

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.

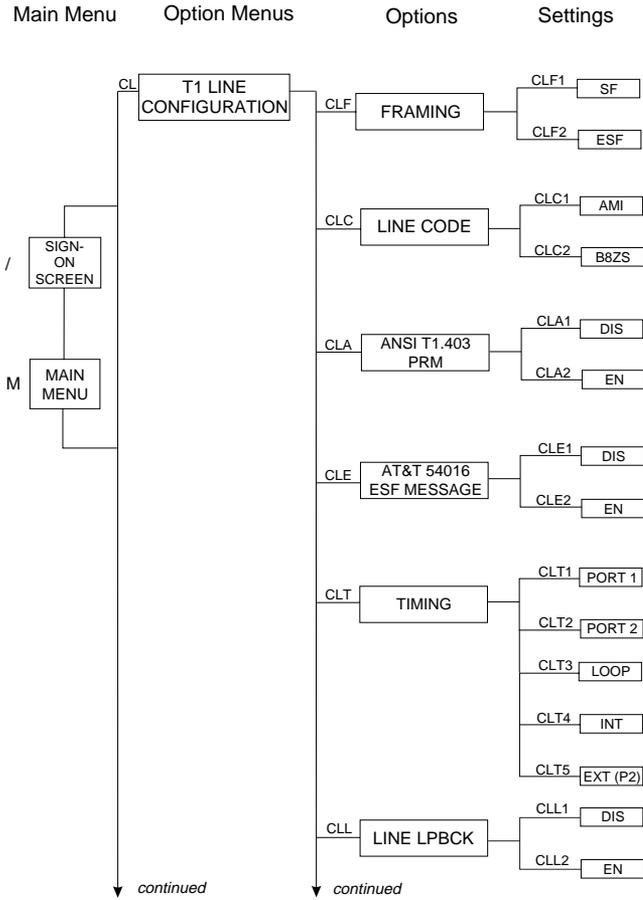


Figure 6-1
Menu Flow Chart

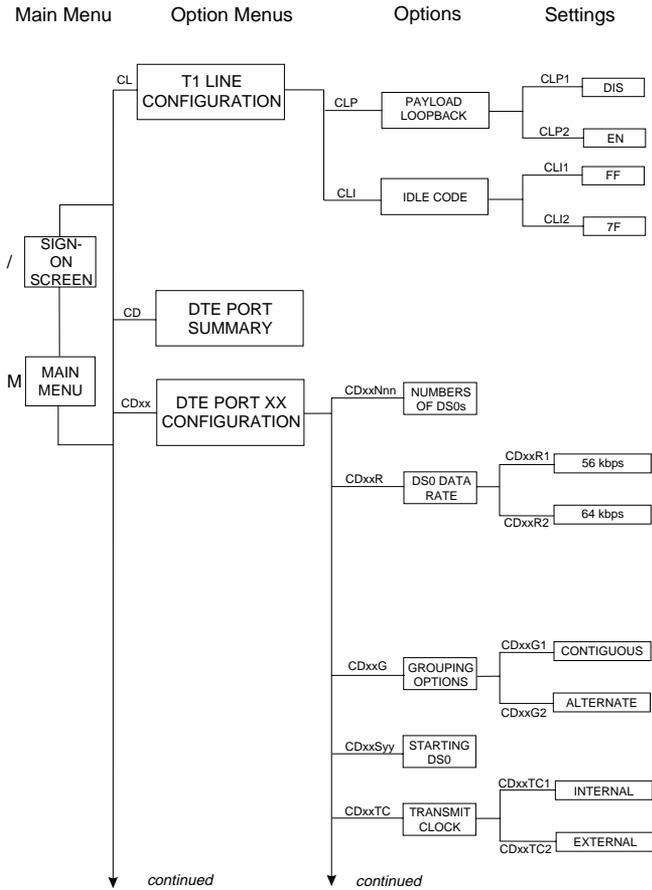


Figure 6-1 Cont.
Menu Flow Chart

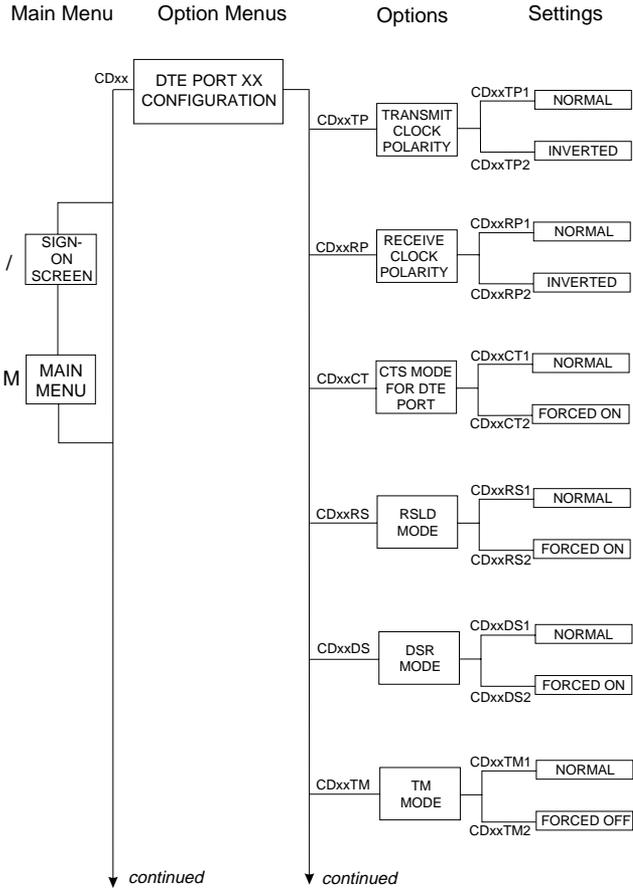


Figure 6-1 Cont.
Menu Flow Chart

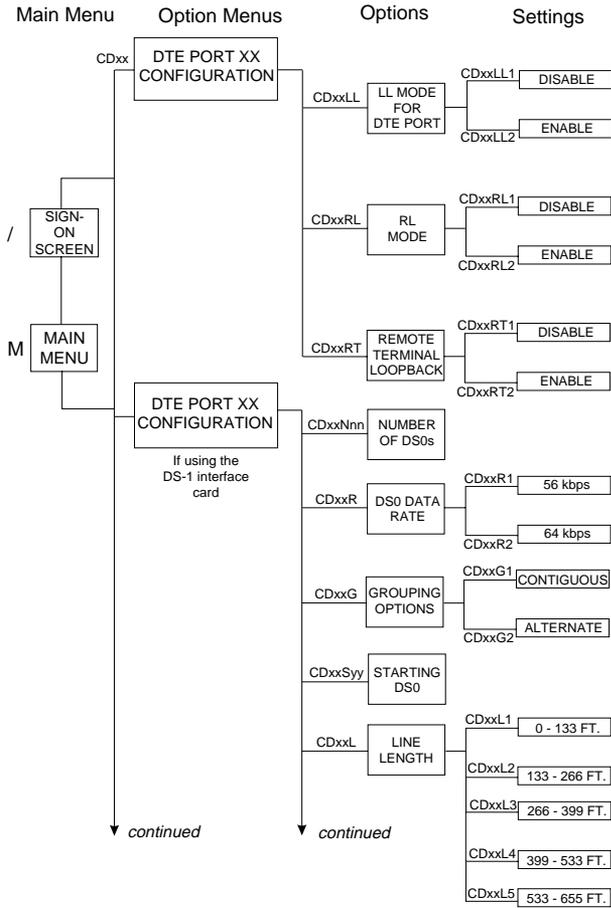


Figure 6-1 Cont.
Menu Flow Chart

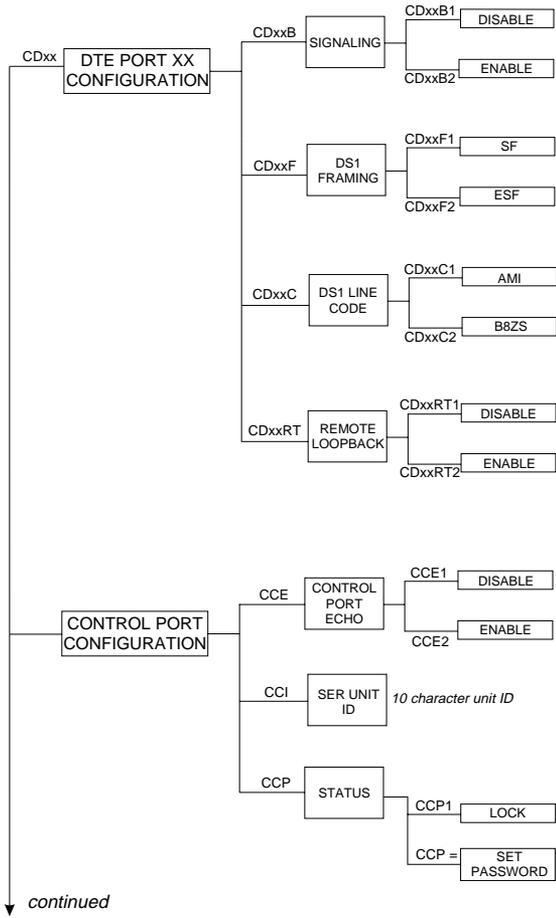


Figure 6-1 Cont.
Menu Flow Chart

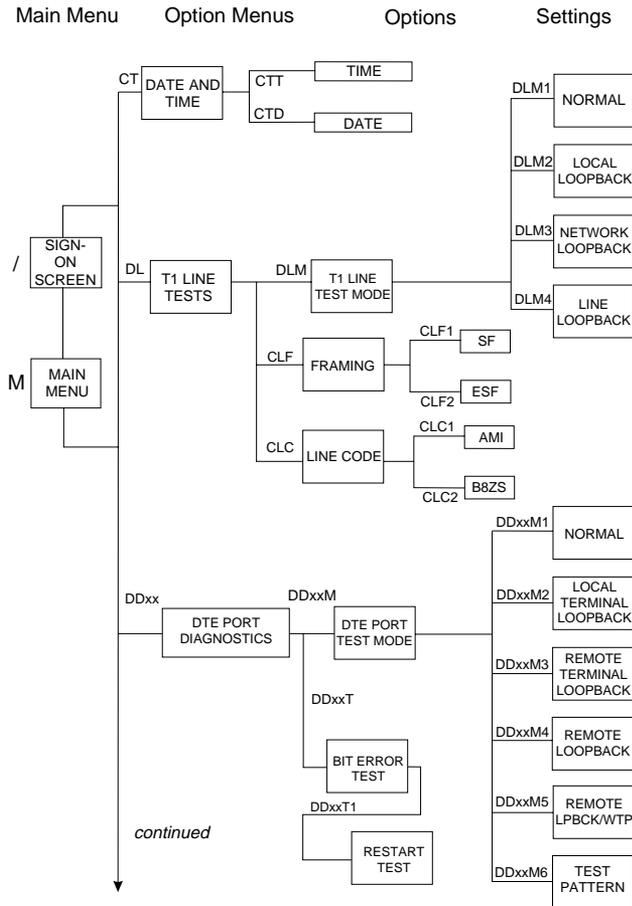


Figure 6-1 Cont.
Menu Flow Chart

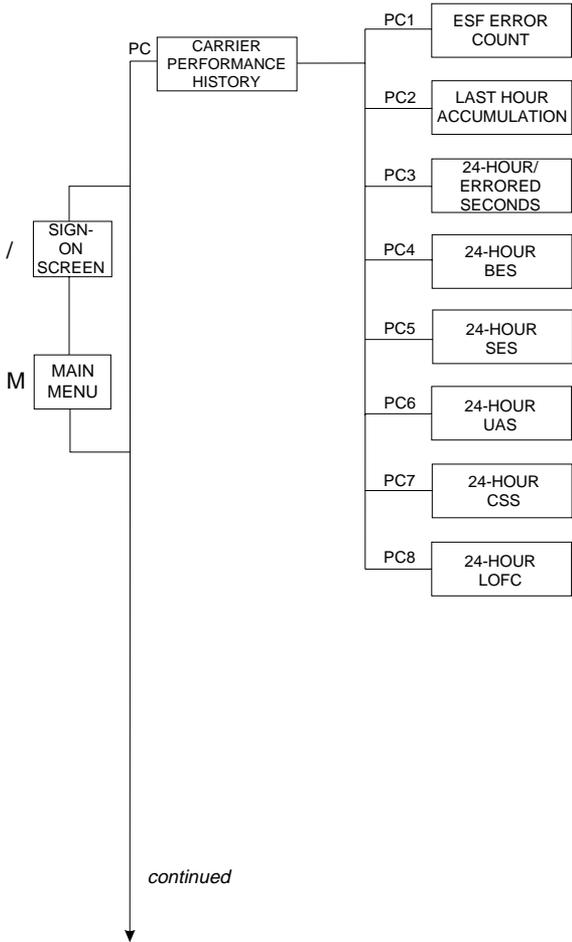


Figure 6-1 Cont.
Menu Flow Chart

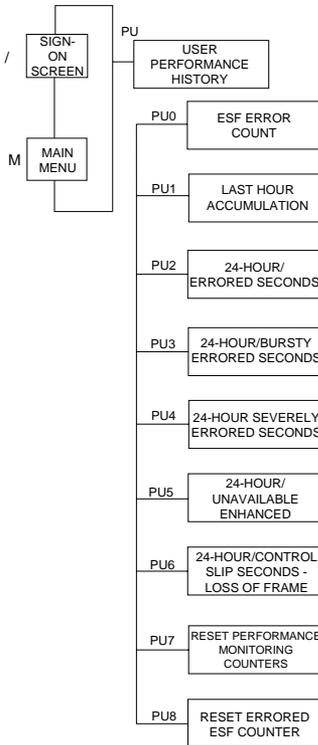


Figure 6-1 Cont.
Menu Flow Chart

CONNECTING TO A TERMINAL

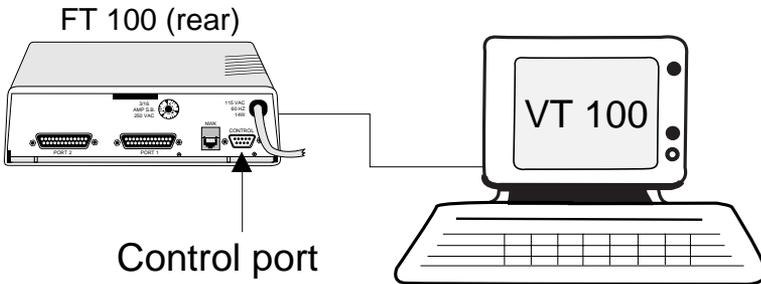
To operate the unit with a CRT terminal:

1. Connect the FT 100 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 100 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 100 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.

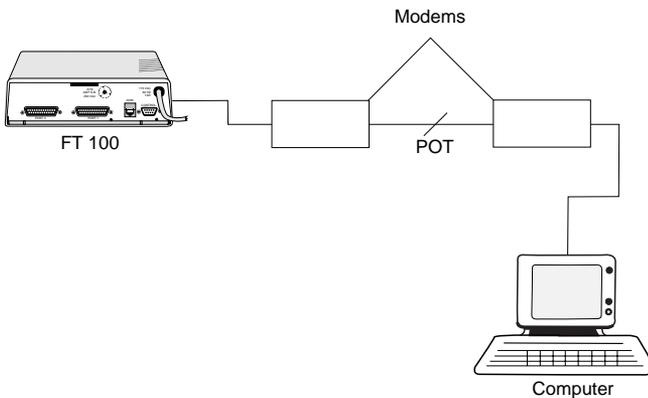


Figure 6-3
Modem Connection

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. The user does not have to choose options only from the menu or option selections currently displayed. Chapter B, lists all menus and options.

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

```
=====
TIME: 14:26:09          UDS/MOTOROLA          DATE: 11/26/96
                        FT100
                        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">• Framing• Line code• ANSI.403 PRM• AT&T 54016 ESF message• Timing• Line loopback• Payload loopback• Idle code
Entering	Displays
CD	DTE Port Summary
CDxx	Port xx Configuration Options: <ul style="list-style-type: none">• Numbers of DS0s• Data rate• Grouping options• Starting DS0• Transmit clock• Transmit clock polarity• Receive clock polarity• CTS mode• RSLD• DSR• TM• Local loopback• Remote loopback• Remote terminal loopback
CC	Control Port Configuration Options: <ul style="list-style-type: none">• Echo• Status
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 port 1, port 2, loop, 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 CL 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: 14:32:28            UDS/MOTOROLA            DATE: 11/26/96
                                 FT100
                                 LOCAL
                                 T1 LINE CONFIGURATION MENU
=====
                                 FRAMING :    CLF    ESF
                                 LINE CODE :   CLC    B8ZS
                                 BIT STUFFING : CLB    DISABLE
                                 ANSI T1.403 PRM : CLA    DISABLE
AT&T 54016 ESF MESSAGE :    CLE    DISABLE
                                 T1 TIMING :    CLT    LOOP
                                 LINE LOOPBACK : CLL    DISABLE
                                 PAYLOAD LOOPBACK : CLP    DISABLE
                                 IDLE CODE :    CLI    FF
                                 YELLOW ALARM : CLY    DISABLE
=====
ENTER SELECTION:
```

Figure 6-5
T1 Line Configuration Menu

CD _{xx} G	DS0 Grouping Select alternate or contiguous.
CD _{xx} S _{yy}	Starting DS0 Select 01 through 24.
CD _{xx} TC	Transmit Clock Select internal or external.
CD _{xx} TP	Transmit Clock Polarity Select normal or inverted.
CD _{xx} RP	Receive Clock Polarity Select normal or inverted.
CD _{xx} CT	CTS Mode Select normal or forced on.
CD _{xx} RS	RLSD Select normal or forced on.
CD _{xx} DS	DSR Mode Select normal or forced on.
CD _{xx} TM	TM (test) Mode Select normal or forced on.
CD _{xx} LL	Local Loopback Select disable or enable.
Entering	Displays
CD _{xx} RL	Remote Loopback Select disable or enable.
CD _{xx} RT	Remote Terminal Loopback Select disable or enable.

DS-1 INTERFACE

Entering	Displays
CDxxN	Number of DS0s Select 00 through 24.
CDxxR	DS0 Rate Select 56 or 64 kbps.
CDxxG	DS0 Grouping Select alternate or contiguous.
CDxxS	Starting DS0 Select 1 through 24.
CDxxL	DS-1 Line Length 0-133, 133-266, 266-399, 399-533, 533-655.
CDxxB	DS-1 Signaling Select disable or enable.
CDxxF	DS-1 Framing Select SF or ESF.
CDxxC	DS-1 Line Code Select AMI or B8ZS
CDxxRT	Remote 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 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 100). Entering the correct password unlocks the control port.

If the control port status is unlocked, no password prompt appears.

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.

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 100 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 100 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 conditions and alarms:

- CSU status error events
- Frame sync ESF error count
- Loss of signal SF error count
- AIS detect errored seconds
- Yellow alarm bursty errored seconds
- Severely errored seconds
- Unavailable seconds
- Loss of frame count
- 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 that 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.

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 is 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 is 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 100 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 100. Also, the status of both the DS-1 network and the Payload Loopback are shown.

The Remote 1-Hour Performance Data report displays the ES, UAS, BES, SES, CSS and LOFC performance data gathered at the remote FT 100 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 100 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 100 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 100 CONFIGURATION

The FT 100 has the capability of configuring a remote FT 100 using the ESF Facility Data Link 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".

The following is description of the various command strings used in remotely configuring an 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 100 may actually handle all of the configuration for both units. The 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 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 100.



Note

The remote 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 100, they are stored in the local FT 100. 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 FT 100's unit ID across the data link after being determined and entered at the local unit.

Send Remote Password CR4

Sends the remote FT 100's password across the data link after being determined and entered at the local unit.

Send Remote Time and Date CR5

Sends the remote FT 100's 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.

```
c1f
=====
LOCAL T1 LINE FRAMING STATUS: ESF
CLF1: SF CLF2: ESF
ENTER OPTION:
```

*Figure 6-7
Command Entry Screen*

