



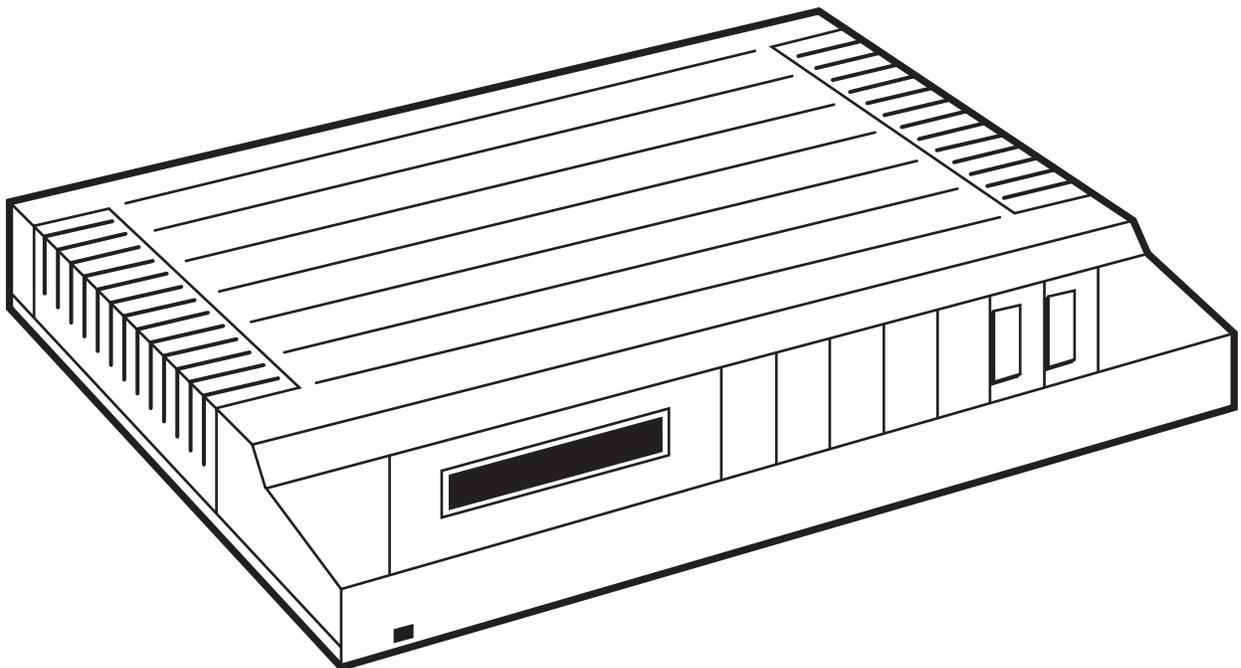
DECEMBER 1992

MX611A

MX622A

810-0832-001A

Statplex 4 Statplex 8



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1. Specifications

1.1 General Specifications

Multiplexor Type — Statistical

User Channels — MX611A: 4; MX622A: 8

Speed — Channel: 50 bps to 9.6 Kbps
Composite: Up to 19.2 Kbps with external timing

Data Format — Asynchronous, ASCII

Flow Control — X-ON/X-OFF, CTS, DTR

Diagnostics — Fox, loopback

Interface — Channel: RS-232/DCE
Composite: RS-232/DTE

Connectors — Channel: DB25 female
Composite: DB25 male

Operating Environment — 32 to 114 °F
(0 to 45 °C)

Humidity — 0 to 95%, noncondensing

Power Supply Weight — 3.3 lb. (1.5 kg)

Storage Temperature — 14 to 140 °F
(-10 to 60 °C)

Status Displays — A liquid crystal display and one light-emitting diode indicator

Hardware Controls — The printed circuit module has two headers: E3 for EIA control signal bias, and E4 for RTS toggle on sync loss control. The printed circuit module has two switches, SELECT and EXECUTE, used to select tests

Power — 115 VAC +10%, 50/60 Hz, 40 watts

Size — 8-channel Statplex: 2"H x 12.6"W x 9.8"D
(5.1 x 32 x 24.8 cm); 4-channel Statplex:
1.3"H x 12.6"W x 9.8"D (3.3 x 32 x 24.8 cm)

Weight — 8-channel Statplex: 3 lbs. (1.4 kg)
4-channel Statplex: 2.5 lb. (1.1 kg)

1.2 Composite Interface Specifications

Connector — DB25 male

Speed — Synchronous, up to 19,200 bps with external timing

Interface — EIA RS-232-C (CCITT V.24/V.28); serial synchronous; external clocking; full-duplex; configured as Data Terminal Equipment (DTE)

Data and Control Path — Shown in Table 1.1.

Table 1-1. Composite Data and Control Path (Signals)

Pin	EIA RS-232C	CCITT V.24	Signal Lead	Input/Output	Bias Control	Type
1	AA	101	Protective Ground	-	-	-
2	BA	103	Transmitted Data	Output	-	Data
3	BB	104	Received Data	Input	-	Data
4	CA	105	Request-To-Send	Output	-	Control
5	CB	106	Clear-To-Send	Input	On	Control
6	CC	107	Data Set Ready	Input	On	Control
7	AB	102	Signal Ground	-	-	-
15	DB	114	Transmit Clock	Input	-	Timing
17	DD	115	Receive Clock	Input	-	Timing
20	CD	108	Data Terminal Ready	Output	-	Control

1.3 Channel Interface Specifications

Connector — DB25 female

Data Codes — 5, 6, 7, 8, and 9 bits per character

Speed — 50, 75, 110, 134.5, 150, 200, 300, 600, 1200, 1800, 2400, 4800, 9600 bps, and autobaud rate detection

Data Stop Bits — 1, 1.5, and 2 stop bits per character

EIA Controls — Two full-duplex interface control signals supported on each channel, as shown in Fig. 1-1

Interface — EIA RS-232-C (CCITT V.24/V.28); serial asynchronous; full-duplex; configured as Data Communications Equipment (DCE)

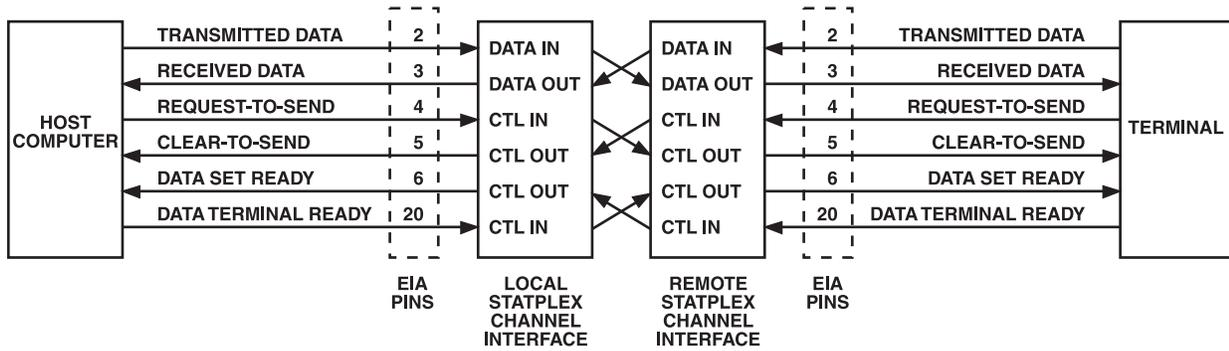


Figure 1-1. Channel Data and Control Paths

Table 1-2. Channel Data and Control Paths

EIA Pin	CCITT RS-232C	V.24	Signal Lead	Input/Output	Bias Control	Type
1	AA	101	Protective Ground	-	-	-
2	BA	103	Transmitted Data	Input	-	Data
3	BB	104	Received Data	Output	-	Data
4	CA	105	Request-to-Send	Input	*On	Control
5	CB	106	Clear-to-Send	Output	-	Control
6	CC	107	Data Set Ready	Output	-	Control
7	AB	102	Signal Ground	-	-	-
20	CD	108	Data Terminal Ready	Input	*On	Control

* EIA bias is controlled by Header E3 on the printed circuit module; see Section 1.3.1.

1.3.1 EIA Bias

When bias is set to ON (the factory setting) and the EIA controls are enabled, the Statplex will recognize an active (EIA-defined) signal when:

- (1) There is no connection to the signal, or
- (2) The device attached to the channel asserts the signal active.

When bias is set to OFF, and EIA controls are enabled, the Statplex will recognize an inactive signal when:

- (1) There is no connection to the signal, or
- (2) The device attached to the channel asserts the signal inactive.

In either case, the Statplex will always recognize the state asserted by the device attached to the channel when there is a connection to the signal and EIA controls are enabled.

1.4 Functional Specifications

Aggregate Input — 76,800 bps (8-channel unit)

Command Facilities — Menu-driven. Provides message broadcast, dynamic channel configuration, centralized troubleshooting, alarm messages, and periodic reports.

Delay Characteristics — Average delay through the Statplex is two character times, plus the transmission delay between the two Statplex units. Although transmission delay is normally very low, customers operating with echoplex systems will experience this delay twice; that is, once inbound to the computer and once on echo outbound to the terminal. This delay is not normally noticeable with speeds of 1200 bps and above, but may be noticeable with speeds of 300 bps or less.

Diagnostics — Local channel tests, local and remote composite loopback tests, and a data output test.

Dynamic Memory Capacity — 16,384 bytes

Error Control — Full-duplex, automatic request for repetition (ARQ), with Cyclic Redundancy Check (CRC), and selective reject. Proprietary algorithm.

Multiplexing Technique — Statistical with variable-length block transmission, dynamic bandwidth assignment, and error control. Proprietary algorithm.

Transparency — Normally transparent to all user data. However, a channel configured as Terminal is transparent only when the data link is operational. The Terminal channel transmits LINK DOWN in response to Ctrl-X when the composite link is not operational. A channel configured as Host is always transparent to Ctrl X.

Enter the Command Mode by a Ctrl-X Ctrl-Y or Ctrl-X BREAK (if enabled) sequence. Transparency to these sequences is obtained by disabling the Command Mode using the Channel Features Menu (see Section 4.3.9).

Types of Displays — The liquid crystal display shows system status and channel activity. LED indicators show power on, and alarm conditions show on the indicator.

2. Introduction

The Statplex is a compact, 4- or 8-channel standalone statistical multiplexor. It uses advanced multiplexing techniques to concentrate data from up to eight devices for transmission over a single data-communications link to another Statplex at a remote location. The remote unit reverses the process. The unit itself is described in **Chapter 3**.

2.1 Applications

This chapter describes the following applications:

- Typical application
- Application in a satellite link
- Application from a central site

2.1.1 TYPICAL APPLICATION

In a typical application, the Statplex allows as many as eight devices to share a single communications link, such as leased line, to a host computer. These devices may be local clusters of personal computers with communications software, dedicated printers, or data terminals.

You can connect the Statplex to a communications link using external data communications devices operating to 19,200 bps (bits per second). These devices may be line drivers, modems, modem eliminators, and so on. Figure 2-1 illustrates a typical application.

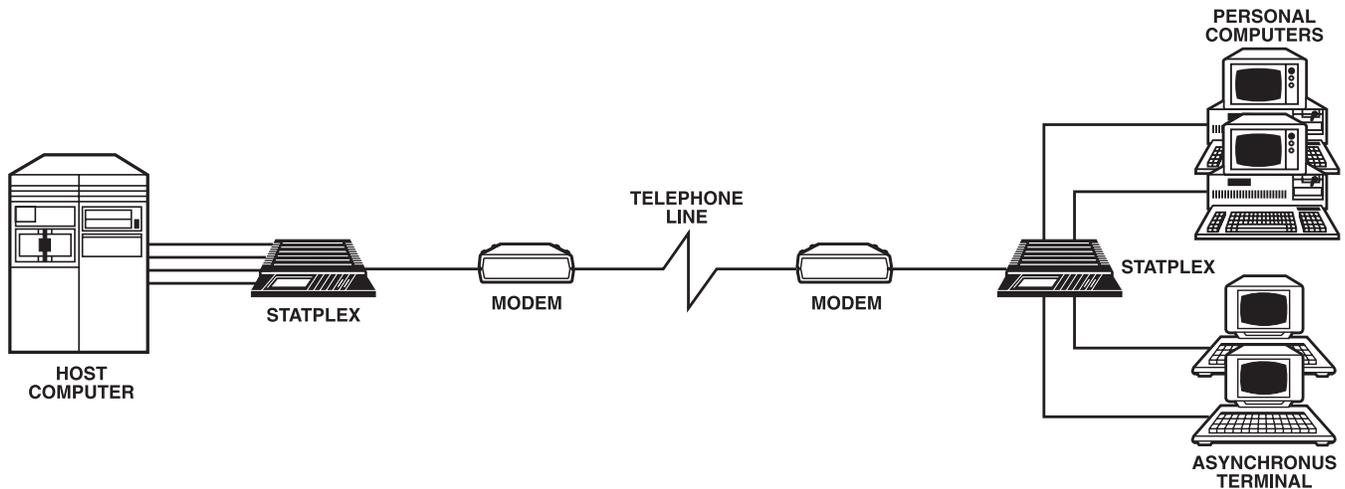


Fig. 2-1. Typical Application.

2.1.2 APPLICATION USING A SATELLITE LINK

The built-in automatic satellite-link support feature automatically sets the Statplex to operate with the round-trip delays inherent in a satellite link (see Fig. 2-2). These delays cause lower system throughput. To maximize system throughput on a satellite link, the Statplex uses a composite protocol different from the one it uses for terrestrial data-communications links.

The Statplex determines (on power-up or reset) whether the link is terrestrial or satellite. If it is a satellite link, the Statplex will automatically shift to the satellite composite protocol.

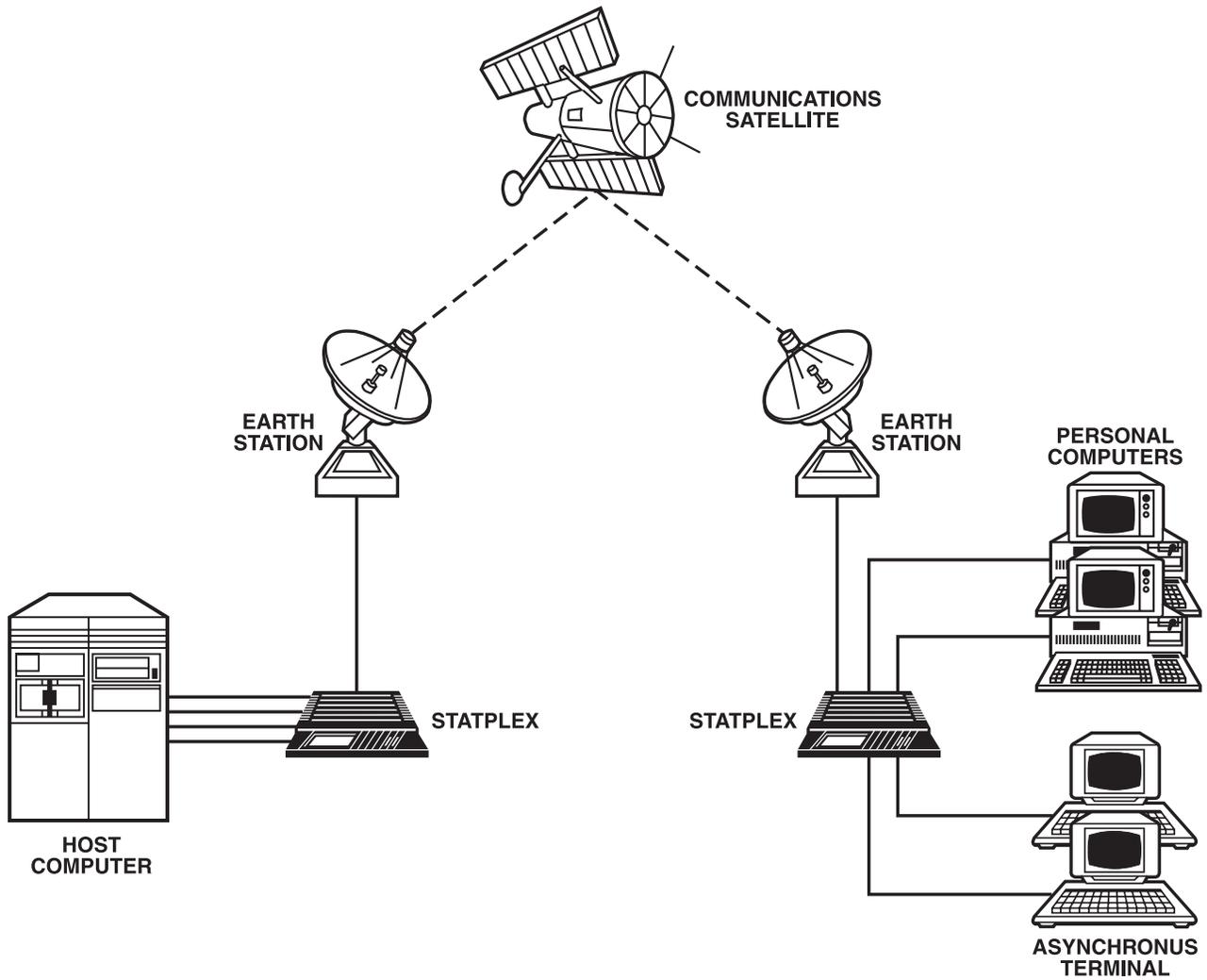


Fig. 2-2. Application Using a Satellite Link.

2.2 Description

This description of the Statplex includes models, major components, and operating parameters. The models are designed to meet the user's needs for different channel capacities. Each model has a wide range of features, described below.

The advanced features include automatic satellite link support, menu-driven channel configuration, menu-driven system configuration, local channel tests, and system diagnostics. The Statplex supports synchronous composite data exchange over leased lines and CCITT Recommendation X.21 Public Data Networks, using X.21 bis protocol. In addition, the Statplex provides automatic retransmission on error to ensure error-free transmission over the communications link.

2.2.1 MODELS

Two models are available:

- Model number MX611 has four channels.
- Model number MX622 has eight channels.

2.2.2 MAJOR COMPONENTS

The major components of the Statplex are its enclosure (base, cover, back), printed circuit module, and power supply (Fig. 2-3).

Enclosure

The enclosure consists of the base, the cover, and the back. The base holds the other major components and interlocks with the cover. The front panel of the cover has a window for the liquid crystal display (LCD) on the printed circuit module, and two switches for selecting certain operations. The back consists of a panel with several 25-pin channel connectors, a 25-pin composite connector, a 5-pin connector for the power supply, and a reset switch.

Printed Circuit Module

The printed circuit module has a Z80A microprocessor with 16 kilobytes of RAM. System configuration data is stored in nonvolatile memory on the module. The printed circuit module has an indicator that displays power-on and alarm conditions, contains the liquid crystal display (LCD), visible from the front panel, which is used to indicate system status.

Power Supply

The Statplex includes a power supply that is separate from the enclosure.

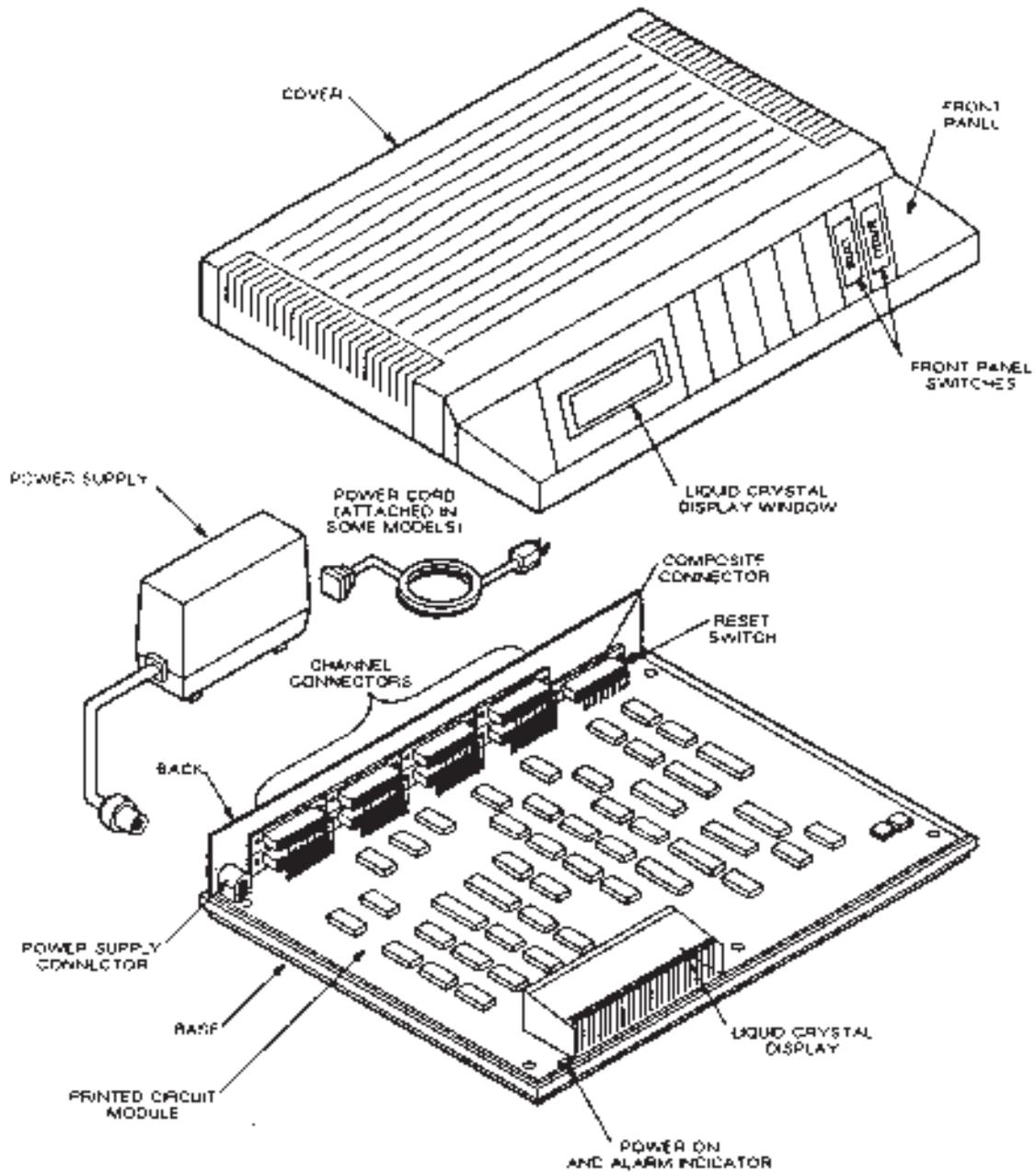


Fig. 2-3. The Major Components of the Statplex.

3. Planning and Installation

Before you install your Statplex, you need to know its physical characteristics and the requirements for installation. Your first step is to plan the system operation.

3.1 System Planning

Assign the channels in your model to the computer ports and terminals.

Assign the channels consecutively, beginning with the first channel. The System Planning Chart shown in Table 3-1 can help you with planning. Table 3-2 shows a sample completed chart.

Table 3-1. System Planning Chart

LINK NUMBER _____ COMPOSITE DATA RATE _____ COMPOSITE MODE _____

LOCATION _____ LOCATION _____

LOCAL UNIT							REMOTE UNIT						
CHANNEL NO.	TO HOST TO TERMINAL	DATA RATE	HP CHAN BITS PER CHAR)	LEVEL (DATA PER CHAR	STOP BITS	PRIORITY (H/L)	CHANNEL NO.	TO HOST TO TERMINAL	DATA RATE	HP CHAN BITS PER CHAR)	LEVEL (DATA PER CHAR	STOP BITS	PRIORITY (H/L0)
1							1						
2							2						
3							3						
4							4						
5							5						
6							6						
7							7						
8							8						

Table 3-2. System Planning Chart (Completed Sample)

LINK NUMBER _____ COMPOSITE DATA RATE _____ COMPOSITE MODE _____

LOCATION Simi Valley, Calif. LOCATION Los Angeles, Calif.

LOCAL UNIT							REMOTE UNIT						
CHANNEL NO.	TO HOST TO TERM	DATA RATE	HP CHAN	LEVEL (DATA BITS PER CHAR)	STOP BITS PER CHAR	PRIORITY (H/L)	CHANNEL NO.	TO HOST TO TERM	DATA RATE	HP CHAN	LEVEL (DATA BITS PER CHAR)	STOP BITS PER CHAR	PRIORITY (H/L)
1	HOST	ABR	NO	8	1	H	1	TERM	ABR	NO	8	1	H
2	HOST	ABR	NO	8	1	H	2	TERM	ABR	NO	8	1	H
3	HOST	ABR	NO	8	1	H	3	TERM	ABR	NO	8	1	H
4	HOST	ABR	NO	8	1	H	4	TERM	ABR	NO	8	1	H
5	TERM	1200	NO	7	1	L	5	TERM	1200	NO	7	1	L
6	TERM	110	NO	8	2	L	6	TERM	110	NO	8	2	L
7	TERM	4800	YES	8	1	H	7	HOST	4800	YES	8	1	H
8	TERM	4800	YES	8	1	H	8	HOST	4800	YES	8	1	H

3.1.1 SYSTEM PLANNING CONSIDERATIONS

When planning your system, consider the following system operation characteristics and requirements.

Composite Data Link

The composite access method (X.21 bis or standard) and data rate must be the same at both ends of the link. The composite is serial synchronous, using external (modem-supplied) transmit and receive clocks.

Minimum-Feature-Side Government

The least-equipped unit determines the system's capabilities. For example, if an 8-channel unit is connected to a 4-channel unit, the 8-channel unit can use only the four lowest-numbered channels.

Host and Terminal Channels

Channels connected to a CPU port are typically configured as Host. Channels connected to terminals are typically configured as Terminal. **Section 4.4** describes these channel characteristics.

Channel Priority

Channels are defined as high- or low-priority. For high-priority channels, data outbound from one Statplex to the other has precedence over data for low priority channels. Assign high priority to interactive channels, and low priority to background-printer channels.

3.1.2 PLANNING REQUIREMENTS FOR INSTALLATION

When planning for installation, follow these requirements:

- Consider the size of the enclosure: 12 5/8" (32 cm) wide and 9.8 inches (24.8 cm) deep. Eight-channel units are 2 inches (5.1 cm) high. Four-channel units are 1.3 inches (3.3 cm) high. Add an additional three inches to the depth for connectors.
- Do not stack other equipment on top of the enclosure. Equipment stacked on the enclosure may bend the cover and damage the internal components.

- Cabling connected to the back of the unit must be supported by some form of strain relief so that the cables don't hang directly downward and tip the unit.
- The air vents on the bottom and sides of the enclosure must always be kept open.
- The distance to the AC power outlet should not exceed six feet (1.8 meters).
- All cables that are used to connect terminals and external modems to the Statplex must be shielded and should not be longer than 50 feet (15.2 meters).

NOTE: The Statplex requires the use of shielding and shielded cables in order to maintain compliance with Title 47 of the Code of Federal Regulations, Federal Communications Commission's Rules and Regulations, Part 15 Subpart J.

If you do not use shielded cables on the DB25 connectors, or are using an unshielded device with the Statplex, or are using a combination of shielded and unshielded cables, you must use a filtered connector at the end of the shielding on the Statplex to comply with FCC Part 15.

3.2 Installation

This section explains how to set Channel EIA control signal bias, control the Composite RTS signal, and install the Statplex.

Before installing the Statplex, determine if you need to configure the jumpers (including setting EIA signal bias and controlling the RTS signal). Follow the instructions in **Sections 3.2.2** and **3.2.3** for using jumpers.

3.2.1 OPENING AND CLOSING THE UNIT

To gain access to the printed circuit module for configuring headers, you need to open the unit (see Fig. 3-1).

To open the unit, remove the five screws on the bottom of the enclosure with a Phillips screwdriver. Carefully turn the unit right-side up and lift the cover off the base.

To close the unit, set the printed circuit module into the enclosure base and place the cover over the base. Carefully turn the unit over and replace the five screws.

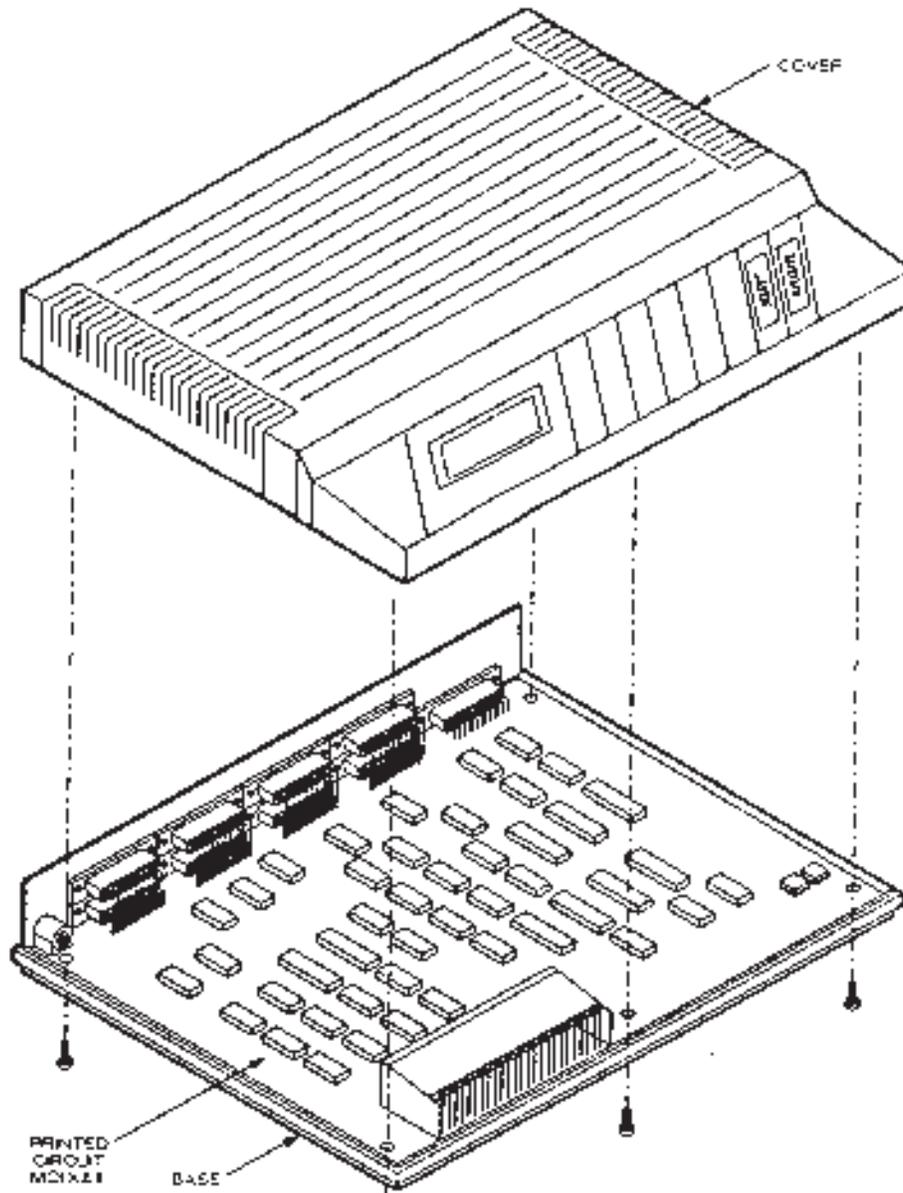


Fig. 3-1. Opening and Closing the Statplex.

3.2.2 SETTING CHANNEL EIA CONTROL SIGNAL BIAS

A bias is set on the input EIA control signals (RTS and DTR). When you enable the EIA control signals, but the device attached to the channel does not terminate the input signals, the bias ensures that the Statplex will recognize these signals as being in a specific state. The signals are not left floating and subject to noise.

CAUTION

To prevent errors caused by induced noise, do not operate the Statplex with open-ended cables connected to the channel interface connectors. You must connect the other ends of the cables to *some* devices.

The EIA input signals may be biased ON (active, per EIA definition) or OFF (inactive). In either case, the Statplex will always recognize the state asserted by the device attached to the channel when the signal is connected and EIA controls are enabled.

The bias is selectable on Header E3 of the printed circuit module (see Fig. 3-2). The jumper installed on Header E3 selects the EIA control signal bias. Press the jumper down so that the pins are fully inside the jumper. For access to the header, see **Section 3.2.1** for instructions on opening the Statplex.

To set Header E3, place the jumper onto:

- | | |
|-----------------|---------------------------|
| Pin 1 and Pin 2 | Bias ON (factory setting) |
| Pin 2 and Pin 3 | Bias OFF |

3.2.3 CONTROLLING THE COMPOSITE RTS SIGNAL

The Statplex can toggle the RTS signal on the composite interface line at 20-second intervals when in a sync-loss condition. This allows some line drivers and modems to recover (retrain) if a failure occurs. RTS will be held Low for a long-enough interval to assure modem recovery.

You must install a jumper on Header E4 to toggle the RTS signal (see Fig. 3-2). Press the jumper down so that the pins are fully inside the jumper. For access to the header, see **Section 2.2.1** for instructions on opening the Statplex.

To set Header E4, place the jumper onto:

- | | |
|-----------------|-----------------------------|
| Pin 1 and Pin 2 | Enabled (factory setting) |
| Pin 2 and Pin 3 | Disabled (RTS is held high) |

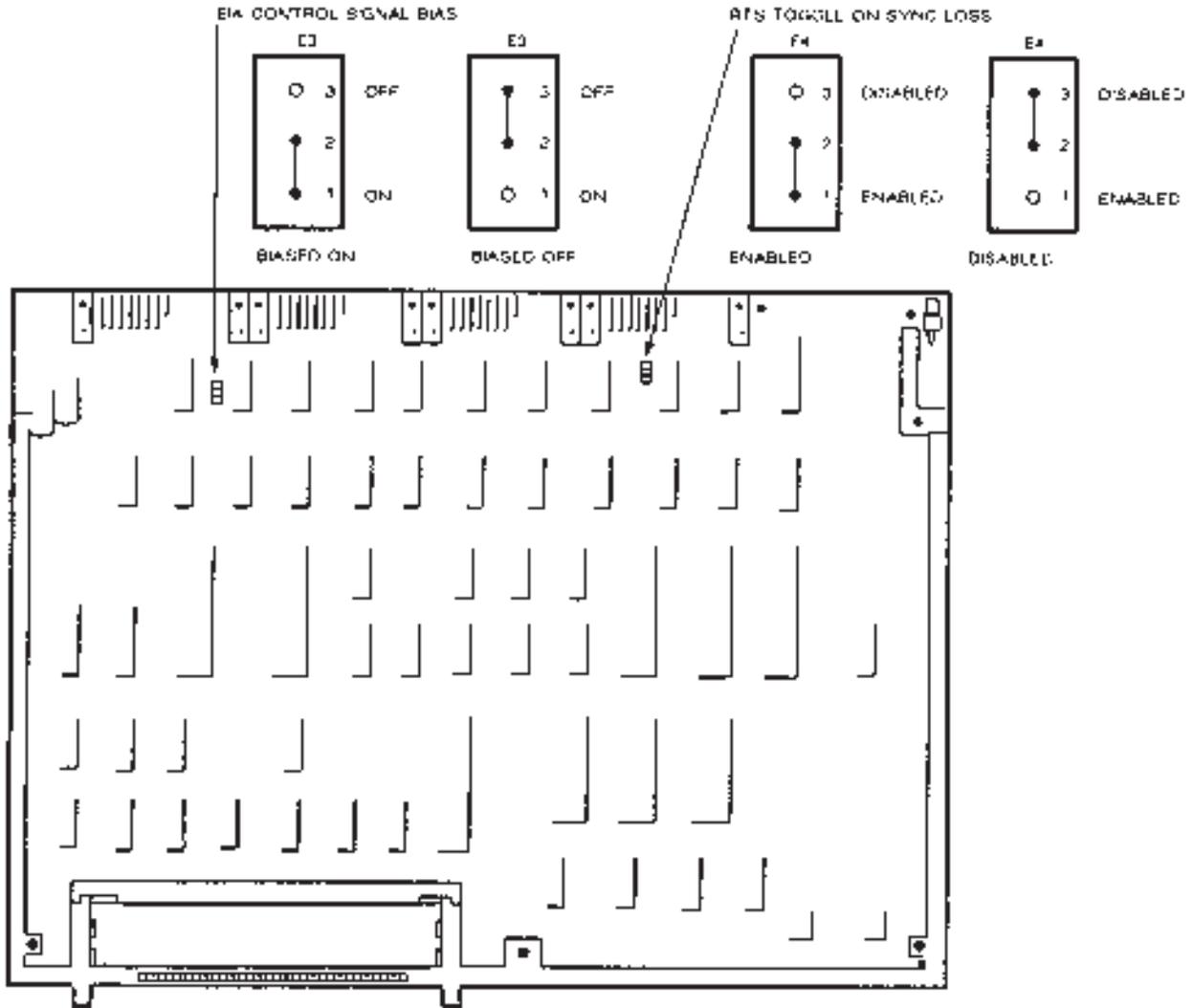


Fig. 3-2. Setting Jumpers on Headers E3 and E4.

3.2.4 INSTALLING THE STATPLEX

Plan the installation of your units (see Section 3.1).

Place each unit on a tabletop or shelf. Allow enough space to handle the back-panel connectors and maintain air flow (see the size specifications in Chapter 1).

CAUTION

Do not locate the back of the Statplex near the edge of a shelf or tabletop. When you connect cables to the back of the unit, the unit may tip over if the cables hang directly downward.

See **Section 3.1.2** for cable shielding requirements. Connect the cables at the back of the unit (see Fig. 3-3) for these system connections:

- Channel interface
- Composite interface
- Power (AC)

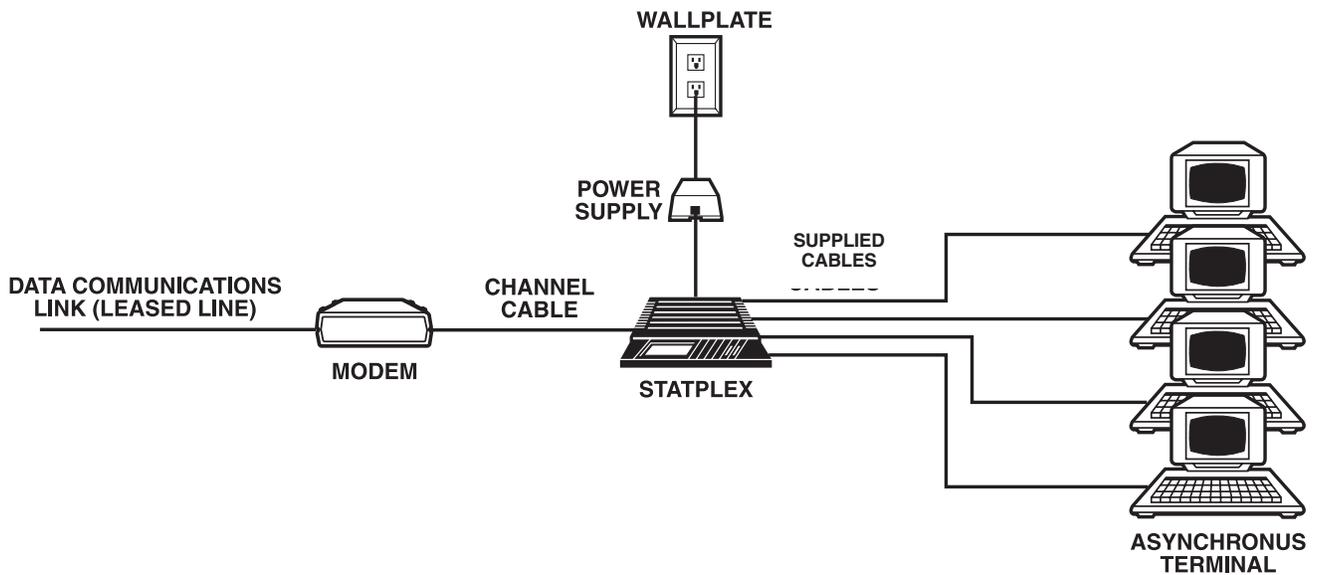


Fig. 3-3. Connections to the Statplex

STATPLEX 4, STATPLEX 8

SYSTEM CABLING

The cables that you use must be shielded and less than 50 feet (15.2 meters) long.

Table 3-3. System Cabling

NAME	FIGURE	CABLE CONNECTION
Channel	3-5	Channel interface to DTE. Composite interface to DCE (standard)
Crossover	3-6	Channel interface to DCE
X.21 composite	3-7	Composite interface to DCE (X.21 network)

Figure 3-4 shows a typical cabling arrangement. For cable wiring, see Fig. 3-5, 3-6, and 3-7. All system connections are described in the text that follows these figures.

CAUTION

To prevent errors caused by induced noise, do not operate the Statplex with open-ended cables connected to the channel interface connectors. You must connect the other ends of the cables to *some* devices.

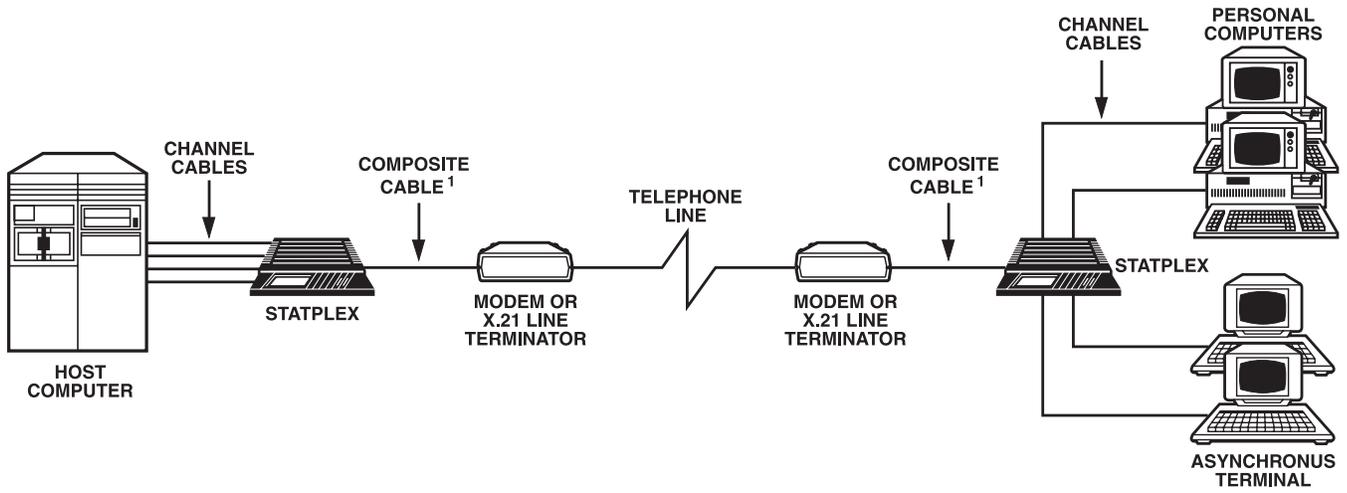


Fig. 3-4. Typical Example of System Cabling.

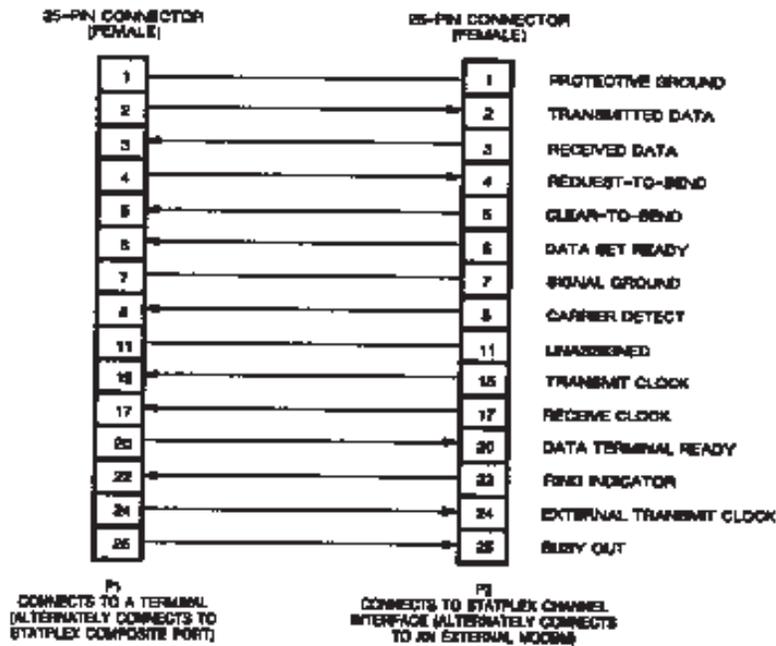


Fig. 3-5. Channel Cable Wiring.

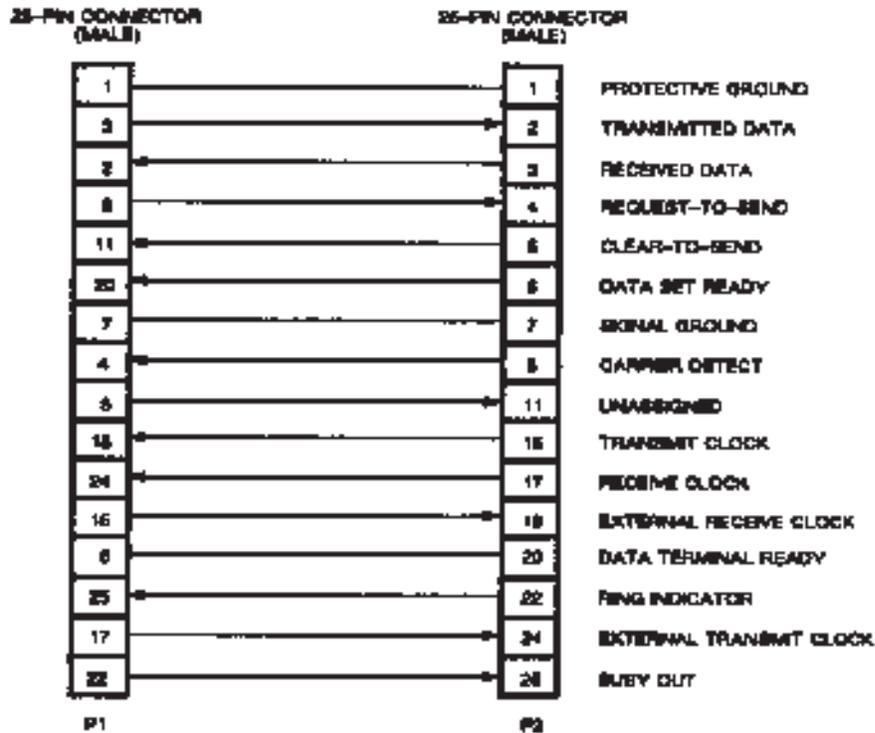


Fig. 3-6. Crossover Cable Wiring.

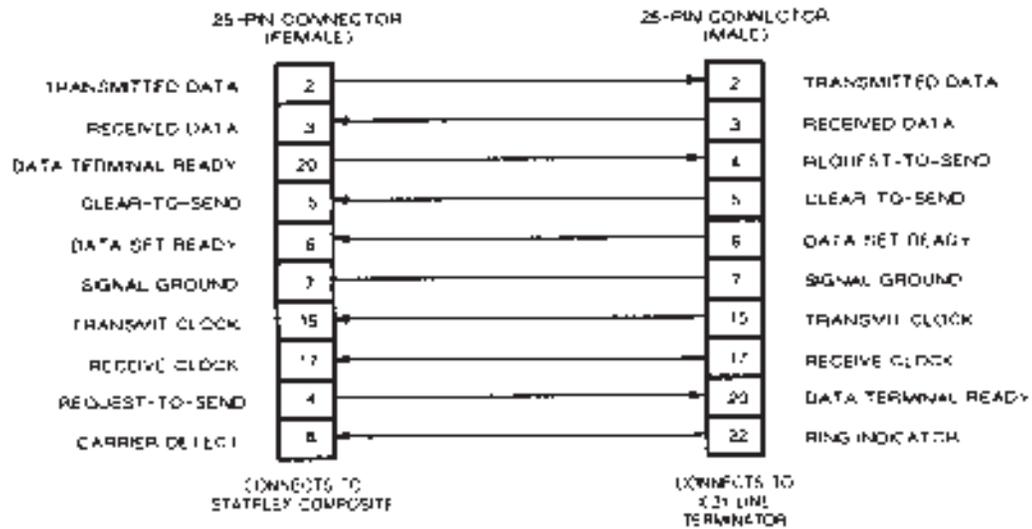


Fig. 3-7. X.21 Composite Cable Wiring.

CHANNEL INTERFACE CONNECTIONS

Using the specified cables (see Table 3-3), connect terminals and computer ports to the channel connectors on the back of the enclosure. Use the cables supplied with the equipment or channel cables (see Fig. 3-5) when connecting to data terminal equipment (DTE). Use a crossover cable (see Fig. 3-6) when connecting to data communications equipment (DCE). Raised letters on the back panel identify the connectors - CHANNEL through CHANNEL 8. Connect the channels according to the System Planning Chart (see Table 3-1). Depending on the channel capacity of your unit, you may use the connectors for two, four, or all eight channels.

COMPOSITE INTERFACE CONNECTION

Use a channel cable (see Fig. 3-5) to connect an external modem to the connector on the back panel labeled COMPOSITE. Use the X.21 Composite Cable (see Fig. 3-7) to connect an X.21 line terminator to the connector labeled *composite*.

POWER SUPPLY CONNECTION

Plug the circular male connector of the cable attached to the power supply to the DC IN connector on the back of the Statplex (see Fig. 3-3). If your power cord is detached, plug one end into the IEC connector on the power supply. Then plug the other end into the AC power wall outlet. The Statplex should begin to operate (see Chapter 5).

4. Operation and Configuration

This chapter contains a description of the following:

- Default values of the system operating parameters
- System status and channel activity displays for system operation
- Configuring the system and obtaining administrative reports
- Reference information on system operating parameters

4.1 Default Values

The Statplex's operating parameters are factory-set to certain default values. These default values configure the Statplex as a basic, point-to-point statistical multiplexor.

Most users will need to make a few changes to exactly match the Statplex to their installation. Table 4-1 contains a list of the Statplex's preset default values. If you need to configure the parameters to something other than the default values, you must make these changes using the Command Facility (refer to **Section 4.3**).

Configuration Storage

Configuration parameters are stored in EEPROM (nonvolatile memory). The EEPROM initially contains the factory-set default values listed in Table 4-1. Any parameter modifications you make replace the default values in EEPROM.

NOTE: Because of the nature of EEPROM, it may take up to 60 seconds before configuration changes made by the user are actually stored in the EEPROM.

EEPROM failures are detectable by the firmware. If the unit detects an EEPROM failure, it alerts the operator via the display and by an Event Report.

Table 4-1. Default Values for System Parameters

Parameter	Default Value	Available Values
Parameters Set by Jumpers (Sections 3.2.1 and 3.2.2)		
Channel EIA control Signal Bias	On	On, Off
Composite RTS Toggle on Sync Loss	Enabled	Enabled, Disabled
Parameters Set by the Command Facility (Section 4.3)		
Access to Command Mode	Enabled	Enabled, Disabled
Access to Command Facility Main Menu	Enabled	Enabled, Disabled
Buffer Control	X-ON/X-OFF	None, X-ON/X-OFF, CTS
Busy-Out User Channel	ON	ON, OFF
Carriage Return Delay	00	00 through 99 Character Times
Channel Command Mode Entry	Ctrl-X Ctrl-Y	Ctrl-X Ctrl-Y, Ctrl-X BREAK
Channel Priority	High	High, Low
Code Level	8 Bits per Character	5, 6, 7, 8, and 9 Bits per Character
Command Facility No-Activity Time-Out	Disabled	Disabled, 1 to 60 minutes
Composite Access Mode	Standard	Standard, X.21
Date	00/00	Month (01 through 12)/Day (01 through 31)
Disconnect on Sync Loss	Disabled	Enabled, Disabled

Table 4-1. Default Values (Continued)

Parameter	Default Value	Available Values
EIA Controls	Enabled	Enabled, Disabled
Parameters Set by the Command Facility (Section 4.3)		
Echo	Disabled	Enabled, Disabled
Event Reports	Disabled	Enabled, Disabled
Flow Control	X-ON/X-OFF	None, X-ON/X-OFF, DTR, DTR with X-ON/X-OFF
Form Feed Delay	00	00 through 99 Character Times
HP® ENQ/ACK Protocol Feature	Disabled	Enabled, Disabled
Line Feed Delay	00	00 through 99 Character Times
Link Number	00	00 through 99
Local Channel Configuration	Enabled	Enabled, Disabled
Local Unit Channel type	To Term	To Host, to Term
Message Parity	Auto	Space, Auto
Passwords	No Password	Global Password, Status Password, No Password
Remote Unit Channel Type	To Term	To Host, to Term
Smooth Scroll Feature	Disabled	Enabled, Disabled
Status Reporting Interval	60 Minutes	0, 10, 20, 30, 60 Minutes
Stop Bits per Character	1 Stop Bit	1, 1.5, 2 Stop Bits

Table 4-1. Default Values (Continued)

Parameter	Default Value	Available Values
Parameters Set by the Command Facility (Section 4.3)		
Strip Flow Control	Pass	Pass, Strip
Tandem Support Feature	Disabled	Enabled, Disabled
Time	00:00:00	Hours (00 through 23): Minutes (00 through 59): Seconds (00 through 59)
User Channel Data	ABR on Channel 1, 1200 on All Other Channels	50, 75, 110, 134.5, 150, 200, 300, 600, 1200, 1800, 2400, 4800, 9600 bps or ABR
X-ON Character	DCI	DCI, DC2, DC3, DC4
X-OFF Character	DC3	DCI, DC2, DC3, DC4
X.21 Connect Mode	Data Activity Connect	DTR Connect, Data Activity Connect
X.21 Connect Retries	20 Retries	1 to 63
X.21 Data Entry Timeout	5 Seconds	1 to 20 Seconds

4.2 Operation

When you turn the unit on (by plugging it into AC power), the display and the indicator on the front panel will show some activity. If the indicator is ON and the display shows LINK UP, the Statplex is operating normally and you can send data to and receive data from the channels.

The display presentations, how to use the front panel switches, and how to reset the system are explained below.

4.2.1 FRONT-PANEL DISPLAY

The display on the front panel shows system operation, test modes, and alarm conditions (see Fig. 4-1).

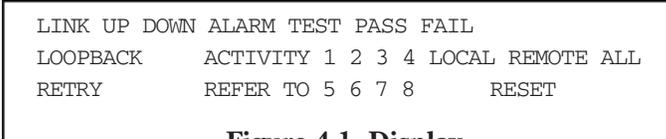


Figure 4-1. Display

The DATA LOST ALARM presentation and all REFER TO presentations are latched alarms—alarms that stay on to alert you to conditions that might affect your application. A latched alarm may be cleared from the Command Facility (**Section 4.3.4**) or by pressing the EXECUTE switch.

When REFER TO is shown, a number will be shown on the display to indicate the type of condition that the Statplex detected.

Table 4-2 lists the display presentations and each

alarm condition.

LINK shows on the display at all times after the power-up reset, except during system tests or when the front panel switches are being used. The

indicator on the front panel will FLASH if ALARM or LINK DOWN is shown for any reason.

Table 4-2. Display Presentations

Presentation	Description
ACTIVITY <i>n</i>	There is data activity on the channel indicated (<i>n</i> = the channel number or numbers).
ALARM REFER TO 3	The unit has performed a cold-start system reset.
ALARM REFER TO 4	EEPROM failure was detected during the Self-Test or during normal operation.
ALARM TEST 3 FAIL	The Statplex failed the Self-Test EEPROM test.
DATA ALARM	Buffer utilization exceeds 87 per cent.
DATA LOST ALARM	Data was lost because of a buffer overflow.
DATA RETRY	The local unit requests a retransmission of an incorrect data frame.
LINK DOWN	The local unit has lost synchronization with the remote unit.
LINK UP	Synchronization is maintained between the local and remote units.
LINK UP LOOPBACK LOCAL	The local unit is in the Local Composite Loopback Test Mode.
LINK UP LOOPBACK REMOTE	The local unit is in the Remote Composite Loopback Test Mode.
LOOPBACK	The local unit is in a loopback as a result of a command from the remote unit.
LOOPBACK DATA ALARM	The local unit is seeing its own data, but is not in a loopback test mode.
REMOTE ALARM	The remote unit has an alarm condition.

Table 4-2. Display Presentations (Continued)

Presentation	Description
RETRY ALARM	The composite line is experiencing a high error rate.
TEST ALL	The display test is called up and may be invoked by pressing the Execute Switch.
TEST LOCAL	The Local Composite Loopback Test is selected, and may be invoked by pressing the Execute Switch.
TEST REMOTE	The Remote Composite Loopback Test is selected, and may be invoked by pressing the Execute Switch.
TEST RESET	The test reset function is selected. If just the Execute Switch is pressed, any previously selected test will be terminated. If both Select and Execute switches are pressed, a cold-start system reset will occur.
TEST 1	The Self-Test PROM Test is in progress.
TEST 1 FAIL	The Statplex has failed the Self-Test PROM Test.
TEST 2	The Self-Test RAM Test is in progress.
TEST 2 FAIL	The Statplex has failed the Self-Test RAM Test.
TEST 3	The Self-Test EEPROM Test is in progress.
DISPLAY DURING NORMAL OPERATION	

When you first plug in the Statplex and you have not yet established communications with the remote

Statplex, the display on the local unit will show the following:

/LINK DOWN

After you establish communications with the remote Statplex, the display on the local unit will show the following:

/LINK UP

Test mode selection and status displays during the tests are described in **Chapter 5**.

USING THE FRONT-PANEL SWITCHES

The front-panel switches (labeled SELECT and EXECUTE) are used to perform diagnostic tests. The display is used with the front-panel switches to aid with selections (see Fig. 4-2).

The diagnostic tests that you can select from the front panel switches are the Local Composite Loopback Test, the Remote Composite Loopback Test, and a test of the display.

The Select Switch is used to step through the selections. Press and hold the Select Switch for about one second to call up the first selection. Each

additional time you press the Select Switch, the next selection in sequence is shown on the display.

The sequence of selections as shown on the display is as follows:

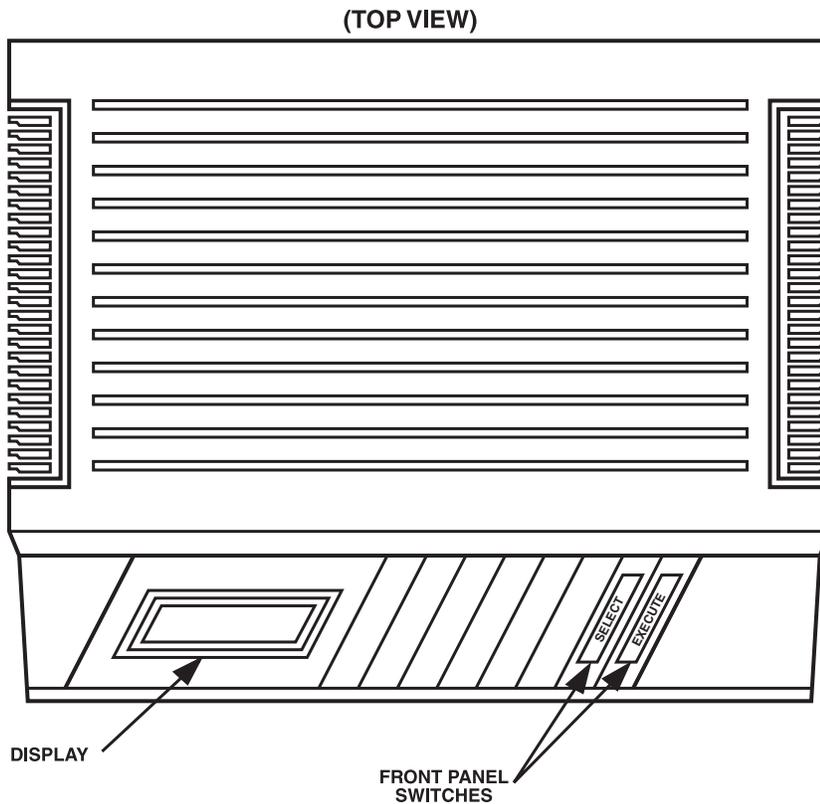
- TEST REMOTE (remote composite loopback)
- TEST RESET (terminate test mode or cold-start system reset)

- TEST ALL (display test)
- TEST LOCAL (local composite loopback)

When any of the selections are shown on the display, pressing the Execute Switch will cause the Statplex to invoke the selected mode.

Fig. 4-2. Front Panel Switches

Refer to **Chapter 5** for performing tests on the



Statplex from the front-panel switches. Refer to **Section 4.2.2** for resetting the system via a cold start from

the front panel switches.

4.2.2 SYSTEM RESET

A system reset can be either a warm start or a cold start.

WARM START

A warm start clears out alarm conditions and data in the buffers.

The system returns to the previously set configuration. You can invoke a warm start from the reset switch on the back or from the Command Facility. Here's how to warm-start the Statplex:

From the Reset Switch on the back of the unit:

1. Using a ballpoint pen, press the Reset Switch all the way in and release it.

From the Command Facility:

1. Select a system reset with current configuration used for parameter restoration (refer to **Section 4.3.4**).

COLD START

At initial power-up, the Statplex is set to the default values listed in Table 4-1. In normal operation, after you change the system parameters from the Command Facility, the system will always come up to the changed configuration after a system reset.

If you wish to return the Statplex to the factory-set default values, or if you need to disable the Command Facility access password, perform a cold start. The cold-start procedure is as follows:

1. Disconnect the cable from the connector labeled COMPOSITE on the back of the local unit. This will prevent downline loading of system configuration information during the reset.
2. At the local unit:
 - a. Press and hold the Select Switch on the front panel. The following will appear on the display:

```
TEST
                RESET
```

- b. While still pressing the Select Switch, press the Execute Switch until the unit resets.

3. At the remote unit:

- a. Press and hold the Select Switch on the front panel. The following will appear on the display:

```
TEST
                RESET
```

- b. While still pressing the Select Switch, press the Execute Switch until the unit resets.

4. At this point, both units will show the following on the display:

```
LINK DOWN  ALARM
                3
```

REFER TO

Reconnect the cable to the connector labeled COMPOSITE of the local unit. A system reset will be performed (this may take three to five seconds). One unit will then show LINK UP on its display, and the other unit will show the following:

```
LINK UP    ALARM
                3
```

REFER TO

This indicates that you have reset the system by a cold start. The parameters of both units are now set to the default values and the Command Facility access password is disabled. Press and release the Execute Switch to clear the alarm condition.

4.3 Command Mode

The Command Mode provides configuration and testing for each user channel, as well as access to the Command Facility for system configuration, tests, and reports (see Fig. 4-3).

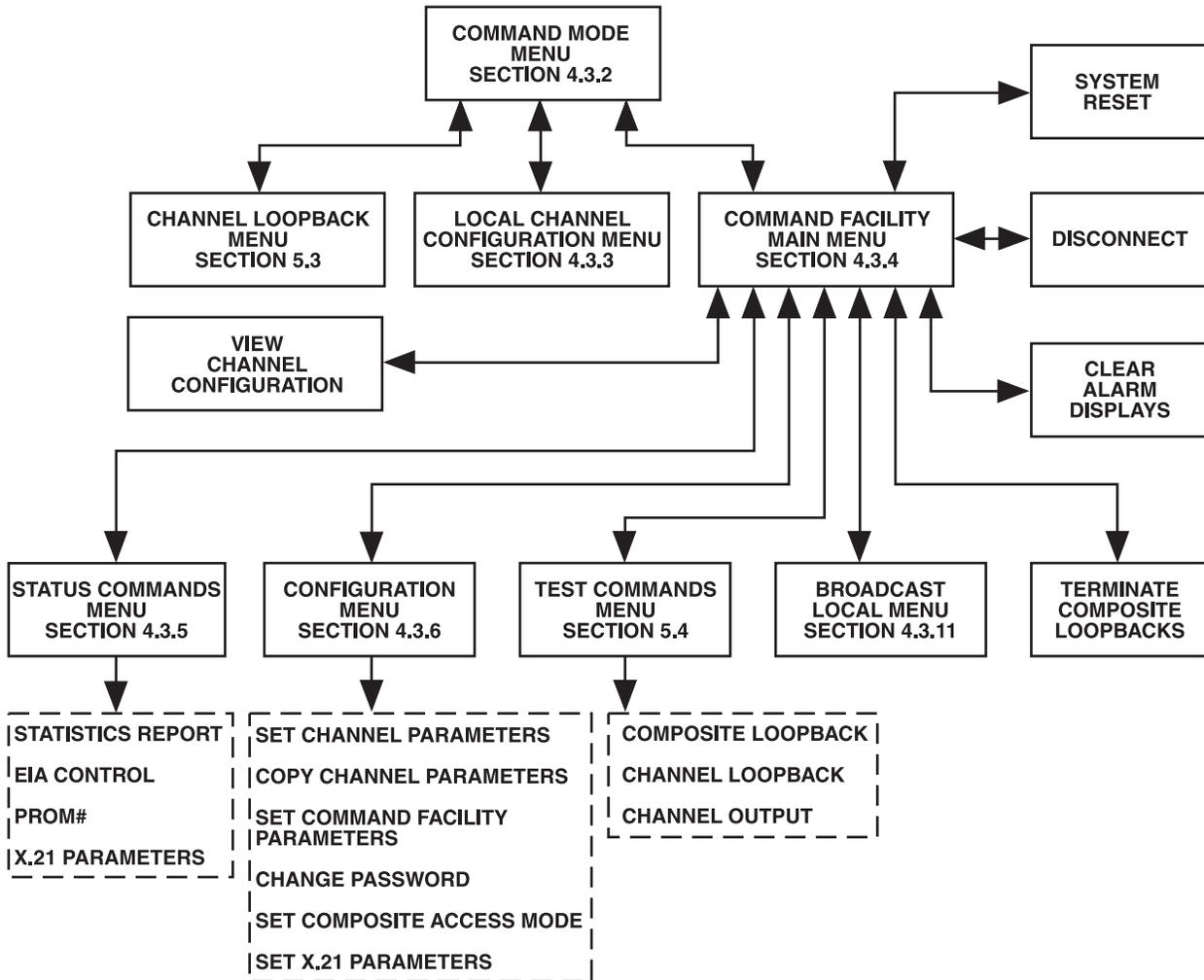
Access to the Command Facility is available to any user channel. This is called up by selecting COMMAND FACILITY MAIN MENU from the Command Mode Menu (**Section 4.3.2**). Only one user channel at a time, on each end of the system, may access the Command Facility.

You can protect access to the Command Facility with passwords.

After you configure passwords into the Statplex, the ENTER PASSWORD prompt will display when you select the COMMAND FACILITY MAIN MENU from the Command Mode Menu.

Certain selections, specifically noted in the Command Facility menus, require a system reset to implement the selected function or parameter. All other selections are implemented immediately.

Figure 4-3. Command Mode Menu Tree
4.3.1 USING THE COMMAND MODE FOR CONFIGURATION



You can change the system configuration by selecting the desired parameters and values from a series of

menus. The following Sections describe how to do this.

OPERATION CONVENTIONS

All Command Mode entries must be typed in upper case (capital) letters.

BREAK	The BREAK key is used to exit the Command Mode and to terminate test modes.
CR	A carriage return [RETURN] is used to enter a selection from a menu after a data entry redisplay the menu. (except where described otherwise—refer to Section 4.3.8 and 4.3.9).
N	An N is used to enter a selection from a menu and display the next menu in sequence. This entry is valid only when it is indicated on the displayed menu.
X	When entered without a previous data entry, X causes the Command Facility Main Menu (Section 4.3.4) to be displayed if the Command Facility is being accessed, or displays the Command Mode Menu (Section 4.3.2) if the Channel Loopback Menu (Section 5.3) or Local Channel Configuration Menu (Section 4.3.3) is being accessed. An X is also used to cancel a data entry, if used after a data entry instead of CR. The current menu will then be redisplayed.

COMMAND MODE ENTRY AND EXIT

The method of entering the Command Mode after initial installation varies, depending on what type of equipment is connected to the user channels. If a

terminal is connected to channel 1 from which you can control the DTR signal, follow these steps:

1. Set the terminal connected to channel 1 for the following parameters:
 - Data Rate — any
 - Code Level — any
 - Stop Bits — 1 (or 2 if using 10 bps data rate)
 - Parity — any
 - Operation — Full-Duplex
2. Raise DTR on the terminal by turning it OFF and then ON again.

If you cannot control the DTR signal from your terminals, or if you are using DEC VT220 terminals, follow these steps:

1. Set terminal connected to any channel except channel 1 for the following parameters:
 - Data Rate - 9600 (later versions) or 1200 (earlier versions)
 - Code Level — 7
 - Stop Bits —1
 - Parity —Even
 - Operation — Full-Duplex

NOTE: If you need to pre-configure the Statplex before you connect it to the actual modem link, you may need to invoke the "Local Loopback" test feature via the Front Panel switches (See Chapter 5: System Tests).

For some terminals, the CTS signal must be present before the terminals will transmit data from the comm port. If the Statplex is not synchronized with its remote counterpart, the Statplex will pull the CTS signal to a negative state. This will prevent the terminal from transmitting. If you place the Statplex in Local Loopback mode, the Statplex will pull the CTS signal to a positive state.

2. Enter Ctrl-X followed by Ctrl-Y (or Ctrl-X followed by BREAK). The Command Mode Menu (**Section 4.3.2**) will be displayed.

After this initial Command Mode entry, you may reconfigure the terminal parameters from the

STATPLEX 4, STATPLEX 8

menus, and you can select a different Command Mode entry sequence. After you select the new parameters, exit the Command Port by entering Ctrl-X followed by Ctrl-Y. The new parameters are now in effect. Set the terminal to the new parameters and reenter the Command Mode if desired.

There are two available Command Mode entry sequences:

- Ctrl-X followed by Ctrl-Y
- Ctrl-X followed by BREAK

There are two available methods to exit the Command Mode:

- Ctrl-X followed by Ctrl-Y
- BREAK

The Command Facility Main Menu has a disconnect selection (**Section 4.3.4**) that you can also use to exit from the Command Mode.

ERROR MESSAGES

Error messages are displayed locally in the Command Mode. These are the messages, in alphabetical order:

```
** CHANNEL nn CURRENTLY USING  
COMMAND FACILITY **
```

The Command Facility Main Menu functions are already being used by the channel indicated (n = channel number). Only one channel at a time per side can access these functions.

```
** COMMAND FACILITY DISABLED **
```

The Command Facility Main Menu has been disabled for the channel requesting it.

```
** COMMAND INHIBITED BY PASSWORD **
```

The password entered does not permit access to the selected menu.

```
** COMMAND MODE PORTS BUSY **
```

All available ports to the Command Mode are busy. Up to three user channels may access the Command Mode at each unit at one time.

```
** ILLEGAL INPUT **
```

The entry, as received, cannot be executed. The password may be incorrect, broadcast message too long, etc.

```
** ILLEGAL SELECTION **
```

The number entered is not on the list of items of the displayed menu.

```
** INPUT REQUIRED **
```

The unit received a CR without a data entry for a function which requires a data input, such as entering a channel number, a broadcast message or a new password.

```
** LOCAL CHANNEL CONFIGURATION  
DISABLED **
```

The channel requesting the Local Channel Configuration Menu cannot access the menu.

```
** NOT IN X21 MODE **
```

The entry received for a menu selection prompt requires the Statplex to be in the X.21 Composite Access Mode.

```
** NUMERIC REQUIRED **
```

The entry received for a menu selection prompt was not a number.

```
** OUT OF RANGE **
```

The range of numbers entered is not available in the unit.

MENU FORMAT

Menus displayed in the Command Mode are generally formatted as follows:

```
GENERAL MENU
```

PARAMETER SELECTION MENU

HEADING:

HEADING (CURRENT VALUE):

<p>1. FIRST SELECTION</p> <p>2. SECOND SELECTION</p> <p>CR — ACCEPT ENTRY</p> <p>X — EXIT</p> <p>ENTRY:</p>	<p>1. FIRST SELECTION</p> <p>2. SECOND SELECTION</p> <p>CR — ACCEPT ENTRY</p> <p>X — EXIT</p> <p>N — NEXT MENU</p> <p>ENTRY:</p>
---	--

In parameter-selection menus, the value shown in brackets is the value that is currently stored for that parameter. To make a selection, type the number which represents the desired selection and enter CR. If X is entered, either the Command Facility Main Menu or the Command Mode Menu will be displayed. N is

available only on parameter-selection menus. If you enter N, the Statplex accepts the entry and displays the next parameter selection menu in sequence.

COMMAND MODE DATA PASS-THROUGH

When a channel is in the Command Mode, the Statplex intercepts all entries made at the channel. The Statplex will not transmit these entries to the remote unit.

However, if a local channel is in the Command Mode, and the remote channel (which is not in the Command Mode) transmits data to the local channel, the data from the remote channel will pass through to the local channel. For most terminals, the data will cause the menus to scroll up. To redisplay the current menu, enter CR.

DOWNLINE LOAD

Most configuration changes made by a channel accessing the Command Facility are automatically

downline-loaded to the other unit, if the composite line is operational.

NO-ACTIVITY TIME OUT

The no-activity time out function is a selectable system parameter. When the channel accesses the Command Facility and you haven't entered data for the specified time, the channel disconnects (refer to the Command Facility Configuration Commands Menu description, **Section 4.3.10**).

4.3.2 COMMAND MODE MENU

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COMMAND MODE: CHANNEL 1

```
1. CHANNEL LOOPBACK
2. LOCAL CHANNEL CONFIGURATION
3. COMMAND FACILITY MAIN MENU
CR - ACCEPT ENTRY
```

ENTRY:

Fig. 4.4. Command Mode Menu.

The menu shown in Fig. 4.4 is displayed when you enter the Command Mode. It provides access to channel configuration and testing, and to the Command Facility. The menu selections, as displayed on the screen,

are:

1. CHANNEL LOOPBACK — this selects a group of channel loopback tests. Refer to **Chapter 5** for information on channel testing.
2. LOCAL CHANNEL CONFIGURATION — this selects the Local Channel Configuration Menu. With this menu, a terminal user can control and modify the channel from his own keyboard. Parameters that may be controlled are data rate, code level, stop bits, echo, and generation of delays for carriage return, line feed, and form feed. Refer to **Section 4.3.3** for information on this menu.
3. COMMAND FACILITY MAIN MENU — this selects the Command Facility Main Menu, which provides access to the Statplex system Command Facility. Access to this menu may be password protected. See **Section 4.3.4** for information on this menu.

To enter a selection from the Command Mode Menu, type in the desired number and enter CR. The selected menu will be displayed.

If passwords are required to enter the Command Facility Main Menu, the following will be displayed when item 3 is selected:

ENTER PASSWORD (CTRL-X TO ABORT):

The password prompt will accept one of two passwords. One password will provide access to all Command Facility Main Menu selections. The other password permits access only to the view channel configuration, system status, and disconnect selections. Enter the Password Menu (**Section 4.3.6**) using the Configuration Menu to select the access area you desire. Then enter the password you desire (**Section 4.3.6**).

Type in the required password and enter CR. The Command Facility Main Menu will be displayed.

If you forget the password, you need to perform a cold start. A cold start removes the password requirement and returns the system to the default values listed in Table 4-1. (You must then reconfigure the system.)

4.3.3 LOCAL CHANNEL CONFIGURATION MENU

```
LOCAL CHANNEL
CONFIGURATION
```

1. DATA RATE

```

2. CODE LEVEL
3. STOP BITS
4. ECHO
5. CR DELAY
6. LF DELAY
7. FF DELAY

CR - ACCEPT ENTRY
X - EXIT

ENTRY:
    
```

Figure 4-5. Local Channel Configuration Menu

When you select Item 2 from the Command Mode Menu, the menu shown in Fig. 4-5 is displayed. This menu provides control of the channel parameters to the terminal user. Any parameter changes remain in effect until you change them from the Command Facility or from the Local Channel Configuration Menu.

When any parameter-selection menu is displayed from the Local Channel Configuration Menu, enter N to

go to the next selection menu without returning to the Local Channel Configuration Menu, or enter X to return to the Command Mode Menu.

These are the Local Channel Configuration Menu selections as displayed on the screen:

1. DATA RATE — this selects the channel speed. To change the data rate, enter 1 and CR. The following display appears:

```

DATA RATE (9600):
1.  ABR
2.   50
3.   75
4.  110
5. 134.5
6.  150
7.  200
    
```

```

8.   300
9.   600
10. 1200
11. 1800
12. 2400
13. 4800
14. 9600
    
```

```

CR - ACCEPT ENTRY
X - EXIT
N - NEXT MENU
    
```

ENTRY:

Enter the number for the desired new data rate, and CR.

2. CODE LEVEL — this selects the number of data bits per character. To change this parameter, enter 2 and CR. The following display appears:

```

CODE LEVEL (8):
1.  5
2.  6
3.  7
4.  8
    
```

5. 9

CR — ACCEPT ENTRY
X — EXIT
N — NEXT MENU

ENTRY :

Enter the number for the required data bits per character, and CR. If 9 bits per character is selected, the following display appears:

9-BIT PARITY (ODD) :
1. EVEN
2. ODD

CR — ACCEPT ENTRY
X — EXIT
N — NEXT MENU

ENTRY :

Enter the number for the required parity, and CR.

3. STOP BITS — this selects the number of stop bits inserted at the end of a data character. To change this parameter, enter 3 and CR. The following display appears:

STOP BITS (1) :
1. 1
2. 1.5
3. 2

CR — ACCEPT ENTRY
X — EXIT
N — NEXT MENU

ENTRY :

Enter the number for the required number of stop bits, and CR.

4. ECHO — this selection turns the echo function on or off. When echo is on, all characters entered by the terminal attached to the channel are echoed back to it. To turn the echo function on or off, enter 4 and CR. The following display appears:

ECHO (OFF) :
1. ON

2. OFF

CR — ACCEPT ENTRY
X — EXIT
N — NEXT MENU

ENTRY :

Enter the number for the desired state of the echo function, and CR.

5. CR DELAY — this selection controls how long a delay the Statplex adds when it transmits a carriage-return control character to the terminal. Delays are sometimes necessary for terminals that have to execute a carriage return mechanically. To add delays after a carriage return, enter 5 and CR. The following display appears:

ENTER CR DELAY (0) :

Enter a number from 00 to 99 for the desired delay in character times, and CR.

6. LF DELAY — this selection controls how long a delay the Statplex adds when it transmits a line-feed control character to the terminal. To add delays after a line feed, enter 6 and CR. The following display appears:

ENTER LF DELAY (0) :

Enter a number from 00 to 99 for the desired delay in character times, and CR.

7. FF DELAY — this selection controls how long a delay the Statplex adds when it transmits a form-feed control character to the terminal. To add delays after a form feed, enter 7 and CR. The following display appears:

ENTER FF DELAY (0) :

Enter a number from 00 to 99 for the desired delay in character times, and CR.

NOTE: Delays are active only on Terminal channels.

After you make all entries for the channel, and the Local Channel Configuration Menu is displayed, enter X to return to the Command Mode Menu, then enter BREAK or Ctrl-X followed by Ctrl-Y to exit the Command Mode. Make the changes on the terminal to match the selected configuration, then enter Ctrl-X followed by BREAK or Ctrl-X followed by Ctrl-Y. The Command Mode Menu will be displayed with the new parameters.

NOTE: Changes do not take effect until you exit the Command Mode.

On ADM3 terminals, use Ctrl-X followed by Ctrl-Y (if EIA control signals are enabled) to enter the Command Mode. Use either Ctrl-X followed by BREAK or Ctrl-X followed by Ctrl-Y if EIA control signals are disabled.

4.3.4 COMMAND FACILITY MAIN MENU

```

COMMAND FACILITY MAIN MENU
1. VIEW CHANNEL
CONFIGURATION
2. SYSTEM
STATUS

```

```

3. CONFIGURATION
4. TEST
5. BROADCAST
6. CLEAR ALARM DISPLAYS
7. TERMINATE COMPOSITE LOOPBACKS
8. DISCONNECT
9. SYSTEM RESET

```

CR — ACCEPT ENTRY

ENTRY :

Fig. 4-6. Command Facility Main Menu.

The menu shown in Fig. 4-6 is displayed when you select Item 3 from the Command Mode Menu. This menu provides access to the Command Facility, which includes system configuration, reports, broadcast messages, system reset, and diagnostic activities. If you've configured passwords and you entered the status password, only the view channel configuration, system status, and disconnect selections (Items 1, 2, and 8) will be accepted. The global password allows all items to be selected. These are the menu selections as displayed on the screen:

- | | |
|--|---|
| <p>1. VIEW CHANNEL CONFIGURATION — this provides a display of the user channel configurations. Refer to Section 4.3.4 for information on viewing channel configurations.</p> <p>2. SYSTEM STATUS — this selects the Status Commands Menu. This menu provides access to system statistics, such as composite utilization, buffer utilization by channel, number of retransmits, etc. The state of the EIA control signals for any local user channel, the PROM set number of the Statplex operating program, and the X.21 operating parameters can also be displayed via the Status Commands Menu. Refer to Section 4.3.5 for information on the Status Commands Menu.</p> <p>3. CONFIGURATION — this selects the Configuration Menu. The Configuration Menu controls system, channel, Command Facility, password, composite, and X.21 parameters. Refer to Section 4.3.6 for information on the Configuration Menu.</p> | <p>4. TEST — this selects the Test Commands Menu, which provides various system tests. Refer to Section 5.4 for information on using the Test Commands Menu.</p> <p>5. BROADCAST — this selection provides the ability to send a message to any or all channels in the system. Refer to Section 4.3.11 for information on sending broadcast messages.</p> <p>6. CLEAR ALARM DISPLAY — this selection clears any latched alarms (DATA LOST and any time REFER TO is shown) that may be presented on the display. To clear latched alarms, enter 6 and CR. Any latched alarms will be cleared, and the Command Facility Main Menu will redisplay.</p> <p>7. TERMINATE COMPOSITE LOOPBACKS — this selection terminates any composite</p> |
|--|---|

loopback mode that was set up with the Test Commands Menu. To terminate a composite loopback, enter 7 and CR. The loopback will terminate and a system reset will execute. This reset takes about one to three seconds, and disconnects any channel in the Command Mode.

8. DISCONNECT — this selection disconnects the terminal from the Command Mode. To disconnect from the Command Mode, enter 8 and CR. The following message appears:

```
COMMAND MODE DISCONNECT TIME
01:27:51 DATE 10/02
```

9. SYSTEM RESET — this selection causes a complete system reset. The reset may be set to use the parameter values stored in the remote unit for system configuration, or to use the configuration stored in the local unit. Whenever the system is reset, any channel in the Command Mode is disconnected. To execute a system reset, enter 9 and CR. The following prompt will be displayed:

```
ENTER A "Y" TO CONFIRM OR "N" TO
ABORT
```

Enter Y and CR to continue with the system reset. The following menu appears:

```
PARAMETER RESTORATION
1. DEFAULT VALUES
2. CURRENT CONFIGURATION
```

```
CR — ACCEPT ENTRY
```

```
X — EXIT
```

```
ENTRY :
```

Enter 1 and CR to use the parameter values from the remote unit, or enter 2 and CR to use the configuration presently set by the Command Facility. The Statplex will execute the system reset. This reset takes about one to three seconds. If the composite link is down, and Item 1 (default values) is selected, the Statplex will do a cold-start system reset and the default values will be used for the system operating parameters.

VIEW CHANNEL CONFIGURATIONS

To view the channel configurations, enter 1 and CR from the Command Facility Main Menu. The following prompt display appears:

```
ENTER CHANNEL (OR RANGE OF
CHANNELS) :
```

Enter the channel number, or a range of channel numbers in the format n-n (for example, 1-4), and CR. The following display appears:

```
LOCATION
1. LOCAL CHANNELS
2. REMOTE CHANNELS
3. BOTH
```

```
CR — ACCEPT ENTRY
```

```
X — EXIT
```

```
ENTRY :
```

Selecting LOCAL CHANNELS (Item 1) shows the channel configuration as it exists at the local Statplex unit. Enter the desired location, and CR. The following display appears:

```
CHANNEL PARAMETERS
1. CHANNEL CHARACTERISTICS
2. CHANNEL FEATURES
```

```
CR — ACCEPT ENTRY
```

```
X — EXIT
```

```
ENTRY :
```

Enter 1 and CR to view the channel characteristics screen, or enter 2 and CR to view the channel features screen (see **Figs. 4-7 and 4-8**). After the selected screen displays, enter CR to return to the Command Facility Main Menu.

Parameters displayed for the channel characteristics screen are controlled by the Channel Characteristics Menu (refer to **Section 4.3.8**). Parameters displayed for the channel features screen are controlled by the Channel Features Menu (refer to **Section 4.3.9**).

LOCAL CHANNEL CHARACTERISTICS

	DATA	CODE	STOP	HOST	DELAYS	DSR
BUFFER	FLOW					
	CH	RATE	LVL	BIT	TERM	X-ON X-
OFF	CONTROL		CONTROL	ECHO CR		LF
FF MODE						
1	9600	9	1	TERM	DC1 DC3	

XN/XF XN + DTR ON 0 0 0 OFF

2 1200 9 1 TERM DC1 DC3 XN/XF XN + DTR OFF 0 0 0 OFF

3 ABR 8 1 HOST DC2 DC4 NONE XN/XF OFF 0 0 0 ON

4 4800 8 1 TERM DC1 DC3 CTS XN+ DTR OFF 50 50 99 ON

REMOTE CHANNEL CHARACTERISTICS

	DATA	CODE	STOP	HOST	DELAYS	DSR
CH	RATE	LVL	BIT	TERM	X-ON X-OFF	FF MODE
1	9600	9	1	TERM	DC1 DC3	XN/XF XN + DTR ON 0 0 0 OFF
2	1200	9	1	HOST	DC1 DC3	CTS XN + DTR OFF 0 0 0 OFF
3	ABR	8	1	TERM	DC1 DC3	XN/XF XN/XF OFF 0 0 0 ON
4	4800	8	1	HOST	DC1 DC3	CTS XN + DTR OFF 0 0 0 ON

ENTER CARRIAGE RETURN TO CONTINUE

Fig. 4-7. View Channel Configuration Displays: X.21 Composite Operation.

LOCAL CHANNEL CHARACTERISTICS

	DATA	CODE	STOP	HOST	DELAYS	LOSS
CH	RATE	LVL	BIT	TERM	X-ON X-OFF	DISC
1	9600	9	1	TERM	DC1 DC3	XN/XF XN + DTR ON 0 0 0 YES
2	1200	9	1	TERM	DC1 DC3	XN/XF XN + DTR OFF 0 0 0 YES

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3	ABR	8	1	HOST	DC2 DC4	NONE	XN/XF	OFF	0	0	0	NO
4	4800	8	1	TERM	DC1 DC3	CTS	XN + DTR	OFF	50	50	99	NO
REMOTE CHANNEL CHARACTERISTICS											SYNC	
DATA	CODE	STOP	HOST			BUFFER	FLOW		DELAYS		LOSS	
CH	RATE	LVL	BIT	TERM	X-ON X-OFF	CONTROL	CONTROL	ECHO	CR	LF	FF	DISC
1	9600	9	1	TERM	DC1 DC3	XN/XF	XN + DTR	ON	0	0	0	YES
2	1200	9	1	HOST	DC1 DC3	CTS	XN + DTR	OFF	0	0	0	YES
3	ABR	8	1	TERM	DC1 DC3	XN/XF	XN/XF	OFF	0	0	0	NO
4	4800	8	1	HOST	DC1 DC3	CTS	XN + DTR	OFF	0	0	0	NO
ENTER CARRIAGE RETURN TO CONTINUE												

Fig. 4-8. View Channel Configuration Displays: Standard Composite Operation.

4.3.5 STATUS COMMANDS MENU

STATUS COMMANDS

1. STATISTICS REPORT

2. EIA CONTROL

3. PROM #

4. X.21 PARAMETERS

CR - ACCEPT ENTRY

X- EXIT

ENTRY:

Fig. 4-9. Status Commands Menu.

This menu shown in Fig. 4-9 is displayed when you select Item 2 from the Command Facility Main Menu (Section 4.3.4). The system statistics report, the EIA control signal states, the PROM set number of the Statplex operating firmware, and the X.21 operating parameters can be selected from this menu. These are the menu selections displayed on the screen:

1. STATISTICS REPORT — A system status is displayed as a set of statistics. Sample reports for X.21 composite operation are shown in Figs. 4-10 and 4-11. Sample reports for standard composite operation are shown in Figs. 4-12 and 4-13. Analysis of the statistics can indicate trends in telephone line quality, as well as the ability to add channels or increase the speed of existing channels.

The statistics reflect system activities that have occurred since the last reporting interval. If you set no reporting interval, the statistics reset every 60 minutes.

The period reports shown in Figs. 4-10 or 4-12 are output to the channel accessing the Command Facility, as long as a reporting interval is set (refer to **Section 4.3.10**). You can request the demand report (Fig. 4-11 or 4-12) at any time by selecting Item 1 from the Status Commands Menu.

The statistics for the remote unit are not shown if either unit has set a composite loopback test mode, or during loss of synchronization on the composite line.

After the period report is displayed, enter CR to redisplay the current menu. After the demand report is displayed, the Status Commands Menu will be displayed when you enter CR.

```

MICOM LCi
PERIOD REPORT   TIME 00: 40: 00  DATE
01/08          LINK 04    INTERVAL:  10
MIN

SYSTEM STATISTICS:
TRANSMITTED                RECEIVED

FRAME COUNT (X100)                1
                                1

                                LOCAL/REMOTE

UTILIZATION %    =                COMPOSITE
                20/ 20
    
```

BUFFERS 57/ 43

```

EVENT COUNTS (X1)    =    RETRANSMITS    0/ 0
                                LINE ALARMS    0/ 0
TIME (SECONDS) IN    =    SYS FLOW CTL    0/ 0
                                X.21 CONNECT    30/ 30
CHANNEL STATISTICS: (B = BUSY-OUT F = FLOW CONTROL)
                                L/R L/R    L/R    L/R
BUFFER % 01F = 30/30 02 = 10/00 03    = 00/10    04    = 20/20
                                05 = 20/00 06 = 00/20 07    = 20/20    08    = 00/00
ENTER CARRIAGE RETURN TO CONTINUE
    
```

Fig. 4-10. System Statistics Period Report for X.21 Composite Operation.

```

MICOM LCi
DEMAND REPORT        TIME 00:          00: 00 DATE 00/00    LINK 01
SYSTEM STATISTICS:
                                TRANSMITTEDRECEIVED
FRAME COUNT (X100):                0                0
                                LOCAL/REMOTE
    
```

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```
UTILIZATION %      =          COMPOSITE      00/  00
                                     BUFFERS      00/  00
EVENT COUNTS (X1)  =          RETRANSMITS 0/   0
                                     LINE ALARMS 0/   0
TIME (SECONDS) IN  =          SYS FLOW CTL    0/   0
                                     X.21 CONNECT 0/   0
CHANNEL STATISTICS (B = BUSY-OUT F = FLOW CONTROL)
                                     L/R    L/R          L/R    L/R
BUFFER %  01      = 00/00    02 = 00/00      08     = 00/00    04      = 00/00
          05      = 00/00    06 = 00/00      07     = 00/00    08      = 00/00
ENTER CARRIAGE RETURN TO CONTINUE
```

Fig. 4-11. System Statistics Demand Report for X.21 Composite Operation.

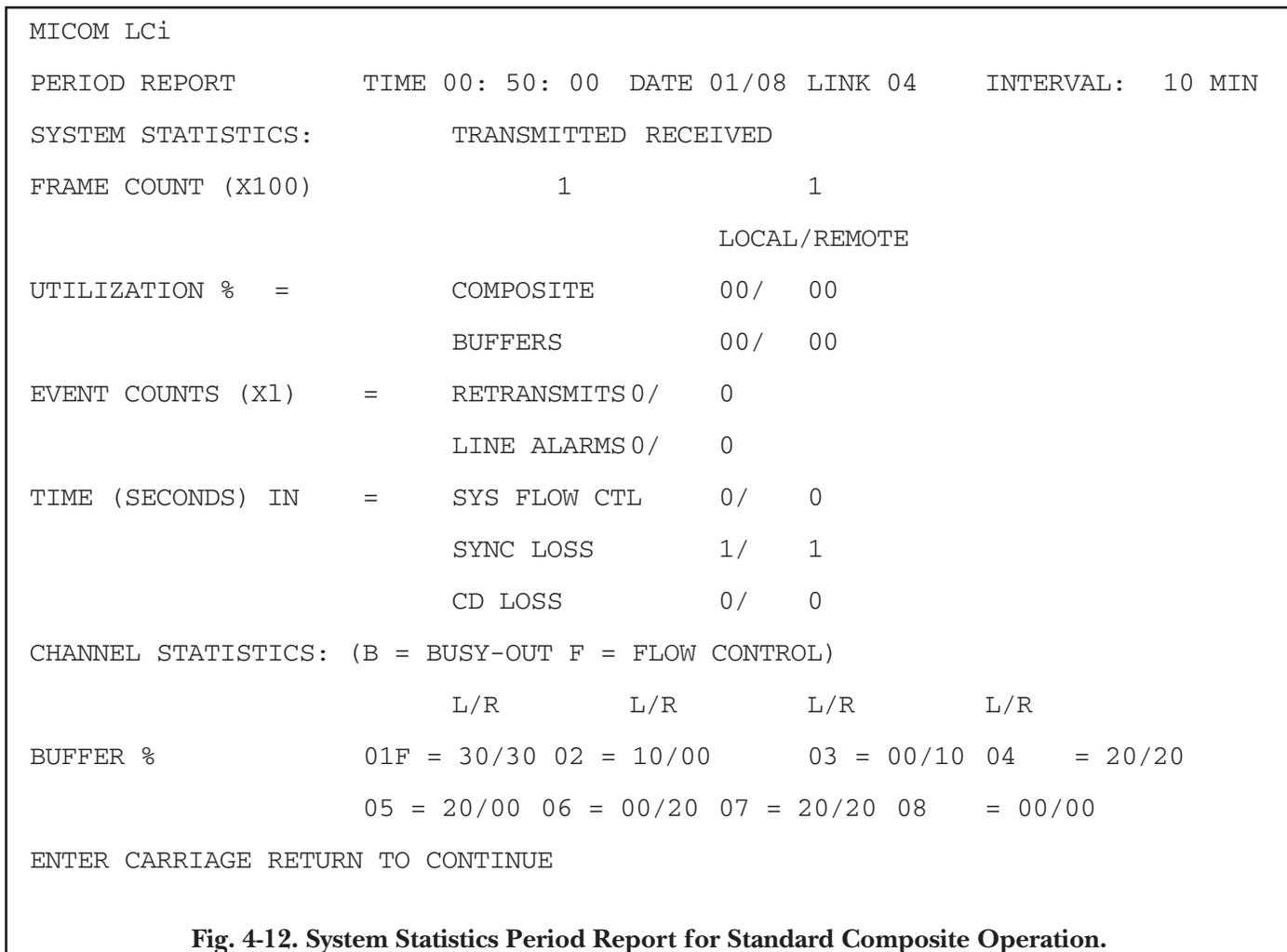


Fig. 4-12. System Statistics Period Report for Standard Composite Operation.

STATPLEX 4, STATPLEX 8

MICOM Lci

```
DEMAND REPORT   TIME 00: 00: 00   DATE 00/00           LINK 01
SYSTEM STATISTICS:
                TRANSMITTEDRECEIVED
FRAME COUNT (X100):          0           0
                                LOCAL/REMOTE
UTILIZATION %   =   COMPOSITE   00/   00
                BUFFERS       00/   00
EVENT COUNTS (X1) = RETRANSMITS 0/   0
                LINE ALARMS 0/   0
TIME (SECONDS) IN=SYS FLOW CTL   0/   0
                SYNC LOSS     0/   0
                CD LOSS       0/   0
CHANNEL STATISTICS: (B = BUSY-OUT F = FLOW CONTROL)
                L/R   L/R           L/R           L/R
BUFFER %       01 = 00/00 02 = 00/00 03 = 00/00 04 = 00/00
                05 = 00/00 06 = 00/00 07 = 00/00 08 = 00/00
ENTER CARRIAGE RETURN TO CONTINUE
```

Fig. 4-13. System Statistics Demand Report for Standard Composite Operation.

The following statistics are compiled and displayed:

- **Frame Count** — displays the number of data frames (in hundreds) sent over the composite line since the last reporting interval.
 - **Composite Utilization** — for a period report, displays the average percentage of composite bandwidth used for data transmission since the last reporting interval. For a demand report, this statistic displays the current percentage of bandwidth being used.
 - **Buffer Utilization (Channel Statistics)** — for a period report, displays the maximum percentage of system buffers used by the channel since the last reporting interval. For a demand report, this statistic displays the current percentage of system buffers used by the channel. If a buffer overflow occurred, **/** is displayed (in a period report only) for the channel most likely to have caused the buffer overflow.
 - **Retransmit Event Counts** — displays the number of frames that were retransmitted (because of errors) over the composite line since the last reporting interval.
 - **Line Alarm Event Counts** — displays the number of line alarms since the last reporting interval. A line alarm is generated whenever the error rate on the composite line is equal to or greater than 1 bit retransmitted per 1000 bits.
 - **Sys Flow Ctl** — displays the number of seconds for system-wide buffer control for all channels
- since the last reporting interval. System-wide buffer control occurs when 87 per cent of the available buffers are used.
 - **Sync Loss** — shown only for standard composite operation. This displays the number of seconds of synchronization loss on the composite line since the last reporting interval.
 - **CD Loss** — shown only for standard composite operation. This displays the number of seconds of loss of carrier on the composite line since the last reporting interval.
 - **X.21 Connect** — shown only for X.21 composite operation. This displays how long (in seconds) the X.21 composite link has been established since the last reporting interval.

The following characters may appear next to the channel number, if the described condition applies to the channel:

B - Channel is busied-out.

F - Channel is currently in flow control, or has been in flow control during the reporting interval.

2. EIA CONTROL to view the states of the EIA control signals of a channel, enter 2 and CR. The following display appears:

ENTER CHANNEL NO. :

Enter the desired channel number, and CR. The following display appears:

EIA CONTROL STATUS

CHANNEL

TO CONC.	FROM CONC.
RTS (HIGH)	CTS (HIGH)
DTR (HIGH)	DSR (HIGH)

ENTER CARRIAGE RETURN TO CONTINUE

Enter CR to return to the Status Commands Menu.

STATPLEX 4, STATPLEX 8

3. PROM # — to view the PROM set number of the Statplex operating firmware, enter 3 and CR. The following display appears:

PROM # = 907-2013-0X

ENTER CARRIAGE RETURN TO CONTINUE

Enter CR to return to the Status Commands Menu.

4. X.21 PARAMETERS — to view the parameters of the X.21 composite feature, enter 4 and CR. The X.21

parameters are displayed in the following example:

X.21 PARAMETERS	CONNECT
MODE	NUMBER OF RETRIES

LOCAL	DTR CONNECT	3
REMOTE	10 SECONDS	7

NOTE: If the Statplex uses standard composite operation, the message NOT IN X.21 MODE will be displayed instead of the X.21 parameters. X.21 parameters are controlled by the Configuration Menu (refer to

Section 4.3.6).

4.3.6 CONFIGURATION MENU

CONFIGURATION

- 1. SET CHANNEL PARAMETERS
- 2. COPY CHANNEL PARAMETERS
- 3. SET COMMAND FACILITY PARAMETERS
- 4. CHANGE PASSWORD
- 5. SET COMPOSITE ACCESS MODE (RESET NEEDED)
- 6. SET X.21 PARAMETERS

CR - ACCEPT ENTRY

X - EXIT

ENTRY :

Figure 4-14. Configuration Menu

The menu shown in Fig. 4-14 is displayed when you select Item 3 from the Command Facility Menu. This menu provides system and channel configuration functions. These are the menu selections as displayed on the screen:

1. SET CHANNEL PARAMETERS — this selection provides access to the Channel Parameters Menu. You

control all parameters and features for both local and remote user channels from menus you select from the Channel Parameters Menu. Refer to **Section 4.3.7** for information on this menu.

2. COPY CHANNEL PARAMETERS — this selection copies the entire parameter and feature configuration of one user channel to any or all other user channels. To copy the parameters and features of one channel to another, enter 2 and CR. The following display appears:

ENTER SOURCE CHANNEL :

Enter the number of the user channel whose parameters and features will be copied to another channel, and CR.

The following display appears:

ENTER CHANNEL (OR RANGE OF CHANNELS) :

Enter the channel number (or a range of channels in the form n-n), to be set to the same parameter and feature configuration as the

source channel, and CR. The Staplex will carry out the copy function and then display the Command Facility Main Menu.

3. SET COMMAND FACILITIES PARAMETERS — this selects the Command Facility Configuration Commands Menu. This menu controls the system time, date, link number, event reports, reporting

intervals, and no-activity timeout. Refer to **Section 4.3.10** for information on this menu.

4. CHANGE PASSWORD — this selection lets you configure Command Facility Main Menu access passwords.

You may configure two passwords: a global password, which provides access to all selections, and a status password, which provides access only to the view, status, and disconnect selections. The default value is no password required. To configure passwords, enter 4 and CR. The following display appears:

```
PASSWORD
          1. GLOBAL (ALLOWS ANY
COMMAND OR TEST)
          2. STATUS (VIEW,
STATUS ONLY)
CR - ACCEPT ENTRY
X - EXIT
```

ENTRY :

Enter 1 and CR to configure the global password. The following display appears:

```
ENTER GLOBAL PASSWORD (CTRL-X TO ABORT) :
```

Enter the global password and CR. The password may be up to eight ASCII characters. The characters may be uppercase or lowercase alphabetical characters or numeric characters, but not control characters. For some terminals, you may use program function keys as part of the password.

With the Password Menu displayed, enter 2 and CR. The following display appears:

```
ENTER STATUS PASSWORD (CTRL-X TO ABORT) :
```

Enter the status password and CR. The status password must meet the requirements described in **Section 4.3.6** for the global password.

With the Password Menu displayed, enter X to go

back to the Command Facility Main Menu. The new passwords are now in effect.

NOTE: To disable a password after you configure

one, press the space bar and CR until you reach the ENTER GLOBAL PASSWORD or ENTER STATUS PASSWORD prompt. The status password is effective only if a global password is also configured.

5. SET COMPOSITE ACCESS MODE — this selects the mode of operation of the composite line. Use standard composite access mode with synchronous modems connected to a Type 3002 leased line. Use X.21 composite access mode with X.21 line terminators connected to a CCITT-recommendation X.21 network. You must set composite access mode for the same value at both units.

To set the composite access mode, enter 5 and CR. The following display appears:

COMPOSITE ACCESS, PDE (STANDARD) :

```

1 . STANDARD
2 . X.21
CR - ACCEPT ENTRY
X - EXIT
ENTRY :
```

At the local unit, enter 1 and CR to select standard composite operation, or 2 and CR to select X.21 bis operation. Wait about 20 seconds and then

command a system reset from the Command Facility Main Menu. At the remote unit, select the desired composite operation, wait about 20 seconds, and command a system reset.

6. SET X.21 PARAMETERS — this selection controls the parameters of the X.21 bis composite if X.21 access mode has been selected. To set the X.21 operation parameters, enter 6 and CR. The following display appears:

LOCATION

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1. LOCAL
2. REMOTE
3. BOTH
CR - ACCEPT ENTRY

X - EXIT

ENTRY:

Select whether you'll configure the local or the remote unit. The following display appears:

X.21 CONFIGURATION

1. CONNECT MODE
2. NUMBER OF TRIES
CR - ACCEPT ENTRY
X - EXIT
N - NEXT MENU
ENTRY:

Enter 1 and CR to configure the connect mode. The following display appears:

CONNECT MODE (DATA ACTIVITY CONNECT):

1. DTR CONNECT
2. DATA ACTIVITY CONNECT
CR - ACCEPT ENTRY
X - EXIT
N - NEXT MENU
ENTRY:

Select whether you'll use DTR or data activity connect mode. DTR connect mode connects to the X.21 network whenever DTR is raised on any channel. Data activity connect mode connects to the X.21 network

whenever there is data activity at any channel. If you select data activity connect, the following will be

displayed:

ENTER NUMBER OF SECONDS (5) :

Enter the amount of time, from 1 to 20 seconds, after which no activity on all channels will disconnect the X.21 composite.

With the X.21 Configuration Menu displayed, enter 2 and CR to configure the number of attempts the Statplex will make to place a call over the X.21 network. The following display appears:

ENTER NUMBER OF RETRIES (20) :

Enter the number of times (from 1 to 63) the Statplex should attempt to place a call over the X.21 network. If the Statplex cannot complete the call after the configured number of retries, the Statplex will discard the data buffered for the channels, and wait for operator intervention before attempting to

connect again. Either the user must enter data (if data activity connect is selected) or DTR must make a transition from Low to High (if DTR connect is selected) to cause the Statplex to reinitiate the callout sequence.

4.3.7 CHANNEL PARAMETERS MENU

This menu provides access to the Channel Characteristics Menu and the Channel Features Menu. These two menus configure the user channels. To call up the Channel Parameters Menu, select Item 1 of the Configuration Menu (refer to

Section 4.3.6). The following display appears:

ENTER CHANNEL NO. :

Enter the number of the user channel you will configure, and CR.

The screen displays the following:

```

CONFIGURATION LOCATION
LOCAL CHANNELS          1.
    
```

```

REMOTE CHANNELS          2.
BOTH                     3.
ACCEPT ENTRY            CR -
                        X - EXIT
ENTRY :
```

Enter:

- 1 and CR if you will configure the channel only at the local unit;

- 2 and CR if you will configure the channel only at the remote unit;
- or 3 and CR if you will configure the channel at

both units with the same parameter values.

The Channel Parameters Menu will be displayed (see Fig. 4-15).

```

CHANNEL PARAMETERS
1. CHANNEL CHARACTERISTICS
2. CHANNEL FEATURES
CR - ACCEPT ENTRY
    
```

EXIT

ENTRY :

X - displayed on the screen are:

1. CHANNEL CHARACTERISTICS — this selects the Channel Characteristics Menu (refer to **Section 4.3.8**). This menu controls the following channel parameters:

Fig. 4-15. Channel Parameters Menu.

The Channel Parameters Menu selections as

- Data rate
- Code level
- Stop bits
- Whether the channel is connected to Host or to Terminal
- X-ON/X-OFF characters
- Buffer control
- Flow control

- Echo
 - Delay for Carriage Return
 - Delay for Line Feed
 - Delay for Form Feed
 - Whether DSR on the channel follows DTR on the remote channel, or is forced on (applies only to X.21 composite access mode)
 - Whether to disconnect the channel if sync on the composite line is lost (applies only to standard composite access mode)
2. CHANNEL FEATURES — this selects the Channel Features Menu (refer to **Section 4.3.9**). This menu controls the following channel parameters and features:
- Priority
 - Busy status
 - Use of EIA control signals
 - Smooth Scroll Feature
 - Tandem Computer Support Feature
 - Whether to strip the flow-control mechanism from being transmitted to the remote unit
 - HP ENQ/ACK Protocol Support Feature
 - Message parity
 - Command Mode entry sequence
 - Access to the Command Mode

- Access to the Command Facility Main Menu
- Access to the Local Channel Configuration Menu

4.3.8 CHANNEL CHARACTERISTICS MENU

CHANNEL CHARACTERISTICS

- | | |
|------------------|--------------------|
| | 1. DATA RATE |
| | 2. CODE LEVEL |
| | 3. STOP BITS |
| HOST/TO TERMINAL | 4. CHANNEL END TO |
| | 5. X-ON CHARACTER |
| | 6. X-OFF CHARACTER |
| | 7. BUFFER CONTROL |
| | 8. FLOW CONTROL |
| | 9. ECHO |
| | 10. CR DELAY |

```

11. LF DELAY
12. FF DELAY
13. DSR MODE
14. SYNC LOSS DISCONNECT

CR - ACCEPT ENTRY
X - EXIT

ENTRY:
    
```

Fig. 4-13. Channel Characteristics Menu.

The menu shown in Fig. 4-16 is displayed when you select Item 1 from the Channel Parameters Menu (refer to **Section 4.3.7**). This menu controls various channel operating parameters. To change or view an item from this menu:

1. Enter the item number and CR. The Statplex displays a parameter selection menu, with the current setting only for the local channel end shown in the brackets. If you input CR with no data entry, the remote channel end might or might not be configured to the value shown in the brackets.
2. To change the setting, enter the desired selection from the menu and CR (to return to the Channel Characteristics Menu) or N (to display the next parameter selection menu in sequence).
3. To view the setting without making changes, enter CR with no data entry (to return to the Channel Characteristics Menu) or N with no data entry (to display the next parameter-selection menu). In either case, the parameter will not change.

NOTE: Changes made to the operating parameters of the channel used to access this menu will not take effect until you exit the Command Mode.

Table 4-3 lists all items of the Channel Characteristics Menu and describes their purpose.

Table 4-3. Channel Characteristics

Item (as shown)	on screen) Description
Selections 1. DATA RATE Sets the data rate (in 110, 134.5 bps) for the user 150, 200, 300,	600, 1200, 1800, 9600 2. CODE LEVEL Sets the number of data bits per character. If you 8, 5, 6, 7, 9
2400, 4800,	

select 9, the Statplex displays a selection menu for parity (Even or Odd) of a character.

3. STOP BITS 1, 1.5, 2
Sets the number of stop bits inserted at the end

4. CHANNEL END

TERMINAL, HOST TO HOST/TO

A user channel is set for either Terminal or Host operation. A Host channel is usually connected to a computer port, and a Terminal channel is connected to a terminal or printer. See **Section 4.4** for information on Terminal and Host channels.

	TERMINAL	
Item (as shown on screen)	Selections	Description
5. X-ON CHARACTER	DCI, DC2, DC3, DC4	Selects the character to be used for X-ON (transmitter on).
6. X-OFF CHARACTER	DC3, DC4 DCI, DC2	Selects the character to be used for X-OFF (transmitter off).
7. BUFFER CONTROL	X-ON/X-OFF CTS, NONE	The Statplex uses its own buffer control to start or stop data transmission from a device attached to user channel. Refer to Section 4.5 for information on buffer control.
8. FLOW CONTROL	X-ON/X-OFF, DTR X-ON/X-OFF = DTR NONE	Starts or stops data transmission from the Statplex to a device attached to a user channel. For X.21 composite operation, configure the user channels operation, configure the user channels to use X-ON/X-OFF flow control only, since DTR is the main control for the X.21 network. Refer to Section 4.6 for more information on flow control.
9. ECHO	OFF, ON	Turns the echo function on or off. When echo is on, all characters entered by the terminal

Table 4-3. Channel Characteristics (continued)

attached to the channel are echoed back to it.

10. CR DELAY	00 to 99 times	You can set the Statplex character to add delays (for mechanical actions to take place) when it transmits certain control characters to a channel. This item sets delays for the carriage return ON character.
11. LF DELAY	00 to 99	Sets the Statplex to add to character delays when it transmits a line-feed control character to a channel.
12. FF DELAY	00 to 99 character times	Sets the Statplex to add delays when it transmits a form-feed control character to a channel.
13. DSR MODE	OFF, ON	(Applies only to X.21 composite access mode.) OFF makes the channel's DSR signal follow the DTR signal on the remote channel. ON forces the channel's DSR signal on.
14. SYNC LOSS DISCONNECT	NO, YES	(Applies only to standard composite access mode). YES makes the channel disconnect 20 seconds after the loss of synchronization on the composite line. All data in the buffers for the channel is discarded and its interface signal DSR is dropped.
<p>4.3.9 CHANNEL FEATURES MENU</p>		
<p>CHANNEL FEATURES</p>	<p>1. PRIORITY</p> <p>2. BUSY OUT</p> <p>3. EIA CONTROL</p> <p>4. SMOOTH SCROLL</p> <p>5. TANDEM</p> <p>6. FLOW CONTROL STRIP</p> <p>7. HP ENQ/ACK</p> <p>8. MESSAGE PARITY</p> <p>9. COMMAND MODE ENTRY SEQUENCE</p>	

```

10. COMMAND MODE ACCESS
11. COMMAND FACILITY MAIN MENU ACCESS
12. LOCAL CHANNEL CONFIGURATION
CR - ACCEPT ENTRY
X - EXIT
ENTRY :
    
```

Fig. 4-17. Channel Features Menu.

The menu shown in Fig. 4-17 is displayed when you select Item 2 from the Channel Parameters Menu (refer to **Section 4.3.7**). This menu controls the features available to each channel. To change or view an item from this menu:

1. Enter the item number and CR. A parameter selection menu will be displayed, with the current setting for only the local channel end shown in the brackets. If you input CR with no data entry, the remote-channel end might or might not be configured to the value shown in the brackets.
2. To change the setting, enter the desired selection from the menu and CR (to return to the Channel Features Menu) or N (to display the next parameter-selection menu in sequence).
3. To view the setting without making changes, enter CR with no data entry (to return to the Channel Features Menu) or N with no data entry (to display the next parameter-selection menu). In either case, the parameter will not change.

NOTE: Changes you make to the features of the channel you use to access this menu will not take effect until you exit the Command Mode.

Table 4-4 lists all items of the Channel Features Menu and describes their purpose.

Table 4-4. Channel Features

Item (as shown on screen) Description	Selections	
1. PRIORITY High-priority channels are assigned a greater percentage of composite bandwidth than low-	HIGH, LOW	priority channels, so that more data is transmitted across the composite line at any one time for the high-priority channel. Assign interactive channels high priority, and assign background-printer channels low priority.

2. BUSY OUT

OFF, ON

Used to “busy-out” user channels. Any data remaining in the buffers for busied-out channels is discarded. When a channel is busied-out, all EIA control signals go Low. Diagnostic tests do not operate on busied-out channels.

3. EIA CONTROL

ENABLE, DISABLE

The channel interface EIA control signals (RTS, CTS, DSR, and DTR) are used for full-duplex

4. SMOOTH SCROLL

OFF, ON

interface or modem control. When you disable EIA control signals, these signals will be output High. When you enable EIA control signals, but there is no connection to the input signals (RTS and DTR), the input signals will function as set by the jumper on Header E3 of the printed circuit module (refer to **Sections 2.3.3**, and **3.2.1**).

When Smooth Scroll is ON, the Statplex requires an explicit X-ON character (after an X-OFF has been received) before transmission of data to the channel resumes. X-ON/X-OFF flow control must be set for Smooth Scroll to operate. For more information, refer to **Section 4.6**.

Table 4-4. Channel Features (Continued)

**Item
(as shown
on screen)**

Selections

Description

5. TANDEM

NO, YES

Selects the Tandem Computer Support Feature for a channel. You need a special cable and also to select CTS buffer control, to set a user channel for operation with this feature. Refer to **Section 4.9** for more information.

6. FLOW CONTROL

PASS, STRIP

At PASS, X-ON/X-OFF and DTR flow-control outputs by the user channel pass to the corresponding channel at the other end

(DTR is output as DSR.) At STRIP, the flow-control outputs by the user channel are not transmitted to the other end. Refer to **Section 4.6** for details about the Strip Flow Control Feature.

7. HP ENQ/ACK	NO, YES	At YES, the HP ENQ/ACK protocol is turned on.
8. MESSAGE PARITY	AUTOMATIC, SPACE	Refer to Section 4.8 for information on the HP ENQ/ACK Protocol Feature. Selects the parity to be used for all transmissions from the Statplex channel. These transmissions include menus, prompts, and diagnostic test data generated when the channel is in the Command Mode. If you select a code level of 9 (refer to Table 4-3) for the channel, then you must select odd or even parity from a separate menu.
9. COMMAND MODE ENTRY SEQUENCE	CTRL-X BREAK, CTRL-X CTRL-Y	CTRL-X CTRL-Y allows both Ctrl-X BREAK and Ctrl-X Ctrl-Y sequences to enter the Command Mode. CTRL-X BREAK allows only the Ctrl-X BREAK sequence to enter the Command Mode.
Table 4-4. Channel Features (Continued)		
Item (as shown on screen)	Selections	Description
10. COMMAND MODE ACCESS	ENABLE, DISABLE	At DISABLE, the user channel will not be able to enter the Command Mode (includes loopbacks, Local Channel Configuration, and the Command Facility Main Menu).
11. COMMAND FACILITY MAIN MENU ACCESS	ENABLE, DISABLE	At DISABLE, the user channel will not be able to access the Command Facility Main Menu to view or change the system operating parameters.

<p>12. LOCAL CHANNEL CONFIGURATION</p>	<p>ENABLE, DISABLE</p>	<p>At DISABLE, the user channel will not be able to access the Local Channel Configuration Menu to change the channel's operating parameters.</p>
<p>CAUTION</p>		
<p>If you select DISABLE on items 10 or 11 for all channels., you will lock yourself out of the Command Mode or the Command Facility Main Menu.</p>		
<p>4.3.10 COMMAND FACILITY CONFIGURATION COMMANDS MENU</p>		
<p>COMMAND FACILITY CONFIGURATION COMMANDS</p> <ul style="list-style-type: none"> 1. TIME 2. DATE 3. EVENT REPORTING 4. PERIODIC REPORTING INTERVAL 5. LINK ID NUMBER 6. NO ACTIVITY TIMEOUT <p>CR - ACCEPT ENTRY</p> <p>X - EXIT</p>		

ENTRY :

Fig. 4-15. Command Facility Configuration Commands Menu.

The menu shown in Fig. 4-18 is displayed when you select Item 3 from the Configuration Menu (refer to **Section 4.3.6**). This menu controls the Command Facility. These are the menu selections displayed on the screen:

1. TIME — this selection sets the system time. To set the system time, enter 1 and CR. The following display appears:

ENTER TIME (00: 47:07) :

Enter the correct time in the format hh:mm:ss, and CR. The Command Facility Configuration Commands Menu will be redisplayed.

2. DATE — this selection sets the system date. To set the system date, enter 2 and CR. The following display appears:

ENTER DATE (00/00) :

Enter the correct date in the format mm/dd, and CR. The Command Facility Configuration Commands Menu will be redisplayed.

3. EVENT REPORTING — this selection controls

the output of event reports to the Command Facility channel. Event reports are messages about important system conditions.

Table 4-5 lists the event reports that the Statplex might issue. Analyzing event reports helps pinpoint telephone line and modem problems.

Event reporting may be turned ON or OFF. The four most recent event reports will be stored if event reporting is turned OFF, or there is no Command Facility channel. The Statplex will output

these reports when either of the following occurs:

- Event reporting is turned back ON from the Event Reporting Menu.

- A channel enters the Command Facility with event reporting previously turned ON.

To control event reporting, enter 3 and CR. The Statplex displays the following:

EVENT

REPORTING (OFF) :

1. ON
- 2.

STATPLEX 4, STATPLEX 8

OFF

ACCEPT ENTRY

CR -

X - EXIT

N - NUMBER

ENTRY :

Enter 1 or 2, and CR. The Command Facility Configuration Commands Menu appears and, if you select ON, the Statplex will output any stored event reports.

4. PERIODIC REPORTING INTERVAL — this selection controls the output of period status reports. The Statplex outputs status reports only if a channel accesses the Command Facility.

You can output the reports at selected intervals or on demand. Refer to **Section 4.3.5** for further information on the status reports. To control the interval at which status reports are output, enter 4 and CR. The following display appears:

PERIODIC REPORTING INTERVAL (60) :

1. NONE
2. 10
3. 20
4. 30

5. 60

CR - ACCEPT ENTRY

X - EXIT

N - NUMBER

ENTRY :

reports, or 10, 20, 30, or 60 minutes per report) — and CR. The Command Facility Configuration Commands Menu will be displayed.

5. LINK ID NUMBER — this selection sets an identification number to the composite link for reporting purposes. When you set a link identification number, this number will appear

Enter the desired selection — NONE (no periodic

on event reports and period reports that the Statplex issues. To set the link identification number, enter 5 and CR. The following display appears:

ENTER LINK ID NUMBER (0) :

Enter the desired link number — 01 through 99 (00 = disabled) — and CR. The Command Facility Configuration Commands Menu will be displayed.

6. NO ACTIVITY TIMEOUT — this selection controls the no activity timeout function. When a channel accesses the Command Facility, and you have made no entries for the specified time, the channel will be disconnected. To set the no-activity timeout feature, enter 6 and CR. The following display appears:

ENTER NO ACTIVITY TIMEOUT (0) :

Enter the desired timeout interval — 0 (disabled), or 1 to 60 minutes, and CR. The Command Facility

Configuration Commands Menu will be displayed.

Table 4-5. Event-Reporting Messages

		System Messages	
		Displayed at	Displayed at
Event		Local Terminal	Remote Terminal
LINK nn	LINK nn	ALL EVENTS	
(01 through 99) has	If a link number	been set, this entry will appear at the end of each message.	
		OVERFLOW # HH:MM:SS **OVERFLOW # #	
BUFFER OVERFLOW			REMOTE**
# = channel number (1-8) most likely			to have caused the overflow
		SYS FLOW CTL HH:MM:SS **SYS FLOW	BUFFER CONTROL
	CTL		
REMOTE**	Buffer control (X-OFF/CTS) is		

activated for all channels (maximum report, one per minute).

<p>**SYNC LOSS HH:MM:SS**</p>	<p>No display</p>	<p>LOSS OF SYNCHRONIZATION</p> <ul style="list-style-type: none"> • Loss of synchronization.
<p>**SYNC ACQUIRE HH:MM:SS**</p>	<p>No display</p>	<ul style="list-style-type: none"> • Initial or reacquired synchronization.
<p>**SL TIME OUT HH:MM:SS**</p>	<p>No display</p>	<ul style="list-style-type: none"> • Sync loss timeout.
<p>**LINE ALARM HH:MM:SS**</p>	<p>**LINE ALARM REMOTE**</p>	<p>COMPOSITE LINE Line error rate is equal to or greater than 1 bit error per 1000 bits.</p>
<p>**CD LOSS HH:MM:SS**</p>	<p>No display</p>	<p>COMPOSITE CARRIER</p> <ul style="list-style-type: none"> • Loss of carrier from modem
<p>**CD ACQUIRE HH:MM:SS**</p>	<p>No display</p>	<ul style="list-style-type: none"> • Reacquisition of carrier from modem

Table 4-5. Event-Reporting Messages (Continued)

<p>System Messages Displayed at Local Terminal</p>	<p>Displayed at Remote Terminal</p>	<p>Event</p>
<p>**LOCAL SYSTEM RESET AT HH:MM:SS**</p>	<p>**REMOTE SYSTEM RESET AT HH:MM:SS**</p>	<p>SYSTEM RESET Message indicates system reset has been executed either by power on, by a command, or because of a power glitch.</p>
<p>**EEPROM FAILURE HH:MM:SS**</p>	<p>**EEPROM FAILURE REMOTE**</p>	<p>EEPROM READ/WRITE An EEPROM read/write problem has occurred. The Statplex could not successfully write new configuration data to the EEPROM (nonvolatile memory). Previously entered configurations may be in doubt.</p>

**CALL INITIATION ALARM no display
HH:MM:SS**

UNABLE TO CONNECT WITH REMOTE
(X.21 modem only) The designated number of attempts was made to call the remote unit, without success. Data in the buffers has been discarded. The Statplex is waiting for either more data activity from a channel (if you select data activity connect) or DTR to transmit from low to high on a channel (if you select DTR connect) before trying again.

4.3.11 BROADCAST LOCATION MENU

```

BROADCAST LOCATION
    1. LOCAL CHANNELS
    2. REMOTE CHANNELS
    3. BOTH

CR - ACCEPT ENTRY
X - EXIT

ENTRY:
    
```

Fig. 4-19. Broadcast Location Menu.

The menu shown in Fig. 4-19 is displayed when you select Item 5 of the Command Facility Main Menu (refer to **Section 4.3.4**). This menu lets you send a message of up to 45 characters to any or all channels of the Statplex system. Three characters require a special procedure to be included in a broadcast message: Ctrl-X, EXC, and ; (semicolon).

STATPLEX 4, STATPLEX 8

To send Ctrl-X or Esc, use the escape character

(ESC) first: ESC Ctrl-X, or ESC ESC.

A semicolon (;) causes a carriage return and line feed to be inserted in the broadcast message, and counts as two characters.

To send a broadcast message, select whether you will transmit the message to channels in the local unit, or the remote unit, or both. The following display appears:

```
ENTER CHANNEL (OR RANGE OF CHANNELS)
```

Enter the channel number or the range of channels, in the format n-n and CR. The following display

appears:

```
ENTER MESSAGE (45 CHARACTERS MAXIMUM,  
CTRL-X TO ABORT) :
```

—

Enter the message according to the guidelines described in this section, and CR. The Statplex outputs the message to the designated channels in the following format:

```
HH:MM:SS
```

```
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
```

NOTE: HH:MM:SS is the system time, and x is the broadcast message.

4.4 Configuring User Channels

User channels are configured either as Terminal or as Host. Typically, channels attached to a computer port

are configured as Host, and channels attached to the terminals are configured as Terminal. All user channels are set to a default value of Terminal. The

Terminal and Host channel configurations are as follows:

Terminal Channels

Flow Control. An attached device can control the flow of data from a Terminal channel to that device.

Either DTR or X-ON/X-OFF methods can be used. A Low on interface signal DTR or the transmission of X-OFF by the device stops the flow of data from the channel to that attached device.

Buffer Control. The Statplex can control the flow of data from an attached device to a Terminal channel. The Statplex transmits X-OFF or produces a Low on interface signal CTS to stop the flow of data from the attached device.

System Messages. System messages, such as LINK DOWN, DATA LOST, and so on, are transmitted to devices attached to Terminal channels.

Ctrl-X. A channel configured as Terminal is transparent to Ctrl-X only when the composite line is operational or the channel is in the Command Mode.

Feature Operation. The following channel characteristics are operational for a Terminal channel.

- Echo
- Autobaud Rate Detection
- Buffer Control
- Flow Control
- Output System Messages
- Channel Loopback
- Local Channel Configuration
- Tandem Computer Flow Control
- Smooth Scroll Flow Control

Tandem Computer Buffer Control is not operational for a terminal channel.

Host Channels

Flow Control. An attached device may not stop the flow of data from a Statplex Host channel. This configuration is consistent with the operation of most host computers, which do not require buffer overrun protection.

Buffer Control. The Statplex can control the flow of data from an attached device to a Host channel.

The Statplex transmits X-OFF or produces a Low on interface signal CTS to stop the flow of data from the attached device.

System Messages. Host channels do not output system messages.

Ctrl-X. A channel configured as Host is always transparent to Ctrl-X, except when used as part of the Command Mode entry sequence.

Feature Operation. The following channel characteristics are operational for a Host channel.

- Echo
- Buffer Control
- Channel Loopback
- Local Channel Configuration
- Tandem Computer Buffer Control

The following channel characteristics are *not* operational for a Host channel.

- Autobaud Rate Detection
- Flow Control
- Output System Messages
- Tandem Computer Flow Control
- Smooth Scroll Flow Control

4.5 Buffer Control

A Statplex user channel uses buffer control to start or stop data flow from the attached device. The channel may control data flow by using either X-

ON/X-OFF or CTS.

During prolonged peak activity on a user channel, the Statplex may exercise selective buffer control. Selective buffer control affects only the channel concerned. If the channel does not respond to the buffer control but continues to input data, buffer overflow can occur, and the channel's data is discarded. If buffer overflow becomes a persistent problem, then reconfigure the channel to operate at a lower data rate.

The Statplex can also exercise global buffer control. During prolonged peak activity on several user channels, or when excessive retransmissions occur on the composite because of poor line quality, the data buffers in the Statplex may fill. If 87 per cent buffer is used, the Statplex attempts to terminate the flow of data into its buffers from the most active channels first. If buffers continue to fill, this action will extend to all channels. If data input still continues so that the buffer overflows, data will be discarded, starting with the most active channel not responding to buffer control. This makes buffer space available quickly without causing data loss on the less-active channels. The Statplex will remove the buffer control when buffer is 62 per cent full.

Buffer control is invoked with either of two selectable techniques:

- **X-ON/X-OFF.** The Statplex outputs the X-OFF control character to instruct the attached computer port or data terminal to suspend transmission, and to wait for an X-ON control character from the Statplex when the buffer use has been significantly reduced.
- **CTS.** The Statplex drops the Clear-To-Send (CTS) interface control signal to instruct the attached computer port or data terminal to suspend transmission, and to wait for CTS to be raised. CTS is raised when buffer use has been significantly reduced. (The Statplex will drop CTS on character boundaries only.)

If data is discarded because the buffer overflows, the message DATA LOST will be output to the affected Terminal channel or channels. The message is output in ASCII code, 7 bits plus parity. DATA LOST is not output to a Host channel.

4.6 Flow Control

A Terminal uses flow control to start or stop data

flow from the Statplex. A Terminal may control the flow of data by using either X-ON/X-OFF or DTR. When both DTR flow control and EIA signals are enabled, Terminals can control the output from the Statplex by using interface signal DTR. Output is suspended on a character boundary when DTR is dropped. The output will resume when DTR is raised. DTR is passed transparently to the remote end—it appears as DSR at a Host channel (see **Section 2.3.3**). Only channels configured as Terminal will respond to DTR flow control.

When DTR flow control is disabled, transitions of interface signal DTR do not affect the flow of data.

X-ON/X-OFF flow control may be used with or without DTR flow control. When you select X-ON/X-OFF flow control, the Statplex monitors the data stream for the X-OFF character (X-OFF = Ctrl-S or DC3 on most terminals).

When a Terminal sends X-OFF, the Statplex immediately halts data flow to the Terminal on that channel, and also passes the X-OFF to the remote end. Because many graphics terminals may inadvertently send characters which look like X-OFF, the Statplex treats the next non-X-OFF character as X-ON, and restarts data flow to the terminal upon receipt of this character. This ensures that false X-OFF characters do not cause a halt in transmission.

This works well in most applications because the next character after a true X-OFF is X-ON. This approach does not work with DEC VT100™ Smooth Scroll terminals. In this application, data flow resumes only when the Statplex receives an explicit X-ON character. The Smooth Scroll Feature (enabled by the Channel Features Menu — see **Section 4.3.9**) performs this function.

Strip Flow Control. Normally, an X-ON or X-OFF character (or transition of DTR, if you select DTR flow control) input by a Terminal to a Channel is passed by the Statplex to the other end, and output by the destination channel to the CPU (DTR is output as DSR). You can inhibit this activity by using the strip flow control function (refer to **Section 5.3.9**). In this case, for example, an X-OFF character received by the Statplex causes transmissions to the terminal to be stopped, but the X-OFF is not passed to the other unit. The CPU at the other end will still be able to output data into

the Statplex, until selective or global buffer control is invoked to stop data output from the CPU. The buffered data will be output to the terminal when the Statplex receives an X-ON.

When you are using X.21 composite operation, configure all user channels to issue only X-ON/X-OFF flow control. You need to do this because DTR is used as the main control for the X.21 network.

4.7 Autobaud Rate Detection (ABR)

The Statplex has the capability to automatically determine the data rate of a channel by dynamically examining the first (sign-on) character after a connect. In addition, the Statplex will pass the sign-on character to a Host computer, if the following channel configuration is set up:

- Channel end for which you entered sign-on character: I
 Data Rate: ABR
 Type: Terminal
- Channel end for which you output sign-on character: I
 Data Rate: ABR
 Type: Host

The sign-on character will be suppressed if this exact configuration is not set up.

The sign-on characters for each data rate supported

are shown in Table 4-6. To sign-on to ABR, the terminal must raise DTR, then send the sign-on character to the Statplex. You must lower DTR between sessions.

Table 4-6. Autobaud Rate (ABR) Sign-on Characters

Stop	Rate ABR Sign-on	Code Level
(bps) Character	(bits)	Bits
1.5	50 CR	5
1.5	75 CR	5
2	110 CR	8
1	134.5 D (=IBM® Hex '34')	7
1	150 CR	8
1	200 CR	8
1	300 CR	8

600	8	1	CR
1200	8	1	CR
1800	8	1	CR
2400	8	1	CR
4800	8	1	CR or Space
9600	8	1	CR

4.8 HP ENQ/ACK Protocol

The Statplex can support Hewlett-Packard® HP3000™ View systems that use Type 26XX display stations operating under Term Type 10.

For this support, the Statplex emulates the HP ENQ/ACK Pacing Mechanism in block mode transmission. Remote spooling for HP2631 and HP2635 printers (Term Type 19) is also supported. The HP ENQ/ACK protocol is available to any user channel from the Channel Features Menu (refer to **Section 4.3.9**). When a Host channel end (with HP ENQ/ACK selection set at YES) receives an ENQ poll following a block of data, it immediately emulates the remote terminal by responding with its own ACK. It then passes ENQ along to the Terminal.

After outputting the data, the remote Statplex buffers any additional data until the Terminal sends an ACK or a 10-second timer expires. When the ACK is received, the remote Statplex forwards data to the Terminal (but does not forward ACK to the host). Fig. 4-20 shows the Statplex ENQ/ACK protocol emulation for block data transmission.

Fig. 4-20. HP3000 ENQ/ACK Protocol Emulation.

Configuration Notes

- Enable HP Channel (from the Channel Features Menu) when the CPU or the terminal user configures

Term Type 10.

- Do not define the DC2 character for either X-ON or X-OFF, when using X-ON/X-OFF flow control for Hewlett-Packard systems.
- For ENQ/ACK protocol to function properly, you must set one channel end as Host and the other end as Terminal.

Spool Mode (Term Type 19)

The Spool Mode uses X-ON/X-OFF characters to indicate flow condition to the HP3000 system. Disable the HP Channel Feature for channels using

the Spool Mode to avoid system time-out. Set flow control to NONE (using the Channel Characteristics Menu; refer to **Section 4.3.8**) when you operate HP2631 and HP2635 printers in an HP system in the Spool Mode.

Statplex user channels with flow control set at NONE will not respond to X-ON or X-OFF from the terminal or the computer.

Table 4-7 summarizes HP channel configurations and those that are not HP.

interface.

4.9 Tandem Computer Feature

Tandem Non-Stop computer data flow operation requires the use of a signal called T-Pause. T-Pause is a control signal on Pin 12 of the Tandem EIA interface. This flow-control signal is used as a function in response to the remote printing terminal signals Ready, Abort, or Temporary Buffer Full. The Statplex will pass the T-Pause signal when you select YES for Tandem in the Channel Features Menu (refer to **Section**

4.3.9)

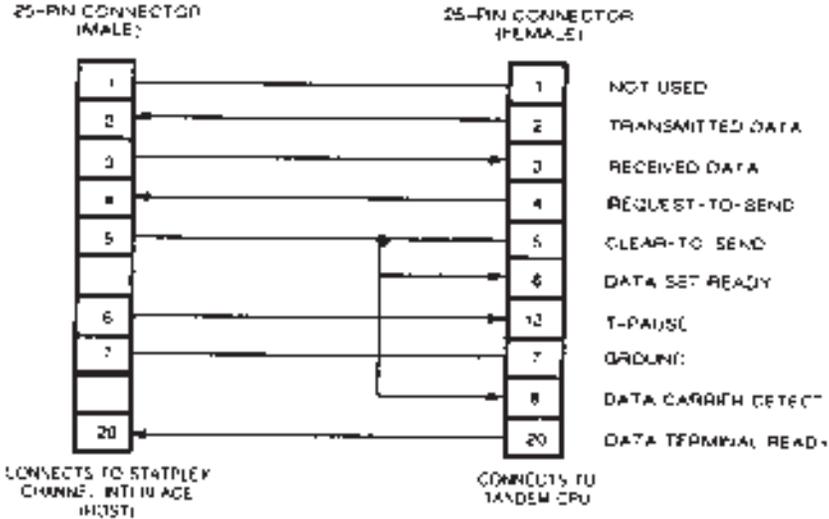
In response to a High on Pin 12 (from a Terminal), the host computer temporarily halts data output to allow the terminal buffer to empty. A Low on Pin 12 will restart the Host data output.

Also, when you enable Tandem computer support, DTR (Pin 20) from the Terminal is inverted and output as DSR (Pin 6) to the Host. However, the Statplex provides normal DTR flow-control response to the Terminal.

The cabling required is shown in Figure 4-21.

To enable Tandem computer support for a user channel, configure according to the Channel Characteristics Menu and the Channel Features Menu (refer to **Sections 4.3.8** and **4.3.9**).

Fig. 4-21. Cabling Required for Tandem Computer Support.



5. Diagnostics

A Self-Test, a display test, a set of channel loopback tests, and a set of system tests are provided for diagnostic maintenance of the Statplex. All the tests except the display test involve suspending normal data transfer, and also discard data in the buffers at the start of the test. Check the description of the individual test to determine the effect of the test on the system.

5.1 Self-Test

The Statplex executes a Self-Test at system initialization and any time the system is reset. The Self-Test, which takes one to three seconds, checks the operation of all system memory. When you first turn on power or press the back-panel Reset Switch, the display will show the following sequence:

```

TEST
1
    
```

This indicates that the Statplex is testing the PROM.

```

TEST
2
    
```

This indicates that the Statplex is testing the RAM.

```

TEST
3
    
```

This indicates that the Statplex is testing the EEPROM.

```

TEST PASS
ALL
    
```

This indicates that the Self-Test was successful.

If the display looks like this:

```

TEST FAIL
    
```

the PROM test failed. See Table 5-1 to determine the nature of the problem.

After the Self-Test passes, the display will show either LINK UP, if the Statplex has established communications with the remote unit, or LINK DOWN, if the Statplex has not established communications with the remote unit.

5.2 Display Test

This test verifies the operation of the display by turning on all the icons. The test procedure is as follows:

1. Press and hold the Select Switch until the display shows the following:

```

TEST
ALL
    
```

2. Press the Execute Switch. All the display icons will turn on for a few seconds, and then the display will return to normal operation. To keep the icons on longer, press and hold the Execute Switch when TEST ALL is shown.

```

LINK UP DOWN ALARM TEST PASS FAIL
LOOPBACK ACTIVITY 1 2 3 4 LOCAL REMOTE ALL
RETRY REFER TO 5 6 7 8 RESET
    
```

5.3 Channel Loopback Tests

There are four channel loopback tests. Two of the tests check the Statplex user channel and the attached terminal itself. The other two check the complete system, including both Statplex units, the two external modems, and the initiating terminal.

You can activate these loopback tests at either end of the Statplex system. Channel loopback tests affect only the individual channel you are testing.

You can activate the channel loopback tests by entering the Command Mode. Enter one of the following sequences at the terminal:

- Ctrl-X followed by Ctrl-Y
- Ctrl-X followed by BREAK

The following display appears:

```

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COMMAND MODE:  CHANNEL 1

    1. CHANNEL LOOPBACK
    2. LOCAL CHANNEL CONFIGURATION
    3. COMMAND FACILITY MAIN MENU

CR - ACCEPT ENTRY

ENTRY

```

Enter 1 and CR to select the channel loopback tests.
The Channel Loopback Menu will be displayed
(Fig. 5-1).

```

CHANNEL LOOPBACK

    1. LOCAL ECHO
    2. REMOTE ECHO
    3. LOCAL FOX
    4. REMOTE FOX

CR - ACCEPT ENTRY

X - EXIT

ENTRY:

```

Fig. 5-1. Channel Loopback Menu.

These are the menu selections as they appear on the screen.

1. LOCAL ECHO — this selects a local loopback test (see Fig. 5-2). This test may be performed without the composite line's being operational. At the start of the test, the local test message is output to the Terminal.

The Statplex then loops back to the Terminal all data it receives from the Terminal. Integrity of the user channel and the Terminal may be judged by observing the quality of the returned data. For example:

STATPLEX 4, STATPLEX 8

LOCAL TEST, ECHO INPUT

PRESS BREAK OR CTRL-X CTRL-Y TO TERMINATE TEST

ABCDEFGHIJKL

2. REMOTE ECHO — this selects a remote loopback test (see Fig. 5-3). The composite line must be operational for this test to execute. (If there are no communications with the remote unit, the message LINK DOWN and the Command Mode Menu will be displayed when you select this test.)

When you enter the test, the Statplex outputs the remote test message. The Statplex then sends the data it receives from the Terminal to the remote unit, which loops back to the Terminal (through the local unit) all data it receives from the Terminal. You may judge the integrity of the components involved in the test by observing the quality of the returned data. For example:

REMOTE TEST, ECHO INPUT

PRESS BREAK OR CTRL-X CTRL-Y TO TERMINATE TEST

ABCDEFGHIJKL

3. LOCAL FOX — this selects a local test, with data supplied by an internal fox message generator (see Fig. 5-2). You may perform this test even if the composite line is not operational. When you enter the test, the local test message is output to the Terminal. The Statplex then sends a continuous fox message to the Terminal. You may judge the integrity of the user channel and the Terminal by the quality of the returned fox message. For example:

LOCAL FOX

PRESS BREAK OR CTRL-X CTRL-Y TO TERMINATE TEST

THE QUICK BROWN FOX JUMPS OVER THE LAZY DOG. 1234567890

THE QUICK BROWN FOX JUMPS OVER THE LAZY DOG. 1234567890

4. REMOTE FOX — this selects a remote test, with data supplied by the internal fox message generator (see Fig. 5-3). The composite line must be operational for this test to execute. (If there is no communication with the remote unit, the message LINK DOWN and the Command Mode Menu will be displayed when you select this test.) When you enter the test, the

remote test message is output to the Terminal. The Statplex then transmits a continuous fox message to the remote unit, which loops the message back to the terminal. You may judge the integrity of the components involved in the test by observing the quality of the fox message. For example:

```

REMOTE FOX

PRESS BREAK OR CTRL-X CTRL-Y TO TERMINATE TEST

THE QUICK BROWN FOX JUMPS OVER THE LAZY DOG. 1234567890

THE QUICK BROWN FOX JUMPS OVER THE LAZY DOG. 1234567890
    
```

To terminate (exit) any test, enter BREAK or Ctrl-X followed by Ctrl-Y. The Command Mode Menu will be displayed.

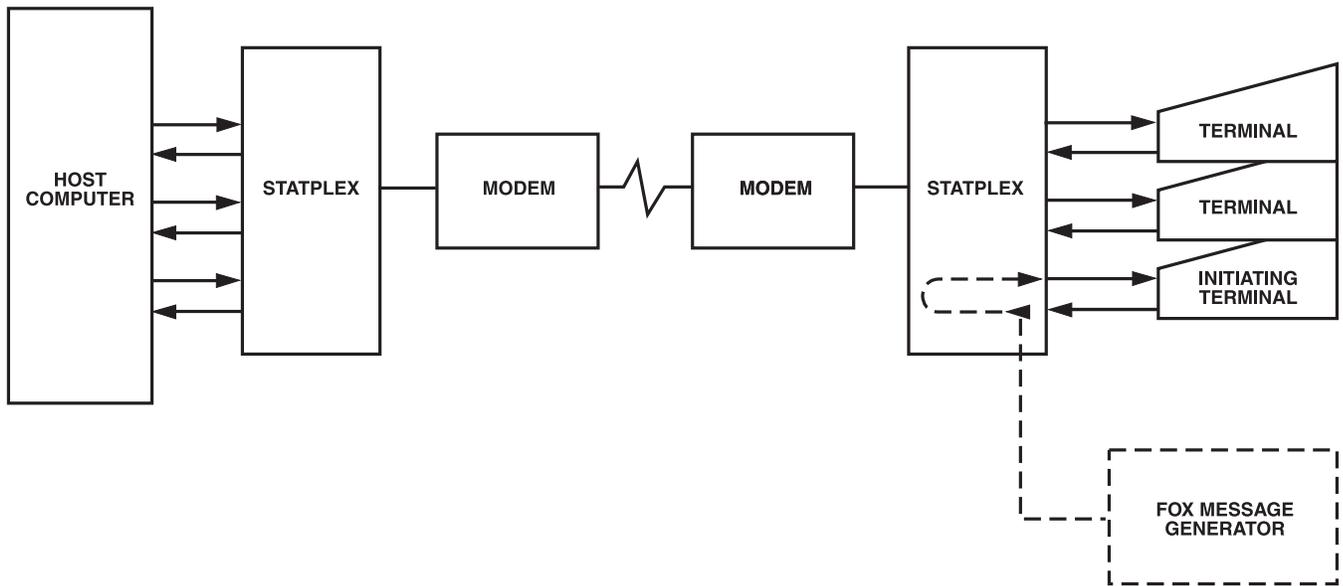


Fig. 5-2. Local Loopback Test Data Flow.

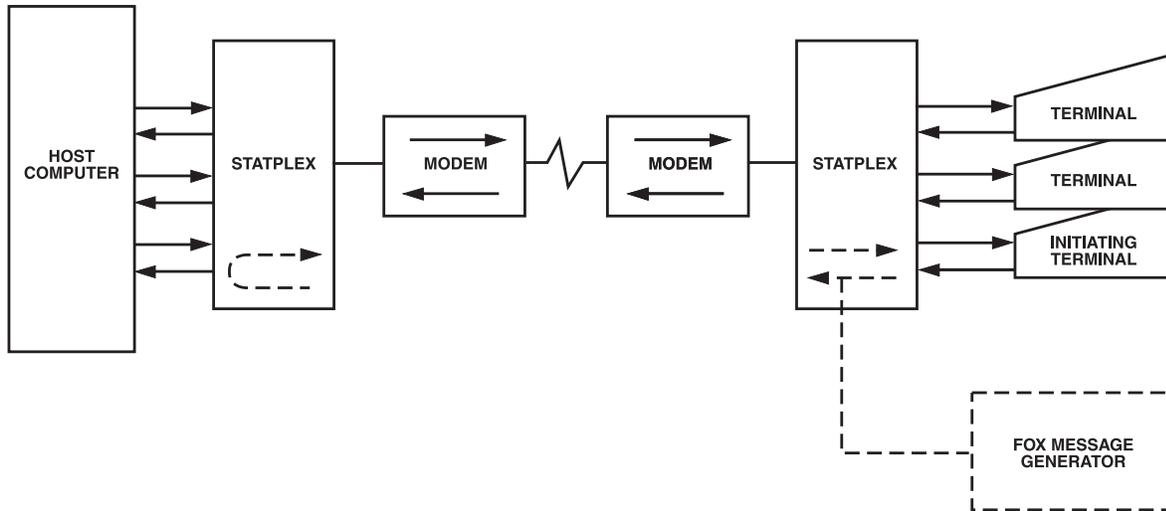


Fig. 5-3. Remote Echo Test Data Flow.

5.4 Tests Commands Menu

The Statplex system tests include composite loopback tests, channel loopback tests, and a channel output test. The Test Commands Menu controls these tests (see Fig. 5-4). To access this menu, select Item 4 of the Command Facility Main Menu (refer to **Section 4.3.4**).

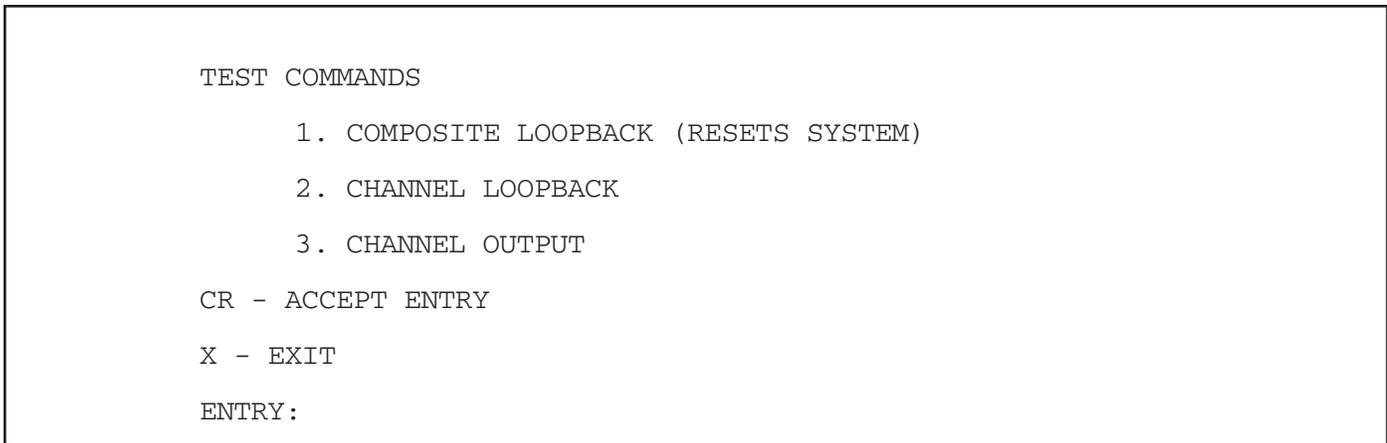


Fig. 5-4. Test Commands Menu.

These are the menu selections as they appear on the screen:

1. **COMPOSITE LOOPBACK** — this selects both local and remote composite loopback tests. These tests return input data and controls to the generating devices. Refer to **Section 5.4.1** for information on performing composite loopback tests.

2. **CHANNEL LOOPBACK** — this selects the channel loopback tests. To test the channel, enter 2 and CR. The following display appears:

```

CHANNEL LOOPBACK

    1. LOCAL ECHO
    2. REMOTE ECHO
    3. LOCAL FOX
    4. REMOTE FOX

CR - ACCEPT ENTRY

X - EXIT

ENTRY:

```

This menu performs the same functions, and operates in the same way, as the Channel Loopback Menu shown in Fig. 5-1. Refer to **Section 5.3** for information about the channel loopback tests. When you perform these tests using the Test Commands menu, the display will return to the Command Facility Main Menu when you enter **BREAK** or **Ctrl-X** followed by **Ctrl-Y** to terminate the test.

3. **CHANNEL OUTPUT** — this selects a test mode in which the Command Facility terminal can place a user channel into a test mode. This selection is useful for testing unattended terminals or devices which do not have a keyboard, such as printers. There are two data output tests available: an Input Test and a Fox Message Test. The Input Test sends data input from the Command Facility terminal to the channel to be tested. The Fox Message Test causes a continuous fox message to be output to the test channel. To perform the Channel Output Test, enter 3 and CR. The following display appears:

```

ENTER CHANNEL NO.:

```

Enter the channel number you wish to test. The following display appears:

```

LOCATION:

    1. LOCAL CHANNEL
    2. REMOTE CHANNEL

CR - ACCEPT ENTRY

X - EXIT

ENTRY:

```

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Select whether you will test the local-channel end or the remote-channel end. The following display appears:

```
CHANNEL OUTPUT :  
    1 . FOX  
    2 . INPUT  
  
CR - ACCEPT ENTRY  
  
X - EXIT  
  
ENTRY :
```

Select whether you will output the fox message or input data to the test channel. The Statplex will then establish the test on the channel, and output FOX TEST ACTIVE or INPUT TEST ACTIVE on the Command Facility terminal. If you selected the Fox Message Test, a continuous fox message will be output to the channel. If you selected the Input Test, then enter some characters on the Command Facility terminal. The characters will be output to the test channel. To end the test, enter BREAK or Ctrl-X followed by Ctrl-Y, as applicable. The test will terminate and the Command Facility Main Menu will be displayed.

5.4.1 COMPOSITE LOOPBACK TEST PROCEDURE

You may initiate composite loopback tests either from the Test Commands Menu (see Fig. 5-4) or

from the front-panel switches (see Fig. 4-2).

When you select or terminate a composite loopback test, both Statplex units are reset and all system error indications on the display are cleared. The entire system is initialized and all data stored in both units is discarded.

LOCAL COMPOSITE LOOPBACK TEST

1. To start the test, place the unit into the Local Composite Loopback Test Mode.

From the Test Commands Menu:

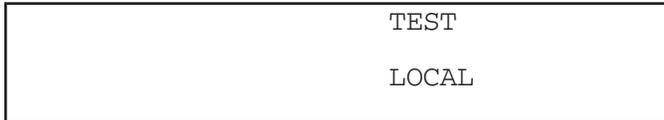
- a. Select Item 1 of the Test Commands Menu. The following display appears:

```
COMPOSITE LOOPBACK (RESETS SYSTEM)  
    1 . LOCAL ECHO  
    2 . REMOTE ECHO  
  
CR - ACCEPT ENTRY  
  
X - EXIT  
  
ENTRY :
```

- b. Enter 1 and CR. The Statplex will perform a reset, and display a copyright notice followed by the Command Facility Main Menu on the Command Facility terminal. (The Statplex does not have to be connected to an operating data-communications link for this test to be performed.)

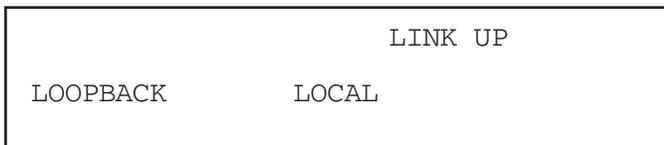
From the Front-Panel Switches:

- a. Press and hold the Select Switch until this display appears:



- b. Press the Execute Switch until the unit resets.
- 2. The display of both units will show the Self-Test sequence and then look like this:

Local unit:



Remote unit:



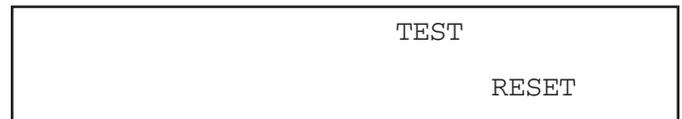
- 3. Enter some characters at any user terminal connected to the local unit. These characters should return exactly as entered to show the integrity of data in the local unit. See Figs. 5-65 and 5-6 for the data flow implemented during this test.
- 4. To end the test, return the local unit to normal operation.

From the Command Facility Main Menu:

- a. Select TERMINATE COMPOSITE LOOPBACKS (Item 7) of the Command Facility Main Menu. The Statplex will reset and remove the loopback. The Command Facility terminal will be disconnected.

From the Front-Panel Switches:

- a. Press and hold the Select Switch until this display appears:



- b. Press the Execute Switch until the unit resets. The display will show the Self-Test sequence and then system status.

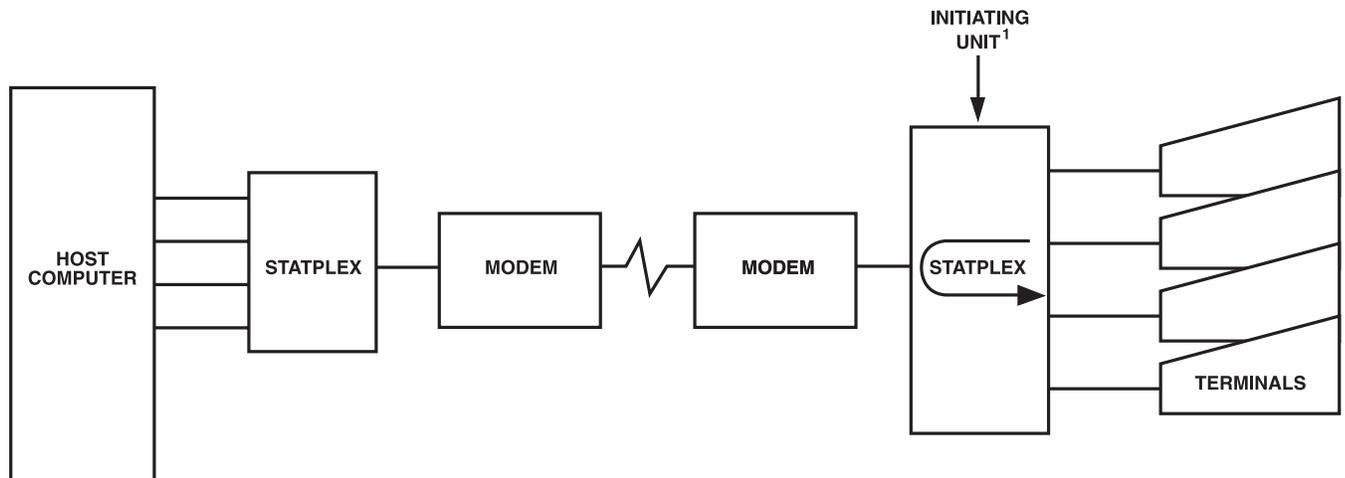


Fig. 5-5. Local Composite Loopback Data Flow.

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3. Enter some characters at any user terminal connected to the local unit. These characters should return exactly as entered to show the integrity of data in the local unit. See Fig. 5-5 for the data flow implemented during this test.

4. To end the test, return the local unit to normal operation.

From the Command Facility Main Menu:

a. Select **TERMINATE COMPOSITE LOOPBACKS** (Item 7) of the Command Facility Main Menu. The Statplex will perform a reset and remove the loopback. The Command Facility terminal will be disconnected.

From the Front-Panel Switches:

a. Press and hold the Select Switch until this display appears:



b. Press the Execute Switch until the unit resets. The display will show the Self-Test sequence and then system status.

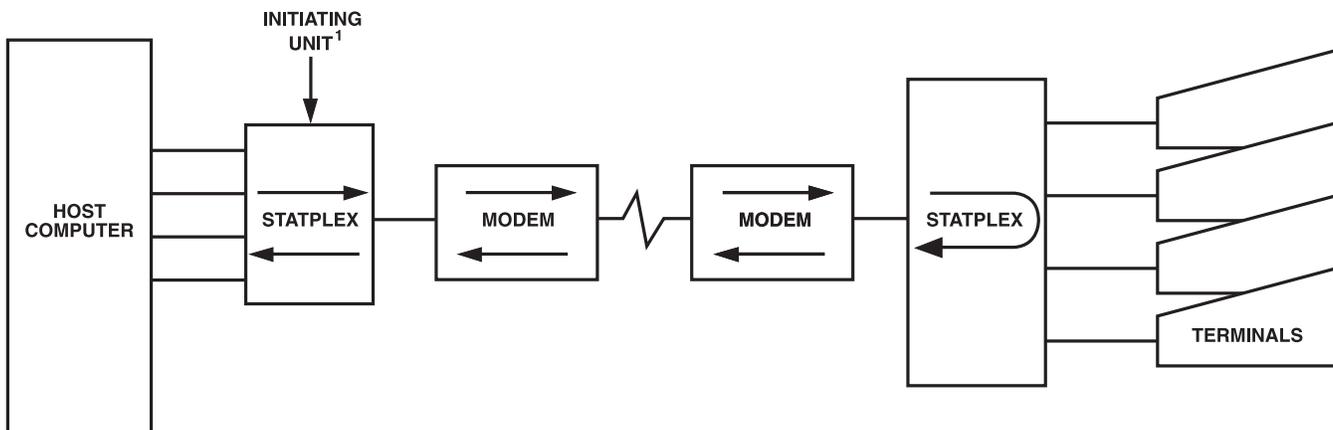


Figure 5-6. Remote Composite Loopback Data Flow

5.5 Operator Troubleshooting

Table 5-1 lists a few problems that you might experience, and suggests ways to deal with each problem.

Table 5-1. Troubleshooting

Problem	Cause	What to Do
<p>The unit does not operate when power is applied (the front-panel indicator does not turn ON).</p>	<p>Loss of power or a problem in the power supply.</p>	<p>Remove the power-cord plug from the wall outlet for about two minutes. Reinsert the plug in the outlet. This resets the Statplex power supply, which may have been tripped by a voltage surge.</p> <p>Test the AC wall outlet.</p> <p>Test the power supply by trying a spare power supply in its place.</p>
<p>The unit does not operate when power is applied (the front-panel indicator is ON).</p>	<p>Problem in the printed circuit module.</p>	<p>Reset the system by pressing the Reset Switch on the back of the unit with a ballpoint pen or small screwdriver.</p> <p>Reseat the connectors on the back of the unit.</p>
<p>ALARM REFER TO 3 (display).</p>	<p>The unit has been cold-started.</p>	<p>Nothing—this display is normal when a cold start is commanded.</p>
<p>ALARM REFER TO 4 (display)</p>	<p>Fault condition.</p>	<p>Replace the unit.</p>
<p>TEST 1 FAIL (display)</p>	<p>Fault condition in the printed circuit module PROM.</p>	<p>Replace the unit.</p>
<p>TEST 2 FAIL (display)</p>	<p>Fault condition in the printed circuit module RAM.</p>	<p>Replace the unit.</p>

Table 5-1. Troubleshooting (Continued)

Problem	Problem Cause	Items to Check
LINK DOWN (display).	<p>Loss of data-communications link.</p> <p>Loss of synchronization.</p>	<p>Make sure that the Statplex-to-modem cable is firmly connected at both ends.</p> <p>Use the Remote Composite Loopback Test to test the link and the modems.</p> <p>Try the Local Composite Loopback Test. If LINK DOWN is still displayed, check the link.</p> <p>Use the Remote Composite Loopback Test to test the link and the modems. If LINK DOWN is still displayed, replace the unit.</p>
RETRY ALARM (display)	Link degradation or modem failure.	<p>Use the Remote Composite Loopback Test to test the link and the modems.</p> <p>Try the modem's remote analog loopback test mode. A failure here indicates a problem in the link.</p>
RETRY ALARM and DATA LOST ALARM (display).	A high error rate on the link caused a buffer overflow.	<p>Use the Remote Composite Loopback Test to test the link and the modems.</p> <p>Check flow-control configuration on attached equipment.</p>

Table 5-1. Troubleshooting (Continued)

Problem	Problem Cause	Items to Check
DATA LOST ALARM (display).	Data input rates that are too high relative to Statplex selection caused a buffer overflow.	Consider reducing rates on the Statplex and the attached equipment.
LINK DOWN and DATA LOST ALARM (display).	A break in the link caused a buffer overflow.	Use the modem's Remote Analog Loopback Test to verify that the link is operational.
LOOPBACK LOCAL (display).	Link is in a loopback test mode.	Select TEST RESET from the front-panel switches or select Item 7 of the Command Facility Main Menu to terminate the loopback and return the unit to normal operation.
LOOPBACK REMOTE (display).	Link is in a loopback test mode.	Select TEST RESET from the front-panel switches or select Item 7 of the Command Facility Main Menu to terminate the loopback and return the unit to normal operation.
REMOTE ALARM (display).	The remote unit has an alarm condition.	Check the remote unit for overflow, sync loss, or other error indications shown on its display.



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1000 Park Drive • Lawrence, PA 15055-1018 • 724-746-5500 • Fax 724-746-0746