumulated during the previous hour. Also displayed are the 24-hour totals for each error count.

The Local 24-Hour Performance Data screen displays all accumulated 15-minute intervals during the previous 24 hours.

## **Remote Error History Per AT&T 54016**

When in the AT&T 54016 ESF mode, remote error history is available over the ESF data link as defined by AT&T Technical Reference 54016. The desired remote error history information may be requested by entering the appropriate selection preceded by an 'R' (see below). If the request is successful, the proper report is displayed. If the request is unsuccessful, the status line indicates an ESF data link communications error.

The Remote ESF Performance Data report shows ESF errors counted at the remote FT 100S and the status of the Payload Loopback.

The Remote 1-Hour Performance Data report displays the ES, UAS, BES, SES, CSS and LOFC performance data gathered at the remote FT 100S for the last hour period (the data is stored in 15-minute intervals).

The Remote 24-Hour Performance Data reports display their respective error event performance data gathered at the remote FT 100S for the last 24-hour period (the data is stored in 15-minute intervals).

### **Carrier Performance History**

The Carrier Performance History Menu allows viewing error performance data accumulated by the FT 100S when in the AT&T 54016 ESF mode or SF mode. The user can view these registers, but cannot reset the data. The 'R' in the command string is used to gather remote error history information if desired.

Entering	Displays
(R)PC1	the ESF error count.
(R)PC2	to request the 1-hour performance report.
(R)PC3	to request the 24-hour ES report
(R)PC4	to request the 24-hour BES report.
(R)PC5	to request the 24-hour SES report.
(R)PC6	to request the 24-hour UAS report.
(R)PC7	to request the 24-hour CSS report.
(R)PC8	to request the 24-hour LOFC report.

### **User Performance History**

The User Error History Menu allows for displaying the user error history options when AT&T 54016 ESF mode or SF mode is selected. The 'R' in the command string is used to gather remote error history information if desired.

Entering	Displays
(R)PU0	the ESF error count.
(R)PU1	the previous 1-hour accumulation of error data.
(R)PU2	to display the previous 24-hour accumulation of errored seconds.



- (R)PU3 the previous 24-hour accumulation of bursty errored seconds data.
- (R)PU4 the previous 24-hour accumulation of Severely Error Seconds data.
- (R)PU5 the previous 24-hour accumulation of unavailable seconds data.
- (R)PU6 the previous 24-hour accumulation of control slip seconds and loss of frame count data.
- (R)PU7 to reset the performance monitoring counters.
- (R)PU8 to reset the errored ESF counter.

### REMOTE FT 100S CONFIGURATION

The FT 100S has the capability of configuring a remote FT 100S or FT 100 using the ESF Facility Data Link (FDL) and a proprietary protocol. Remote configuration is accomplished through the use of the control port or LocalView. Since the ESF Data Link is utilized for this feature, the framing option on all units must be selected for "ESF".



#### Note

*Changing remote framing from ESF to SF will disable remote configuration and may cause errors.*

The following is a description of the various command strings used in remotely configuring an FT 100S or FT 100.

### Configuration Control                      CRC

The choice for this option determines whether the information displayed for the various control port screens pertains to the local unit or remote unit. If the configuration control is selected for remote configuration, all the information displayed on the various option and summary screens shows the configuration of the remote unit at the time that its configuration was last downloaded (CR1 command). If the configuration control is selected for local configuration, the configuration information is that of the local unit.

**Remote Configuration Mode      CRM**

The choice for this option determines which FT 100S or FT 100 may actually handle all of the configuration for both units. The FT 100S or FT 100 that is selected for slave mode may be configured from the master unit and request the configuration from the master unit but may not change it.

**Get Remote Configuration      CR1**

This command initiates the actual downloading of the remote FT 100S or FT 100's configuration information. Once this is complete, the option and summary screens for the remote unit may be viewed by selecting the configuration control on the local unit for remote configuration.

**Send Remote Configuration      CR2**

This command initiates actual transmission of the configuration information across the data link to the remote FT 100S or FT 100.



**Note**

*The remote FT 100S or FT 100's configuration is not actually updated until this command is successfully executed.*

When changes are made to the various configuration options for the remote FT 100S or FT 100, they are stored in the local FT 100S. Therefore, that information must be sent across the network using this command before the remote unit reflects any of the changes made.

**Send Remote Unit ID      CR3**

Sends the remote units ID across the data link after being determined and entered at the local unit.

**Send Remote Password      CR4**

Sends the remote units password across the data link after being determined and entered at the local unit.

**Send Remote Time and Date      CR5**

Sends the remote units time and date across the data link after being determined and entered at the local unit.

## **COMMAND ENTRY**

The following is an example of a screen when a command is entered from the control port.

```
clf
-----
LOCAL T1 LINE FRAMING STATUS: ESF
CLF1: SF CLF2: ESF
ENTER OPTION:
```

*Figure 6-7  
Command Entry Screen*

