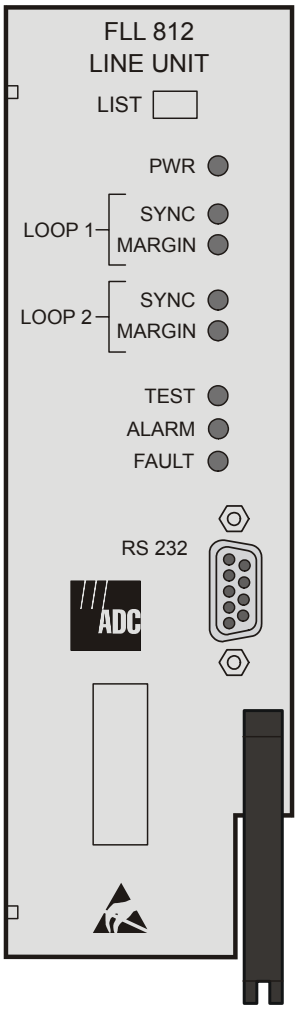
PG-Flex

24 Channel Universal Central Office Line Unit

Technical Practice



Model	List	CLEI Code
FLL-812	1	VACHDTNC~~

Section SCP-FLL812-010-06H

REVISION HISTORY

Revision	Release Date	Revisions Made
01	May 1, 2002	Initial Release
02	July 30, 2002	Update product description and configuration options
03	August 14, 2002	Update Specifications, System Options and RTLU Alarms
04	September 30, 2002	Misc. software updates
05	January 6, 2003	Updated Product Support Information
06	January 27, 2003	Added DC Resistive Signatures note under Table 2

USING THIS TECHNICAL PRACTICE

The following style conventions and terminology are used throughout this guide.

Element	Meaning
Bold font	Text that you must input exactly as shown (e.g., type **1** for card 1), menu buttons (e.g., **ACCEPT SHELF OPTIONS**) or menu screen options (e.g., **ALARMS** screen) that you must select
Italic font	Variables that you must determine before inputting the correct value (e.g., *Password*)
Monospace font	References to screen prompts (e.g., `Invalid Password...Try Again:.`)

Reader Alert	Meaning
	Alerts you to supplementary information
	Alerts you to supplementary information that is essential to the completion of a task
	Alerts you to possible equipment damage from electrostatic discharge
	Alerts you to possible data loss, service-affecting procedures, or other similar type problems
	Alerts you that failure to take or avoid a specific action might result in hardware damage or loss of service
	Alerts you that failure to take or avoid a specific action might result in personal harm

INSPECTINGYOUR SHIPMENT

Upon receipt of the equipment:

- Unpack each container and visually inspect the contents for signs of damage. If the equipment has been damaged in transit, immediately report the extent of damage to the transportation company and to ADC. Order replacement equipment, if necessary.
- Check the packing list to ensure complete and accurate shipment of each listed item. If the shipment is short or irregular, contact ADC as described in Product Support on page 141. If you must store the equipment for a prolonged period, store the equipment in its original container.

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OVERVIEW

The PG-Flex® FLL-812 List 1 24 Channel Universal Central Office Line Unit (COLU) is located in a PG-Flex Central Office Terminal (COT) Shelf. The PG-Flex system uses High-bit-rate Digital Subscriber Line (HDSL) 2B1Q technology to transport up to 24 DS0's of Plain Old Telephone Service (POTS) and Integrated Services Digital Network (ISDN) service between the FLL-812 and a PG-Flex FRL-842 Remote Terminal Line Unit (RTLU). The RTLU can be line-powered from the COLU or locally powered.

DESCRIPTION

The universal system is comprised of a line unit and channel units at both the COT and RT (Figure 1 on page 2). Line units and channel units can be hot-swapped without affecting other systems in the same shelf. The POTS channel units support dial-up modem and group 3 facsimile on all channels.

The COT shelf supports up to four systems, where each system is comprised of one COLU and up to three Central Office Channel Units (COCUs). The channel units must be the same type of card (POTS or ISDN) as the channel units installed at the RT. A PG-Flex FPI-829 Pair Gain Test Controller (PGTC) Interface Unit (common to all systems installed in the shelf) provides an interface for maintenance, alarm relays, and metallic access to the remote subscriber lines.

RT enclosures support up to four systems, where each system is comprised of one RTLU and up to three PG-Flex Remote Terminal Channel Units (RTCUs). The channel units must be the same type of card (POTS or ISDN) as the channel units installed at the COT. RT enclosures are designed for indoor and outdoor applications and are provided with multiple mounting options.

The FLL-812, in combination with the FRL-842, eliminates the need for a metallic bypass pair for subscriber drop testing by using a test head in the FRL-842. Results of subscriber drop tests are reported back to the central office test equipment through the FPI-829 with three-terminal resistive signatures complying with TR-NWT-000909 specifications. The FLL-812 and FRL-842 can optionally be configured to support the metallic bypass pair instead of using the test head..

If an FPI-729 is installed in the system, craft sessions must be initiated through the front of the FLL-812 because craft sessions with the FLL-812 are not supported through the FPI-729. However, if an FPI-829 is installed in the system, you can log into the FLL-812 through the FPI-829.

The FLL-712 and FLL-812 COLUs can reside in the same COT shelf and function normally. FLL-812 alarm reporting is compatible with the FPI-729; however, the FLL-812 critical alarms are mapped to the FPI-729 major alarms. The FLL-812 is not compatible with the FAU-728.

All references to a VT-100 terminal imply that a Personal Computer running VT-100 terminal emulation software can also be used for accessing the COLU through the Management Unit.

IMPORTANT ***Please refer to Appendix A on page 137 to facilitate proper system configuration. The Feature Matrix identifies the major features in the CO and RT line units. The Compatibility Matrix provides CO and RT line unit compatibility information.***

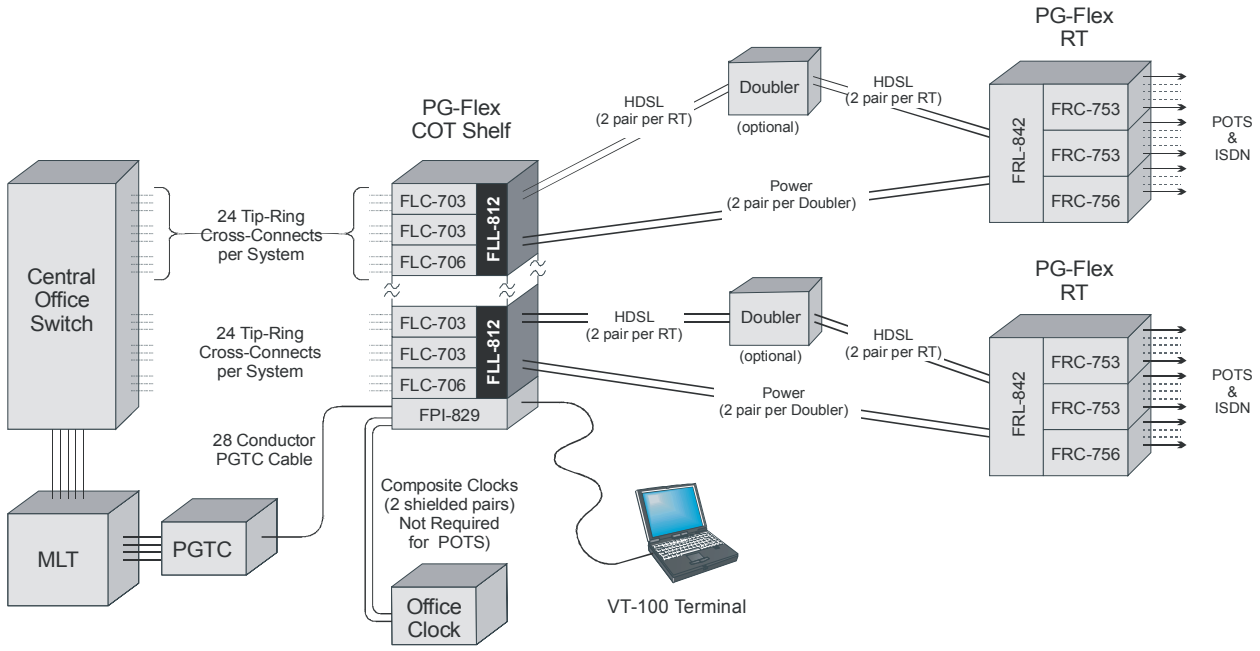


Figure 1. Typical PG-Flex Universal System with MLT Test Capability

If the FLL-812 is connected to an FRL-842 List 2, the power pairs (as shown in Figure 1) will not be needed since the FRL-842 List 2 is locally powered.

FUNCTIONS AND FEATURES

The FLL-812 provides the following functions and features for each 24-channel system in a single COT shelf:

- HDSL line transceivers and power supply
- Front panel status indicators
- Front panel craft terminal interface
- Downloadable software for product maintenance
- Eliminates the requirement for a metallic bypass pair (though supported when needed) for subscriber drop testing

HDSL TRANSMISSION

The FLL-812 card uses HDSL 2B1Q Technology to transport 24 DS0s plus an operations channel for management control over two copper pairs. Adaptive equalization, scrambling, and a four-level 2B1Q line coding scheme are used to maximize distance and minimize crosstalk.

The line interface is a two-pair, 784 Kbps full-duplex 2B1Q transmission format. The signal characteristics on the carrier pairs comply with TR-NWT-001210, Generic Requirements for HDSL Systems.

Table 1 shows the maximum distance between the COT and the RT for various gauge wire with up to two doublers in the circuit. Because of HDSL transmission technology, the HDSL pairs require no special conditioning and may include unterminated bridge taps; however, they cannot include load coils.

Table 1. HDSL Distances

Gauge Wire	HDSL Distance (6 dB Margin / 35 dB Loss / 68° F)			Analog Drop (530 Ω)
	No Doubler	1 Doubler	2 Doublers	
26 AWG (0.4 mm)	9.0 kft (2.8 km)	18.0 kft (5.6 km)	27.0 kft (8.4 km)	6.3 kft (1.9 km)
24 AWG (0.5 mm)	12.3 kft (3.8 km)	24.6 kft (7.6 km)	36.9 kft (11.4 km)	10.2 kft (3.1 km)
22 AWG (0.6 mm)	16.1 kft (5.0 km)	32.2 kft (10.0 km)	48.3 kft (15.0 km)	16.3 kft (5.0 km)
19 AWG (0.9 mm)	22.8 kft (7.0 km)	45.6 kft (14.0 km)	67.4 kft (21.0 km)	32.9 kft (10.0 km)

When the RT is powered from the COT, two auxillary power pairs are required between the COT and RT for each doubler installed in the HDSL circuit. These power pairs should meet the same criteria as the HDSL pairs. Refer to the COT Shelf and RT Enclosure technical practices for additional information on the power pairs. The RT can also be locally powered to eliminate the need for auxiliary power pairs.

SEALING CURRENT

The FLL-812 provides line powering voltage even if the RTLU is locally powered. In this configuration, the locally powered RTLU draws no current on the HDSL pairs. In order to allow the operating company to “wet” the HDSL lines, the locally powered RTLU provides a provisionable sealing current load circuit. This feature is provisionable as ENABLED or DISABLED. The default is DISABLED. Refer to CONFIG — System Options section for a description of provisioning the sealing current feature.

DISABLED

If a single span system is used, no current flows in the span between the RT and the COT. If doublers are used, no current flows in the span between the last doubler and the RT. Current does flow in the spans between the CO and doublers since the doublers are still line powered.

ENABLED

The Sealing Current load is automatically applied for a period of 15-20 seconds, once every 24 hours at the system clock time of 00:05. A minimum of 20 mA is drawn through each conductor of HDSL (side 1 + side 2) during the time the sealing current feature is active. The current flow is ramped at a rate less than 20 mA/second to meet industry standard requirements for pulsed sealing current.

SUBSCRIBER DROP TESTING

Test results on POTS subscriber drops can be displayed through a maintenance screen during a craft session or as three-terminal resistive signatures (compliant with TR-909) reported back to the MLT system through the FPI-829. Wire the PG-Flex COT Shelf to the FPI-829 per local procedure. Table 2 shows the signature resistances that are presented to the CO test system for various line conditions.

Table 2. DC Resistive Signatures

Test	Failure Condition	TR (kΩ)	TG, RG (kΩ)
RT Equipment Failure	RT detected, but no response from RT	17.8	90.9
Foreign Voltage on Drop	TG or RG > 10 Vrms TG or RG > 6 Vdc	27.8	90.9
All Tests OK	No failures detected	38.3	90.9
Ringer Test	REN > 5.0 or REN < 0.2	48.3	90.9
Resistive Fault on Drop	TG, RG, or TR ≥ 150 kΩ	58.0	90.9
Receiver Off-Hook	Phone is off-hook	68.0	90.9
Hazardous Potential on Drop	TG or RG > 50 Vrms TG or RG > 135 Vdc	78.5	90.9
COTS/RT Facility Failure	RT not detected	≥ 1,000	90.9

The resistive signatures on the FPI-829 List 3 are biased to -14 Vdc.

The resistive signatures shown in Table 2 are typical. Refer to the FPI-829 technical practice for specific resistive signatures provided by the various models of the FPI-829.

The FLL-812 can be configured to use a metallic bypass pair for subscriber drop testing in cases when MLT does not support TA-909 resistive signatures.

SPECIFICATIONS

Table 3 lists the specifications for the FLL-812.

Table 3. Specifications

Category	Item	Value
Electrical	Input Voltage	-42.5 Vdc to -56.5 Vdc
	Input Power	145 Watts (maximum)
	Output Voltage	± 130 Vdc
	Output Power	100 Watts (maximum)
	Voltage Safety	A2 compliant per GR-1089-CORE
Compliance	NEBS	SR-3580 Level 3
	Human Safety	UL-1950 for Restricted Access
	Emissions Radiation and Immunity	GR-1089-CORE for Class A equipment
HDSL	Line Interface	Two pair full duplex 2B1Q transmission format
	Signal Characteristics	TR-NWT-001210, Generic Requirements for HDSL Systems
Environmental	Elevation	-200 ft. to 13,000 ft. -60 m to 4,000 m
	Temperature	-40° F to +150° F -40° C to +65° C
	Humidity	5% to 95% (non-condensing)
Physical	Height	5.5 in. (14.0 cm.)
	Width	2.0 in. (5.1 cm.)
	Depth	10.5 in. (26.7 cm.)
	Weight	2.0 lbs. (0.9 kg.)

FRONT PANEL

Figure 2 shows the FLL-812 front panel and Table 4 on page 7 lists the LEDs and LED status for the FLL-812. Table 5 on page 8 lists the LED indications for the FLL-812 diagnostic and maintenance modes.

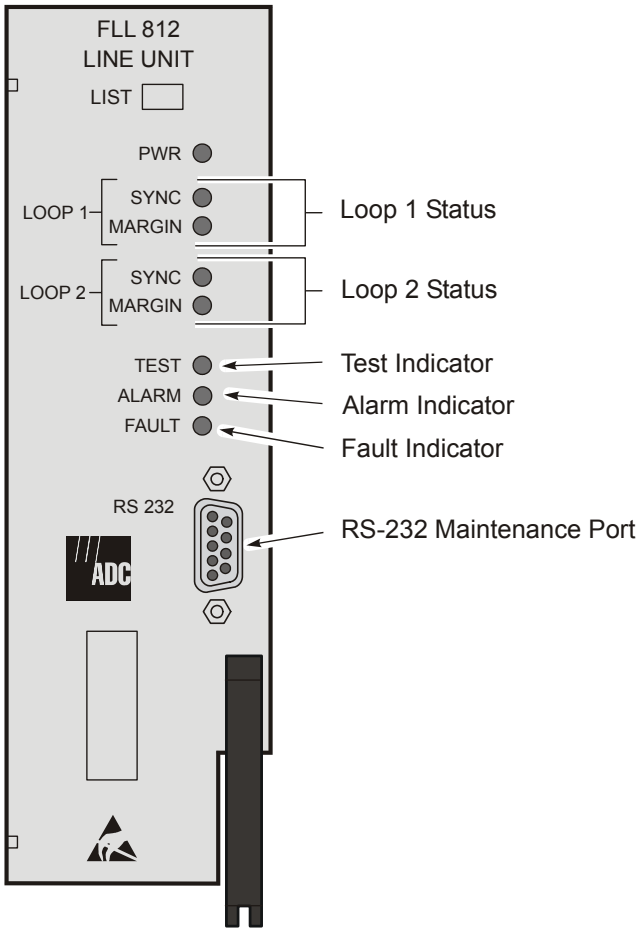


Figure 2. FLL-812 Front Panel

Table 4. FLL-812 Front Panel LEDs

LED	Color	State	Description
PWR	Green	On	COLU power supply is normal
		Flashing	COLU is attempting to power-up the RTLU or Doubler Unit
		Off	COLU is not receiving power or internal fault
Loop 1 SYNC	Green	On	Loop 1 is in synchronization between the COLU and RTLU or Doubler Unit
		Flashing	Loop 1 is attempting to synchronize with the RTLU or Doubler Unit
		Off	Active RTLU or Doubler Unit is not detected
Loop 1 MARGIN	Yellow	On	Loop 1 margin at the COLU is equal to or below the provisioned threshold level
		Flashing	Loop 1 margin at the RTLU or Doubler Unit is equal to or below the provisioned threshold level
		Off	Loop 1 margin at the COLU and RTLU or Doubler Unit is above the provisioned threshold level
Loop 2 SYNC	Green	On	Loop 2 is in synchronization between the COLU and RTLU or Doubler Unit
		Flashing	Loop 2 is attempting to synchronize with the RTLU or Doubler Unit
		Off	Active RTLU or Doubler Unit is not detected
Loop 2 MARGIN	Yellow	On	Loop 2 margin at the COLU is equal to or below the provisioned threshold level
		Flashing	Loop 2 margin at the RTLU or Doubler Unit is equal to or below the provisioned threshold level
		Off	Loop 2 margin at the COLU and RTLU or Doubler Unit is above the provisioned threshold level
Test	Yellow	On	Test active
		Off	Test not active
ALARM (refer to Table 30 on page 135 for troubleshooting details)	Red	On	COLU alarm condition exist
		Flashing	RTLU alarm condition exist
		Off	No alarm conditions exist
FAULT (refer to Table 30 on page 135 for troubleshooting details)	Red	On	Fault in the COLU
		Off	No fault is detected

Table 5. FLL-812 Diagnostic Indicators

LED State	Description	Action
PWR LED On, All other LEDs Flashing	FLL-812 is running in Boot Mode	Application software must be re-installed. Contact Product Support for additional information.
PWR LED On, All other LEDs sequencing downward	Software download to FLL-812	Wait for download to complete and FLL-812 to re-start
PWR LED On, All other LEDs sequencing upward	Software download to the FRL-842 connected to FLL-812	Wait for download to complete and FLL-812 to re-start

INSTALLATION AND TEST

STATIC SENSITIVE DEVICE – DO NOT HANDLE ANY MATERIAL WITHOUT FIRST TAKING PROPER STATIC CONTROL PRECAUTIONS.

The FLL-812 can be installed in any slot in the COT shelf that is labeled LU *n,* where “n” is the line unit slot number. Refer to the documentation accompanying the COT shelf for information on line unit slot numbering and wiring.

INSTALLATION

Install a FLL-812

Step	Action
1	Insert the FLL-812 into a vacant slot in the shelf that corresponds to the location of the wiring for the service being activated.
2	Engage the retaining latch to hold the card in place.

Initialize and Power Up the FLL-812

By default, the FLL-812 continuously attempts to power up and synchronize with the FRL-842 and/or the Doubler Units in the circuit until end-to-end HDSL synchronization is established. If the FLL-812 is unable to establish synchronization, it powers down the loops and waits approximately one minute before re-trying. The FLL-812 repeats this process continually until it is able to synchronize with the FRL-842.

The FLL-812 initialization and power up sequence described below assumes:

- HDSL pairs are wired from the COT shelf, through doubler housings (if required) and terminated at the RT enclosure
- Auxiliary Power pairs (if required) are wired from the COT shelf and terminated at the RT enclosure (these pairs do not need to pass through the Doubler housing)
- COT shelf has been wired to CO battery
- Bay fuses have been installed
- Doublers (if required) have been installed
- FRL-842 has been installed

1. When the FLL-812 is installed with power applied to the COT shelf, all LEDs turn on for one second, then go off.
2. After a few seconds, the PWR LED flashes.
3. The FLL-812 attempts to power up the FRL-842 or Doubler Unit. Depending on the condition of the HDSL and auxiliary power pairs, one of the following scenarios occur:

   a. One of more pairs are opened between the FLL-812 and the FRL-842 or Doubler Unit:
   - PWR LED flashes for approximately 12 seconds, then remains on
   - SYNC LEDs flash for approximately six seconds, then remains off
   - DSL Power Feed Open (PFO) alarm is indicated in ALARMS — COLU System History on page 51
   - FLL-812 waits one minute, then repeats step

   b. One or more pairs are shorted or grounded between the FLL-812 and the FRL-842 or Doubler Unit:
   - PWR LED flashes for approximately 12 seconds, then remains on
   - SYNC LEDs flash for approximately six seconds, then remains off
   - DSL Power Feed Short (PFS) alarm indicated in ALARMS — COLU System History on page 51
   - FLL-812 waits one minute, then repeats step

c. All pairs are good and properly wired between the FLL-812 and the FRL-842 or Doubler Unit:

- PWR LED flashes for approximately 12 seconds, then remains on
- SYNC LEDs flash and the FLL-812 attempts to synchronize with the FRL-842 or Doubler Unit. One of the following occurs:
  - FLL-812 does not detect or is not able to synchronize with the FRL-842 or Doubler Unit
    SYNC LEDs flash for approximately one minute, then remain off
    FLL-812 waits one minute, then repeat step
  - FLL-812 detects and is able to synchronize with the FRL-842 or Doubler Unit:
    Within a few minutes, the SYNC LEDs remain on and the FLL-812 establishes synchronized HDSL communications with the FRL-842 or Doubler Unit. Assuming the HDSL margins are above alarm thresholds and there are no subscriber drop tests or other alarms/faults in the system, refer to Table 6 for FLL-812 LED status.

Table 6. FLL-812 LED Status

LED	Status
PWR	On
LOOP 1 SYNC	On
LOOP 1 MARGIN	Off
LOOP 2 SYNC	On
LOOP 2 MARGIN	Off
TEST	Off
ALARM	Off
FAULT	Off

All HDSL alarms are suppressed when the FLL-812 is initially installed and powered up. When the HDSL links between the FLL-812 and FRL-842 are synchronized and have achieved NORMAL status on the spans and system status is IN SYNC, then active alarms are reported to the FPI-829.
It takes approximately two minutes before end-to-end synchronization is established with two doublers installed in the circuit. However, depending on the condition of the cable plant and length of the spans, it may take up to four minutes before synchronization is established.

ADMINISTRATION

To use the craft interface to provision the FLL-812 or other cards installed in the COT, you must connect a VT-100 compatible terminal or a personal computer with VT-100 terminal emulation software to the RS-232 interface of the FLL-812 or FPI-829 front panel or COTS backplane. The VT-100 interface allows "real time" updating of information displayed on the screen. Through the craft interface screens, system administration functions such as alarm checking and clearing, configuration changes, performance monitoring, and testing can be performed.

FRONT PANEL CRAFT PORT TO TERMINAL CONNECTIONS

Connections between the RS-232 craft port of the FLL-812 or FPI-829 and the craft terminal are shown in Figure 3.

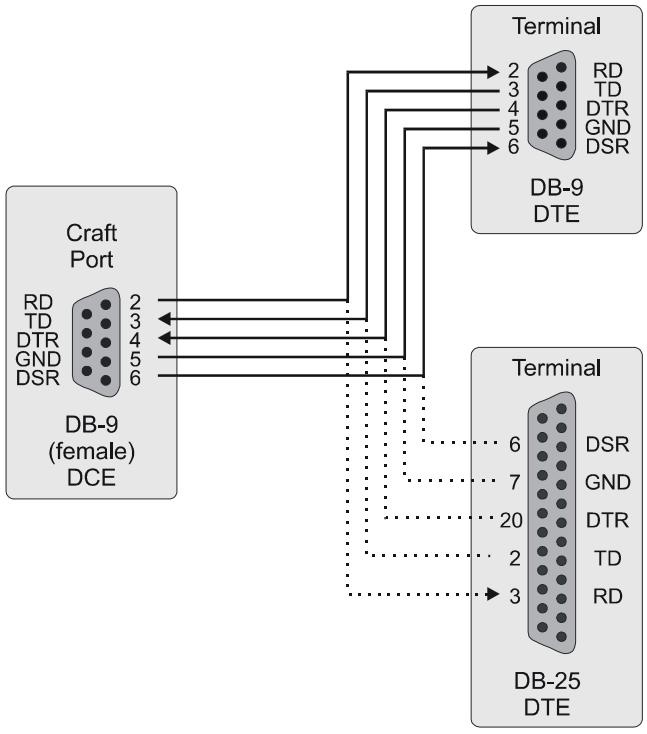


Figure 3. Front Panel Craft Port to Terminal Connections

FRONT PANEL CRAFT PORT TO MODEM CONNECTIONS

When connecting the RS-232 port to a modem, a null modem cable should be used. Ensure that the modem's Carrier Detect (CD) and DTR functions are enabled. This allows the modem connection to terminate properly when the FLL-812 drops Data Set Ready (DSR) and the unit logs off after the modem drops CD. The following connections are required to make the modem work correctly (Figure 4).

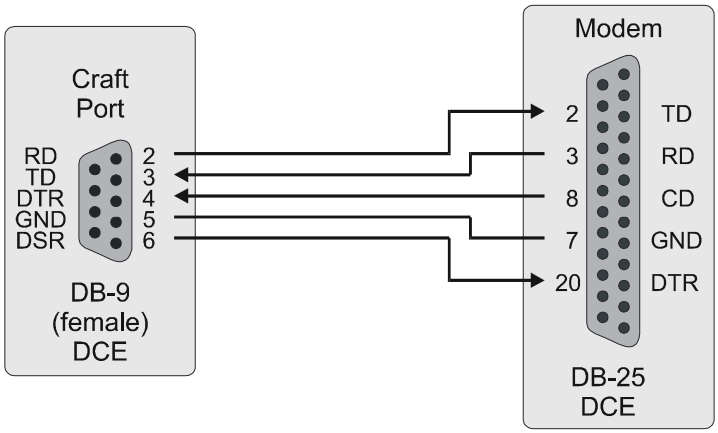


Figure 4. Front Panel Craft Port to Modem Connections

BACKPLANE CRAFT PORT TO TERMINAL CONNECTIONS

Use a null modem cable to connect to a Data Terminal Equipment (DTE) device from the backplane connector. Figure 5 shows the wiring for the required null modem cable to a DB-9 and a DB-25 connector.

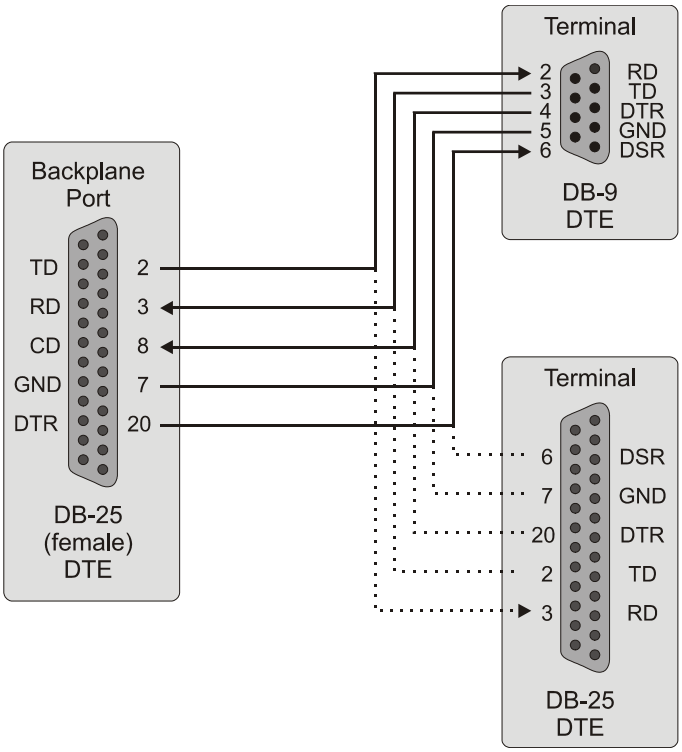


Figure 5. Backplane Craft Port to Terminal Connections Using a Null Modem Cable

Backplane Craft Port to Modem Connections

The backplane DB-25 is a female connector wired as a DTE interface. Figure 6 shows the cable connections between the backplane connector and a Data Carrier Equipment (DCE) DB-25 connector.

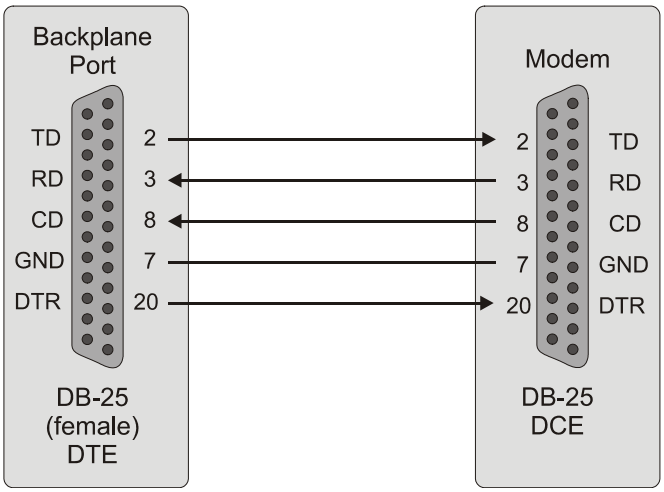


Figure 6. Backplane Craft Port to Modem Connections

Refer to Table 7 to set up the VT-100 craft port connections and Table 8 on page 16 for VT-100 Modem settings.

Table 7. Craft Port Configuration

Control	Setting	Supported	Default
Software Flow Control	XON/XOFF	Enabled	Enabled
Baud Rate		• FLL-812: – 1200 – 2400 – 4800 – 9600 – 38400 • FPI-829: – 1200 – 2400 – 4800 – 9600 – 14400 – 19200 – 28800 – 38400 – 57600	Autobaud
Asynchronous Communication Parameters	Data Bits	8	8
	Parity	None	None
	Stop Bits	1	1

Table 8. Modem Settings

Control	Setting	Supported
Hardware Flow Control		Off
Software Flow Control	XON/XOFF	Enabled
Baud Rate		1200 2400 4800 9600 19200 38400
Asynchronous Communication Parameters	Data Bits	8
	Parity	None
	Stop Bits	1

NAVIGATIONAL METHODS

Table 9 shows the keys used to navigate through the menus and screens:

Table 9. Navigational Keystrokes

Keypress	Effect on Menu	Effect on Screen
ENTER	Moves to sub-menu or screen selected	Confirms changes
← or CTRL - F	Moves left across Main Menu	Moves the cursor left
→ or CTRL - G	Moves right across Main Menu	Moves the cursor to the right
↑ or CTRL - T	Moves up the sub-menu selection	Moves the cursor up
↓ or CTRL - V	Moves down the sub-menu selection	Moves the cursor down
TAB	No effect	Moves to the next field
SPACEBAR	No effect	Cycle through the field options
ESC	Moves up a menu level. From the Main Menu, the Logout screen is displayed.	Returns to Main Menu without accepting changes. The banner briefly appears and then the Main Menu bar displays.
CTRL - R	Returns to the Main Menu. The banner briefly appears and then the Main Menu bar displays.	Returns to Main Menu without accepting changes
A - Z keys	Selects an underlined or highlighted menu item	A screen entry is made

Some screens illustrated in this document may be slightly different than what may appear on the craft interface terminal. These differences are related to individual software installations.

TESTING, CONFIGURATION, AND MAINTENANCE

The following sections describe how to navigate the VT-100 screens to configure, check the status of, and maintain the FLL-812 system.

MENUS AND DISPLAY STRUCTURE

Figure 7 shows the menu structure of the terminal management system. In this software section, the COLU refers to the FLL-812 and the RTLU refers to the FRL-842.

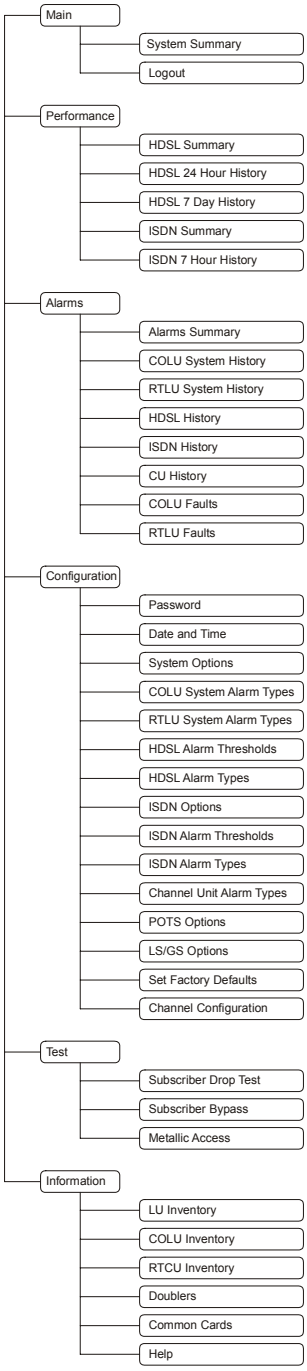


Figure 7. Terminal Menu and Display Structure

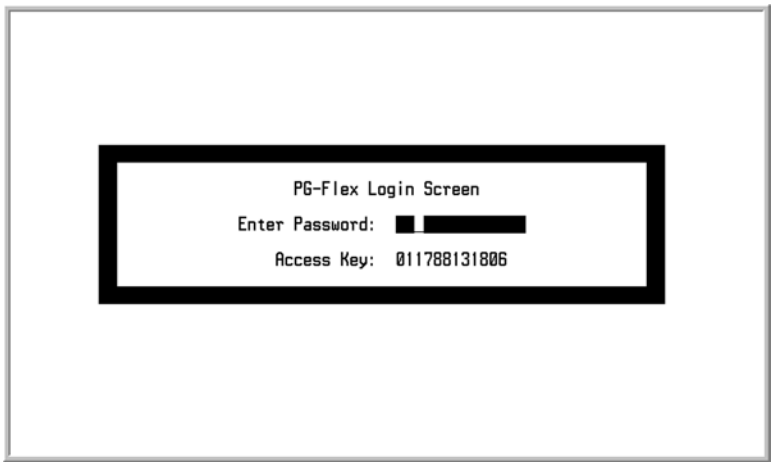
Log On Directly Through the FLL-812

This screen logs the user into the system directly through the FLL-812.

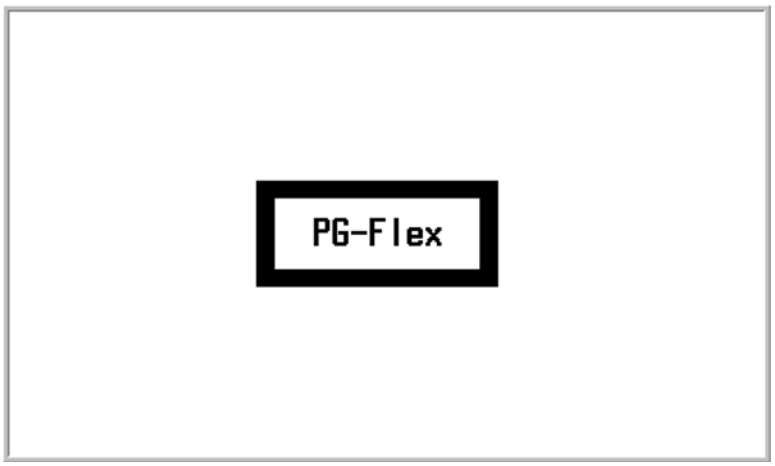
The factory-default password is **password#1**.

If the password has been changed and the new password is not known, contact ADC Technical Support while at the terminal. Technical Support will provide a temporary password based on the Access Key number displayed on the Logon screen.

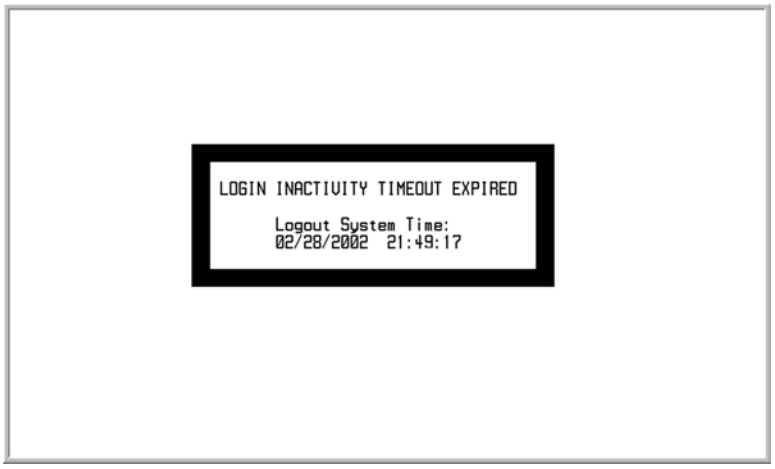
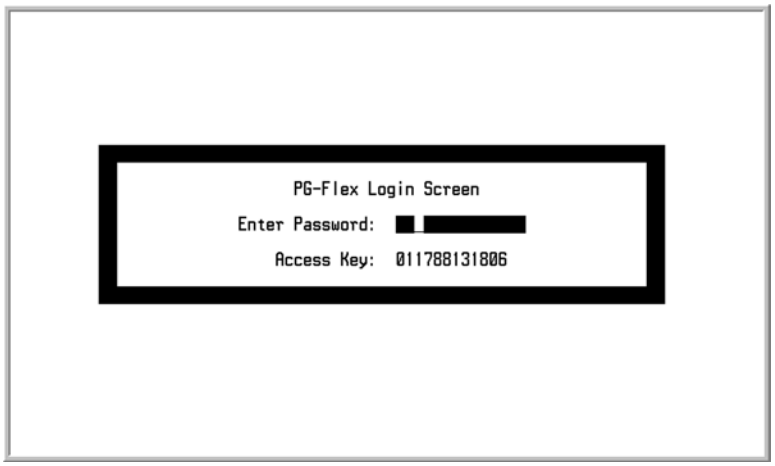
Log On Directly Through the FLL-812

Step	Action
1	After connecting a VT-100 terminal to the FLL-812, press **SPACEBAR** several times to start the autobaud feature. The PG-Flex Login screen appears. 
2	If an invalid *Password* is entered, the Login screen is redisplayed with the message `Invalid Password...Try Again:.` 

Log On Directly Through the FLL-812 (Continued)

Step	Action
3	Type the *Password*, then press **ENTER**. After a successful login, the PG-Flex banner screen appears for a few seconds.  Then, the Main Menu screen appears. 

Log On Directly Through the FLL-812 (Continued)

Step	Action
4	After 15 minutes of inactivity, the following menu appears.  Press **ESC**. The Flex Login screen reappears.  Repeat Step 1 and Step 3 to log in again.

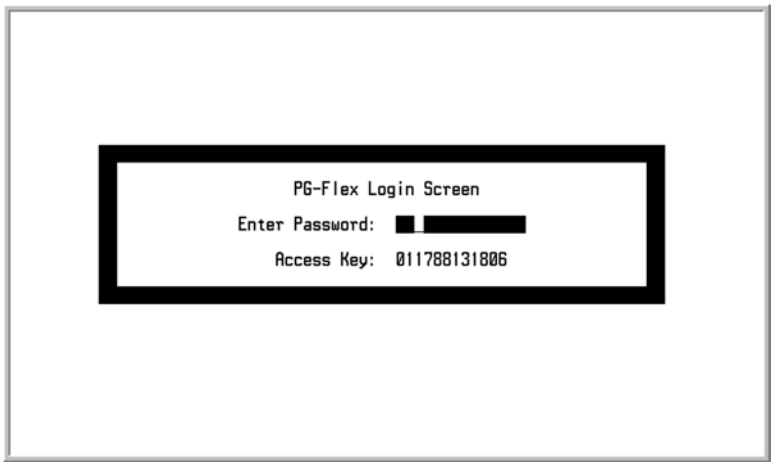
Log On The FLL-812 Through the FPI-829

This screen logs the user into the FLL-812 by going through the FPI-829.

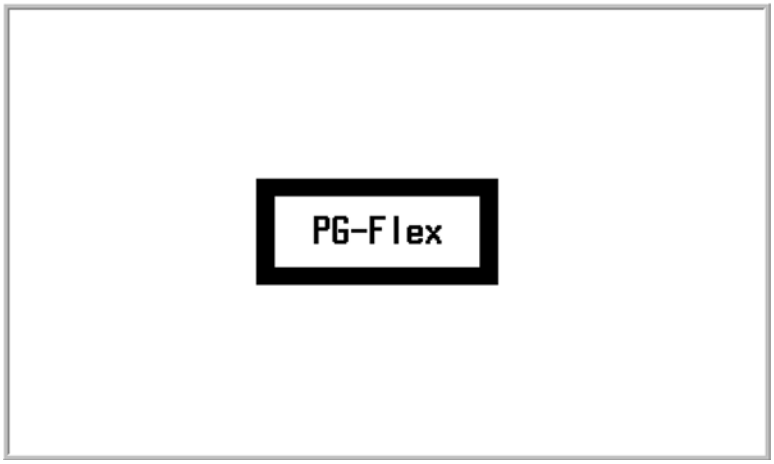
The factory-default password is **password#1**.

If the password has been changed and the new password is not known, contact ADC Technical Support while at the terminal. Technical Support will provide a temporary password based on the Access Key number displayed on the Logon screen.

Log On The FLL-812 Through the FPI-829

Step	Action
1	After connecting a VT-100 terminal to the FPI-829, press SPACEBAR several times to start the autobaud feature. The PG-Flex Login screen appears. 
2	If an invalid *Password* is entered, the Login screen is redisplayed with the message `Invalid Password...Try Again:.` 

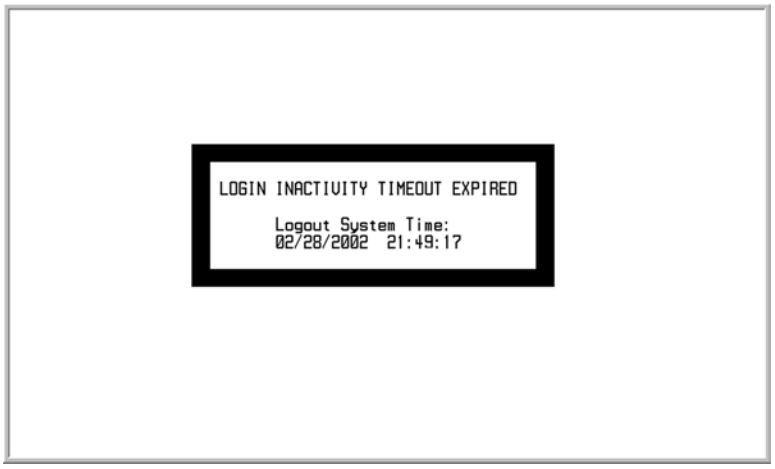
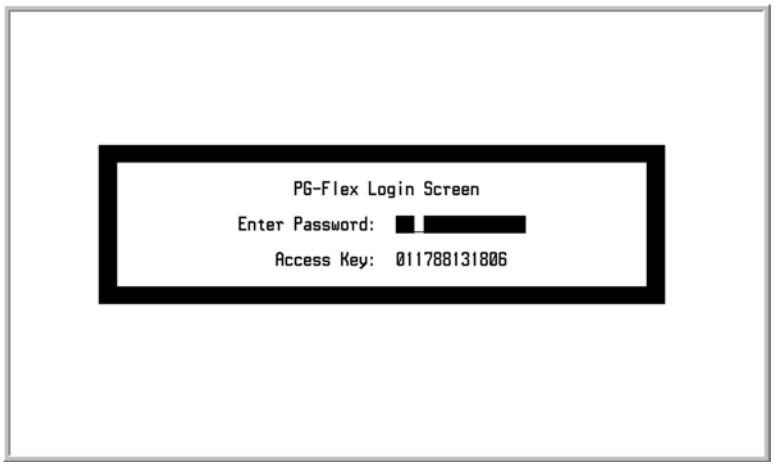
Log On The FLL-812 Through the FPI-829 (Continued)

Step	Action
3	Type the *Password*, then press **ENTER**. After a successful login, the PG-Flex banner screen appears for a few seconds.  Then, the FPI-829 Main Menu screen appears. 

Log On The FLL-812 Through the FPI-829 (Continued)

Step	Action
4	At the Main Menu, choose **SELECT**. Press ↓ to choose **COLU** (**COLU 1-4**, depending on your system configuration).  The FLL-812 Main Menu appears. 

Log On The FLL-812 Through the FPI-829 (Continued)

Step	Action
5	After 15 minutes of inactivity, the following menu appears.  Press **ESC**. The Flex Login screen reappears.  Repeat Step 1, Step 3 and Step 4 to log in again.

MAIN MENU OPTIONS

The Main Menu provides access to other sub-menus to check system status information and log out of the system. Refer to Table 10 for sub-menu options and descriptions, parameters and valid values.

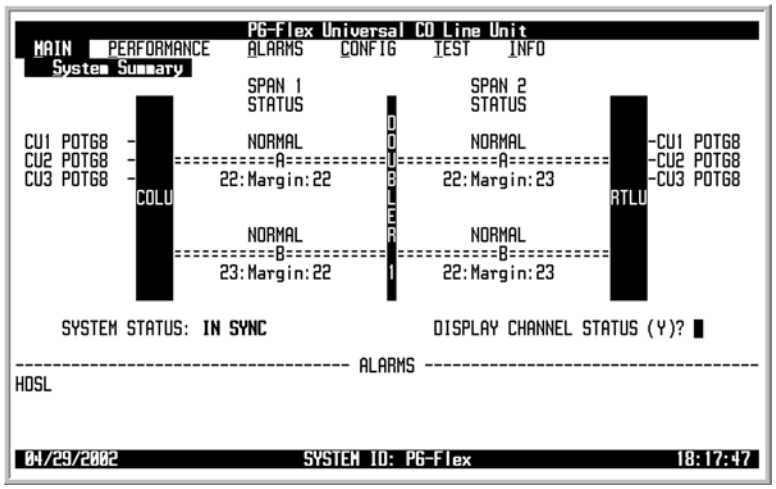
Table 10. Main Menu Options

Sub-Menu Options	Sub-Menu Descriptions	Parameters	Valid Values
System Summary	System status (spans, services, channel status for each span and service)	Display Channel Status	Y or N
Logout	Log out of the current PG-Flex session	Current Session will be Logged Out. Continue (Y/N)?:	Y or N

MAIN — System Summary

This screen displays the status of the system. Refer to Table 11 on page 29 for System Status information.

MAIN — System Summary

Step	Action
1	At the Main Menu screen, select **MAIN**. Press ↓ to choose **System Summary**. The following screen appears. 
2	Press ENTER. The following screen appears. 

MAIN — System Summary (Continued)

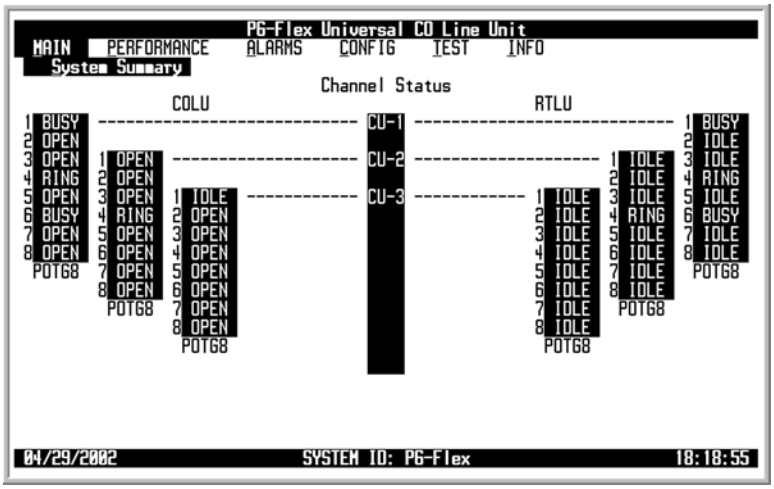
Step	Action
3	To display channel status, press **Y**. The following screen appears. 
4	Press **ESC**. The Main Menu screen reappears.

Table 11. System Status

Status	Description
System Status	
IN SYNC	Payload synchronized between the COLU and RTLU
OUT OF SYNC	Payload is not synchronized between the COLU and RTLU
Span "N" Status (where N = 1 – 3)	
HDSL LINK DOWN	HDSL link is down
NORMAL	HDSL link is synchronized
START-UP	HDSL link is acquiring synchronization
MARGIN	Indicates current noise margin of span
Alarms	
HDSL	Summary of alarms associated with HDSL link
ISDN	Summary of alarms associated with the ISDN channels
SYSTEM	Summary of alarms within the system
Display Channel Status	
ACTIVE	ISDN link is synchronized and the m-channel "Act" bit is set in the customer direction (towards NT1) as well as network direction (towards LT)
BUSY	Voice path through system is intact, Line is off-hook at RT with or without CO battery wired
DS0AIS	DS0 is not available due to a incoming DS1 facility fault failure
FRAMED	ISDN start-up sequence is complete, but end-to-end transparency has not been established
IDLE	Voice path through the system is intact, CO battery detected , Line is on-hook at RT (IDLE at CO, IDLE at RT)
INACT	"Act" bit in the ISDN m-channel is reset in the customer direction or network direction or both
LOS	Loss of signal
N/A	Not applicable, Timeslots are disabled, Channel Unit is removed at either end (CO or RT)
OPEN	Voice path through the system is intact, No CO battery detected (OPEN at CO, IDLE at RT)
RING	Line is ringing
RINGGND	Ring ground detected at the RT
TEST	Testing being done on line
TKCOND	Forced line condition
RBAT	Reverse battery

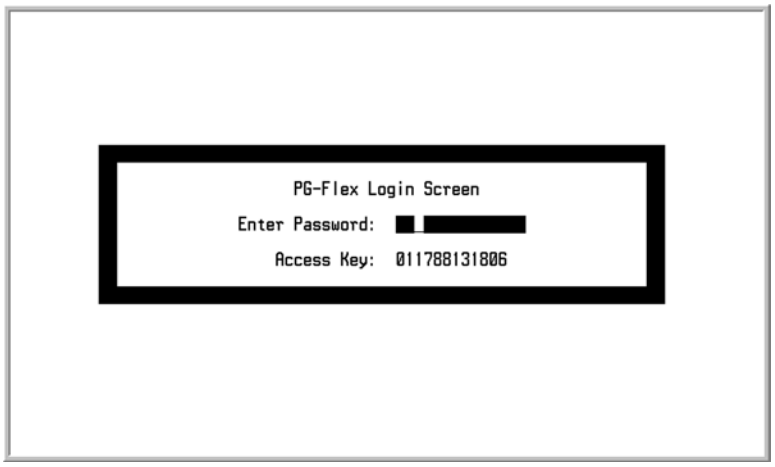
MAIN — Logout

This screen logs the user out of the system.

MAIN — Logout

Step	Action
1	**CAUTION** ***If you must leave your VT-100 terminal unattended for any length of time, log off until you are ready to resume work. This prevents unauthorized persons from inadvertently changing any of your operating parameters and causing a possible loss of service.*** At the Main Menu screen, select **MAIN**. Press ↓ to choose **Logout**. The following screen appears. 
2	Press **ENTER**. The following screen appears. 

MAIN — Logout (Continued)

Step	Action
3	Press Y. The PG-Flex Login screen appears. 

PERFORMANCE MENU OPTIONS

The Performance Menu provides access to HDSL and ISDN status (if ISDN is installed) and performance monitoring information. Refer to Table 12 on page 33 for sub-menu options and descriptions, parameters and valid values.

ISDN menu selections are only present if ISDN is installed the system.

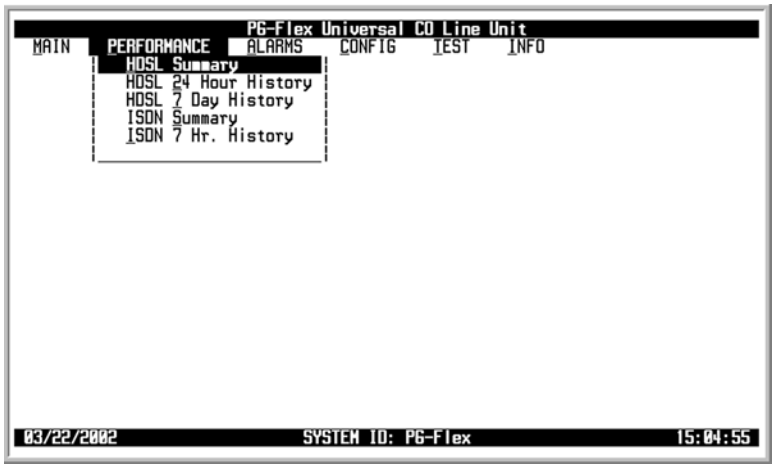
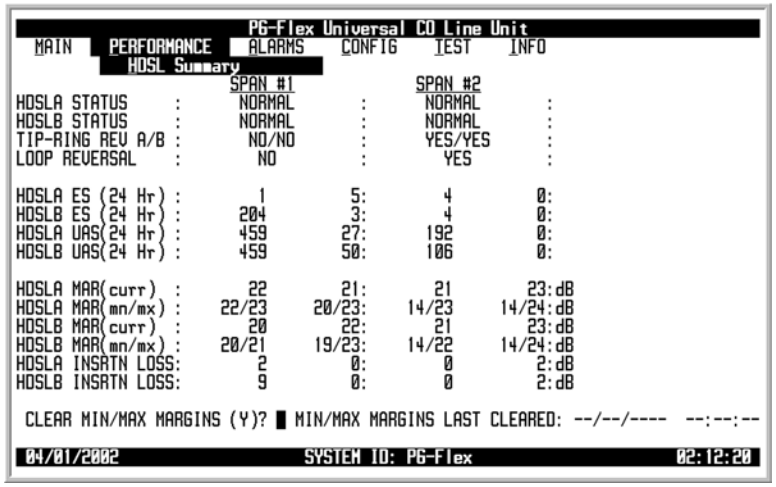
Table 12. Performance Menu Options

Sub-Menu Options	Sub-Menu Descriptions	Parameters	Valid Values
HDSL Summary	View the HDSL performance summary and status	• Clear Min/Max Margins (Y)? • HDSL Min/Max margins will be reset. Continue (Y/N)?	• Y or N • Y or N
HDSL 24 Hour History	View the last 24 hours of HDSL performance history in 15 minute intervals	• Span • HDSL 24 Hour History will be cleared. Continue (Y/N)?	• 1 – 3 • Y or N
HDSL 7 Day History	View the last 7 days of performance history plus the current day's accumulated performance history in 24 hour intervals	• Span • HDSL 7 Day History will be cleared. Continue (Y/N)?	• 1 – 3 • Y or N
ISDN Summary	View the stored ISDN performance data	• Clear ISDN PM Counts for this channel (Y)? • ISDN PM Counts will be cleared. Continue (Y/N)?	• Y or N • Y or N
ISDN 7 Hour History	View the 7 hour ISDN ES history info	• Clear ISDN PM Counts for this channel (Y)? • ISDN PM Counts will be cleared. Continue (Y/N)?	• Y or N • Y or N

PERFORMANCE — HDSL Summary

This screen displays the HDSL performance summary and status. Refer to Table 13 on page 36 for HDSL Summary information.

PERFORMANCE — HDSL Summary

Step	Action
1	At the Main Menu screen, select **PERFORMANCE**. Press ↓ to choose **HDSL Summary**. The following screen appears. 
2	Press **ENTER**. The following screen appears.  The following actions can be taken: a. To clear the minimum and maximum margins, press **Y** and continue with this procedure. b. To exit the HDSL Summary, press **ESC**.

PERFORMANCE — HDSL Summary (Continued)

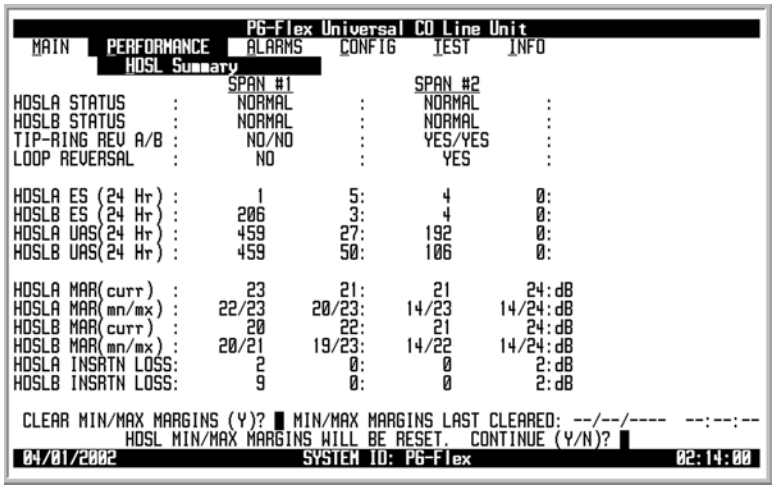
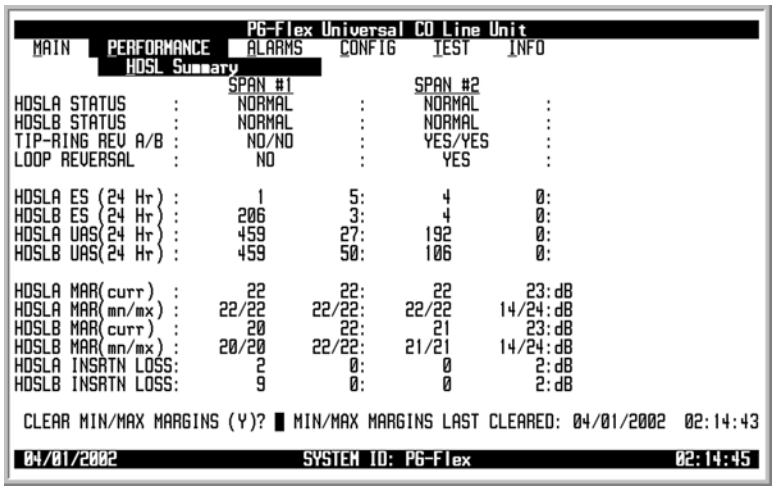
Step	Action
3	The following actions can be taken: a. To reset the margins, press **Y**. The following events occur: • minimum and maximum margins are set to the current margins • time and date that the margins were last set are updated   b. To retain the existing minimum and maximum margins, press **N**.
4	Press **ESC**. The Main Menu screen reappears.

Table 13. HDSL Summary

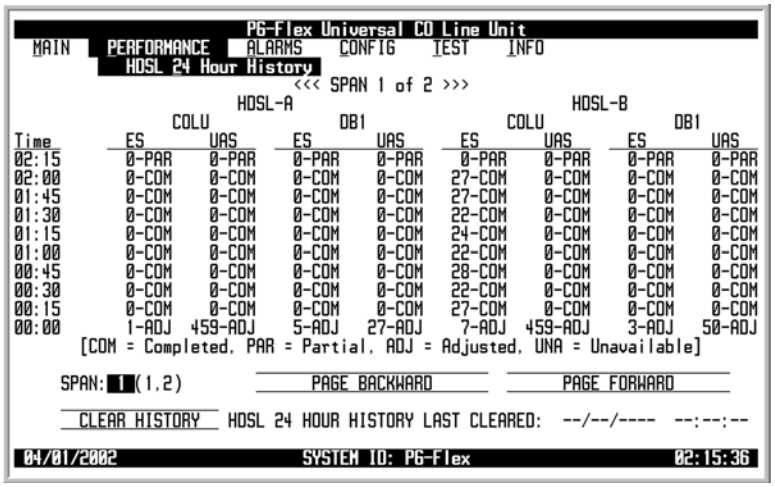
Parameter	Description	State or Value
• HDSLA STATUS • HDSLB STATUS	Status of the HDSL A/B link on the span	• NORMAL HDSL link and payload is synchronized • STARTUP HDSL link is attempting to synchronize • LINKDOWN HDSL transceiver at the far end has not been detected
TIP-RING REV A/B*	Tip-ring polarity of the HDSL A/B link	• NO Indicates that tip and ring are wired properly • YES Indicates that tip and ring are reversed
LOOP REVERSAL*	HDSL loop A and B connection	• NO Indicates HDSL loops A and B are wired properly • YES Indicates HDSL loops A and B are reversed
• HDSLA ES (24 Hr) • HDSLB ES (24 Hr)	Total number of errored seconds in the last 24 hours on the HDSL A/B link	
• HDSLA UAS (24 Hr) • HDSLA UAS (24 Hr)	Total number of unavailable seconds in the last 24 hours on the HDSL A/B link	
• HDSLA MAR (curr) • HDSLB MAR (curr)	Current margin on the HDSL A/B link	
• HDSLA MAR (mn/mx) • HDSLB MAR (mn/mx)	Minimum and maximum margins on the HDSL A/B link since the min/max margins were last cleared	
• HDSLA INSRTN LOSS • HDSLB INSRTN LOSS	Loss on the HDSL A/B link	

* The system works correctly with loop and/or tip and ring reversals. However, alarms are generated and fault isolation may be difficult.

PERFORMANCE — HDSL 24 Hour History

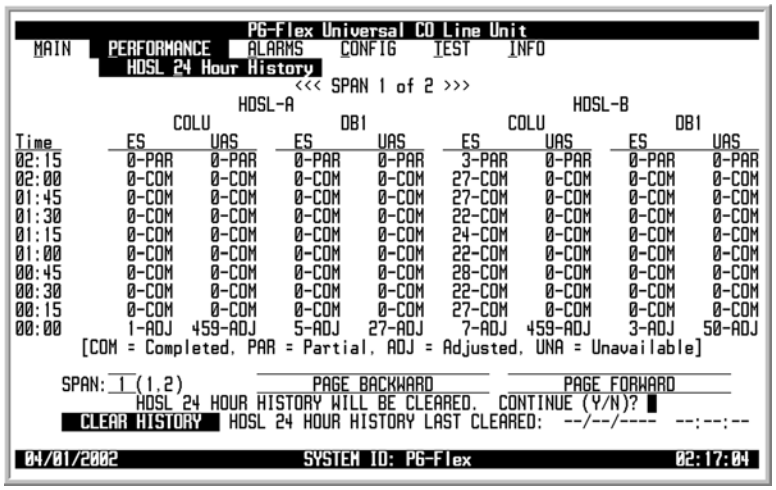
This screen displays the last 24 hours of HDSL performance history in 15 minute intervals. The performance history data displayed includes ES and UAS counts and the status of these counts.

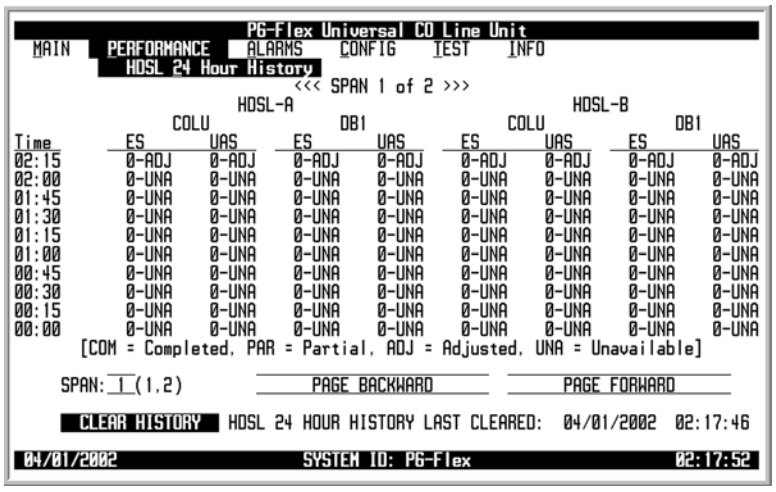
PERFORMANCE — HDSL 24 Hour History

Step	Action
1	At the Main Menu screen, select **PERFORMANCE**. Press ↓ to choose **HDSL 24 Hour History**. The following screen appears. 
2	Press **ENTER**. The following screen appears.  In the Time field, 15-minute interval information is displayed. For example, the time interval marked 2:00 contains the information for 2:00 AM to 2:15 AM. The status of the count is shown as: • ADJ (Adjusted): Time or date has been changed or the history cleared on the system during this interval • COM (Complete): Data is saved in the history register for this interval • PAR (Partial): Data is being collected for this interval • UNA (Unavailable): Data has not been collected for this interval or has been reset during a previous time interval

PERFORMANCE — HDSL 24 Hour History (Continued)

Step	Action
3	The following actions can be taken: a. To scroll through all 15-minute intervals, select the **PAGE FORWARD** or **PAGE BACKWARD** button and press **ENTER**. b. To view additional spans, select the SPAN field and press **SPACEBAR** to toggle to the other spans, then press **ENTER**. c. To clear the HDSL 24 Hour History, select the **CLEAR HISTORY** button and press **ENTER**. From the `HDSL 24 HOUR HISTORY WILL BE CLEARED. CONTINUE (Y/N)?` prompt, the following actions can be taken: • To clear the HDSL 24 Hour History, press **Y**. The following events occur: 1. all HDSL 24 hour history 15-minute interval registers are set to zero and labeled UNA 2. current interval is labeled as ADJ 3. time and date that the registers were last cleared are updated





If there is an active 15-minute ES or UAS alarm, this alarm becomes inactive when the 24-hour performance history is cleared and reactivates once the threshold has been crossed.

- To retain the existing HDSL 24 Hour History, press **N**.

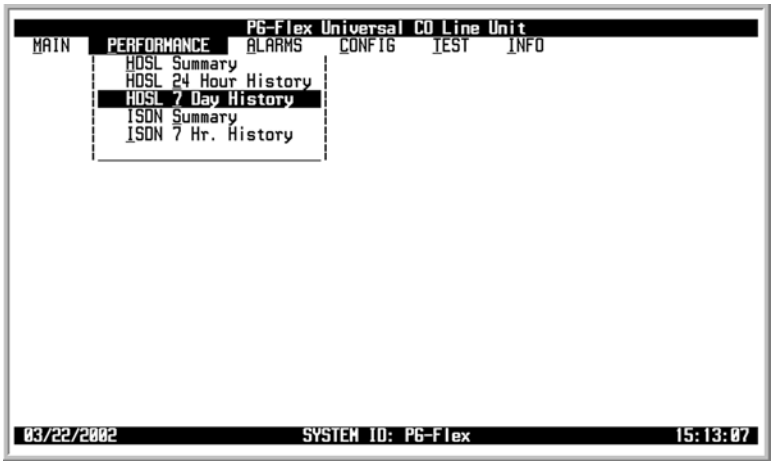
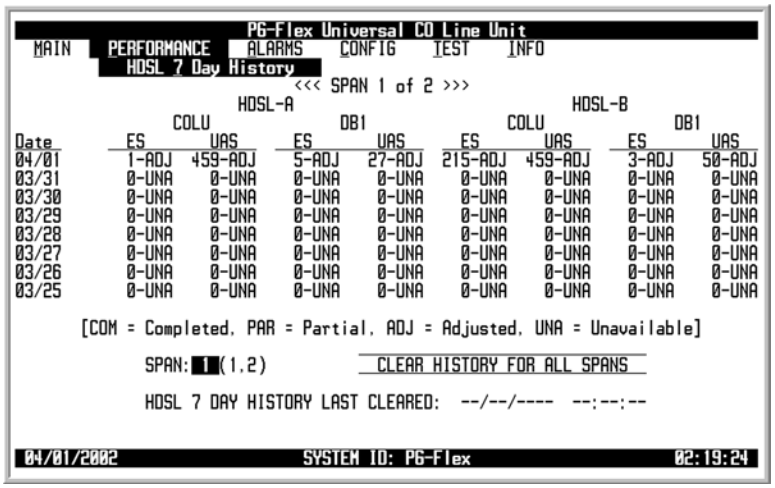
PERFORMANCE — HDSL 24 Hour History (Continued)

Step	Action
4	Press ESC. The Main Menu screen reappears.

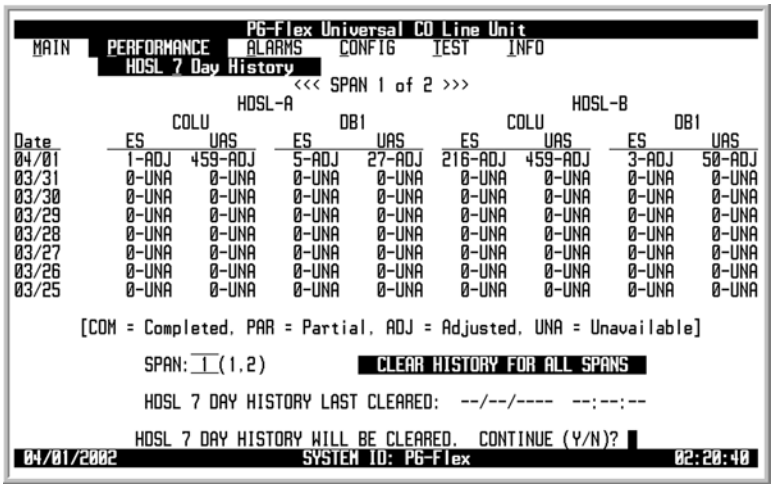
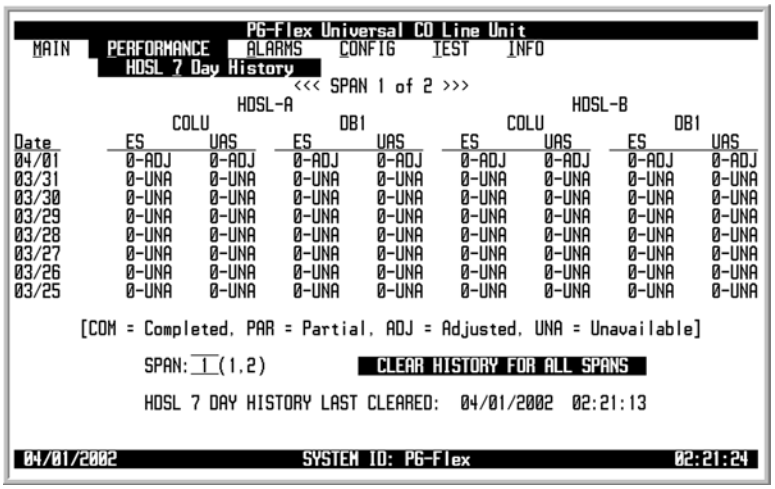
PERFORMANCE — HDSL 7 Day History

This screen displays the last seven days of performance history, plus the current day's accumulated performance history in 24-hour intervals. The performance history data information displayed includes ES counts, UAS counts, and the status of the counts.

PERFORMANCE — HDSL 7 Day History

Step	Action
1	At the Main Menu screen, select **PERFORMANCE**. Press ↓ to choose **HDSL 7 Day History**. The following screen appears. 
2	Press **ENTER**. The following screen appears.  The current day performance information shows the performance since the previous midnight. At midnight of every day, the current day performance history is moved to the previous day's history and the current day performance information is cleared. The status of the count is shown as: • ADJ (Adjusted): Time or date has been changed or the history cleared on the system during this interval • COM (Complete): Data is saved in the history register for this interval • PAR (Partial): Data is being collected for this interval • UNA (Unavailable): Data has not been collected for this interval or has been reset during a previous time interval

PERFORMANCE — HDSL 7 Day History (Continued)

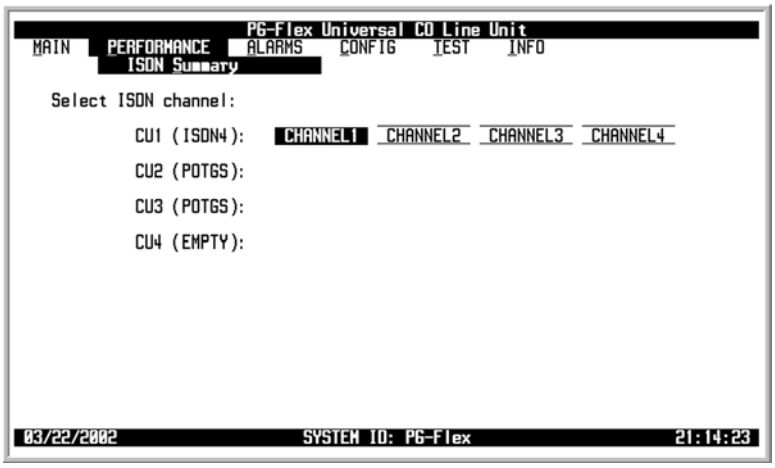
Step	Action
3	The following actions can be taken: a. To view additional spans, select the SPAN field and press **SPACEBAR** to toggle to the other spans, then press **ENTER**. b. To clear the HDSL 7 Day History, select the **CLEAR HISTORY FOR ALL SPANS** button and press **ENTER**. From the `HDSL 7 DAY HISTORY WILL BE CLEARED. CONTINUE (Y/N)?` prompt, the following actions can be taken: • To clear the HDSL 7 Day History, press **Y**. The following events occur: 1. all HDSL 7 day history 24-hour interval registers are set to zero and labeled UNA 2. current interval is labeled as ADJ 3. time and date that the registers were last cleared are updated   If there is an active 1-day ES or UAS alarm, this alarm becomes inactive when the 24-hour performance history is cleared and reactivates once the threshold has been crossed. • To retain the existing HDSL 7 Day History, press **N**.
4	Press **ESC**. The Main Menu screen reappears.

PERFORMANCE — ISDN Summary

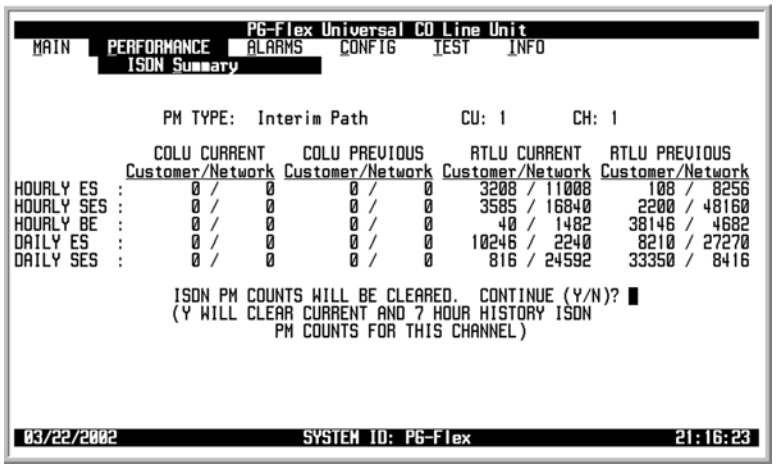
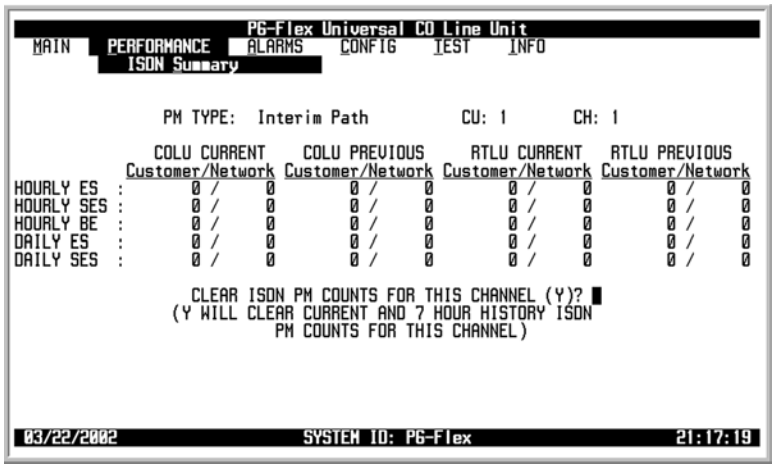
This screen allows you to select an ISDN channel and view the ISDN performance data. The displayed information includes:

- ES and SES counts for the current hour, the previous hour, the current day and the previous day
- Bit Error (BE) counts for the current hour and previous hour

PERFORMANCE — ISDN Summary

Step	Action
1	At the Main Menu screen, select **PERFORMANCE**. Press ↓ to choose **ISDN Summary**. The following screen appears. 
2	Press **ENTER**. The following screen appears. 
3	To view the ISDN performance data, select the ISDN channel, then press **Y**.

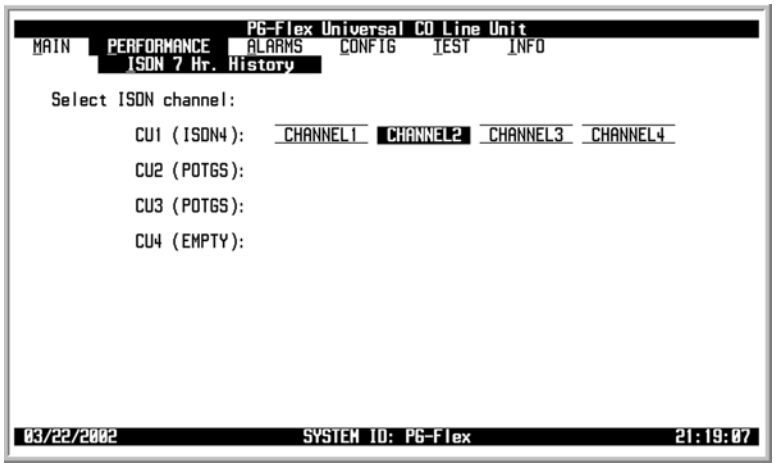
PERFORMANCE — ISDN Summary (Continued)

Step	Action
4	The following actions can be taken: a. To clear the current and 7 hour history ISDN PM counts for this channel, press **Y** from the `ISDN PM COUNTS WILL BE CLEARED. CONTINUE (Y/N)?` prompt. b. To retain the existing ISDN performance data, press **N**. c. To verify you want the ISDN PM counts to be cleared, press **Y** from the `CLEAR ISDN PM COUNTS FOR THIS CHANNEL. CONTINUE (Y)?` prompt.   If there are alarms associated with the performance counts, those alarms are reset when the ISDN performance data is cleared. Errors in the Customer column indicate errors in transmission from the Network (ISDN switch) to the Customer. Errors in the Network column indicate errors in transmission from the Customer to the Network. d. To retain the existing ISDN performance data, press **ESC**.
5	Press **ESC**. The Main Menu screen reappears.

PERFORMANCE — ISDN 7 Hour History

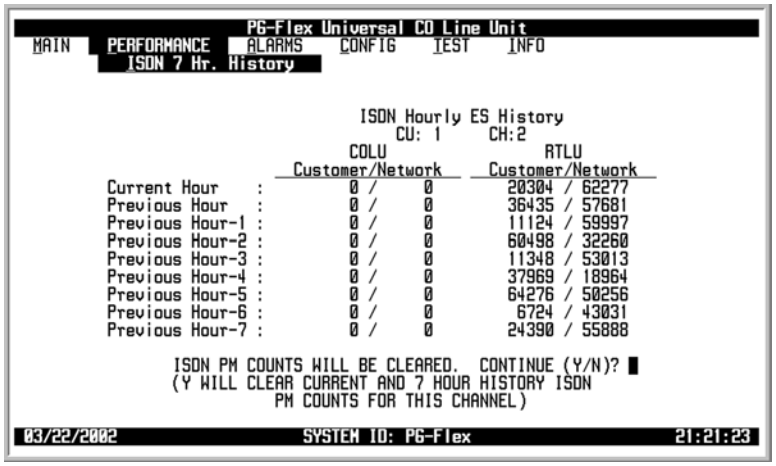
This screen allows you to select an ISDN channel and view the ISDN 7 Hour ES history information.

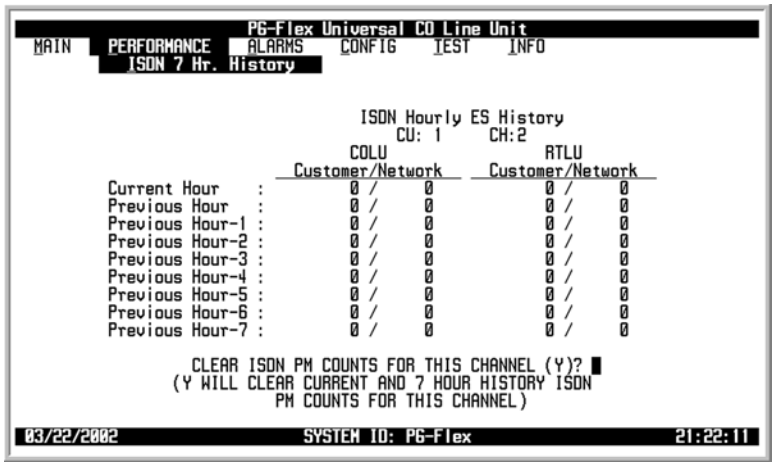
PERFORMANCE — ISDN 7 Hour History

Step	Action
1	At the Main Menu screen, select **PERFORMANCE**. Press ↓ to choose **ISDN 7 Hour History**. The following screen appears. 
2	Press **ENTER**. The following screen appears.. 
3	To view ISDN 7 Hour ES history, select an ISDN channel unit, then press **ENTER**.

PERFORMANCE — ISDN 7 Hour History (Continued)

Step	Action
4	The following actions can be taken: a. To clear the current and 7 hour history counts for this channel, press **Y** from the `ISDN PM COUNTS WILL BE CLEARED. CONTINUE (Y/N)?` prompt. b. To retain the existing performance data, press **N**. c. To verify you want the ISDN PM counts to be cleared, press **Y** from the `CLEAR ISDN PM COUNTS FOR THIS CHANNEL. CONTINUE (Y)?` prompt.





If there are alarms associated with the performance counts, those alarms are reset when the ISDN performance data is cleared.

Errors in the Customer column indicate errors in transmission from the Network (ISDN switch) to the Customer. Errors in the Network column indicate errors in transmission from the Customer to the Network.

d. To retain the existing performance data counts, press **ESC**.

5	Press **ESC**. The Main Menu screen reappears.

ALARM MENU OPTIONS

The Alarm Menu provides access to the alarm status and system related alarm events. Refer to Table 14 on page 47 for sub-menu options and descriptions, parameters and valid values.

ISDN menu selections are only present if ISDN is installed the system.

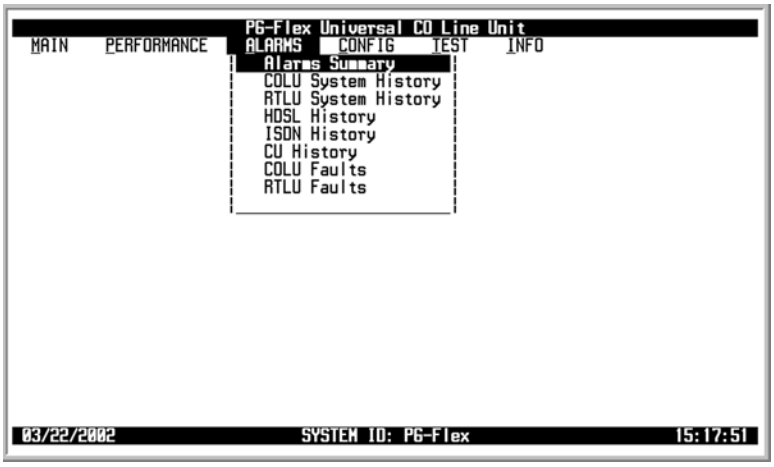


Table 14. Alarm Menu Options

Sub-Menu Options	Sub-Menu Descriptions	Selectable Parameter Options	Valid Values
Alarm Summary	View the active PG-Flex system alarms	• Span • All Alarm Histories will be cleared. Continue (Y/N)?	• 1 – 3 • Y or N
COLU System History	View the COLU alarm history	System Alarm History will be cleared. Continue (Y/N)?	Y or N
RTLU System History	View the RTLU alarm history	System Alarm History will be cleared. Continue (Y/N)?	Y or N
HDSL History	View the HDSL history	• Span • HDSL Alarm History will be cleared. Continue (Y/N)?	• 1 – 3 • Y or N
ISDN History	View the ISDN history	ISDN Alarm History will be cleared. Continue (Y/N)?	Y or N
CU History	View the channel unit alarm history	CU Alarm History will be cleared. Continue (Y/N)?	Y or N
COLU Faults	View COLU faults detected by the unit		
RTLU Faults	View RTLU faults detected by the unit		

ALARMS — Alarms Summary

This screen displays the active critical, major, and minor alarms of the PG-Flex system.

ALARMS — Alarms Summary

Step	Action
1	At the Main Menu screen, select **ALARMS**. Press ↓ to choose **Alarms Summary**. The following screen appears.

The alarm information displayed indicates:

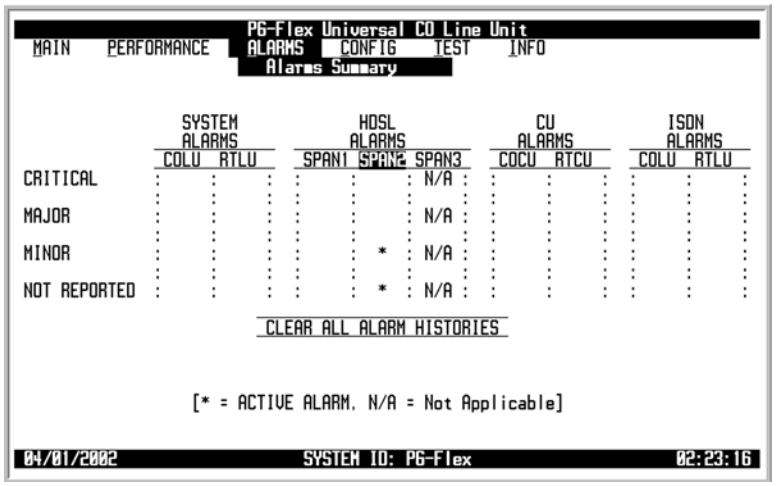
Alarm Types:

- CRITICAL — Critical alarm is present
- MAJOR — Major alarm is present
- MINOR — Minor alarm is present
- NOT ALARMED — Condition is active, but has no severity
- NOT REPORTED — Condition not reported by system

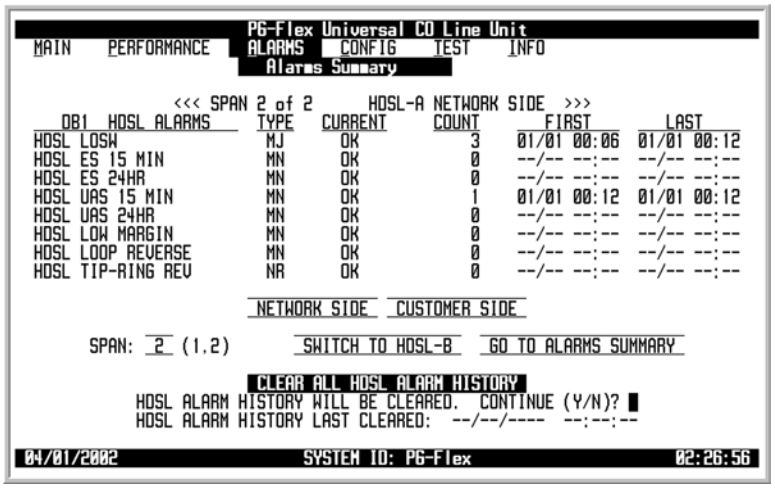
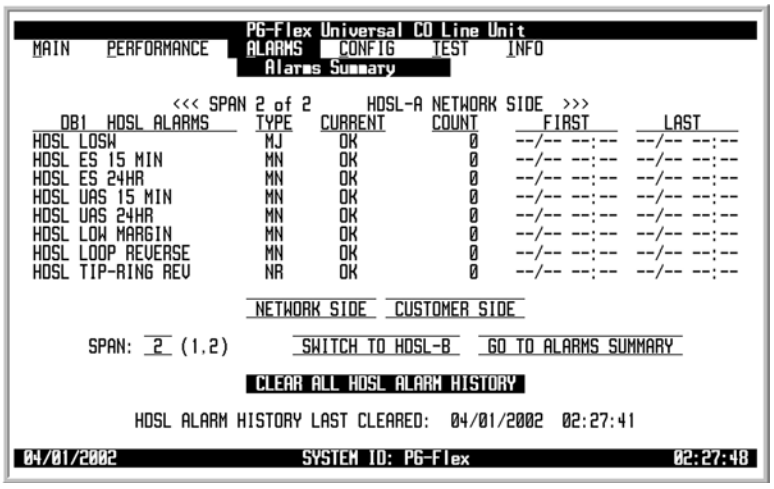
Alarm States:

- * — Designates active alarm

ALARMS — Alarms Summary (Continued)

Step	Action
2	Press **ENTER**. The following screen appears.  To view an alarm, press ← or → to move to the appropriate alarm column: • SYSTEM ALARMS – COLU or RTLU • HDSL ALARMS – SPAN1, SPAN 2, or SPAN3 • CU ALARMS – COCU or RTCU • ISDN ALARMS – COLU or RTLU Then press **ENTER**.

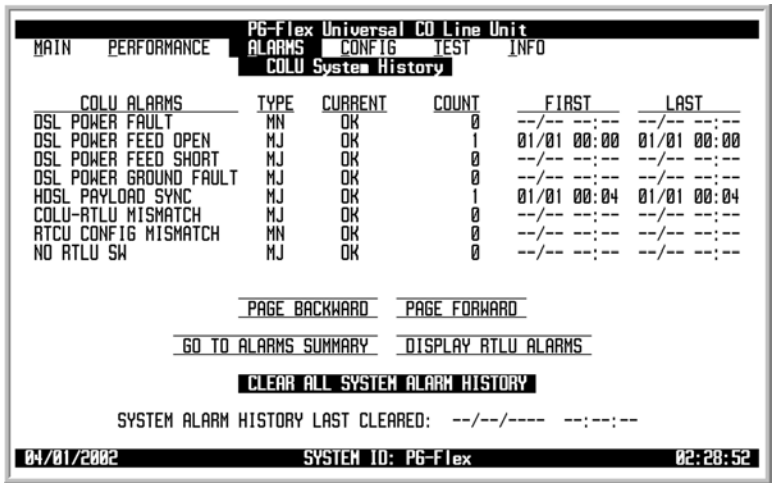
ALARMS — Alarms Summary (Continued)

Step	Action
3	The following actions can be taken: a. To view the network side or the customer side of the alarm summary, select the **NETWORK SIDE** or **CUSTOMER SIDE** button, then press **ENTER**. b. To view the alarm summary for HDSL-B or HDSL-A, select the **SWITCH TO HDSL-B** or **SWITCH TO HDSL-A** button, then press **ENTER**. c. To view a summary of all alarms, select the **GO TO ALARMS SUMMARY** button, then press **ENTER**. d. To clear the history of all alarms, select the **CLEAR ALL ALARM HISTORIES** button, then press **ENTER**. From the `HDSL ALARM HISTORIES WILL BE CLEARED. CONTINUE (Y/N)?` prompt, the following actions can be taken: e. To clear the history of all alarms, press **Y**. The following events occur: • all alarm history counts are set to zero • time and date that the registers were last cleared are updated   f. To retain the existing summary of active alarms, press **N**.
4	Press **ESC**. The Main Menu screen reappears.

ALARMS — COLU System History

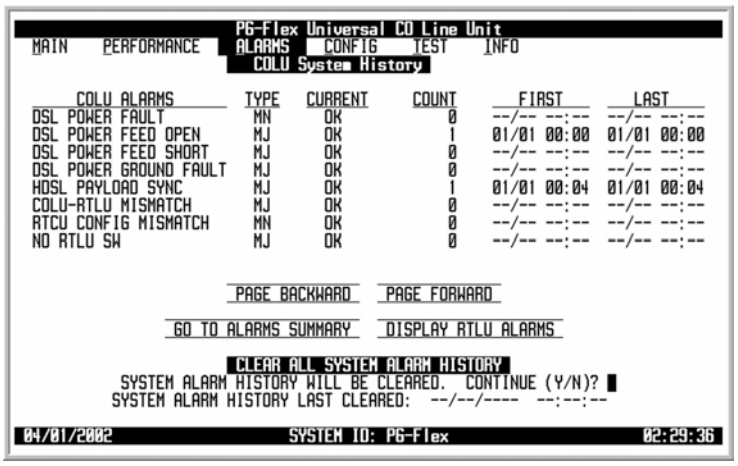
This screen displays the COLU alarm history. Information includes a count of the number of times each alarm occurred, the time and date of the first and last occurrence, the provisioned alarm type, and the current status.

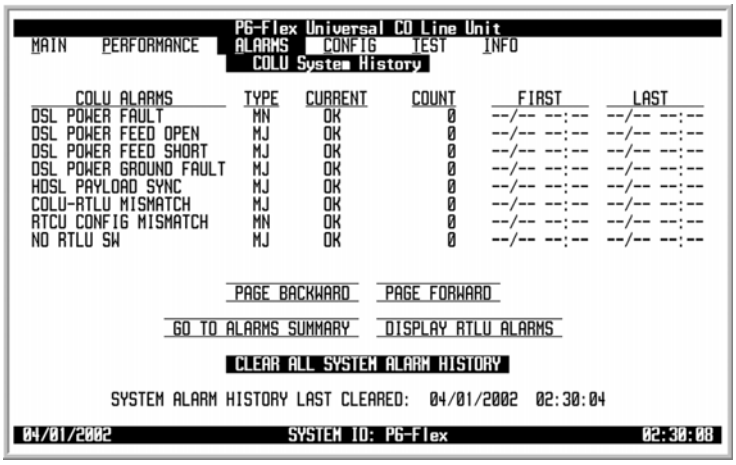
ALARMS — COLU System History

Step	Action
1	At the Main Menu screen, select **ALARMS**. Press ↓ to choose **COLU System History**. The following screen appears. 
2	Press **ENTER**. The following screen appears.   The status *OK* displays in the *Current* column when the alarm is not present. The status *Active* displays when an alarm is present (see Table 18 on page 83 for CO Alarms). A description of the Alarm types reported is provided in Table 17 on page 82.

ALARMS — COLU System History (Continued)

Step	Action
3	The following actions can be taken: a. To scroll through the COLU system alarm history, select the **PAGE FORWARD** or **PAGE BACKWARD** button, then press **ENTER**. b. To view a summary of all active alarms, select the **GO TO ALARMS SUMMARY** button, then press **ENTER**. c. To view the RTLU alarm information, select the **DISPLAY RTLU ALARMS** button, then press **ENTER**. d. To clear the COLU alarm history, select the **CLEAR ALL SYSTEM ALARM HISTORY** button, then press **ENTER**. From the `SYSTEM ALARM HISTORY WILL BE CLEARED. CONTINUE (Y/N)?` prompt, the following actions can be taken: • To clear the COLU alarm history, press **Y**. The following events occur: 1. COLU alarm history counts are set to zero 2. time and date that the registers were last cleared are updated





Clearing the alarm history does not clear any alarm that is currently active in the system.

If there is an active alarm, the count is set to 1 and the value in the LAST date and time field is set to the FIRST date and time field.

- To retain the existing COLU alarm history, press **N**.

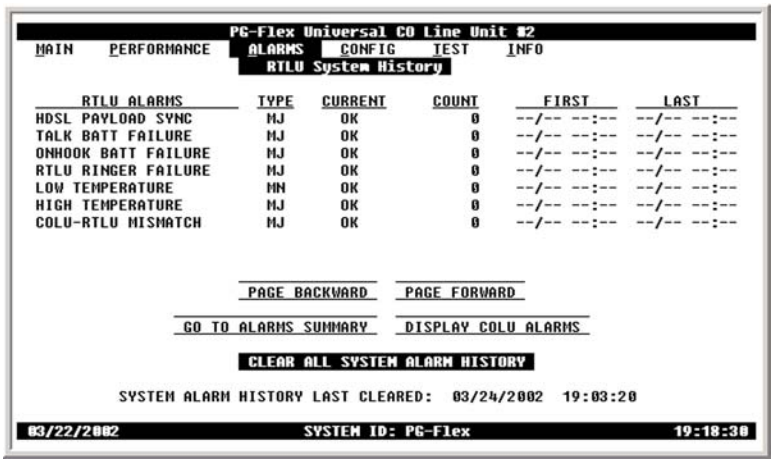
ALARMS — COLU System History (Continued)

Step	Action
4	Press ESC. The Main Menu screen reappears.

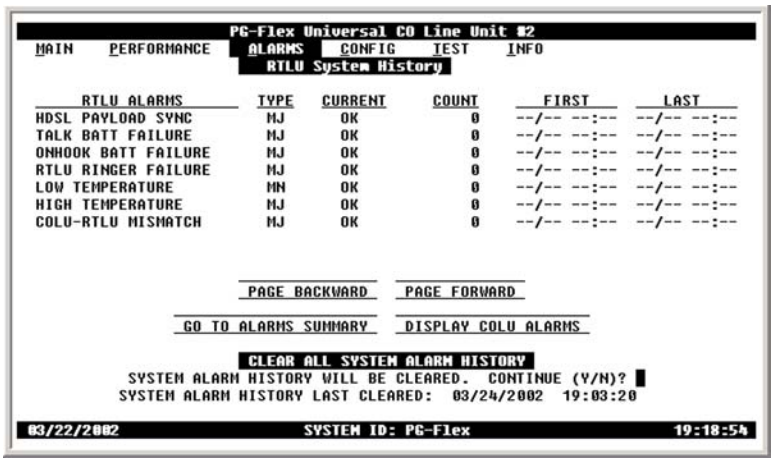
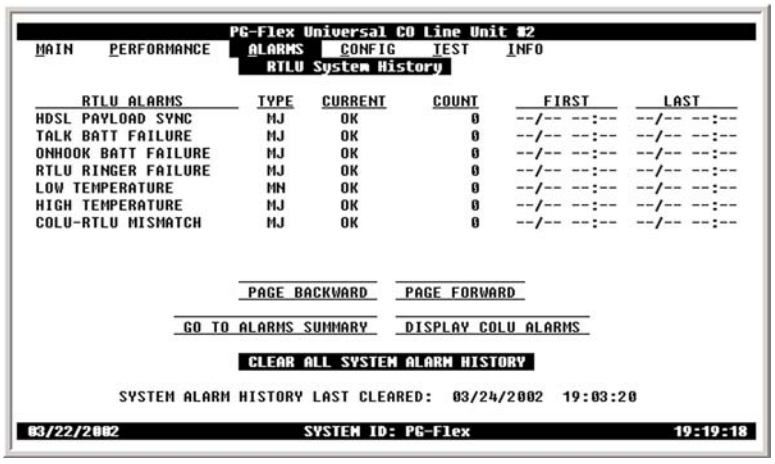
ALARMS — RTLU System History

This screen displays the RTLU alarm history. Information includes a count of the number of times each alarm occurred, the time and date of the first and last occurrence, the provisioned alarm type, and the current status.

ALARMS — RTLU System History

Step	Action
1	At the Main Menu screen, select **ALARMS**. Press ↓ to choose **RTLU System History**. The following screen appears. 
2	Press **ENTER**. The following screen appears.  The status *OK* displays in the *Current* column when the alarm is not present. The status *Active* displays when an alarm is present (see Table 19 on page 86 for RTLU Alarms). A description of the Alarm types reported is provided in Table 17 on page 82.

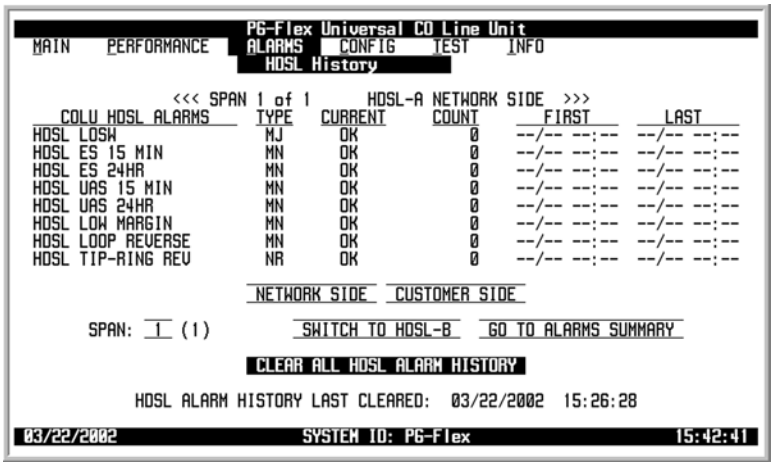
ALARMS — RTLU System History (Continued)

Step	Action
3	The following actions can be taken: a. To scroll through the RTLU system alarm history, select the **PAGE FORWARD** or **PAGE BACKWARD** button, then press **ENTER**. b. To view a summary of all active alarms, select the **GO TO ALARMS SUMMARY** button, then press **ENTER**. c. To view the COLU alarm information, select the **DISPLAY COLU ALARMS** button, then press **ENTER**. d. To clear the RTLU alarm history, select the **CLEAR ALL SYSTEM ALARM HISTORY** button, then press **ENTER**. From the `SYSTEM ALARM HISTORY WILL BE CLEARED. CONTINUE (Y/N)?` prompt, the following actions can be taken: • To clear the RTLU alarm history, press **Y**. The following events occur: 1. RTLU alarm history counts are set to zero 2. time and date that the registers were last cleared are updated  PG-Flex Universal CO Line Unit #2 MAIN PERFORMANCE ALARMS CONFIG TEST INFO RTLU System History RTLU ALARMS TYPE CURRENT COUNT FIRST LAST HDSL PAYLOAD SYNC MJ OK 0 --/-- --:-- --/-- --:-- TALK BATT FAILURE MJ OK 0 --/-- --:-- --/-- --:-- ONHOOK BATT FAILURE MJ OK 0 --/-- --:-- --/-- --:-- RTLU RINGER FAILURE MJ OK 0 --/-- --:-- --/-- --:-- LOW TEMPERATURE MN OK 0 --/-- --:-- --/-- --:-- HIGH TEMPERATURE MJ OK 0 --/-- --:-- --/-- --:-- COLU-RTLU MISMATCH MJ OK 0 --/-- --:-- --/-- --:-- PAGE BACKWARD PAGE FORWARD GO TO ALARMS SUMMARY DISPLAY COLU ALARMS CLEAR ALL SYSTEM ALARM HISTORY SYSTEM ALARM HISTORY WILL BE CLEARED. CONTINUE (Y/N)? SYSTEM ALARM HISTORY LAST CLEARED: 03/24/2002 19:03:20 03/22/2002 SYSTEM ID: PG-Flex 19:18:54  PG-Flex Universal CO Line Unit #2 MAIN PERFORMANCE ALARMS CONFIG TEST INFO RTLU System History RTLU ALARMS TYPE CURRENT COUNT FIRST LAST HDSL PAYLOAD SYNC MJ OK 0 --/-- --:-- --/-- --:-- TALK BATT FAILURE MJ OK 0 --/-- --:-- --/-- --:-- ONHOOK BATT FAILURE MJ OK 0 --/-- --:-- --/-- --:-- RTLU RINGER FAILURE MJ OK 0 --/-- --:-- --/-- --:-- LOW TEMPERATURE MN OK 0 --/-- --:-- --/-- --:-- HIGH TEMPERATURE MJ OK 0 --/-- --:-- --/-- --:-- COLU-RTLU MISMATCH MJ OK 0 --/-- --:-- --/-- --:-- PAGE BACKWARD PAGE FORWARD GO TO ALARMS SUMMARY DISPLAY COLU ALARMS CLEAR ALL SYSTEM ALARM HISTORY SYSTEM ALARM HISTORY LAST CLEARED: 03/24/2002 19:03:20 03/22/2002 SYSTEM ID: PG-Flex 19:19:18 Clearing the alarm history does not clear any alarm that is currently active in the system. If there is an active alarm, the count is set to 1 and the value in the LAST date and time field is set to the FIRST date and time field. • To retain the existing RTLU alarm history, press **N**.
4	Press **ESC**. The Main Menu screen reappears.

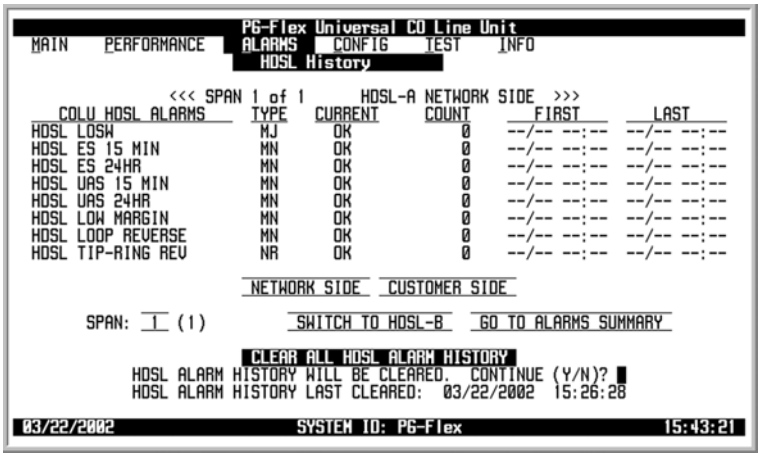
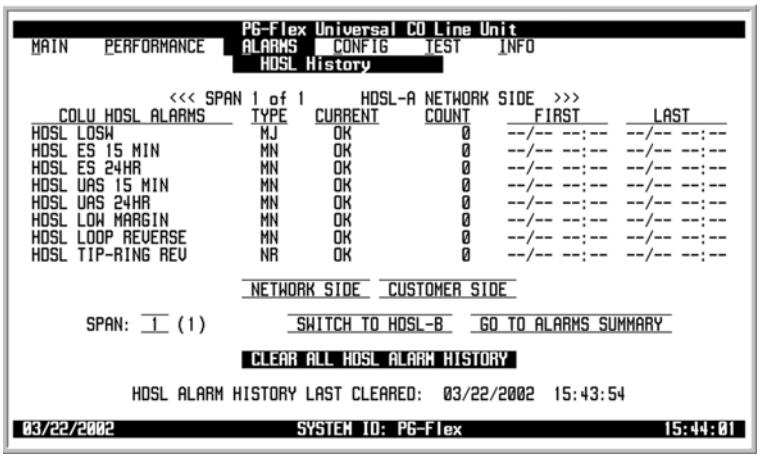
ALARMS — HDSL History

This screen displays the HDSL alarm history for each span in the system. Information includes a count of the number of times each alarm occurred, the time and date of the first and last occurrence, the provisioned alarm type, and the current status.

ALARMS — HDSL History

Step	Action
1	At the Main Menu screen, select **ALARMS**. Press ↓ to choose **HDSL History**. The following screen appears. 
2	Press **ENTER**. The following screen appears.   The status *OK* displays in the *Current* column when the alarm is not present. The status *Active* displays when an alarm is present (see Table 21 on page 92 for HDSL Alarms). A description of the Alarm types reported is provided in Table 17 on page 82.

ALARMS — HDSL History (Continued)

Step	Action
3	The following actions can be taken: a. To view the network side or the customer side of the HDSL alarm history, select the **NETWORK SIDE** or **CUSTOMER SIDE** button, then press ENTER. b. To view the HDSL alarm history for HDSL-B or HDSL-A, select the **SWITCH TO HDSL-B** or **SWITCH TO HDSL-A** button, then press ENTER. c. To view a summary of all active alarms, select the **GO TO ALARMS SUMMARY** button, then press ENTER. d. To clear the HDSL alarm history, select the **CLEAR ALL HDSL ALARM HISTORY** button, then press ENTER. From the `HDSL ALARM HISTORY WILL BE CLEARED. CONTINUE (Y/N)?` prompt, the following actions can be taken: • To clear the HDSL alarm history, press Y. The following events occur: 1. all HDSL alarm history counts are set to zero 2. time and date that the registers were last cleared are updated   Clearing the alarm history does not clear any alarm that is currently active in the system. If there is an active alarm, the count is set to 1 and the value in the LAST date and time field is set to the FIRST date and time field. • To retain the existing HDSL alarm history, press N.

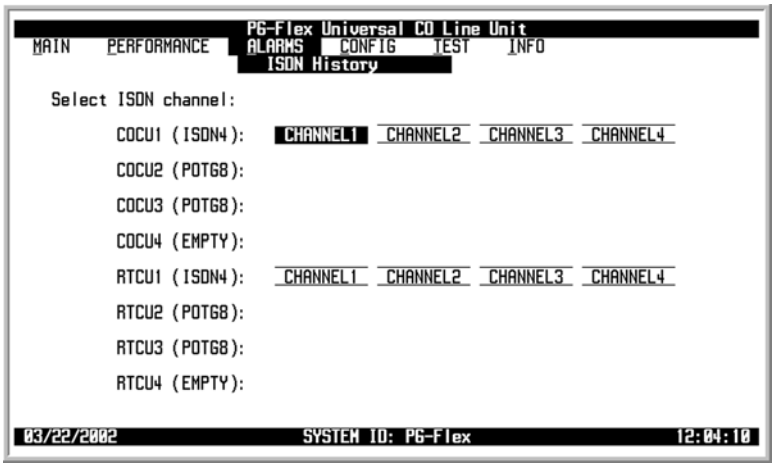
ALARMS — HDSL History (Continued)

Step	Action
4	Press ESC. The Main Menu screen reappears.

ALARMS — ISDN History

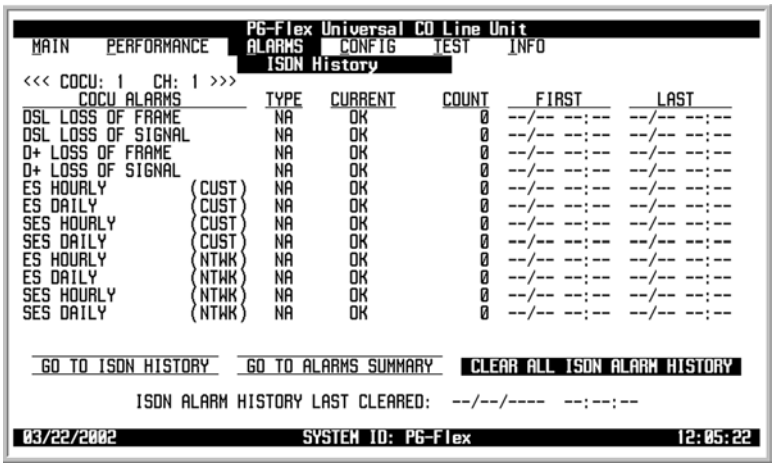
This screen displays the ISDN alarm history. Information includes the provisionable alarm type, the current status of the alarm, the number of times the alarm was reported, the date and time of the first and last occurrence, and the current status.

ALARMS — ISDN History

Step	Action
1	At the Main Menu screen, select **ALARMS**. ress ↓ to choose **ISDN History**. The following screen appears. 
2	Press ENTER. The following screen appears. 

ALARMS — ISDN History (Continued)

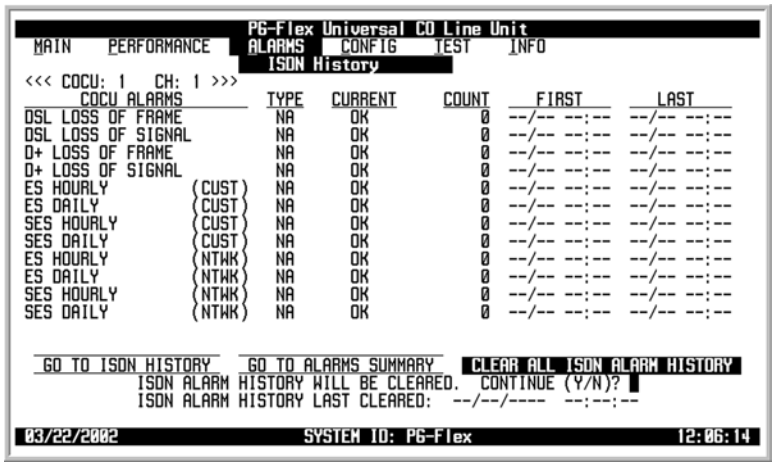
Step	Action
3	To view the ISDN history data, select the ISDN channel, then press **ENTER**. The following screen appears.

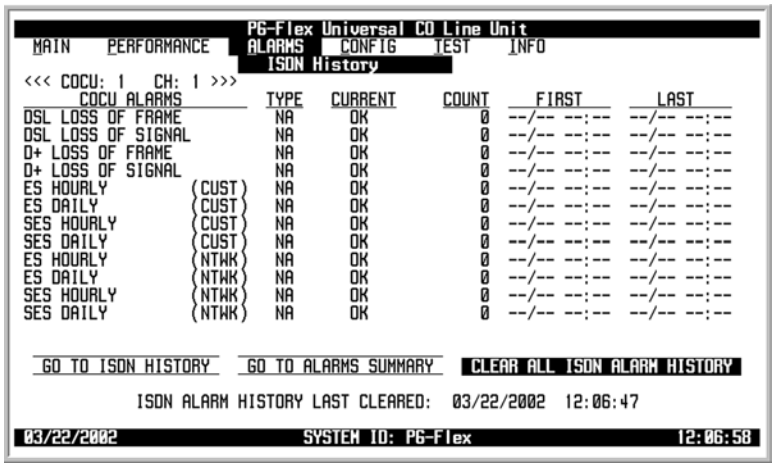


The status *OK* displays in the *Current* column when the alarm is not present. The status *Active* displays when an alarm is present. A description of the Alarm types reported is provided in Table 17 on page 82.

ALARMS — ISDN History (Continued)

Step	Action
4	The following actions can be taken: a. To view the ISDN History, select the **GO TO ISDN HISTORY** button, then press ENTER. b. To view a summary of all active alarms, select the **GO TO ALARMS SUMMARY** button, then press ENTER. c. To clear the ISDN alarm history, select the **CLEAR ALL ISDN ALARM HISTORY** button, then press ENTER. From the `ISDN ALARM HISTORY WILL BE CLEARED. CONTINUE (Y/N)?` prompt, the following actions can be taken: • To clear the ISDN alarm history, press Y. The following events occur: 1. all ISDN alarm history counts are set to zero 2. time and date that the registers were last cleared are updated





Clearing the alarm history does not clear any alarm that is currently active in the system.

If there is an active alarm, the count is set to 1 and the value in the LAST date and time field is set to the FIRST date and time field.

- To retain the existing ISDN alarm history, press N.

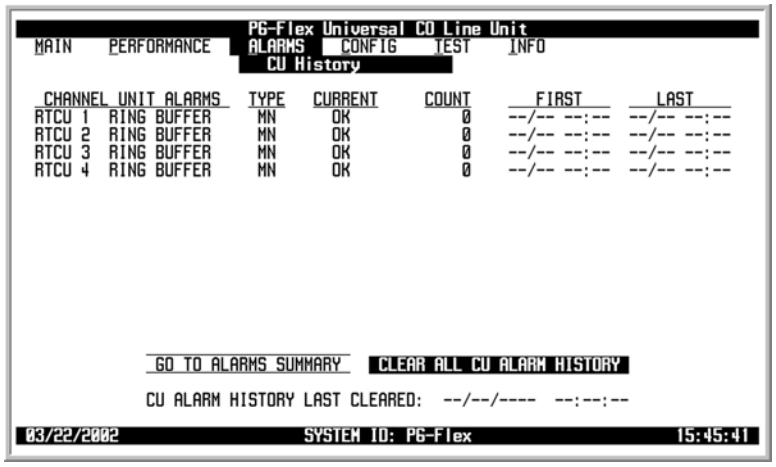
ALARMS — ISDN History (Continued)

Step	Action
5	Press ESC. The Main Menu screen reappears.

ALARMS — CU History

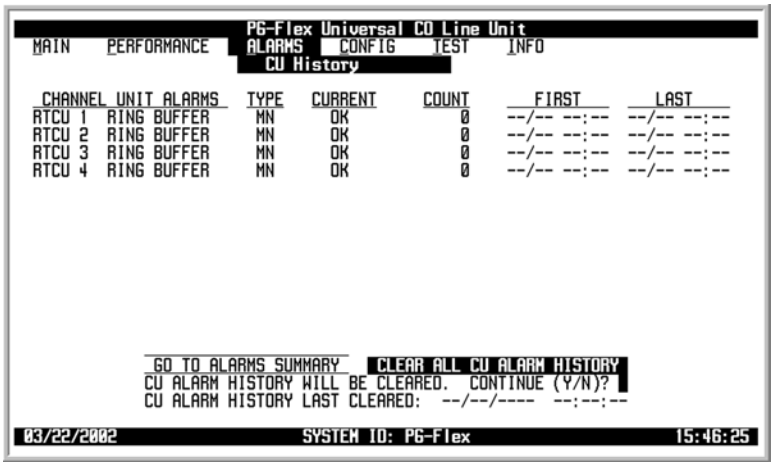
This screen displays the Channel Unit alarm history. Information includes the provisionable alarm type, the current status of the alarm, the number of times the alarm was reported, the date and time of the first and last occurrence and the current status.

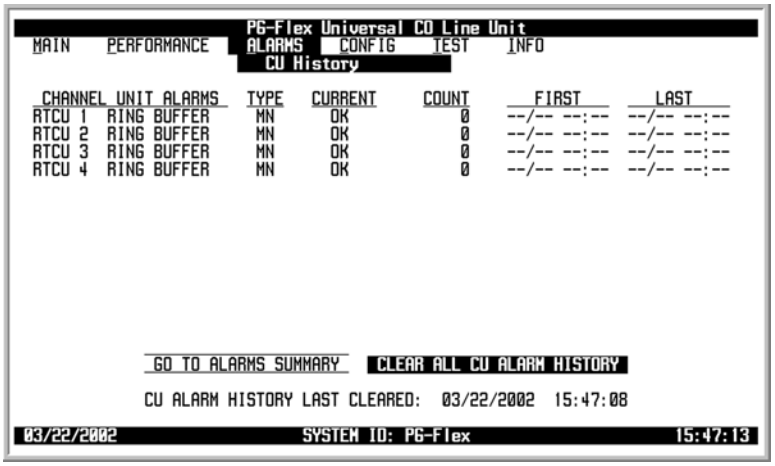
ALARMS — CU History

Step	Action
1	At the Main Menu screen, select **ALARMS**. Press ↓ to choose **CU History**. The following screen appears. 
2	Press **ENTER**. The following screen appears.   The status *OK* displays in the *Current* column when the alarm is not present. The status *Active* displays when an alarm is present (see Table 25 on page 104 for Channel Unit Alarms). A description of the Alarm types reported is provided in Table 17 on page 82.

ALARMS — CU History (Continued)

Step	Action
3	The following actions can be taken: a. To view a summary of all active alarms, select the **GO TO ALARMS SUMMARY** button, then press **ENTER**. b. To clear the CU alarm history, select the **CLEAR ALL CU ALARM HISTORY** button, then press **ENTER**. From the `CU ALARM HISTORY WILL BE CLEARED. CONTINUE (Y/N)?` prompt, the following actions can be taken: • To clear the CU alarm history, press **Y**. The following events occur: 1. all CU alarm history counts are set to zero 2. time and date that the registers were last cleared are updated





Clearing the alarm history does not clear any alarm that is currently active in the system.

If there is an active alarm, the count is set to 1 and the value in the LAST date and time field is set to the FIRST date and time field.

- To retain the existing CU alarm history, press **N**.

4	Press **ESC**. The Main Menu screen reappears.

ALARMS — COLU Faults

This screen displays any faults detected in the CO Line Unit.

Step	Action
1	At the Main Menu screen, select **ALARMS**. Press ↓ to choose **COLU Faults**. The following screen appears. 
2	Press **ENTER**. The following screen appears.  If there are no faults detected, then the COLU Faults screen displays the message `NO FAULTS ON COT LINE UNIT`. If there is a fault detected, a descriptive message appears.
3	Press **ESC**. The Main Menu screen reappears.

ALARMS — RTLU Faults

This screen displays any faults detected on the RT Line Unit.

Step	Action
1	At the Main Menu screen, select **ALARMS**. Press ↓ to choose **RTLU Faults**. The following screen appears. 
2	Press **ENTER**. The following screen appears.  If there are no faults detected, then the RT Faults screen displays the message `NO FAULTS ON RT LINE UNIT`. If there is a fault detected, a descriptive message appears.
3	Press **ESC**. The Main Menu screen reappears.

CONFIGURATION MENU OPTIONS

The Configuration Menu provides access to system provisioning and setting all options to factory defaults, etc. Refer to Table 15 for sub-menu options and descriptions, parameters and valid values.

ISDN menu selections are only present if ISDN is installed the system.

Table 15. Configuration Menu Options

Sub-Menu Options	Sub-Menu Descriptions	Parameters	Valid Values
Password	Personal identifier for security reasons	• Enter Old Password and Press Return • Enter New Password and Press Return • Enter Password Again and Press Return • This Password will be permanently changed. Continue (Y/N)?	• 6 to 10 characters • Embedded spaces not allowed • Case insensitive and must contain at least 1 alpha character (i.e., A - Z), 1 numeric character (i.e., 1 - 9), and 1 special character (i.e., $ or #) • Y or N
Date and Time	Set system date and time	• Month • Day • Year • Hour • Minute • Seconds	• January – December • 1 – 31 • 2002 (accepts any 4-number year on or after 1970) • 00 – 24 • 0 – 59 • 0 – 59

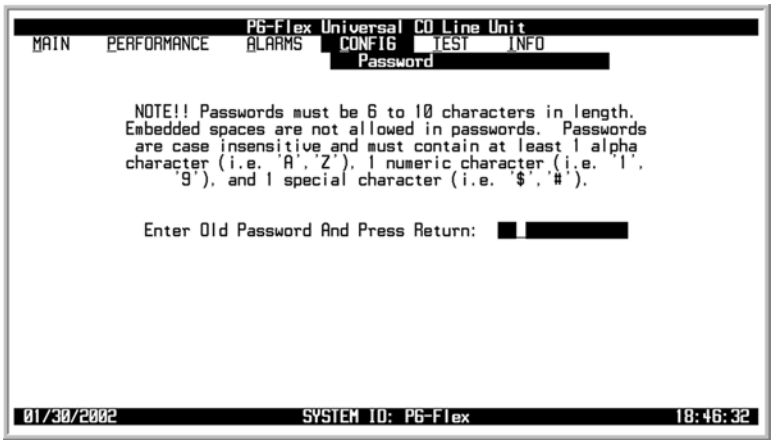
Sub-Menu Options	Sub-Menu Descriptions	Parameters	Valid Values
System Options (See Table 16 on page 78 for System Options)	Set system options	• System Options will be changed. Continue (Y/N)? • Accept System Option Changes	Y or N
COLU System Alarm Types (See Table 18 on page 83 for CO Alarms)	Provision FLL-812 alarm types	System Alarm Types will be Changed. Continue (Y/N)?	Y or N
RTLU System Alarm Types (See Table 19 on page 86 for RTLU System Alarm Types)	Provision RTLU alarm types	System Alarm Types will be Changed. Continue (Y/N)?	Y or N
HDSL Alarm Thresholds (See Table 20 on page 89 for HDSL Alarm Thresholds)	Provision HDSL alarm thresholds	HDSL Alarm Thresholds will be Changed. Continue (Y/N)?	Y or N
HDSL Alarm Types (See Table 21 on page 92 for HDSL Alarm Types)	Provision HDSL alarm types	HDSL Alarm Types will be Changed. Continue (Y/N)?	Y or N
ISDN Options (See Table 22 on page 95 for ISDN Options)	Provision ISDN options	ISDN Options will be changed. Continue (Y/N)?	Y or N
ISDN Alarm Thresholds (See Table 23 on page 98 for ISDN Alarm Thresholds)	Provision ISDN alarm thresholds	ISDN Alarm Thresholds will be changed. Continue (Y/N)?	Y or N

Sub-Menu Options	Sub-Menu Descriptions	Parameters	Valid Values
ISDN Alarm Types (See Table 24 on page 101 for ISDN Alarm Thresholds)	Provision ISDN alarm types	ISDN Alarm Types will be changed. Continue (Y/N)?	Y or N
Channel Unit Alarm Types (See Table 25 on page 104 for Channel Unit Alarm Types)	Provision channel unit alarm types	Channel Unit Alarm Types will be Changed. Continue (Y/N)?	Y or N
POTS Options (See Table 26 on page 107 for POTS Options)	Provision the ringing frequency for POTS lines	POTS Options will be Changed. Continue (Y/N)?	Y or N
LS/GS Options	View the Loop Start/Ground Start (LS/GS) circuit configuration	Ground/Loop Settings will be Changed. Continue (Y/N)?	Y or N
Set Factory Defaults	Reset the provisionable items to the original factory settings	• Configuration data will be set to factory defaults (This May Be Service Affecting!) Continue (Y/N)? • Configuration data has been set to factory defaults. Press ESC to continue:	• Y or N • ESC
Channel Configuration	Allows each individual channel to be set as enabled or disabled	• Channel Configuration will be Changed. Continue (Y/N)? • All Channel will be Enabled. Continue (Y/N)? • All Channel will be Disabled. Continue (Y/N)?	• Y or N • Y or N • Y or N

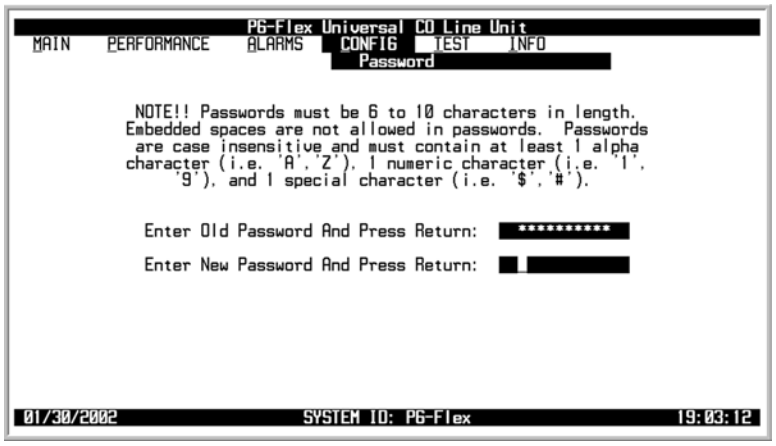
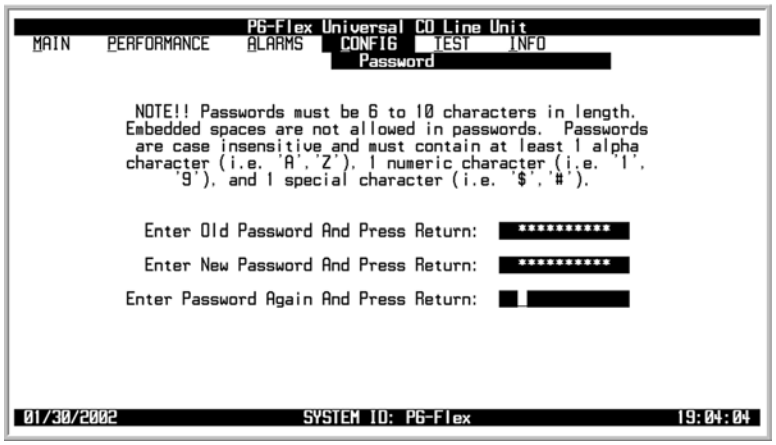
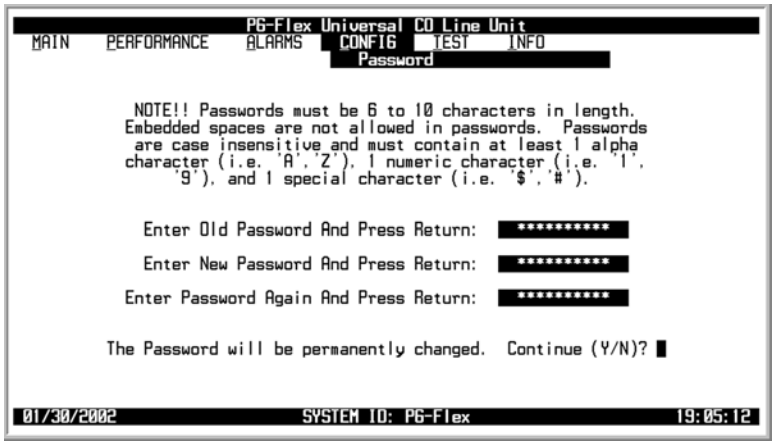
CONFIG — Password

This screen allows you to change the Password for security reasons. Refer to Table 15 on page 67 for valid values.

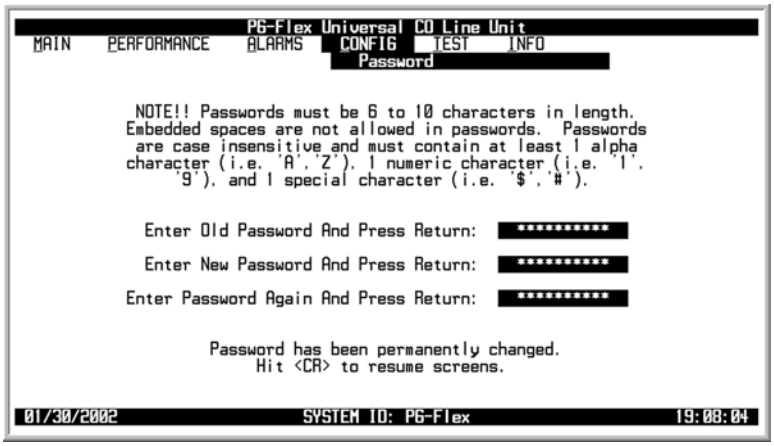
CONFIG — Password

Step	Action
1	At the Main Menu screen, select **CONFIG**. Press ↓ to choose **Password**. The following screen appears. 
2	Press **ENTER**. The following screen appears. 

CONFIG — Password (Continued)

Step	Action
3	Enter the current (old) *Password* (System Default is **password#1**). For security reasons, the system echoes the password with *. Press **ENTER**. The following screen appears. 
4	Enter the new *Password*. Press **ENTER**. The following screen appears. 
5	Enter the new *Password* again. Press **ENTER**. The following screen appears. 

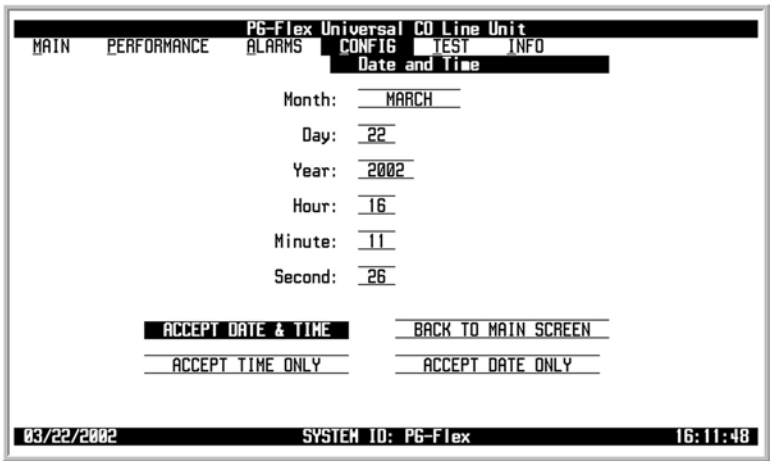
CONFIG — Password (Continued)

Step	Action
6	The following actions can be taken: a. From `The Password will be permanently changed. Continue (Y/N)?` prompt, the following actions can be taken: • To accept the new password, press **Y**.  • To retain the existing password, press **N**.
7	Press **ESC**. The Main Menu screen reappears.

CONFIG — Date and Time

This screen allows you to set the system date and time. Refer to Table 15 on page 67 for valid values.

CONFIG — Date and Time

Step	Action
1	At the Main Menu screen, select **CONFIG**. Press ↓ to choose **Date and Time**. The following screen appears. 
2	Press **ENTER**. The following screen appears. 
3	Press ↓ and ↑ to scroll through the list of parameters to change. a. To change the Month, press ↓ to reach the Month field. Press the **SPACEBAR** until you reach the appropriate month. b. To change the rest of the fields (Day, Year, Hour, Minute, Second), press ↓ or ↑ to reach the field to be changed. Then type the appropriate numbers on the keypad for each field.

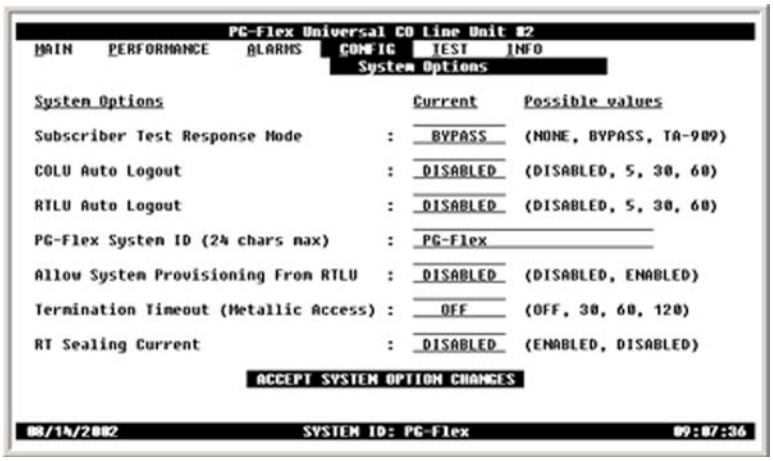
CONFIG — Date and Time (Continued)

Step	Action
4	Once all appropriate fields are completed, the following actions can be taken: a. To accept the date and time, select the **ACCEPT DATE & TIM**E button, then press ENTER. b. To accept the time only, select the **ACCEPT TIME ONLY** button, then press ENTER. c. To go back to the Main Menu, select the **BACK TO MAIN SCREEN** button, then press ENTER. d. To accept the date only, select the **ACCEPT DATE ONLY** button, then press ENTER.
5	Press ESC. The Main Menu screen reappears.

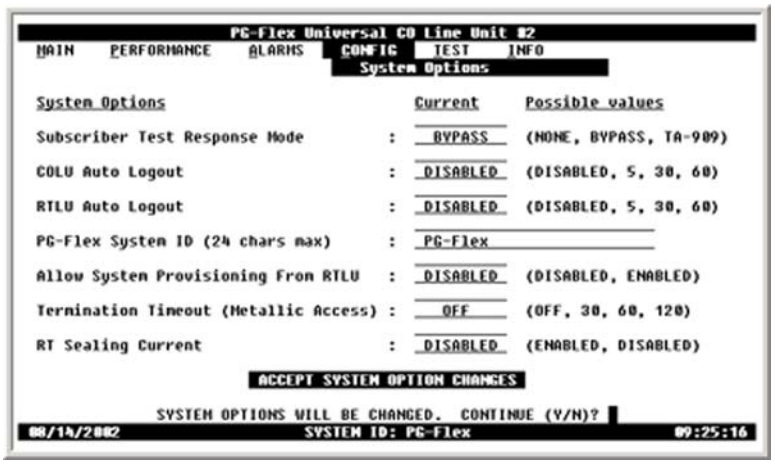
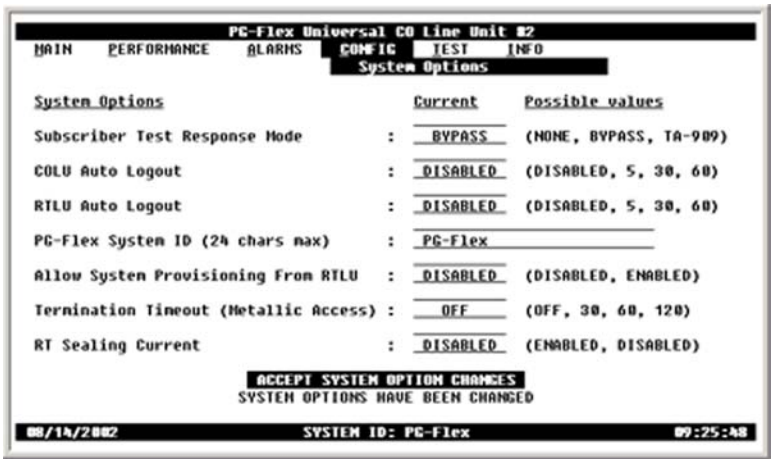
CONFIG — System Options

The System Options screen allows provisioning of system options such as Subscriber Test Response Mode and System ID. Refer to Table 16 on page 78 for system options.

CONFIG — System Options

Step	Action
1	At the Main Menu screen, select **CONFIG**. Press ↓ to choose **System Options**. The following screen appears. 
2	Press **ENTER**. The following screen appears. 

CONFIG — System Options (Continued)

Step	Action
3	The following actions can be taken: a. To change the Subscriber Test Response Mode value, press **SPACEBAR** to toggle to the desired value, or press ↓ or ↑ to move to the next option. b. To change the COLU Auto Logout value, press **SPACEBAR** to toggle to the desired value, or press ↓ or ↑ to move to the next option. c. To change the RTLU Auto Logout value, press **SPACEBAR** to toggle to the desired value, or press ↓ or ↑ to move to the next option. d. To change the PG-Flex System ID, type in a *System ID*, or press ↓ or ↑ to move to the next option. e. To change the Allow System Provisioning From RTLU value, press **SPACEBAR** to toggle to the desired value, or press ↓ or ↑ to move to the next option. f. To change the Termination Timeout (Metallic Access) value, press **SPACEBAR** to toggle to the desired value, o or press ↓ or ↑ to move to the next option. g. To change the RT Sealing Current value, press **SPACEBAR** to toggle to the desired value, or press ↓ or ↑ to move to the next option. This option is displayed only on a locally powered system. h. To save the shelf options, select the **ACCEPT SYSTEM OPTION CHANGES** button, then press **ENTER**. From the `SHELF OPTIONS WILL BE CHANGED. CONTINUE (Y/N)?` prompt, the following actions can be taken: • To save the shelf options, press **Y**. The following events occur: – all current values are set to desired values   • To retain the existing shelf options on the Shelf Options screen, press **N**.

CONFIG — System Options (Continued)

Step	Action
4	Press **ESC**. The Main Menu screen reappears.

Table 16. System Options

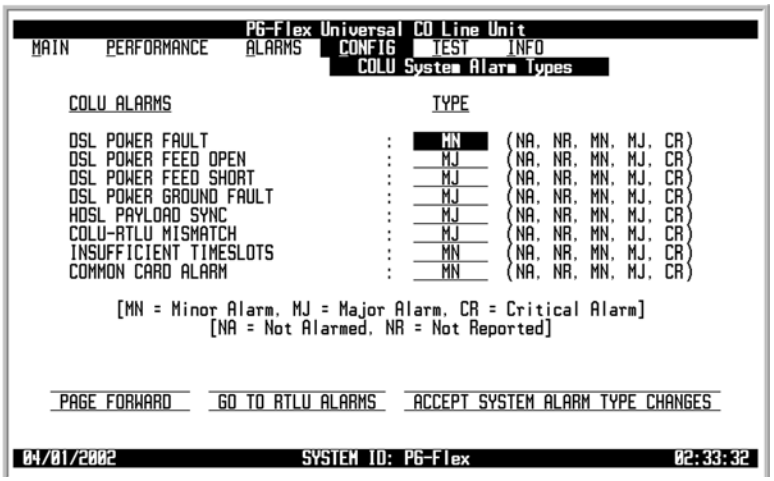
System Options	Value	Description	Default
Subscriber Test Response Mode	NONE	Disables the test and there will be no response.	TA-909
	BYPASS	Connects the subscriber to the CO, bypassing the PG-Flex DLC	
	TA-909	Performs the subscriber drop test at the RTLU and presents the TA-909 resistive signatures at the COLU	
COLU Auto Logout	DISABLED	Auto logout feature is disabled	DISABLED
	5	Screens session logs out after 5 minutes of inactivity	
	30	Screens session logs out after 30 minutes of inactivity	
	60	Screens session logs out after 60 minutes of inactivity	
RTLU Auto Logout	DISABLED	Auto logout feature is disabled	DISABLED
	5	Screens session logs out after 5 minutes of inactivity	
	30	Screens session logs out after 30 minutes of inactivity	
	60	Screens session logs out after 60 minutes of inactivity	
PG-Flex System ID (24 chars max)	24 Alphanumeric Characters maximum	Configurable identification string for the system can be up to 24 characters. The System ID is always visible at the bottom of every screen. There are no special rules for changing the System ID. Any printable character, including space, is valid.	PG-Flex
Allow System Provisioning from RTLU	DISABLED	Disallows configuration from the RTLU	DISABLED
	ENABLED	Allows configuration from the RTLU	
Termination timeout – Metallic Access	OFF	Termination Timeout – Metallic Access is off	OFF
	30	Termination Timeout – Metallic Access times out after 30 minutes	
	60	Termination Timeout – Metallic Access times out after 60 minutes	
	120	Termination Timeout – Metallic Access times out after 120 minutes	

System Options	Value	Description	Default
* RT Sealing Current	DISABLED	Single Span: Disables current flow between the CO and RT Doublers Used: Disables current flow between the last doubler and RT	DISABLED
	ENABLED	Sealing Current load is automatically applied for a period of 15-20 seconds, once every 24 hours at the system clock time of 00:05	
* RT SEALING CURRENT option is displayed only on a locally powered system.			

CONFIG — COLU System Alarm Type

The COLU System Alarm Types screen allows provisioning of all COLU system alarms. Table 18 on page 83 shows the COLU system alarm fields, values, descriptions and default settings. Table 17 on page 82 provides a description of the Alarm types reported.

CONFIG — COLU System Alarm Type

Step	Action
1	At the Main Menu screen, select **CONFIG**. Press ↓ to choose **COLU System Alarm Types**. The following screen appears. 
2	Press **ENTER**. The following screen appears. 

CONFIG — COLU System Alarm Type(Continued)

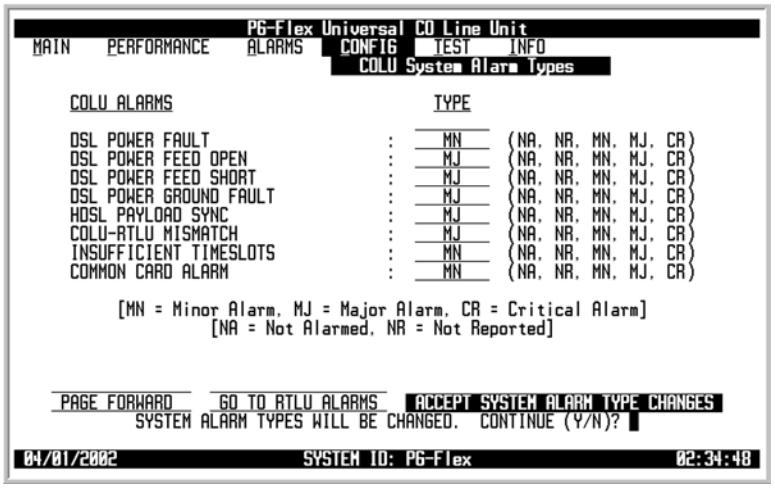
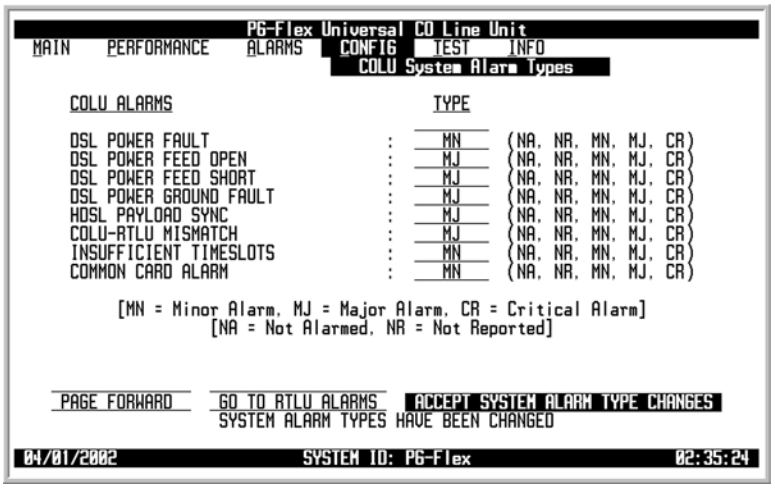
Step	Action
3	The following actions can be taken: a. To change the field value, press **SPACEBAR** to toggle to the desired value, or press ↓ or ↑ to move to the next option. b. To scroll through the entire set of system alarms, select the **PAGE FORWARD** or **PAGE BACKWARD** button, then press **ENTER**. c. To view the RTLU alarm information, select the **GO TO RTLU ALARMS** button, then press **ENTER**. d. To save the COLU alarm type changes, select the **ACCEPT SYSTEM ALARM TYPE CHANGES** button, then press **ENTER**. From the `SYSTEM ALARM TYPE CHANGES WILL BE CHANGED. CONTINUE (Y/N)?` prompt, the following actions can be taken: • To save the COLU alarm type changes, press **Y**. The following events occur: – all current values are set to desired values   • To retain the existing COLU alarm types, press **N**.
4	Press **ESC**. The Main Menu screen reappears.

Table 17. Alarm Types Reported

Settings	Reported	Alarm LED Lit	Main Shelf Summary	History Updated
CR – Critical	Yes	Yes	Yes	Yes
MJ – Major	Yes	Yes	Yes	Yes
MN – Minor	Yes	Yes	Yes	Yes
NA – Not Alarmed	No	No	No	Yes
NR – Not Reported	No	No	No	No

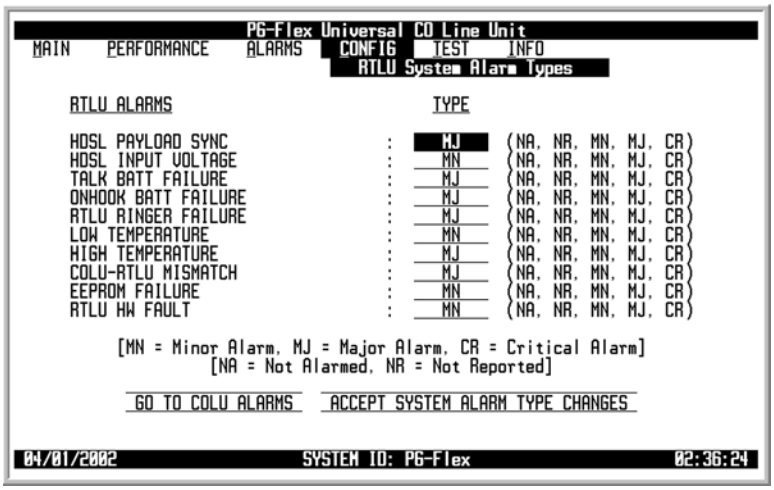
Table 18. CO Alarms

Alarm	Value	Description	Default
DSL POWER FAULT	CR, MJ, MN, NA, NR	DSL Power Fault	MN
DSL POWER FEED OPEN	CR, MJ, MN, NA, NR	COLU cannot power the RTLU due to an open circuit. A possible cause is that there is no RTLU at the other end of the circuit.	MJ
DSL POWER FEED SHORT	CR, MJ, MN, NA, NR	COLU cannot power the RTLU due to a short circuit. A PFS alarm indicates an overcurrent condition due to wire shorting or an RTLU failure. COLU automatically turns off power feeding to both loops in response to a PFO or PFS condition on a single loop.	MJ
DSL POWER GROUND FAULT	CR, MJ, MN, NA, NR	Ground fault detected on HDSL loop	MJ
HDSL PAYLOAD SYNC	CR, MJ, MN, NA, NR	HDSL payload is out of synchronization	MJ
COLU-RTLU MISMATCH	CR, MJ, MN, NA, NR	Incompatible COLU and RTLUs installed	MJ
RTCU CONFIG MISMATCH	CR, MJ, MN, NA, NR	Incompatible COCU and RTCUs installed, for example, a POTS COCU is connected to an ISDN RTCU	MN
INSUFFICIENT TIMESLOTS	CR, MJ, MN, NA, NR	Current channel unit configuration has insufficient timeslots (ISDN only)	MN
COMMON CARD ALARM	CR, MJ, MN, NA, NR	Alarm card detects an alarm	MN
NO RTLU S/W	CR, MJ, MN, NA, NR	RTLU has no application software and is awaiting software download	MJ
LOW TEMPERATURE	CR, MJ, MN, NA, NR	Temperature at RTLU is too low	MN
HIGH TEMPERATURE	CR, MJ, MN, NA, NR	Temperature at RTLU is too high	MJ
EEPROM FAILURE	CR, MJ, MN, NA, NR	A checksum error has been detected on COLUs EEPROM data	MN

CONFIG — RTLU System Alarm Types

The RTLU System Alarm Types screen allows provisioning of all RTLU system alarms. Table 19 on page 86 shows the RTLU system alarm fields, values, descriptions and default settings. Table 17 on page 82 provides a description of the Alarm types reported.

CONFIG — RTLU System Alarm Types

Step	Action
1	At the Main Menu screen, select **CONFIG**. Press ↓ to choose **RTLU System Alarm Types**. The following screen appears. 
2	Press **ENTER**. The following screen appears. 

CONFIG — RTLU System Alarm Types (Continued)

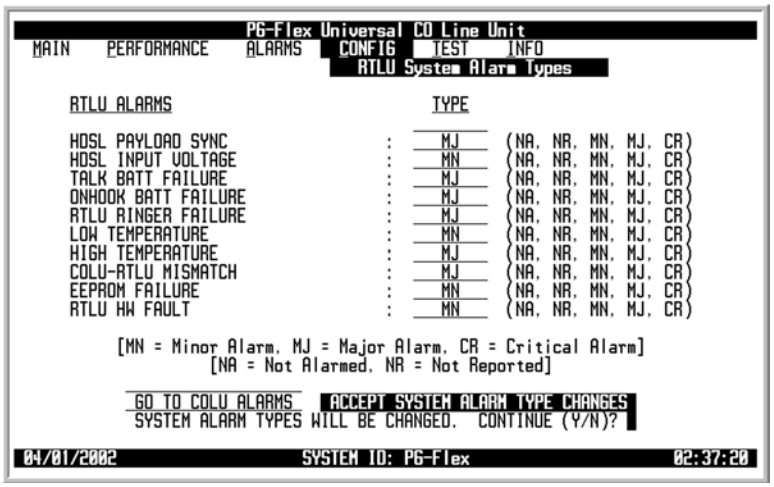
Step	Action
3	The following actions can be taken: a. To change the field value, press **SPACEBAR** to toggle to the desired value, or press ↓ or ↑ to move to the next option. HDSL INPUT VOLTAGE option is displayed, set and cleared only on a line-powered system. b. To scroll through the entire set of system alarms, select the **PAGE FORWARD** or **PAGE BACKWARD** button, then press **ENTER**. c. To view the COLU alarm information, select the **GO TO COLU ALARMS** button, then press **ENTER**. d. To save the RTLU alarm type changes, select the **ACCEPT SYSTEM ALARM TYPE CHANGES** button, then press **ENTER**. From the `SYSTEM ALARM TYPE CHANGES WILL BE CHANGED. CONTINUE (Y/N)?` prompt, the following actions can be taken: • To save the RTLU alarm type changes, press **Y**. The following events occur: – all current values are set to desired values  • To retain the existing RTLU alarm types, press **N**.
4	Press **ESC**. The Main Menu screen reappears.

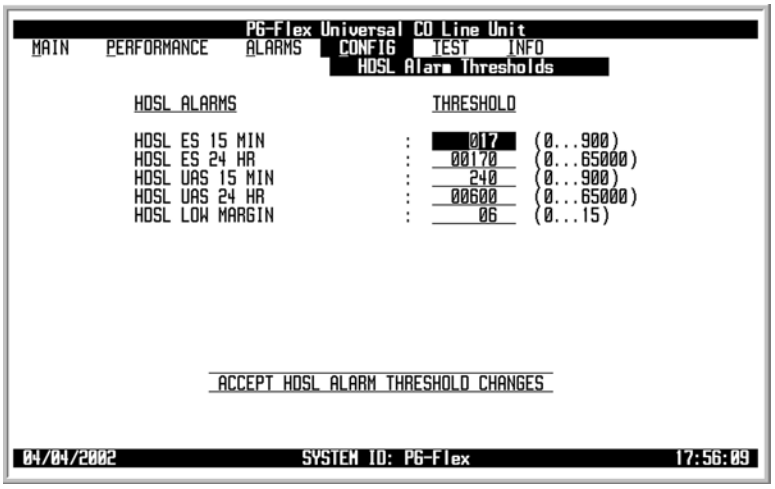
Table 19. RTLU Alarms

Alarms	Value	Description	Default
HDSL PAYLOAD SYNC	CR, MJ, MN, NA, NR	HDSL payload is out of sync	MJ
* HDSL INPUT VOLTAGE	CR, MJ, MN, NA, NR	HDSL input voltage is less than 170 Vdc	MN
TALK BATT FAILURE	CR, MJ, MN, NA, NR	Talk battery failure at RTLU	MJ
ONHOOK BATT FAILURE	CR, MJ, MN, NA, NR	On-hook battery failure at RTLU	MJ
RTLU RINGER FAILURE	CR, MJ, MN, NA, NR	RT ringer failure at RTLU	MJ
LOW TEMPERATURE	CR, MJ, MN, NA, NR	Temperature at RTLU is too low	MN
HIGH TEMPERATURE	CR, MJ, MN, NA, NR	Temperature at RTLU is too high	MJ
COLU-RTLU MISMATCH	CR, MJ, MN, NA, NR	COLU-RTLU mismatch	MJ
EEPROM FAILURE	CR, MJ, MN, NA, NR	COLU memory checksum is incorrect	MN
RTLU HW FAULT	CR, MJ, MN, NA, NR	Fault detected in RTLU hardware	MN
RT EXTERNAL ALARM 1	CR, MJ, MN, NA, NR	RT External 1 Alarm reported	MN
RT EXTERNAL ALARM 2	CR, MJ, MN, NA, NR	RT External 2 Alarm reported	MN
RT EXTERNAL ALARM 3	CR, MJ, MN, NA, NR	RT External 3 Alarm reported	MN
RT EXTERNAL ALARM 4	CR, MJ, MN, NA, NR	RT External 4 Alarm reported	MN
RT FAN FAILURE	CR, MJ, MN, NA, NR	RT Fan Failure reported	MN
***** HDSL INPUT VOLTAGE option is displayed, set and cleared only on a line-powered system.			

CONFIG — HDSL Alarm Thresholds

This screen allows the provisioning of the threshold crossing values for the 15 minute and 24-hour ES and UAS counts and HDSL margin. Table 20 on page 89 shows the HDSL Alarm Threshold fields, values, descriptions and default settings.

CONFIG — HDSL Alarm Thresholds

Step	Action
1	At the Main Menu screen, select **CONFIG**. Press ↓ to choose **HDSL Alarm Thresholds**. The following screen appears. 
2	Press **ENTER**. The following screen appears. 

CONFIG — HDSL Alarm Thresholds (Continued)

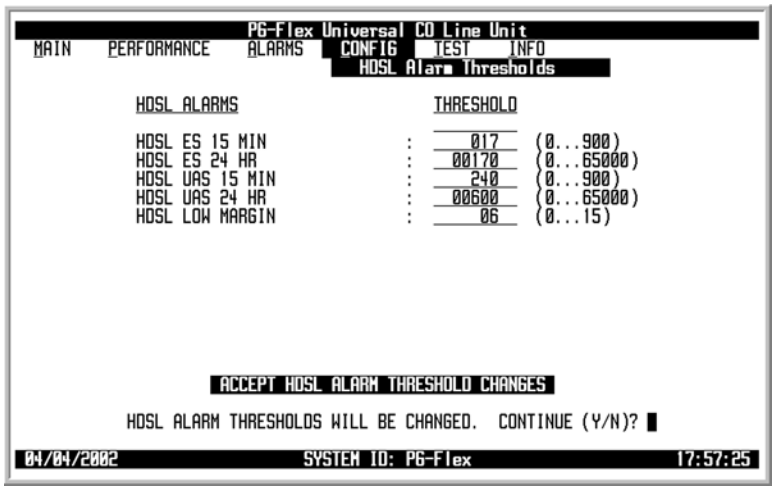
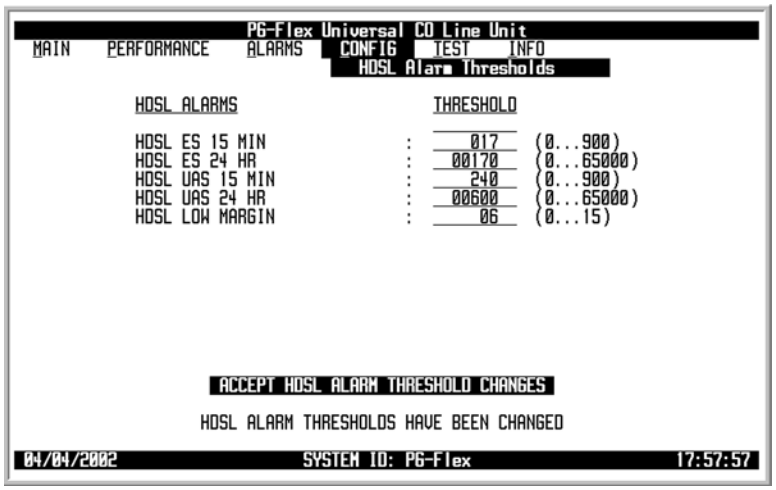
Step	Action
3	The following actions can be taken: a. To change the threshold value, press ↓ or ↑ to go to the appropriate HDSL Alarm Threshold. Then type the appropriate numbers on the keypad for each field. b. To save the HDSL Alarm Threshold changes, select the **ACCEPT HDSL ALARM THRESHOLD CHANGES** button, then press **ENTER**. From the `HDSL ALARM THRESHOLDS WILL BE CHANGED. CONTINUE (Y/N)?` prompt, the following actions can be taken: • To save the HDSL Alarm Threshold changes, press **Y**. The following events occur: – all current values are set to desired values   • To retain the existing HDSL Alarm Thresholds, press **N**.
4	Press **ESC**. The Main Menu screen reappears.

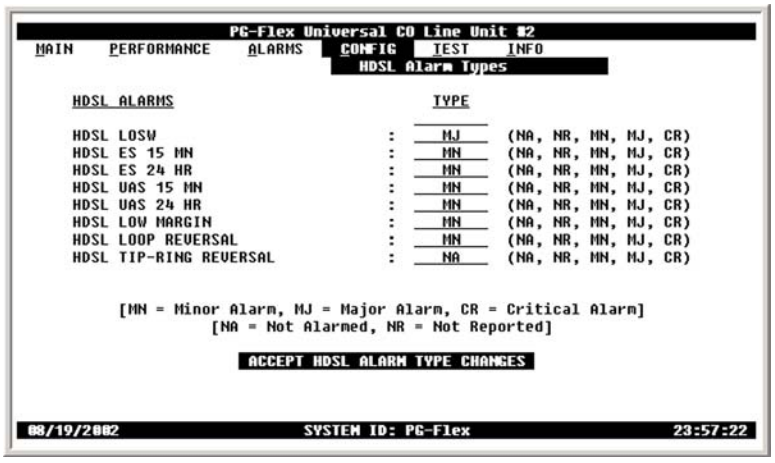
Table 20. HDSL Alarm Thresholds

Alarms	Value	Description	Default
HDSL ES 15 MIN	0 to 900	HDSL ES 15 minutes alarm is generated if the current 15-minute HDSL ES count reaches or exceeds this threshold.	17
HDSL ES 24 HOUR	0 to 65,000	HDSL ES 24 hour alarm is generated if ES 24 hour counts become equal to or greater than this threshold.	170
HDSL UAS 15 MIN	0 to 900	HDSL UAS-15 minutes alarm is generated in the current 15-minute HDSL UAS count reaches or exceeds this threshold.	240
HDSL UAS 24 HR	0 to 65,000	HDSL UAS-24 hour alarm is generated if UAS counts become equal to or greater than this threshold.	600
HDSL LOW MARGIN	0 to 15	HDSL Low Margin alarm is generated if margin drops equal to or less than this threshold.	6

CONFIG — HDSL Alarm Types

This screen allows provisioning of the alarm types for all HDSL alarms. Table 21 on page 92 lists the HDSL Alarm Type fields, values, descriptions and default settings.

CONFIG — HDSL Alarm Types

Step	Action
1	At the Main Menu screen, select **CONFIG**. Press ↓ to choose **HDSL Alarm Types**. The following screen appears. 
2	Press **ENTER**. The following screen appears. 

CONFIG — HDSL Alarm Types (Continued)

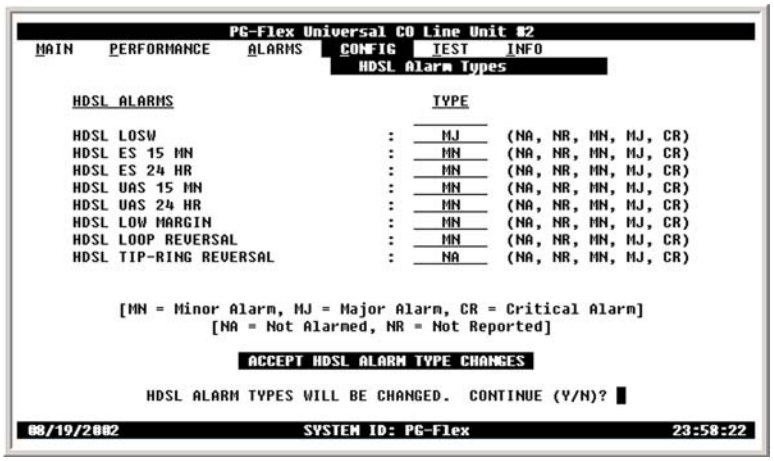
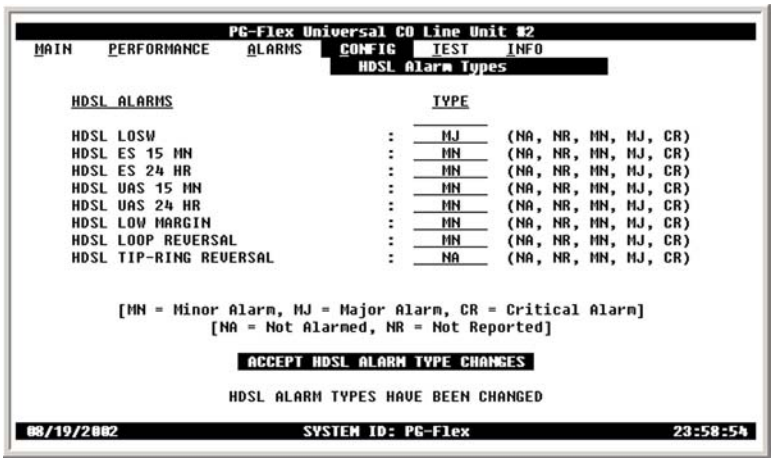
Step	Action
3	The following actions can be taken: a. To change the field value, press **SPACEBAR** to toggle to the desired value, or press ↓ or ↑ to move to the next option. b. To save the HDSL Alarm Type changes, select the **ACCEPT HDSL ALARM TYPE CHANGES** button, then press **ENTER**. From the `HDSL ALARM TYPES WILL BE CHANGED. CONTINUE (Y/N)?` prompt, the following actions can be taken: • To save the HDSL Alarm Types changes, press **Y**. The following events occur: – all current values are set to desired values   • To retain the existing HDSL Alarm Types, press **N**.
4	Press **ESC**. The Main Menu screen reappears.

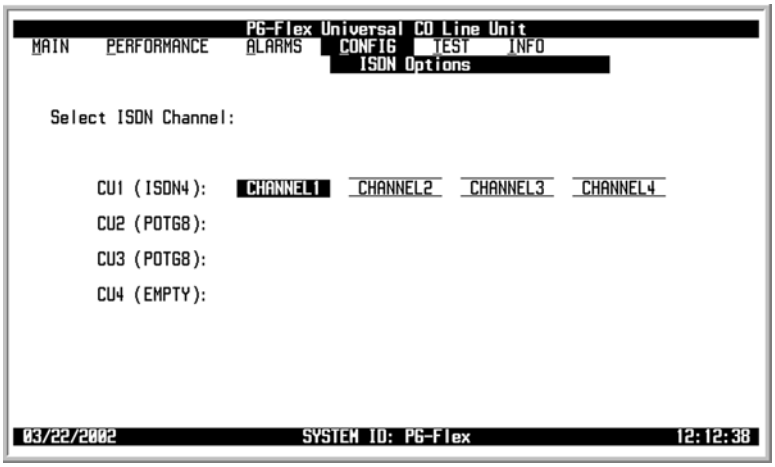
Table 21. HDSL Alarm Types

Alarms	Value	Description	Default
HDSL LOSW	CR, MJ, MN, NA, NR	HDSL Loop has lost synchronization	MJ
HDSL ES 15 MN	CR, MJ, MN, NA, NR	HDSL ES 15 minute alarm is generated if the current 15 minute HDSL ES count reaches or exceeds threshold	MN
HDSL ES 24 HR	CR, MJ, MN, NA, NR	HDSL ES 24 hour alarm is generated if the HDSL ES 24 hour count reaches or exceeds threshold	MN
HDSL UAS 15 MN	CR, MJ, MN, NA, NR	HDSL UAS 15 minute alarm is generated if the current 15-minute HDSL UAS count reaches or exceeds threshold	MN
HDSL UAS 24 HR	CR, MJ, MN, NA, NR	HDSL UAS 24 hour alarm is generated if the HDSL UAS 24-hour count reaches or exceeds threshold	MN
HDSL LOW MARGIN	CR, MJ, MN, NA, NR	HDSL low margin alarm is generated if the margin is equal to, or less than, threshold	MN
HDSL LOOP REVERSAL	CR, MJ, MN, NA, NR	HDSL loops A and B are reversed on the span	MN
HDSL TIP-RING REVERSAL	CR, MJ, MN, NA, NR	HDSL tip-ring of the HDSL A/B loop is reversed on the span	NA

CONFIG — ISDN Options

This screen allows provisioning of ISDN options. Table 22 on page 95 lists the ISDN Option fields, values, descriptions and default settings.

CONFIG — ISDN Options

Step	Action
1	At the Main Menu screen, select **CONFIG**. Press ↓ to choose **ISDN Options**. The following screen appears. 
2	Press ENTER. The following screen appears. 

CONFIG — ISDN Options (Continued)

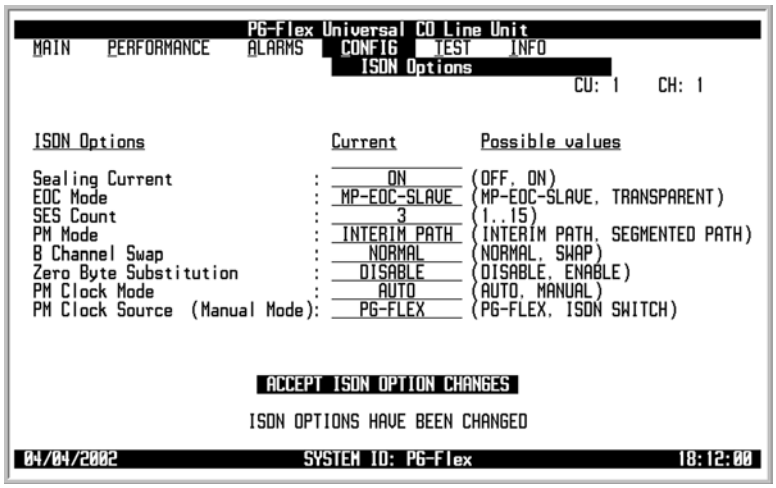
Step	Action
3	The following actions can be taken: a. To change the field value, press **SPACEBAR** to toggle to the desired value, or press ↓ or ↑ to move to the next option. b. To save the ISDN Option changes, select the **ACCEPT ISDN OPTION CHANGES** button, then press **ENTER**. From the `ISDN OPTIONS WILL BE CHANGED. CONTINUE (Y/N)?` prompt, the following actions can be taken: • To save the ISDN Option changes, press **Y**. The following events occur: – all current values are set to desired values   • To retain the existing ISDN Options, press **N**.
4	Press **ESC**. The Main Menu screen reappears.

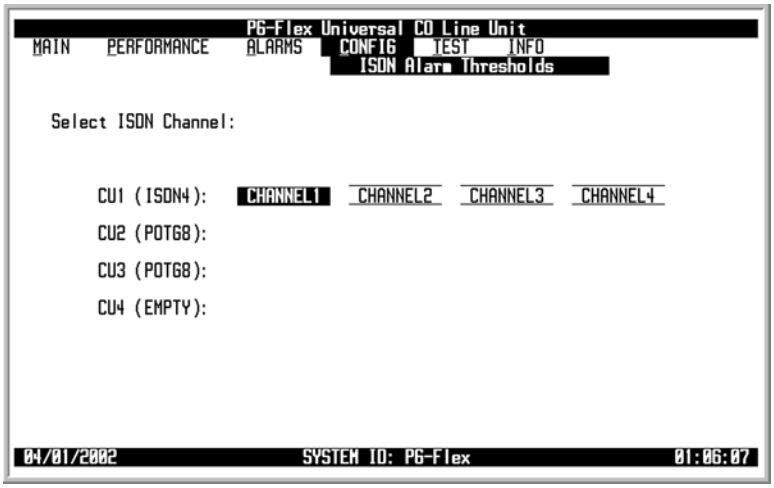
Table 22. ISDN Options

System Options	Value	Description	Default
Sealing Current	OFF	No sealing current is applied to the ISDN subscriber loop	ON
	ON	A constant current of approximately 5 MA flows in the ISDN subscriber loop at all times	
EOC Mode	MP-EOC-SLAVE	EOC messages are decoded and re-transmitted within the PG-Flex system	MP-EOC-SLAVE
	TRANSPARENT	EOC messages are not decoded and are passed through the PG-Flex system transparently	
SES Count	1 to 15	The number of ISDN BE allowed before SES count is incremented	3
PM Mode	INTERIM PATH	Considers the channel as one path and collects the end-to-end error rate for the entire transport path	INTERIM PATH
	SEGMENTED PATH	Considers the channel as separate sections and individually collects error rates for each DSL loop	
B Channel Swap	NORMAL	Channels “B1” and “B2” at the CO ISDN “U” interface are routed to channels “B1” and “B2” at the RT ISDN “U” interface	NORMAL
	SWAP	Channels “B1” and “B2” at the CO ISDN “U” interface are routed to channels “B2” and “B1” at the RT ISDN “U” interface	
Zero Byte Substitution	DISABLE	PG-Flex system passes all data through without any special encoding	DISABLE
	ENABLE	PG-Flex system will use a ZBS code to prevent long strings of zeros in the data	
PM Clock Mode	AUTO	“0” byte of the channel unit determines the PM Clock Source field	AUTO
	MANUAL	Clock source is determined by PM Clock Source field	
PM Clock Source (Manual Mode)	PG-FLEX	Clock source is determined by PG-Flex system clock	PG-FLEX
	ISDN SWITCH	Clock source is determined by ISDN clock	

CONFIG — ISDN Alarm Thresholds

This screen allows the provisioning of ISDN alarm thresholds. The fields on this screen are measured hourly and daily. Table 23 on page 98 lists the ISDN Alarm Threshold fields, values, descriptions and default settings.

CONFIG — ISDN Alarm Thresholds

Step	Action
1	At the Main Menu screen, select **CONFIG**. Press ↓ to choose **ISDN Alarm Thresholds**. The following screen appears. 
2	Press **ENTER**. The following screen appears. 

CONFIG — ISDN Alarm Thresholds (Continued)

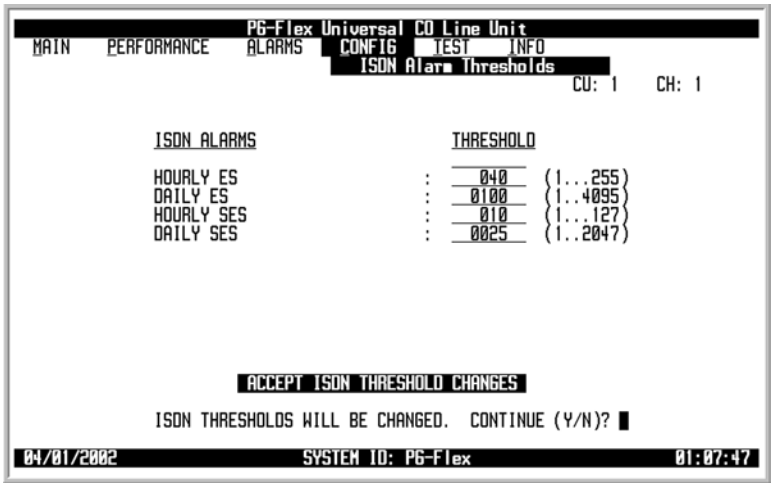
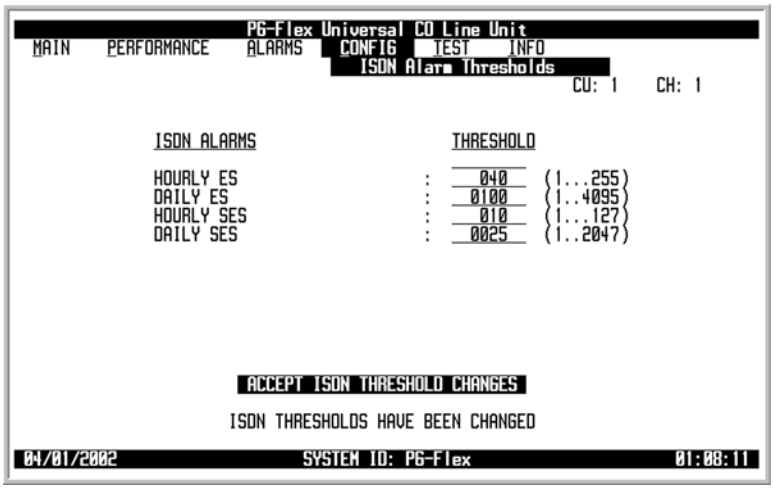
Step	Action
3	The following actions can be taken: a. To change the threshold value, press ↓ or ↑ to go to the appropriate ISDN Alarm Threshold. Then type the appropriate numbers on the keypad for each field. b. To save the ISDN Alarm Threshold changes, select the **ACCEPT ISDN ALARM THRESHOLD CHANGES** button, then press **ENTER**. From the `ISDN ALARM THRESHOLDS WILL BE CHANGED. CONTINUE (Y/N)?` prompt, the following actions can be taken: • To save the ISDN Alarm Threshold changes, press **Y**. The following events occur: – all current values are set to desired values   • To retain the existing ISDN Alarm Thresholds, press **N**.
4	Press **ESC**. The Main Menu screen reappears.

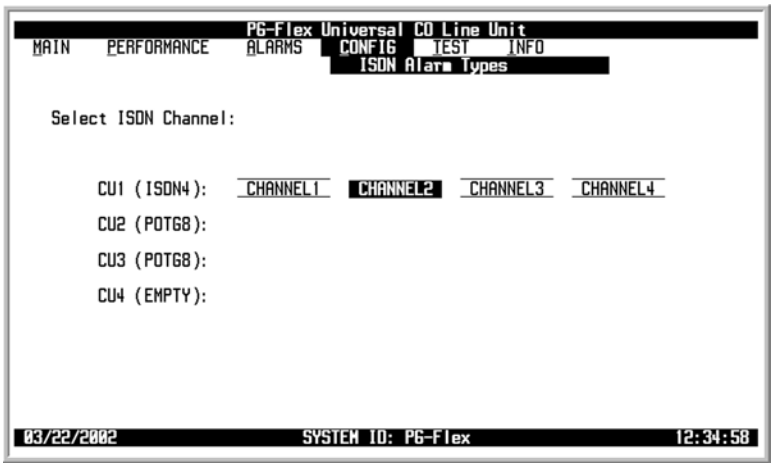
Table 23. ISDN Alarm Thresholds

Alarms	Value	Description	Default
HOURLY ES	1 to 255	ISDN hourly ES alarm is generated if the accumulated hourly ES count at the COLU/RTLU reaches or exceeds this threshold. The range of values is from 1 to 255.	40
DAILY ES	1 to 4095	ISDN daily ES alarm is generated if the accumulated daily ES count at the COLU/RTLU reaches or exceeds this threshold. The range of values is from 1 to 4095.	100
HOURLY SES	1 to 127	ISDN hourly SES alarm is generated if the accumulated hourly SES count at the COLU/ RTLU reaches or exceeds this threshold. The range of values is from 1 to 127.	10
DAILY SES	0 to 2047	ISDN daily SES alarm is generated if the accumulated daily SES count at the COLU/RTLU reaches or exceeds this threshold. The range of values is from 1 to 2047.	25

CONFIG — ISDN Alarm Types

This screen allows the provisioning of ISDN alarm types. Table 24 on page 101 lists the ISDN Alarm Type fields, values, descriptions and default settings.

CONFIG — ISDN Alarm Types

Step	Action
1	At the Main Menu screen, select **CONFIG**. Press ↓ to choose **ISDN Alarm Types**. The following screen appears. 
2	Press **ENTER**. The following screen appears. 

CONFIG — ISDN Alarm Types (Continued)

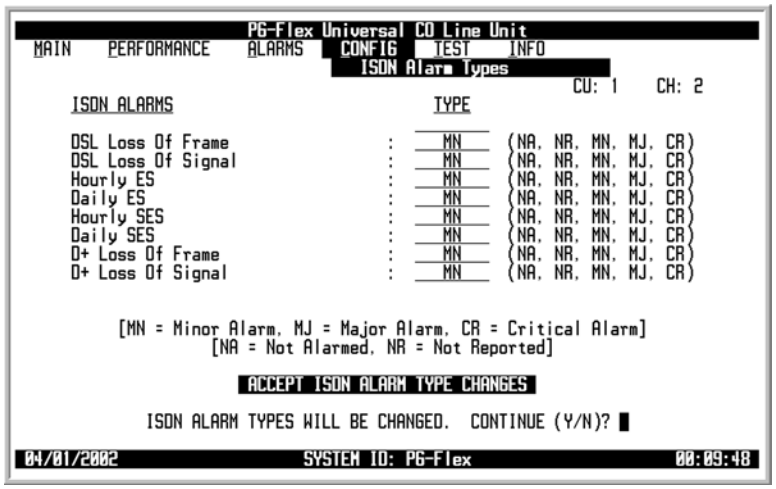
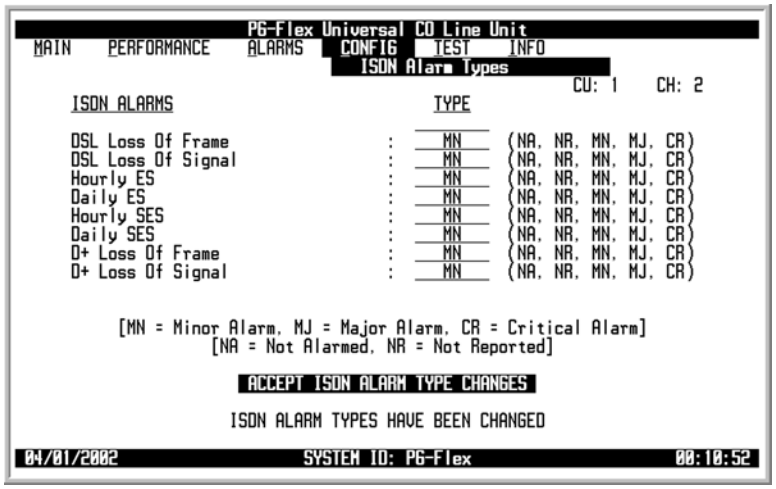
Step	Action
3	The following actions can be taken: a. To change the field value, press **SPACEBAR** to toggle to the desired value, or press ↓ or ↑ to move to the next option. b. To save the ISDN Alarm Type changes, select the **ACCEPT ISDN ALARM TYPE CHANGES** button, then press **ENTER**. From the `ISDN ALARM TYPES WILL BE CHANGED. CONTINUE (Y/N)?` prompt, the following actions can be taken: • To save the ISDN Alarm Type changes, press **Y**. The following events occur: – all current values are set to desired values   • To retain the existing ISDN Alarm Types, press **N**.
4	Press **ESC**. The Main Menu screen reappears.

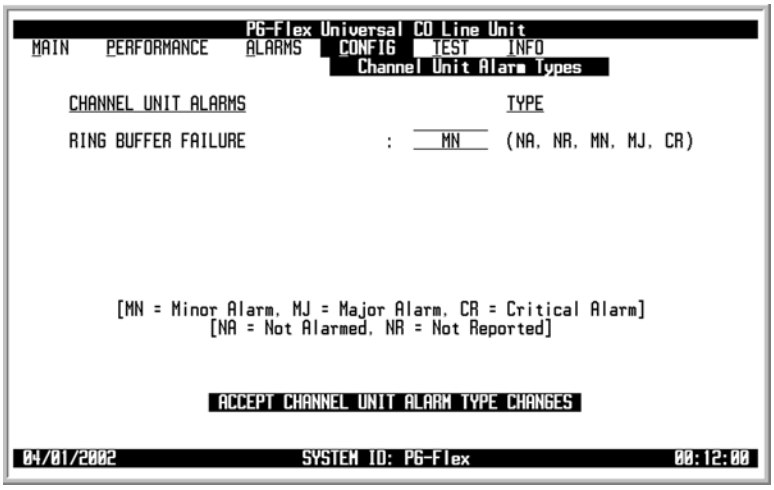
Table 24. ISDN Alarm Types

Alarms	Value	Description	Default
DSL Loss Of Frame	CR, MJ, MN, NA, NR	Generated if there is a DSL Loss of Frame	MN
DSL Loss Of Signal	CR, MJ, MN, NA, NR	Generated if there is a DSL Loss of Signal	MN
HOURLY ES	CR, MJ, MN, NA, NR	Generated if the accumulated hourly ES count at the COLU/RTLU reaches or exceeds its threshold value. A single threshold value is used for threshold errors in the customer or network direction. The range of values is from 1 to 255.	MN
DAILY ES	CR, MJ, MN, NA, NR	Generated if the accumulated daily ES count at the COLU/RTLU reaches or exceeds its threshold value. A single threshold value is used for threshold errors in the customer or network direction. The range of values is from 1 to 4095.	MN
HOURLY SES	CR, MJ, MN, NA, NR	Generated if the accumulated hourly SES count at the COLU/RTLU reaches or exceeds its threshold value. A single threshold value is used for threshold errors in the customer or network direction.	MN
DAILY SES	CR, MJ, MN, NA, NR	Generated if the accumulated daily SES count at the COLU/RTLU reaches or exceeds its threshold value. A single threshold value is used for threshold errors in the customer or network direction.	MN
D+ Loss of Frame	CR, MJ, MN, NA, NR	Generated if the ISDN m-channel framing pattern has been lost on the HDSL link	MN
D+ Loss of Signal	CR, MJ, MN, NA, NR	Generated if the ISDN m-channel loses synchronization	MN

CONFIG — Channel Unit Alarm Types

This screen allows provisioning of channel unit alarms types. Each RT channel unit continuously monitors its subscriber ring generator circuits. If a ring generator circuit fails, the subscriber's equipment no longer rings. When an RT channel unit detects the failure of one of these circuits, it generates an alarm of the type selected on this screen. Table 25 on page 104 lists the Channel Unit Alarm Type fields, values, descriptions and default settings.

CONFIG — Channel Unit Alarm Types

Step	Action
1	At the Main Menu screen, select **CONFIG**. Press ↓ to choose **Channel Unit Alarm Types**. The following screen appears. 
2	Press **ENTER**. The following screen appears. 

CONFIG — Channel Unit Alarm Types (Continued)

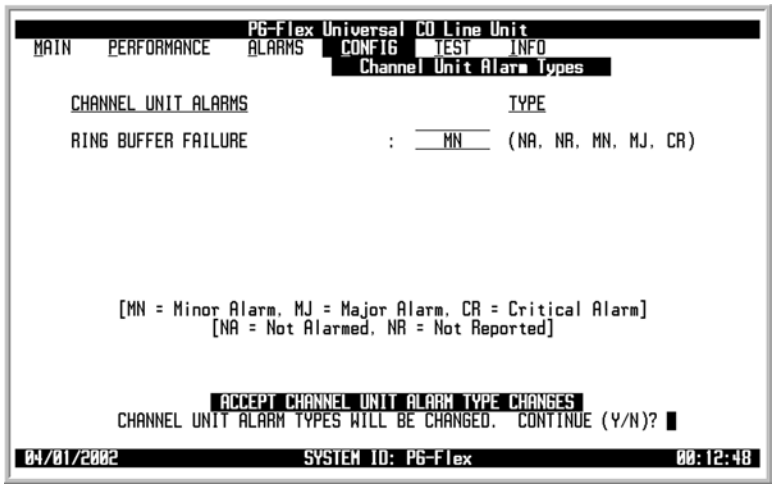
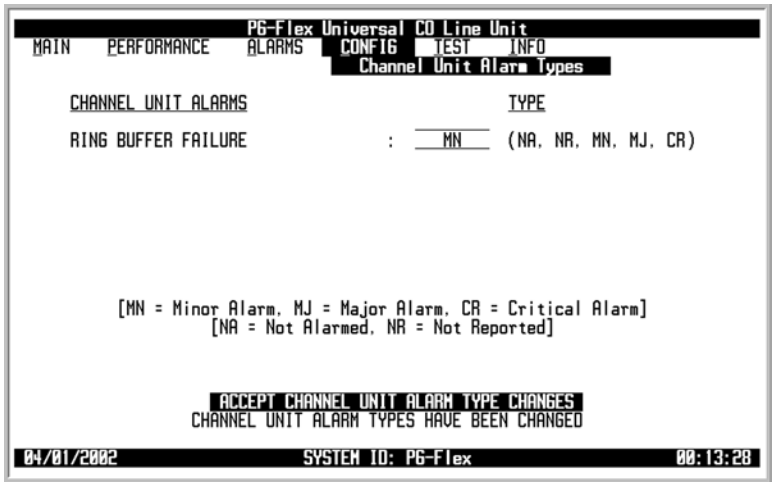
Step	Action
3	The following actions can be taken: a. To change the Ring Buffer Failure field value, press **SPACEBAR** to toggle to the desired value. b. To save the Channel Unit Alarm Type changes, select the **ACCEPT CHANNEL UNIT ALARM TYPE CHANGES** button, then press **ENTER**. From the `CHANNEL UNIT ALARM TYPES WILL BE CHANGED. CONTINUE (Y/N)?` prompt, the following actions can be taken: • To save the Channel Unit Alarm Type changes, press **Y**. The following events occur: – all current values are set to desired values   • To retain the existing Channel Unit Alarm Types, press **N**.
4	Press **ESC**. The Main Menu screen reappears.

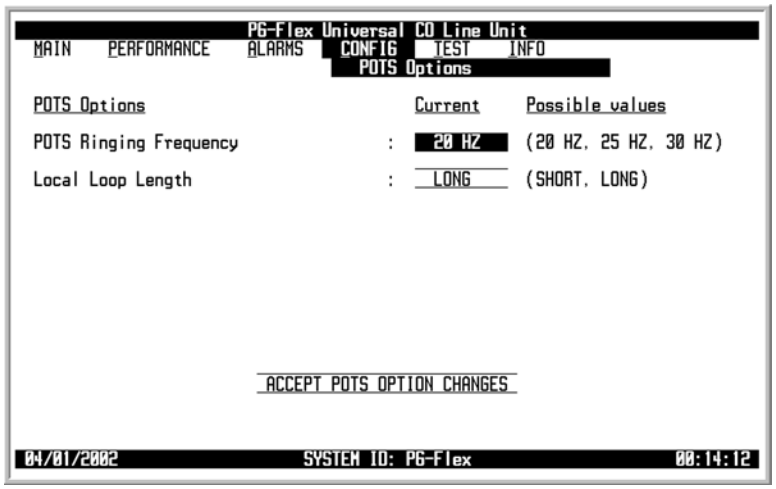
Table 25. Channel Unit Alarms

Alarms	Value	Description	Default
RTCU 1 RING BUFFER FAILURE	CR, MJ, MN, NA, NR	RTLU has detected a ring buffer failure on RTCU1. Associated CU must be replaced to restore ringing functionality.	MN
RTCU 2 RING BUFFER FAILURE	CR, MJ, MN, NA, NR	RTLU has detected a ring buffer failure on RTCU2. Associated CU must be replaced to restore ringing functionality.	MN
RTCU 3 RING BUFFER FAILURE	CR, MJ, MN, NA, NR	RTLU has detected a ring buffer failure on RTCU3. Associated CU must be replaced to restore ringing functionality.	MN
RTCU 4 RING BUFFER FAILURE	CR, MJ, MN, NA, NR	RTLU has detected a ring buffer failure on RTCU4. Associated CU must be replaced to restore ringing functionality.	MN
If RTCU Ring Buffer Failure alarms are declared for all installed POTS Cards, the probable cause of failure is a faulty ring generator. The RTLU will need to be replaced.			

CONFIG — POTS Options

This screen allows provisioning of POTS lines. Table 26 on page 107 lists the POTS Option fields, values, descriptions and default settings.

CONFIG — POTS Options

Step	Action
1	At the Main Menu screen, select **CONFIG**. Press ↓ to choose **POTS Options**. The following screen appears. 
2	Press **ENTER**. The following screen appears. 

CONFIG — POTS Options (Continued)

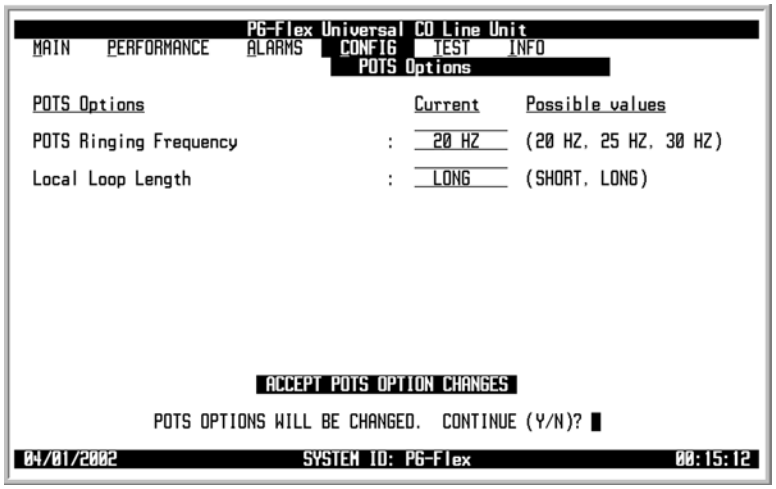
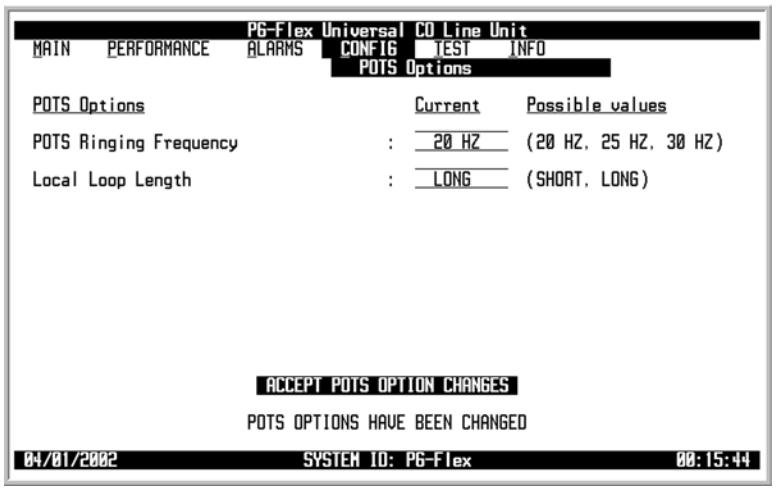
Step	Action
3	The following actions can be taken: a. To change the POTS Ringing Frequency field value, press SPACEBAR to toggle to the desired value. b. To change the Local Loop Length field value, press SPACEBAR to toggle to the desired value. c. To save the POTS Option changes, select the **ACCEPT POTS OPTION CHANGES** button, then press ENTER. From the `POTS OPTIONS WILL BE CHANGED. CONTINUE (Y/N)?` prompt, the following actions can be taken: • To save the POTS Option changes, press Y. The following events occur: – all current values are set to desired values   • To retain the existing POTS Options, press N.
4	Press ESC. The Main Menu screen reappears.

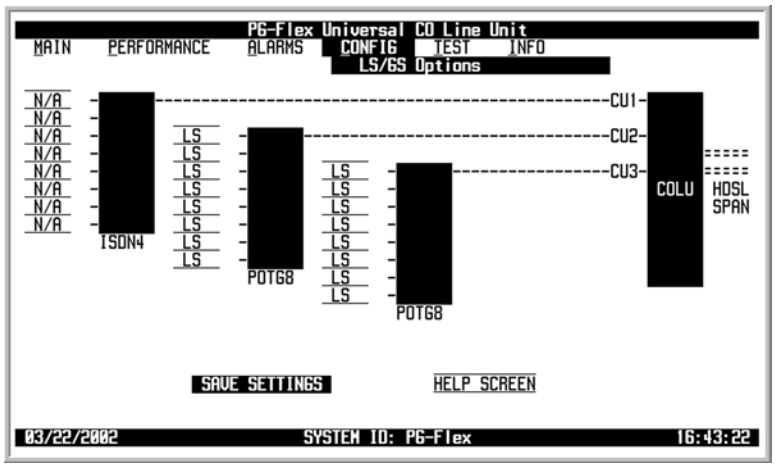
Table 26. POTS Options

Alarm	Value	Description	Default
POTS Ringing Frequency	20 HZ 25 HZ 30 HZ	Sets the ring generator frequency for all POTS circuits served by the RTLU	20 HZ
Local Loop Length	SHORT	All POTS circuits support shorter 430 ohm subscriber drops and results in slightly reduced power consumption from the CO battery.	LONG
	LONG	All POTS circuits support standard length 530 ohm subscriber drops. The power consumption from the CO battery matches the published specifications.	

CONFIG — LS/GS Options

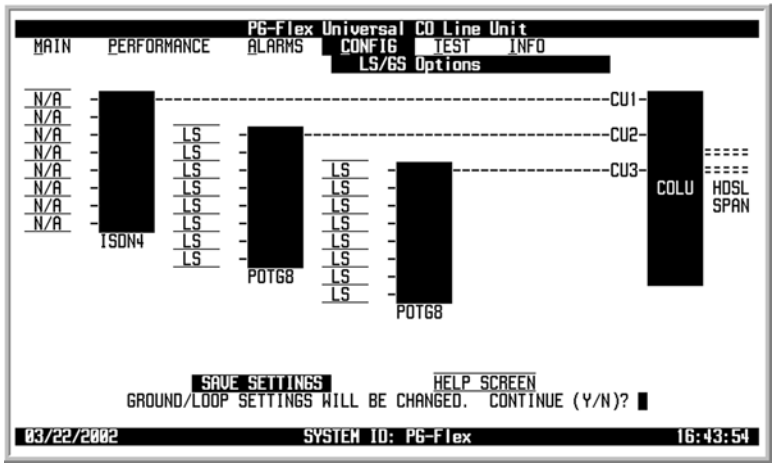
This screen shows the Loop Start and Ground Start configuration.

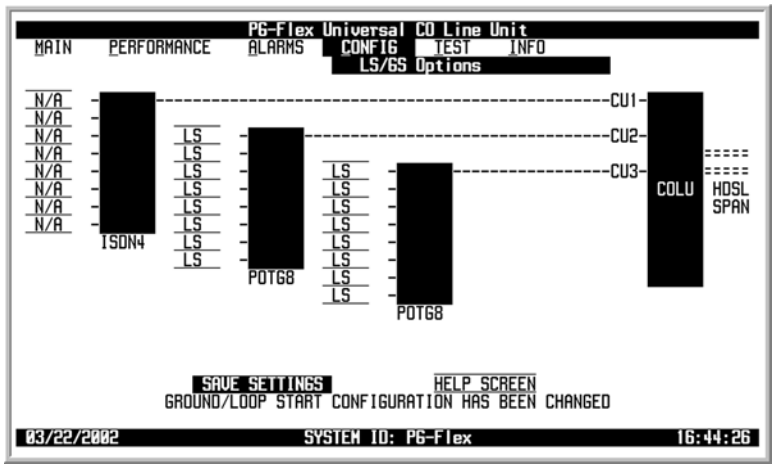
CONFIG — LS/GS Options

Step	Action
1	At the Main Menu screen, select **CONFIG**. Press ↓ to choose **LS/GS Options**. The following screen appears. 
2	Press **ENTER**. The following screen appears. 

CONFIG — LS/GS Options (Continued)

Step	Action
3	The following actions can be taken: a. To change the field value, press SPACEBAR to toggle to the desired value, or press ↓, ↑, ← or → to move to next option. b. To save the LS/GS Option changes, select the **SAVE SETTINGS** button, then press ENTER. From the `GROUND/LOOP SETTINGS WILL BE CHANGED. CONTINUE (Y/N)?` prompt, the following actions can be taken: • To save the LS/GS Option changes, press Y. The following events occur: – all current values are set to desired values



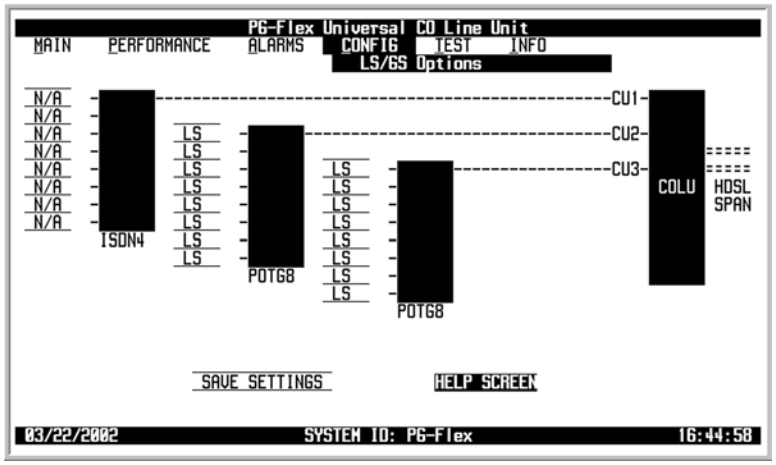


Only POTS channel units indicate LS/GS. ISDN channel units always display N/A.

• To retain the existing POTS Options, press N.

CONFIG — LS/GS Options (Continued)

Step	Action
4	To view the Help Screen, select the **HELP SCREEN** button, then press ENTER. The Help Screen appears.
5	Press ESC. The Main Menu screen reappears.



CONFIG — Set Factory Defaults

This screen resets the configuration data back to the original factory default setting.

CONFIG — Set Factory Defaults

Step	Action
1	At the Main Menu screen, select **CONFIG**. Press ↓ to choose **Set Factory Defaults**. The following screen appears. 
2	Press **ENTER**. The following screen appears.  **CAUTION** ***Setting to Factory Defaults may cause a loss of service.***

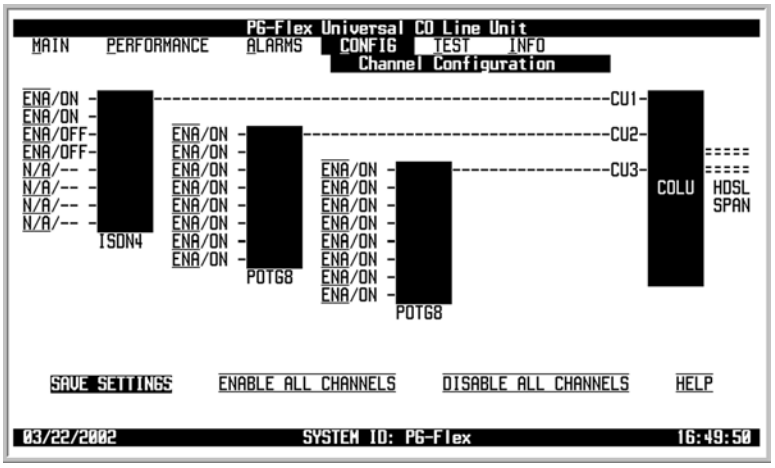
CONFIG — Set Factory Defaults (Continued)

Step	Action
3	The following actions can be taken: a. To reset the system options back to the original factor default settings, press **ENTER**. From the `CONFIGURATION DATA WILL BE SET TO FACTORY DEFAULTS (THIS MAY BE SERVICE AFFECTING!) CONTINUE (Y/N)?` prompt, the following actions can be taken: • To save the Factory Default changes, press **Y**. The following events occur: – all current values are reset to the factory default values  • To retain the existing configuration data, press **N**.
4	Press **ESC**. The Main Menu screen reappears.

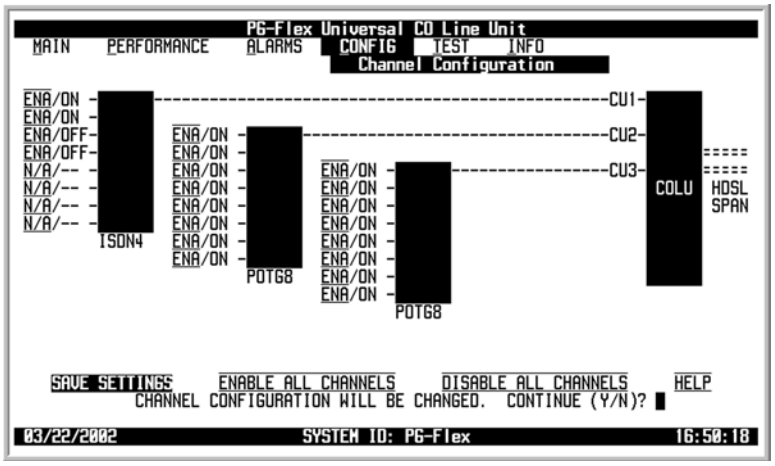
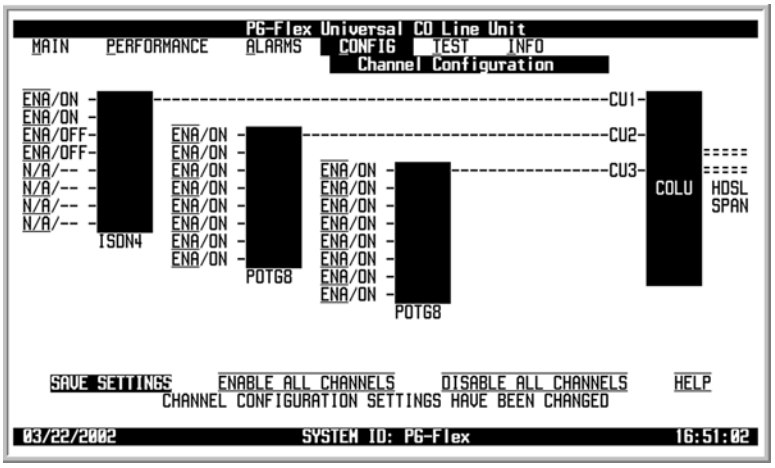
CONFIG — Channel Configuration

This screen allows each individual channel to be set as enabled or disabled. If any one card (COLU, RTLU, COCU or RTCU) is removed, replaced or reinserted, the channel configuration is automatically preserved.

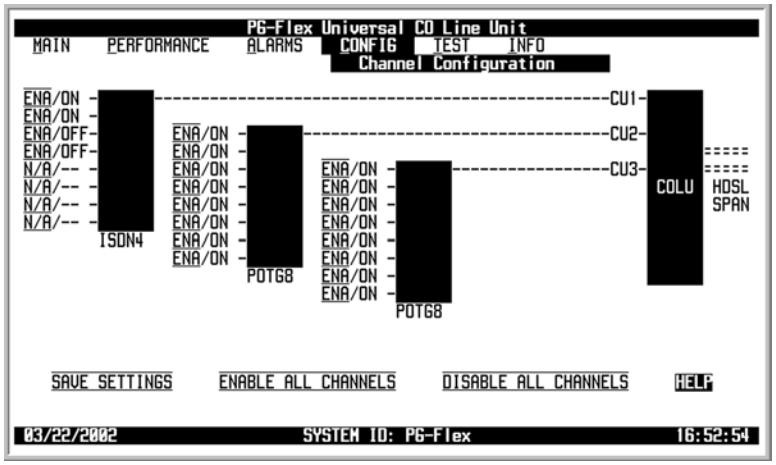
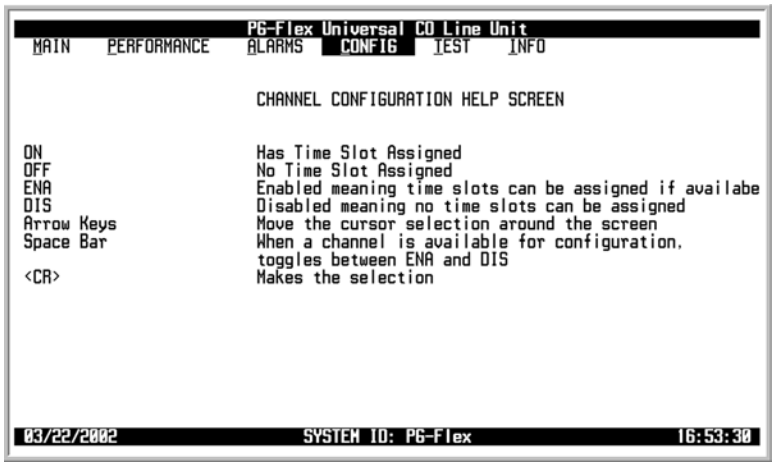
CONFIG — Channel Configuration

Step	Action
1	At the Main Menu screen, select **CONFIG**. Press ↓ to choose **Channel Configuration**. The following screen appears. 
2	Press **ENTER**. The following screen appears. 

CONFIG — Channel Configuration (Continued)

Step	Action
3	The following actions can be taken: a. To change a field value (enable or disable), press **SPACEBAR** to toggle to the desired value, or press ↓, ↑, ← or → to move to next option. b. To Enable All Channels, select the **ENABLE ALL CHANNELS** button, then press **ENTER**. c. To Disable All Channels, select the **DISABLE ALL CHANNELS** button, then press **ENTER**. d. To save the Channel Configuration changes, select the **SAVE SETTINGS** button, then press **ENTER**. From the `CHANNEL CONFIGURATION WILL BE CHANGED. CONTINUE (Y/N)?` prompt, the following actions can be taken: • To save the Channel Configuration changes, press **Y**. The following events occur: – all current values are set to desired values   • To retain the existing configuration data, press **N**.

CONFIG — Channel Configuration (Continued)

Step	Action
4	To view the Help Screen, select the **HELP** button, then press **ENTER**. The Help screen appears.  
5	Press **ESC**. The Main Menu screen reappears.

TEST MENU OPTIONS

The Test Menu provides access to the following tests: Subcriber Drop, Subscriber ByPass, Metallic Access. Refer to Table 27 on page 117 for sub-menu options and descriptions, parameters and valid values.

If you attempting to run a second test when one test is already in progress, a flashing warning message appears. Wait a few minutes, then try to run the test again.

Table 27. Test Menu Options

Sub-Menu Options	Sub-Menu Descriptions	Parameters	Valid Values
Subscriber Drop	Allows Subscriber Drop Test to be performed on a particular channel	• CU# • CH# • POTS (CU#, CH#) Chosen for Test. **WARNING** Calls in Progress on Test Circuit will be Terminated. Continue with Test (Y/N)?: • **POTS (CU#, CH#) Test in Progress** Hit 'S' to Stop the Test	• 1 – 3 • 1 – 8 (POTS) • 1 – 4 (ISDN) • Y or N • S
Subscriber Bypass	Performs Subscriber ByPass	• CU# • CH# • POTS (CU#, CH#) Chosen for Test. **WARNING** Calls in Progress on Test Circuit will be Terminated. Continue with Test (Y/N)?: • **POTS (CU#, CH#) Test in Progress** Hit 'S' to Stop the Test	• 1 – 3 • 1 – 8 (POTS) • 1 – 4 (ISDN) • Y or N • S
Metallic Access	Performs Metallic Access: COT Bridging COT Looking In COT Looking Out RT Looking Out RT Looking In RT Bridging	• CU# • CH# • POTS (CU#, CH#) Chosen for Test. **WARNING** Calls in Progress on Test Circuit will be Terminated. Continue with Test (Y/N)?: • **POTS (CU#, CH#) Test in Progress** Hit 'S' to Stop the Test	• 1 – 3 • 1 – 8 (POTS) • 1 – 4 (ISDN) • Y or N • S

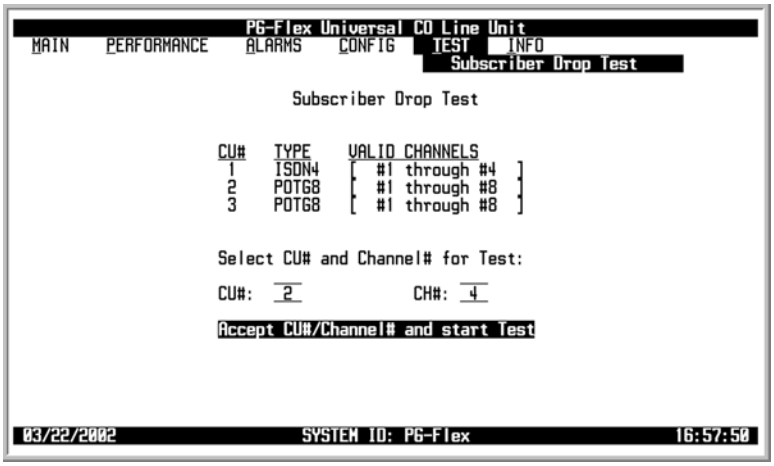
TEST — Subscriber Drop Test

This screen allows a subscriber drop test to be performed on a particular channel.

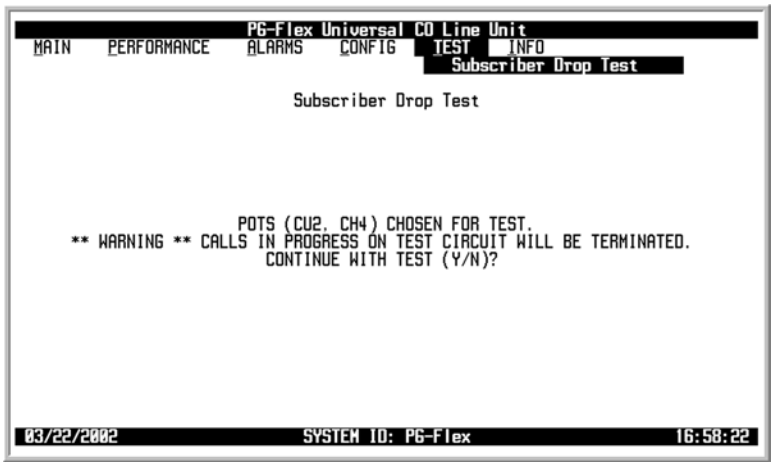
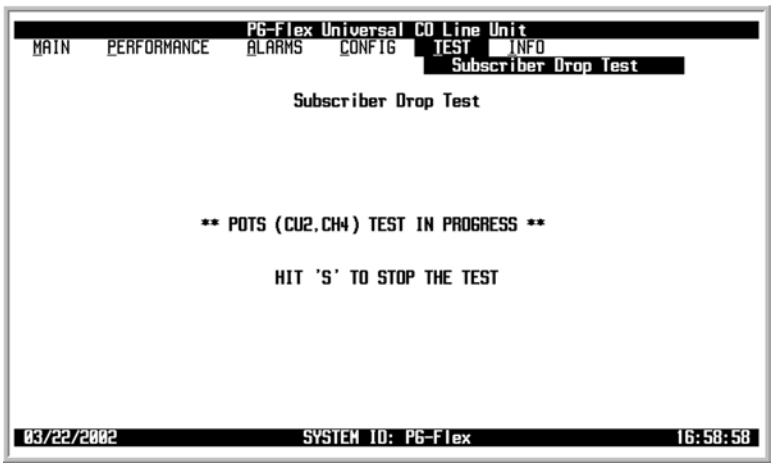
CAUTION

Performing a subscriber drop test on any channel interrupts service on the line under test. The remaining lines on the PG-Flex system remain in service.

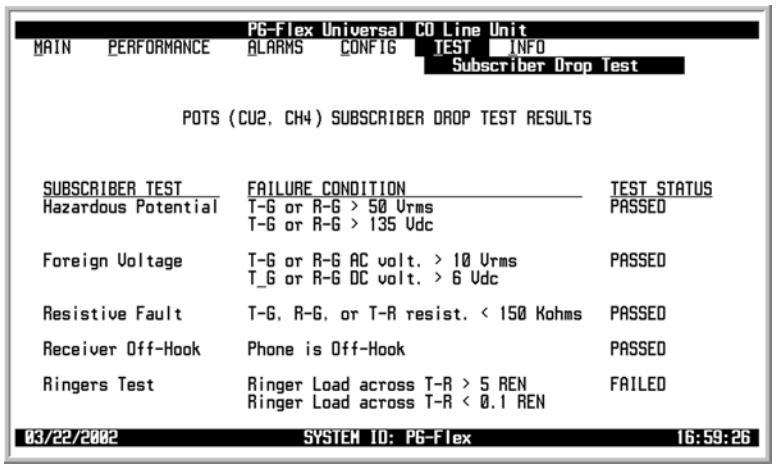
TEST — Subscriber Drop Test

Step	Action
1	At the Main Menu screen, select **TEST**. Press ↓ to choose **Subscriber Drop Test**. The following screen appears. 
2	Press **ENTER**. The following screen appears. 

TEST — Subscriber Drop Test (Continued)

Step	Action
3	The following actions can be taken: a. To assign the CU# value, select the CU# field, then press SPACEBAR to toggle to the desired value. b. To assign the CH# value, select the CH# field, then press SPACEBAR to toggle to the desired value. c. To accept the changes, select the **Accept CU#/Channel# and Start Test** button, then press ENTER. d. From the `POTS (CU#, CH#) CHOSEN FOR TEST. **WARNING** CALLS IN PROGRESS ON TEST CIRCUIT WILL BE TERMINATED. CONTINUE WITH TEST (Y/N)?` prompt, the following actions can be taken: • To start the test, press Y. If you decide to stop the test, press S to stop the test. Then press ESC and the Main Menu screen reappears.   • To abort the test, press N. Then press ESC and the Main Menu reappears.

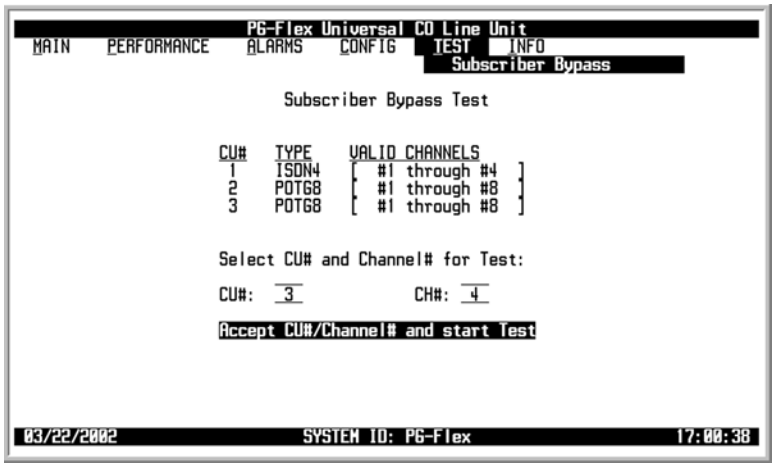
TEST — Subscriber Drop Test (Continued)

Step	Action
4	Upon completion of all tests, the Subscriber Drop Test Results screen with the Subscriber Test, Failure Condition, and Test Status results is displayed. Tests are performed in the order of display.  If a test fails, the remaining tests are not performed (as per TA-909). It takes approximately seven to eight seconds for all tests to complete.
5	Press **ESC**. The Main Menu screen reappears.

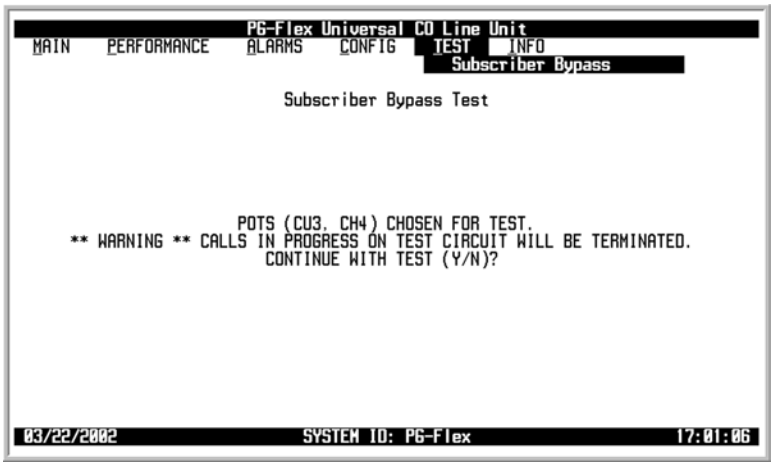
TEST — Subscriber Bypass

Provides a metallic connection from the switch to the subscriber's terminal equipment for the selected channel, bypassing the PG-Flex carrier transport. The bypass pair must be present for proper operation of this test configuration.

TEST — Subscriber Bypass

Step	Action
1	At the Main Menu screen, select **TEST**. Press ↓ to choose **Subscriber Bypass**. The following screen appears. 
2	Press **ENTER**. The following screen appears. 

TEST — Subscriber Bypass (Continued)

Step	Action
3	The following actions can be taken: a. To assign the CU# value, select the CU# field, then press SPACEBAR to toggle to the desired value. b. To assign the CH# value, select the CH# field, then press SPACEBAR to toggle to the desired value. c. To accept the changes, select the **Accept CU#/Channel# and Start Test** button, then press ENTER. d. From the `POTS (CU#, CH#) CHOSEN FOR TEST. **WARNING** CALLS IN PROGRESS ON TEST CIRCUIT WILL BE TERMINATED. CONTINUE WITH TEST (Y/N)?` prompt, the following actions can be taken: • To start the test, press Y. If you decide to stop the test, press S to stop the test. Then press ESC and the Main Menu screen reappears.   • To abort the test, press N. Then press ESC and the Main Menu reappears.
4	Upon completion of the test, press S. Then press ESC and the Main Menu reappears.

TEST — Metallic Access

This screen allows a metallic access connection to a subscriber circuit to be set up using the metallic access options. Refer to Table 28 on page 127 for Metallic Access Menu Options descriptions. The bypass pair must be present for proper operation of the RT test configurations.

TEST — Metallic Access

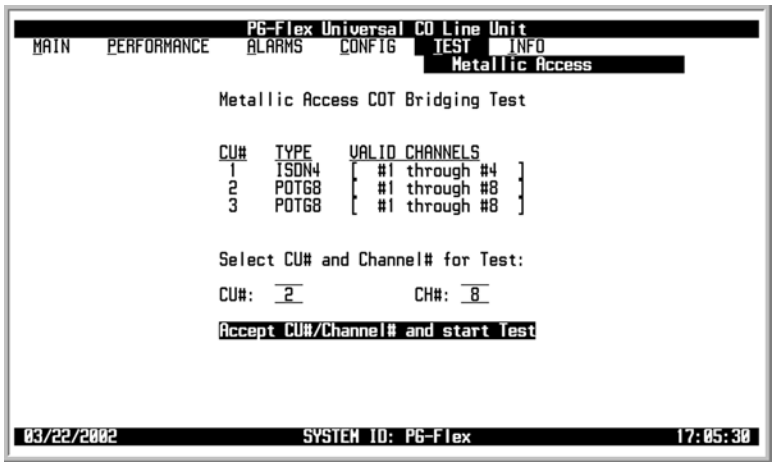
Step	Action
1	At the Main Menu screen, select **TEST**. Press ↓ to choose **Metallic Access**. The following screen appears. 
2	Press ENTER. The following screen appears. 

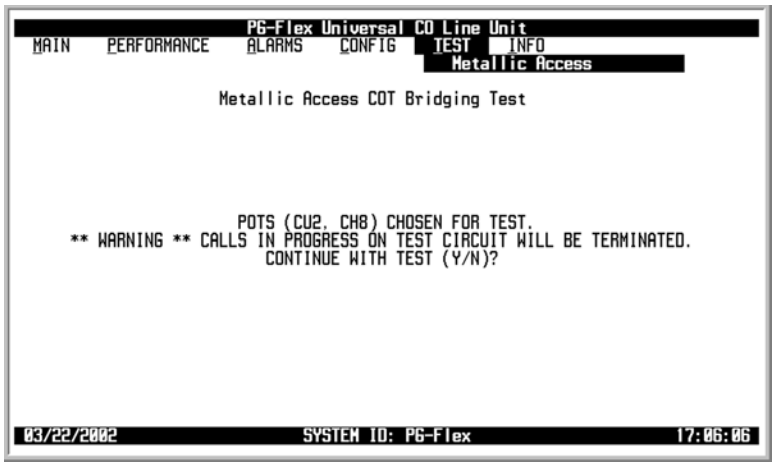
TEST — Metallic Access (Continued)

Step	Action
3	All of the tests on this screen are implemented the same way; therefore, only one example is being shown. **COT Bridging** To run COT Bridging test, select the **COT Bridging** field. Press ENTER.

TEST — Metallic Access (Continued)

Step	Action
4	a. To assign the CU# value, select the CU# field, then press SPACEBAR to toggle to the desired value. b. To assign the CH# value, select the CH# field, then press SPACEBAR to toggle to the desired value. c. To accept the changes, select the **Accept CU#/Channel# and Start Test** button, then press ENTER. d. From the `POTS (CU#, CH#) CHOSEN FOR TEST. **WARNING** CALLS IN PROGRESS ON TEST CIRCUIT WILL BE TERMINATED. CONTINUE WITH TEST (Y/N)?` prompt, the following actions can be taken: • To start the test, press Y.





If you decide to stop the test, press S to stop the test. Then press ESC and the Main Menu screen reappears.

• To abort the test, press N. Then press ESC and the Main Menu appears.

TEST — Metallic Access (Continued)

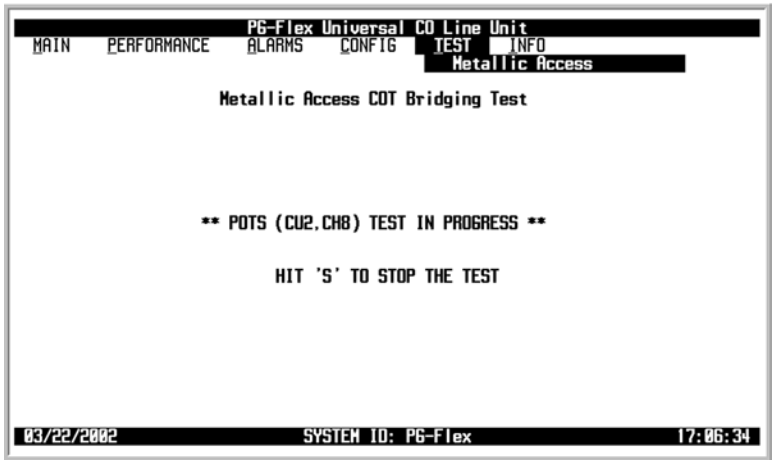
Step	Action
5	Upon completion of the test, press **S**.  Then press **ESC** and the Main Menu appears.

Table 28. Metallic Access Menu Option Descriptions

Parameter	Function
COT - Bridging	Monitors a subscriber circuit connection between the switch and the specified CO channel unit Tip/Ring pair.
COT - Looking In	Verifies the connection between the switch and the specified channel unit Tip/Ring pair. The channel under test is disconnected from the switch for this function. The technician is able to verify connectivity of the channel under test back to the switch.
COT - Looking Out	The subscriber connection through the CO channel unit toward the subscriber can be tested. The switch is disconnected from PG-Flex for this function.
RT - Looking In	Provides a connection to the subscriber circuit at the RT channel unit Tip/Ring pair with the subscriber terminal equipment disconnected (Metallic bypass pair required).
RT - Looking Out	Provides a connection to the subscriber drop with the RT channel unit disconnected (Metallic bypass pair required).
RT - Bridging	Monitors the connection between the RT channel unit and the subscriber terminal equipment (Metallic bypass pair required).

INFORMATION MENU OPTIONS

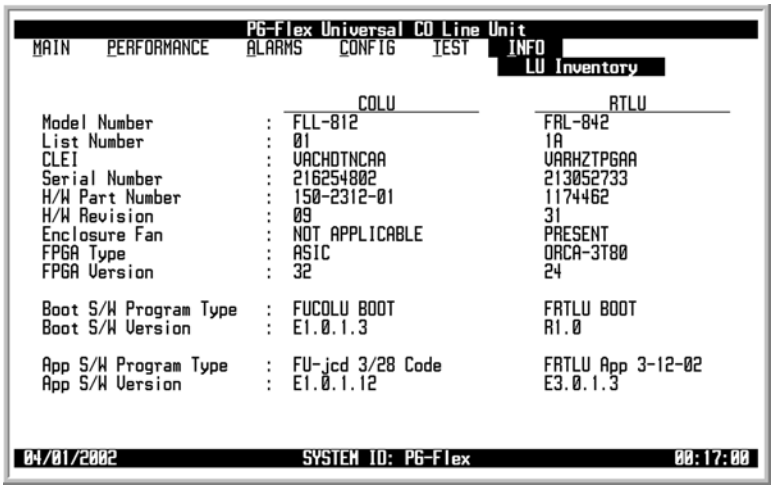
The Information Menu provides technical information about the system. Refer to Table 29 for sub-menu options and descriptions.

Table 29. Information Menu Options

Sub-Menu Options	Sub-Menu Descriptions
LU Inventory	Displays product identification information, manufacturing data, software versions and the hardware revisions for COLU and RTLU
COCU Inventory	Displays product identification information, manufacturing data, software versions and the hardware revisions for CO Channel Units (CU1, CU2, CU3)
RTCU Inventory	Displays product identification information, manufacturing data, software versions and the hardware revisions for RT Channel Units (CU1, CU2, CU3)
Doublers	Displays product identification information, manufacturing data, software versions and the hardware revisions for Doublers (DB1, DB2)
Common Cards	Displays product identification information, manufacturing data, software versions and the hardware revisions for Common Cards (Alarm).
Help	Provides information on using the system screens and menus

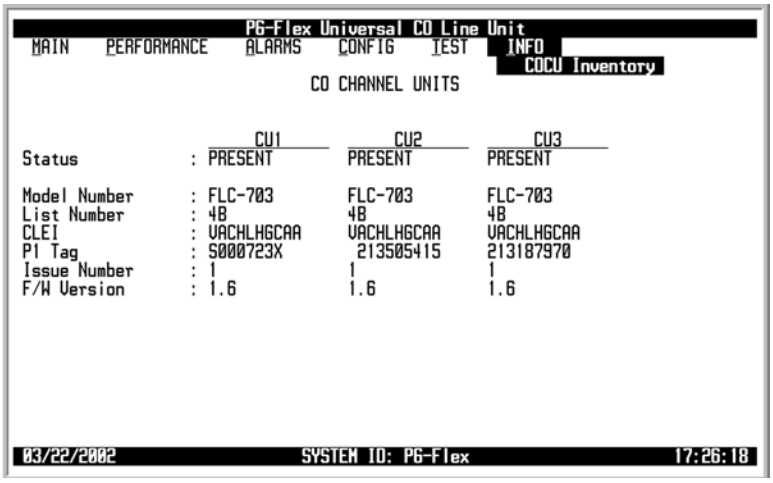
INFO — LU Inventory

This screen displays product identification information, manufacturing data, software versions and the hardware revisions for COLU and RTLU.

Step	Action
1	At the Main Menu screen, select **INFO**. Press ↓ to choose **Line Unit Inventory**. The following screen appears. 
2	Press **ENTER**. The following screen appears. 
3	Press **ESC**. The Main Menu screen reappears.

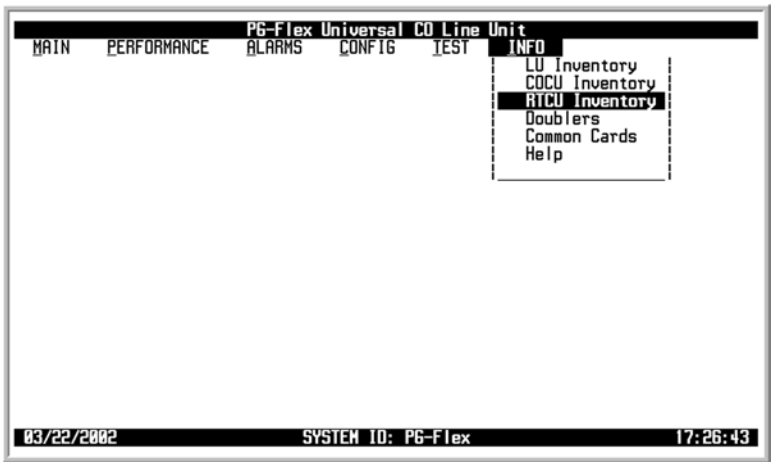
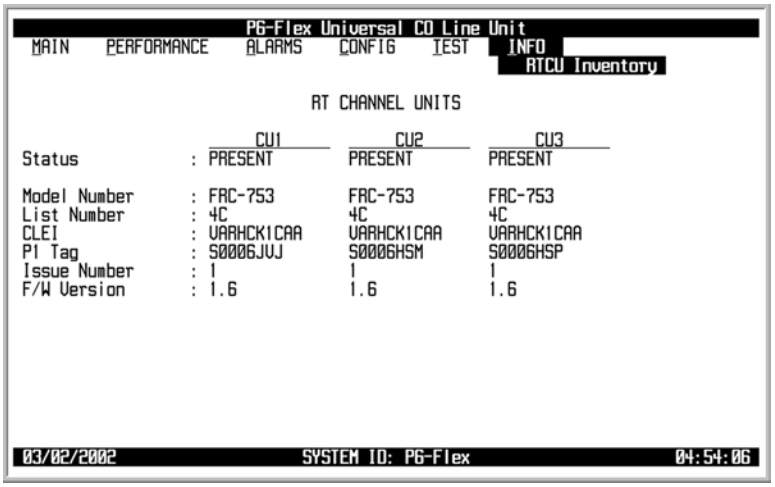
INFO — COCU Inventory

This screen displays product identification information, manufacturing data, software versions and the hardware revisions for CO Channel Units (CU1, CU2, CU3).

Step	Action
1	At the Main Menu screen, select **INFO**. Press ↓ to choose **COCU Inventory**. The following screen appears. 
2	Press **ENTER**. The following screen appears. 
3	Press **ESC**. The Main Menu screen reappears.

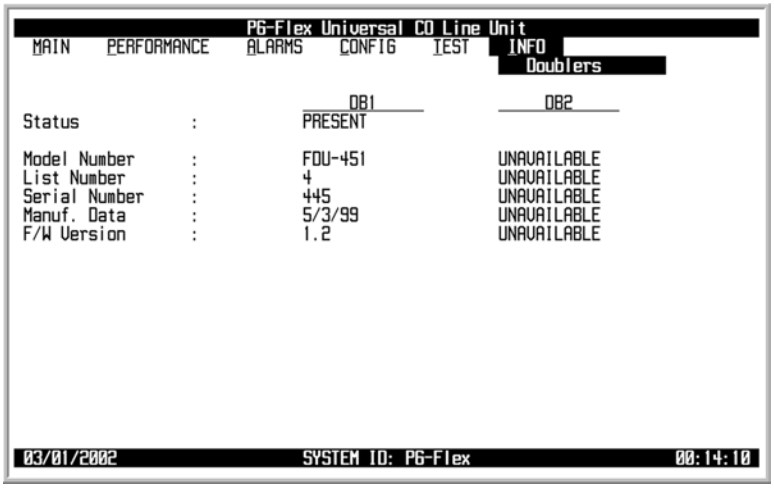
INFO — RTCU Inventory

This screen displays product identification information, manufacturing data, software versions and the hardware revisions for RT Channel Units (CU1, CU2, CU3).

Step	Action
1	At the Main Menu screen, select **INFO**. Press ↓ to choose **RTCU Inventory**. The following screen appears. 
2	Press **ENTER**. The following screen appears. 
3	Press **ESC**. The Main Menu screen reappears.

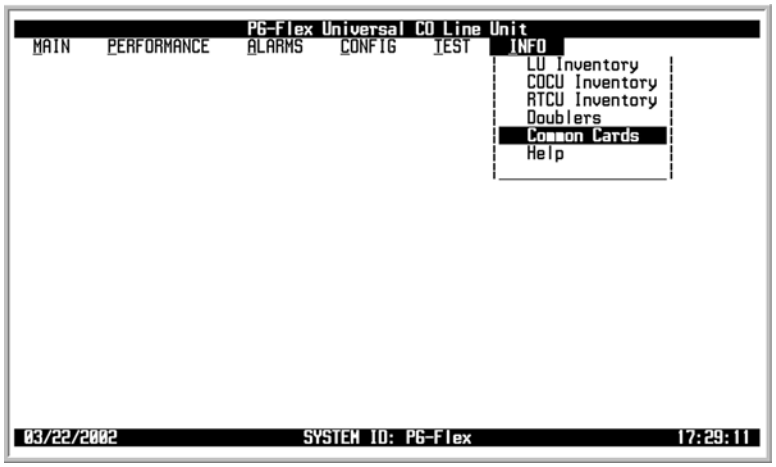
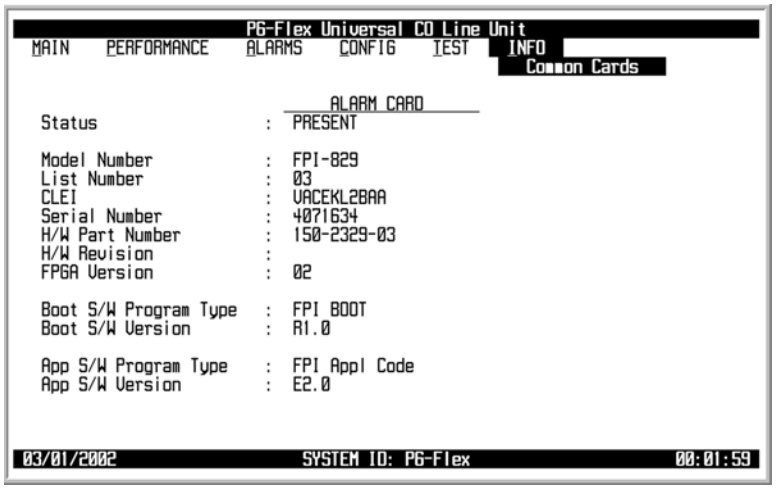
INFO — Doublers

This screen displays product identification information, manufacturing data, software versions and the hardware revisions for Doublers (DB1, DB2).

Step	Action
1	At the Main Menu screen, select **INFO**. Press ↓ to choose **Doublers**. The following screen appears. 
2	Press **ENTER**. The following screen appears. 
3	Press **ESC**. The Main Menu screen reappears.

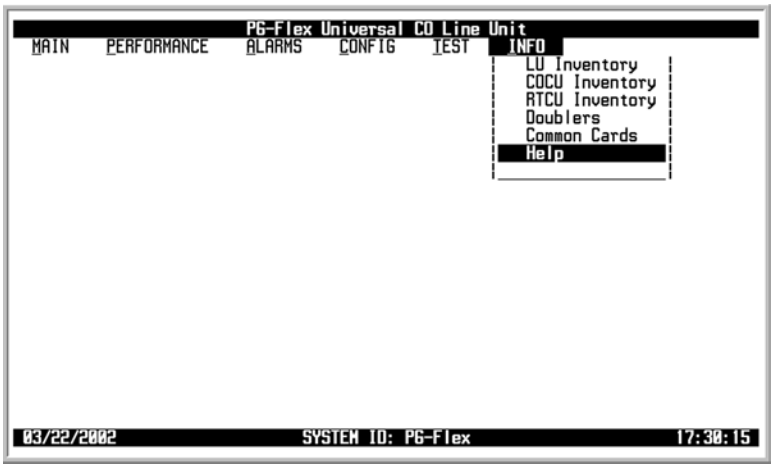
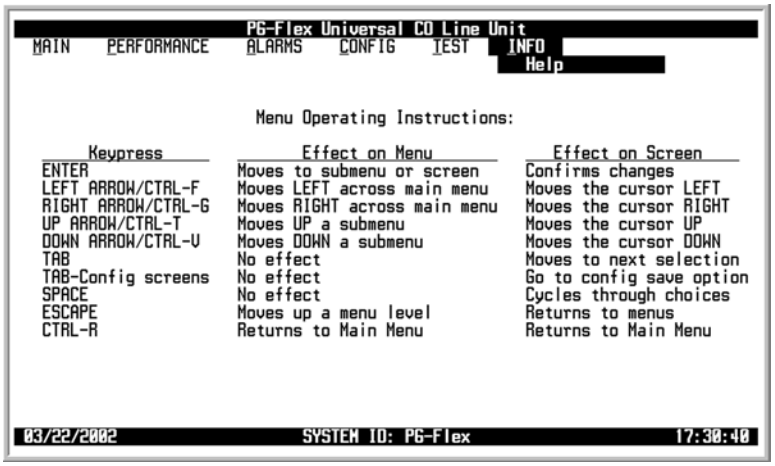
INFO — Common Cards

This screen displays product identification information, manufacturing data, software versions and the hardware revisions for Common Cards (Alarm).

Step	Action
1	At the Main Menu screen, select **INFO**. Press ↓ to choose **Common Cards**. The following screen appears. 
2	Press **ENTER**. The following screen appears. 
3	Press **ESC**. The Main Menu screen reappears.

INFO — Help

This screen provides information on using the system screens and menus.

Step	Action
1	At the Main Menu screen, select **INFO**. Press ↓ to choose **Help**. The following screen appears. 
2	Press **ENTER**. The following screen appears. 
3	Press **ESC**. The Main Menu screen reappears.

FAULT ISOLATION AND TROUBLESHOOTING

Table 30 provides fault isolation and troubleshooting procedures for the FLL-812.

Table 30. Fault Isolation and Troubleshooting

Indicator	Probable Cause	Solution
All LEDs Off	• No input power • FLL-812 power fuse blown • FLL-812 processor stopped	• Verify fuses on bay fuse panel • Check input power on the COT Shelf battery terminations • Remove and re-insert FLL-812 • From the Main Menu (Alarms sub-menu), verify no alarms exist on the FLL-812 • Replace the FLL-812
PWR LED On, Alarm LED Flashing, and SYNC LEDs Off	• HDSL Loop Open • HDSL ground fault detector activated	• Check HDSL loop continuity and length • FLL-812 power supply or RTLU fault • Replace FLL-812; then replace the RTLU
FAULT LED On	FLL-812 fault detected	• Remove and re-insert the FLL-812 • Replace the FLL-812
ALARM LED On	FLL-812 alarm condition exists	• From the Main Menu (Alarms sub-menu), display alarm conditions and correct causes • Replace FLL-812
ALARM LED Flashing	RTLU alarm condition exists	• From the Main Menu (Alarms sub-menu), display alarm conditions and correct causes • Replace RTLU
MARGIN LED On	• HDSL distance limit exceeded • HDSL loop fault • FLL-812 fault	• From the Main Menu (Alarms sub-menu), verify that no alarms exist • Check engineering records for distance between FLL-812 and RT • From the Main Menu (Performance sub-menu), check HDSL loss on FLL-812 to ensure maximum attenuation has not been exceeded • Replace FLL-812; then replace the RTLU • Troubleshoot the outside plant
MARGIN LED Flashing	• HDSL distance limit exceeded • HDSL loop fault • RTLU fault	• From the Main Menu (Alarms sub-menu), verify that no alarms exist • Check engineering records for distance between FLL-812 and RT • From the Main Menu (Performance sub-menu), verify HDSL loss status to ensure maximum attenuation has not been exceeded • Replace FLL-812; then replace the RTLU • Troubleshoot the outside plant

Indicator	Probable Cause	Solution
SYNC LED Off	• HDSL loop has lost synchronization with the RTLU • HDSL distance limit exceeded • HDSL loop fault • FLL-812 fault • RTLU fault	• From the Main Menu (Alarms sub-menu), verify that no alarms exist • Check engineering records for distance between FLL-812 and RTLU • From the Main Menu (Performance sub-menu), verify HDSL loss status to ensure maximum attenuation has not been exceeded • Replace FLL-812; then replace the RTLU • Troubleshoot the outside plant

Appendix A

24 Channel Line Unit
Feature Matrix

Feature	FLL-812	FLL-814				FRL-842[1]			
	L1	L1	L1A	L1B	L2	L1	L1A	L1B	L2
Power:									
Line	●	●	●	●	●	●	●	●	
Local	●			●					●
Alarms:									
System	●	●	●	●	●	●	●	●	●
Environmental	●			●	●			●	●
Fan	●			●	●			●	●
Subscriber Drop Testing:									
TR-909	●	●	●	●	●	●	●	●	●
Bypass Pair	●					●	●	●	●
Management:									
TL1			●	●	●		●	●	●
Switch Interface:									
UDLC	●					●	●	●	●
IDLC		●	●	●	●	●	●	●	●
Services:									
POTS	●	●	●	●	●	●	●	●	●
ISDN	●	●	●	●	●	●	●	●	●
Customer Defaults:									
BellSouth					●				

Notes:

- ● Feature implemented

(1) Default configuration parameters for the RTLU are determined by the COLU.

Compatibility Matrix

Compatibility	FLL-812	FLL-814			
	L1	L1	L1A	L1B	L2
FRL-842 List 1		●			
FRL-842 List 1A	●		●	■	■
FRL-842 List 1B	●		♦	●	●
FRL-842 List 2	●			●	●

Notes:

- ● COLU and RTLU are fully compatible
- ■ Fan alarm not enabled
- ♦ Fan alarm and environmental alarms not enabled

ACRONYMS

A

AWG – American Wire Gauge

C

CD – Carrier Defect

CEV – Controlled Environment Vault

CO – Central Office

COT – Central Office Terminal

CU – Channel Unit

D

DCE – Data Carrier Equipment

DS0 – Digital Signal Level 0

DS1 – Digital Signal Level 1

DSL – Digital Subscriber Line

DSR – Data Set Ready

DTE – Data Terminal Equipment

DTR – Data Terminal Ready

E

ES – Errored Seconds

ESD – Electrostatic Discharge

F

FCC – Federal Communications Commission

G

GND – Ground

H

HDSL – High-bit-rate Digital Subscriber Line

I

ISDN – Integrated Services Digital Network

L

LED – Light Emitting Diode

LOS – Loss of Signal

LS/GS – Loop Start/Ground Start

LU – Line Unit

M

MLT – Mechanized Loop Testing

N

NEBS – Network Equipment Building System

P

PGTC – Pair Gain Test Controller

PM – Performance Monitoring

POTS – Plain Old Telephone Service

R

RD – Receive Data

RINGGRD – Ring Ground

RMA – Return Material Authorization

RT – RemoteTerminal

S

SES – Severely Errored Seconds

SYNC – Synchronization

T

TD – Transmit Data

TRCOND – Trunk Condition

U

UAS – Unavailable Seconds

X

xDU – Doubler Unit

PRODUCT SUPPORT

TECHNICAL SUPPORT

Technical Assistance is available 24 hours a day, 7 days a week by the contacting Customer Service Engineering group at:

Telephone:	800.366.3891 The 800 telephone support line is toll-free in the U.S. and Canada.
Email:	wsd_support@adc.com
Knowledge Base:	http://adc.com/Knowledge_Base/index.jsp
Web:	www.adc.com

LIMITED WARRANTY

Product warranty is determined by your service agreement. Refer to the ADC Warranty/Software Handbook for additional information, or contact your sales representative or Customer Service for details.

RETURNS

To return equipment to ADC:

1. Locate the number of the purchase order under which the equipment was purchased. To obtain a return authorization number, you need to provide the original purchase order number to ADC's Return Material Authorization (RMA) Department.
2. Call or write ADC's RMA Department to ask for an RMA number and any additional instructions. Use the telephone number, fax number or email address listed below:
   - Telephone: 800.366.3891
   - Email Address: rma@ADC.com
3. Include the following information, in writing, along with the equipment you are returning:
   - Company name and address
   - Contact name and telephone number
   - Shipping address to which ADC should return the repaired equipment
   - Original purchase order number
   - Description of the equipment that includes the model and part number of each unit being returned, as well as the number of units that you are returning.
   - Reason for the return. For example:
     – The equipment needs an ECO/ECN upgrade.
     – The equipment is defective.

If the equipment is defective, please tell us what you observed just before the equipment malfunctioned. Be as detailed in your description as possible.

If there is any other reason for returning the equipment, please let us know so we can determine how best to help you.

4. Pack the equipment in a shipping carton.

5. Write ADC's address and the RMA Number you received from the RMA Department clearly on the outside of the carton and return to:

   ADC DSL Systems, Inc.
   14352 Franklin Ave.
   Tustin, CA 92780-7013

   Attention: **RMA (Number)**

All shipments are to be returned prepaid. ADC will not accept any collect shipments.

FCC CLASS A COMPLIANCE

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the use will be required to correct the interference at his own expense.

MODIFICATIONS

The FCC requires the user to be notified that any changes or modifications made to this device that are not expressly approved by ADC voids the user's warranty.

All wiring external to the product(s) should follow the provisions of the current edition of the National Electrical Code.

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