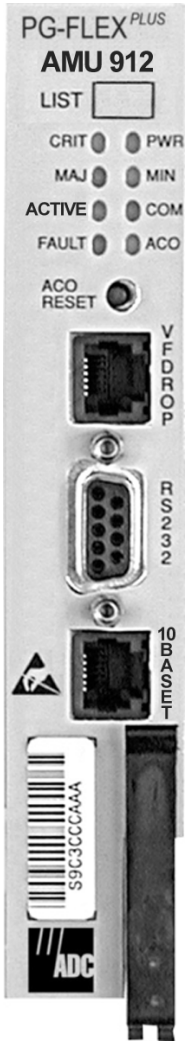
PG-Flex*Plus*

Advanced Management Unit

Technical Practice



Model	List	CLEI Code
AMU-912	1	VAC2Z7HL~~

Section SCP-AMU912-010-06H

REVISION HISTORY

Revision	Release Date	Revisions Made
01	November 7, 2002	Initial Release
02	January 6, 2003	Updated Product Support Information
03	April 22, 2003	Updated Software Section
04	August 6, 2003	Updated external alarms
05	March 1, 2004	Updated DB-25 alarm information
06	July 19, 2004	Updated Test Interface information

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
CAUTION	Alerts you to possible data loss, service-affecting procedures, or other similar type problems
WARNING	Alerts you that failure to take or avoid a specific action might result in hardware damage or loss of service
DANGER	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 115. 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*Plus*™ AMU-912 List 1 Management Unit provides the user interface into the Central Office Terminal (COT) Shelf. The AMU-912 allows you to provision, monitor, and test the CO Line Units and Multiplexers (MUXs) installed in the shelf.

DESCRIPTION AND FEATURES

The AMU-912 is interconnected through a serial bus to each CO Line Unit and MUX unit installed in the shelf. It provides the means for a user to provision, monitor, and test the units of the shelf (Figure 1).

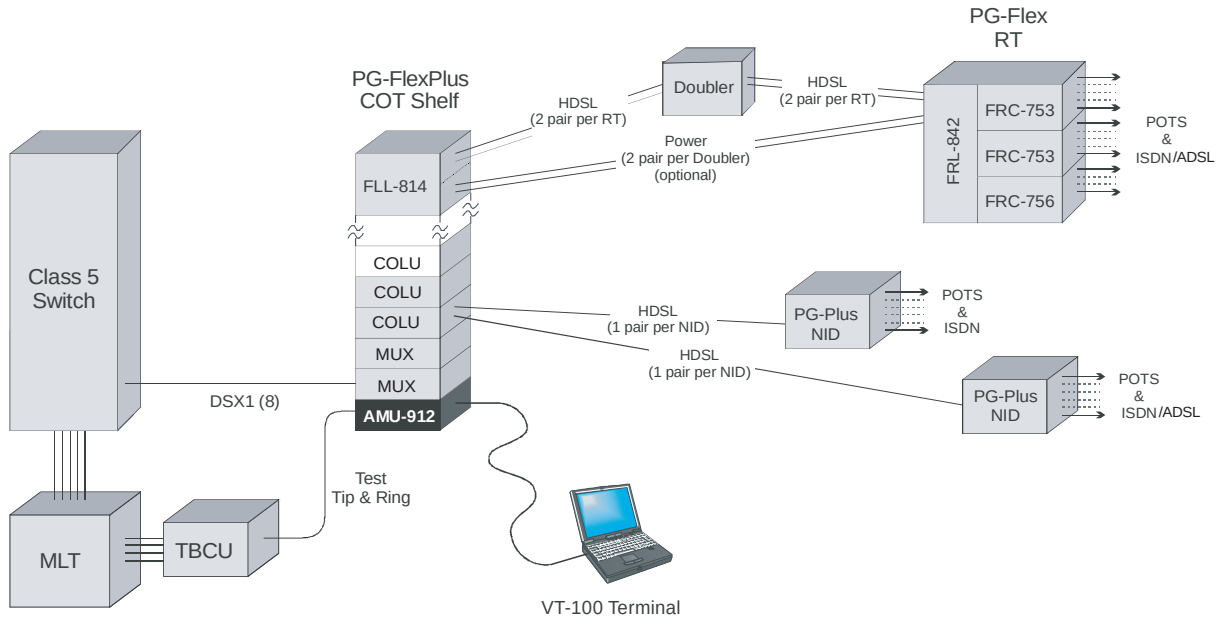


Figure 1. Typical System Configuration

The AMU-912 has two independently operating RS-232 serial ports, one on the front panel and another on the shelf backplane. The AMU-912 has two Ethernet ports (one 10Base-2 and one 10Base-T). The 10Base-T interface allows the AMU-912 to be connected to the network to allow a user to manage the shelf via a telnet connection or Simple Network Management Protocol (SNMP) operations. The 10Base-2 interface allows multiple shelves to be connected together. This allows all the cascaded shelves to be managed from a single interface point. Up to 24 shelves can be connected together through the 10Base-2 connector on the shelf backplane. The AMU-912 provides two management user interfaces:

- VT-100 screens based user interface
- SNMP/Element Management System (EMS) (Stargazer) user interface

SNMP Management Information Base (MIB) is available, if needed. For SNMP support, contact Technical Support on page 115.

You can provision, monitor, and test the system through any of the above interfaces.

The AMU-912 contains a nonvolatile database that stores provisioning data for all systems and MUX units in the shelf. It monitors the status of all system and MUX units and provides audible and visual alarms classified as major, minor, and critical.

It supports Mechanized Loop Testing (MLT) and 4TEL by providing a subset of the TA-909 resistive signatures. The AMU-912 provides a diode signature for the Integrated Digital Loop Carrier (IDLC) bypass pair test and a test jack for monitoring and testing a VF drop. The VF drop provides metallic access to any subscriber pair connected to the backplane or any integrated POTS channel by means of the MUX card.

Local Area Network Interface

The AMU-912 provides two Ethernet ports:

- one for intershelf communication using a 10Base-2
- one for a user interface using a 10Base-T Ethernet connection in accordance with IEEE standard 802.3

10Base-2

- System uses COAX interconnects terminated with BNC connectors on the backplane of the shelf unit
- Shelves are cascaded in a daisy-chain configuration
- 10Base-2 must be terminated on both ends with 50Ω terminations
- Allows SNMP operations

10Base-T

- Standard RJ-45 Ethernet connectivity
- Allows the user to TELNET into the system
- Allows SNMP operations

Test Access

The AMU-912 test access function meets the following criteria:

- Audible for IDLC only
- Ringing signal for Universal Digital Loop Carrier (UDLC)
- Drop line can support up to 100 ft. line length
- Decodes the Loop Current Feed (LCF), Loop Current Feed Open (LCFO) and Ringing signaling states

TEST INTERFACE

The system supports MLT, 4TEL, screen initiated drop tests and integrated channel testing.

For MLT and 4TEL, the test unit performs tests specified in section 11.4 of TA-909 for fiber to the loop systems. Additionally, the test results are provided as DC resistive signatures as shown in Table 1 by the AMU-912 to the Test Tip and Test Ring terminals on the backplane.

Screen initiated drop testing is supported through the RS-232 Craft Port and TELNET interface. Test results as reported by the on-board test unit located in the RT are presented as pass/fail on the Craft interface. Test results are not provided as DC resistive signatures for a screen initiated drop test.

Table 1. 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
COT Shelf/RT Facility Failure	RT not detected	≥ 1,000	90.9

The resistive signatures on the AMU-912 are biased to -14 Vdc.

In support of MLT testing on the Universal system, the AMU-912 supplies 1kΩ from Tip to Ground in lieu of allowing the PGTC to be activated. For either MLT or 4TEL test systems, subscriber drop test results are provided as TA-909 DC resistive signatures as shown in Table 1 on page 3 by the AMU-912 to the Test Tip and Test Ring terminals on the backplane. These resistive signatures are routed to the channel under test tip and ring leads and finally passed to MLT for interpretation (Figure 2). When the test environment includes IMLT on a Class 5ESS switch, use of a PCU-796 conditioner unit is required for proper PGTC test result reporting.

In support of MLT testing on the Integrated system, the AMU-912 provides the diode/410Ω bypass integrity test signature as required by TR-08. Additionally, subscriber drop test results are provided as TA-909 DC resistive signatures as shown in Table 1 on page 3 by the AMU-912 to the Test Tip and Test Ring terminals on the backplane.

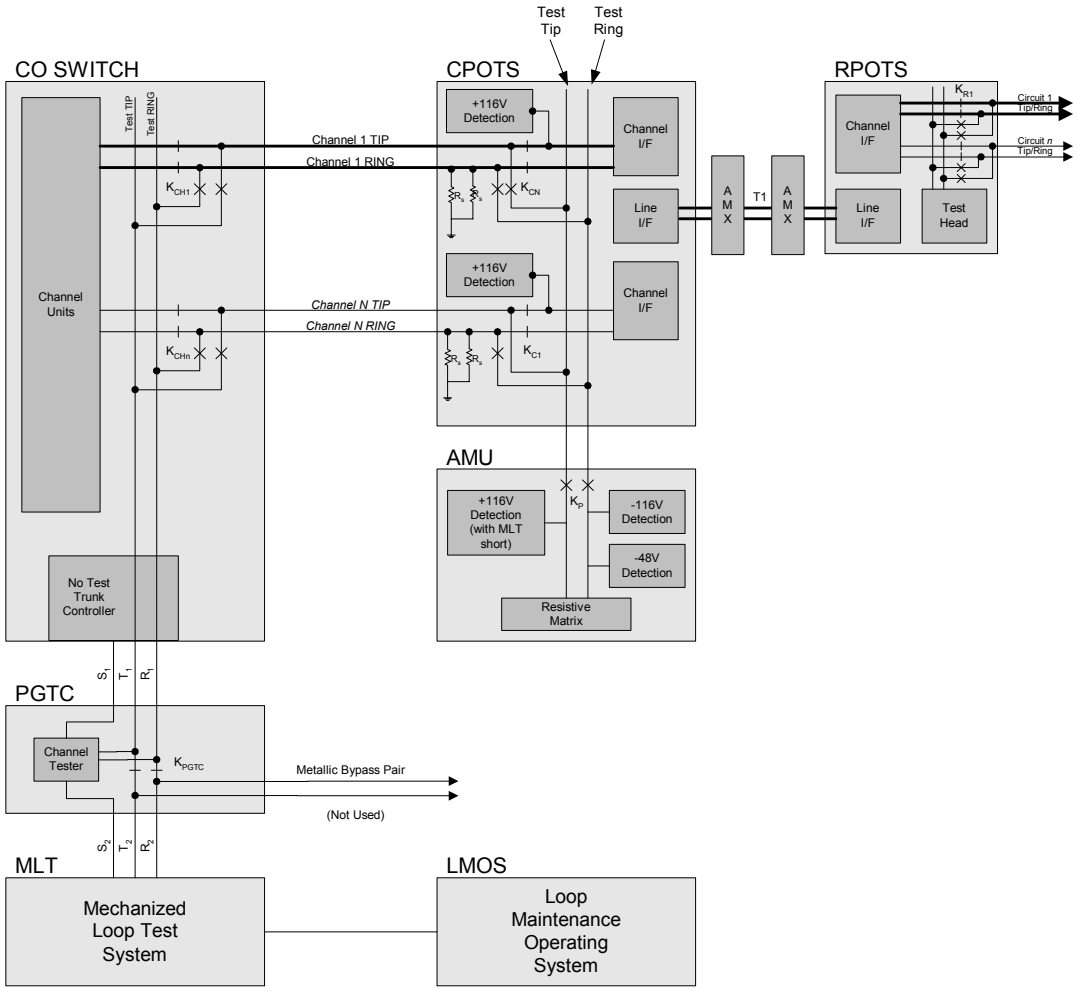


Figure 2. DC Resistive Signatures

SERIAL MANAGEMENT INTERFACES

An RS-232 serial interface is provided on the front of the AMU-912 and meets the following specifications:

- compliant with EIA-RS-232
- full duplex, serial, asynchronous format
- supports baud rate:
  - 1200
  - 2400
  - 4800
  - 9600
  - 19200
  - 38400
  - 57600
  - 115200
- configured as DCE, supporting Transmit, Receive, DTR, and DSR signals
- 9-pin DB type connector

An RS-232 serial interface is provided on the shelf backplane and meets the following specifications:

- compliant with EIA-RS-232
- full duplex, serial, asynchronous format
- supports baud rate:
  - 1200
  - 2400
  - 4800
  - 9600
  - 19200
  - 38400
  - 57600
  - 115200
- configured as DTE, supporting Transmit, Receive, DTR, and CD signals
- 25-pin DB type connector

ALARMS

The AMU-912 communicates with each CO Line Unit and MUX in the shelf to provide a summary of active shelf-level alarms (Figure 3). The CO Line Unit and MUX units inform the AMU-912 of alarms becoming active and inactive. A summary of alarms for each unit is maintained on the AMU-912. Active shelf alarms are displayed by the front panel LEDs and through audible and visual relay contacts. These alarm indications are also obtainable through the Craft Interface. An ACO is provided to silence audible alarms. A shelf ID relay is provided to allow shelf fault isolation when more than one shelf system is located in a bay. The shelf ID relay is activated when any visual alarm is active in the shelf.

The AMU-912 can also accept external environmental alarms via the backplane DB-25 connector; however, the functionality of the DB-25 must be changed to ENV-ALARMS setting rather than the default setting of CRAFT-PORT (refer to CONFIG — Shelf Options on page 66). The DB-25 connector can function as a craft access port or operate as an external alarm input source.

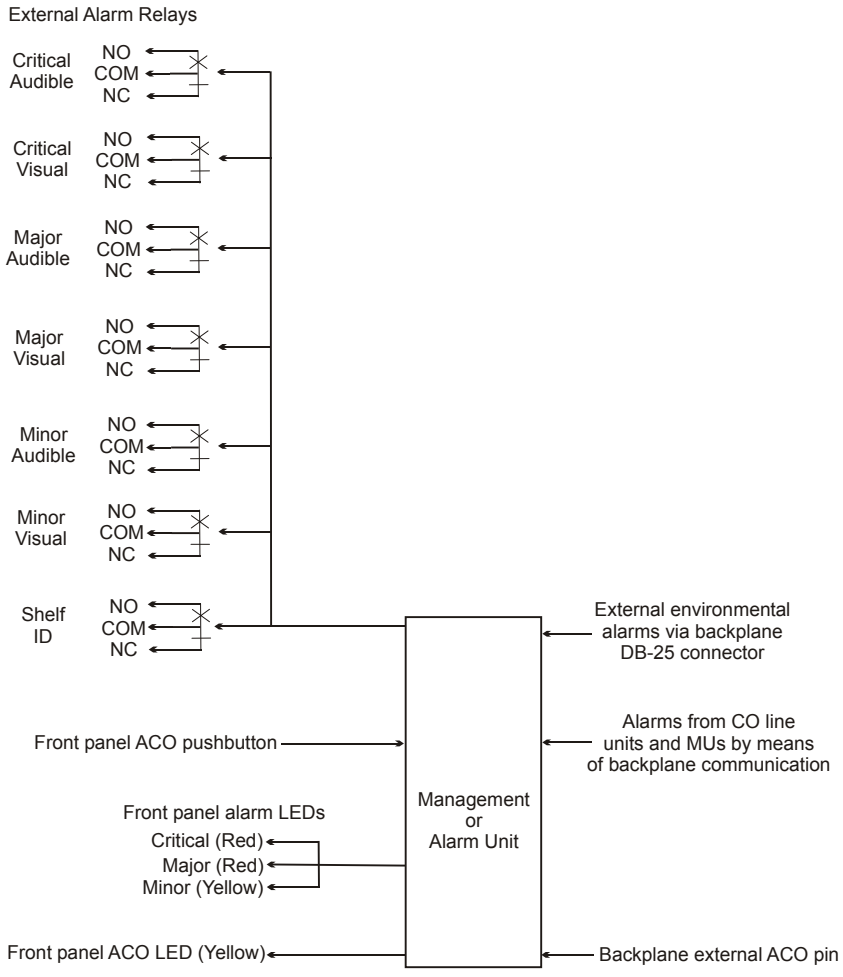


Figure 3. Alarm Processing

Alarm Types

Any alarm may be set to the following severities:

- Critical - CR
- Major - MJ
- Minor - MN
- Not Alarmed - NA
- Not Reported - NR

An alarm type set to NA will accumulate history counts and send an SNMP trap message, but will not activate an alarm LED or alarm relay. However, *Current* Status will show ACTIVE. An alarm set to NR will not be reported by the AMU-912.

External Environmental Alarm Contact Alarm Inputs/Outputs

The AMU-912 allows the rear DB-25 connector to be provisioned as either a craft port (RS-232) or environmental alarm input (Figure 4). When the rear DB-25 is provisioned for environmental alarm inputs, the conductors operate as dry input contacts. An alarm is considered active when certain pins are pulled to +8 volts. There are a total of four Environmental Alarms: ENV1, ENV2, ENV3, and ENV4 (Table 2 on page 8). In addition to the Environmental Alarms being reported through screens, they are also reported through the Derived Data Link (DDL) of the TR08 Shelf A DS1. There are three shelf alarm relay settings: Standard, Telemetry and Environmental. The system activates different relays depending on Shelf Option configuration (Table 3 on page 8). Refer to Figure 4 and Table 4 on page 8 for proper wiring of customer supported DB-25 alarm cable.

When the AMU-912 is used in the Field Shelf, the rear craft port interface is not used for alarm inputs. Rather, the prewired Alarm cable will contain the Alarm inputs and outputs and will operate as dry contacts.

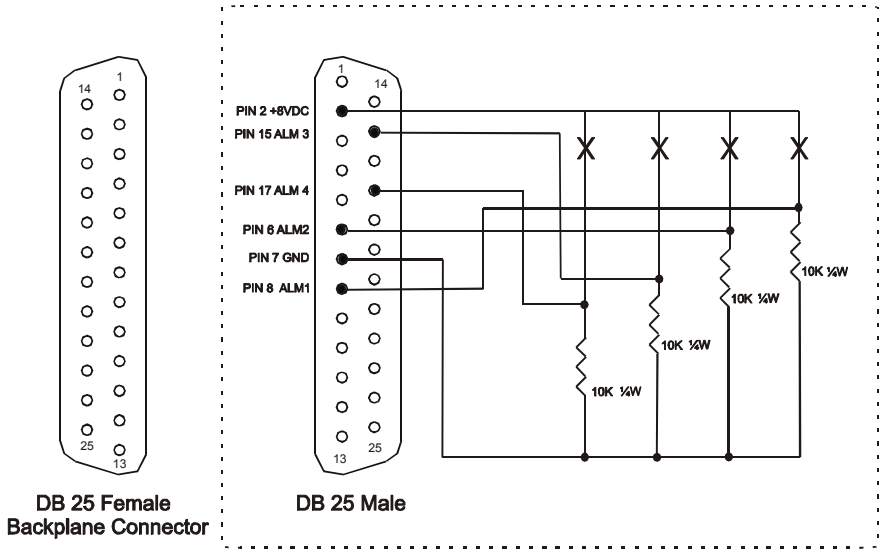


Figure 4. ENV Alarm Input Pinouts

CAUTION ***Connections other than those shown in Figure 4 will damage the AMU-912 and will not be covered under the warranty.***

Table 2. Environmental Alarm Input Definitions

Alarm Input Type	AMU-912 in CO Shelf (TR-08 Alarm Defaults)	AMU-912 in Field Shelf (TR-08 Alarm Defaults)
ENV1	ENV1 (SYS1-PWRMISC)	AC Power Fail (SYS1-PWRMISC)
ENV2	ENV2 (SYS2-PWRMISC)	Door Alarm (COM MN)
ENV3	ENV3 (COM MN)	Fan Alarm (COM MN)
ENV4	ENV4 (COM MJ)	MISC (COM MJ)

Table 3. Alarm Relay Definitions

Standard	Telemetry	Environmental
System ID	Shelf ID	System ID
Critical - Visual	System - Major	Critical - Visual
Critical - Audible	System - Minor	Major - Visual
Major - Visual	Major - Visual	Minor - Visual
Major - Audible	Major - Audible	Environmental #1
Minor - Visual	Minor - Visual	Environmental #2
Minor - Audible	Minor - Audible	Environmental #3

Table 4. DB-25 Alarm Cable Pinouts

Environmental Alarm	Common	Normally Open
Alarm 1	2	8
Alarm 2	2	6
Alarm 3	2	15
Alarm 4	2	17

Service Loss Alarm Reporting Via the TR-08 Derived Data Link

The AMU-912 provides a method for Service Loss Alarms to be reported to the Central Office switch or SLC-96 COT via the TR-08 Derived Data Link. The Service Loss Alarms occur when six or more POTS lines lose service. These alarms can be triggered by removal of line units, Loss of Signal (LOS) or Loss of Frame (LOF) of the High-bit-rate Digital Subscriber Line (HDSL)/Symmetric High-bit-rate Digital Subscriber Line (SHDSL), etc. When a Service Loss Alarm is detected, the AMU-912 will report a TR-08 Shelf A, B, C, or D Major or Minor alarm to the TR-08 shelf or switch. The type of alarm is determined by the CO Line Unit type that has the “Active” Service Loss Alarm (e.g., Shelf A, B, C, or D alarms are only reported against the FLL-814.) The severity and CO Line Unit location of the Service Loss Alarm will determine what TR-08 alarm is reported. Refer to Table 5 and Table 6.

Table 5. Service Loss Alarm Reporting

Service Loss Alarm Severity	TR-08 DDL Alarm
CR	MJ Shelf A, B, C, or D
MJ	MJ Shelf A, B, C, or D
MN	MN Shelf Alarm
NR	No alarm reported via DDL
NA	No alarm reported via DDL

Table 6. Alarms Reported for each Different COLU Service Loss Alarm

COLU Service Loss Alarm	TR-08 DDL Alarm
LU 1 & LU 2	System 1 Shelf A Alarm
LU 3 & LU 4	System 1 Shelf B Alarm
LU 5 & LU 6	System 1 Shelf C Alarm
LU 7 & LU 8	System 1 Shelf D Alarm
LU 9 & LU 10	System 2 Shelf A Alarm
LU 11 & LU 12	System 2 Shelf B Alarm
LU 13 & LU 14	System 2 Shelf C Alarm
LU 15 & LU 16	System 2 Shelf D Alarm

SPECIFICATIONS

Table 7 lists the specifications for the AMU-912.

Table 7. Specifications

Category	Item	Value
Electrical	Input Voltage	-42.5 Vdc to -56.5 Vdc
	Input Power	8 Watts (maximum), cooled by natural convection 0.50 Amp Fuse
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	1.1 in. (2.8 cm.)
	Length	10.5 in. (26.7 cm.)
	Weight	0.7 lbs. (0.3 kg.)
Alarm Relays	Critical	Audible, Visual
	Major	Audible, Visual
	Minor	Audible, Visual
	Shelf ID	Visual
Alarm Relay	Contact Rating	0.3 A @ 125 Vac
		0.3 A @ 110 Vdc
		1.0 A @ 30 Vdc
Alarm Cutoff	ACO pushbutton	N/A
	ACO LED	
	Remote ACO capabilities	
Test/VF Drop	Connector	RJ-11
RS-232	Connectors	DB-9 (female) – AMU-912 front panel
		DB-25 (female) – shelf backplane
10Base-T	Connector	RJ-45 – AMU-912 front panel
10Base-2	Connector	BNC – shelf backplane
Test System Interface	TSTTIP TSTRING	Wire-wrap pins – shelf backplane

FRONT PANEL

Figure 5 shows the AMU-912 front panel and Table 8 on page 12 lists the LEDs and LED status for the AMU-912. Table 9 on page 12 lists the LED indications for the AMU-912 diagnostic and maintenance modes.

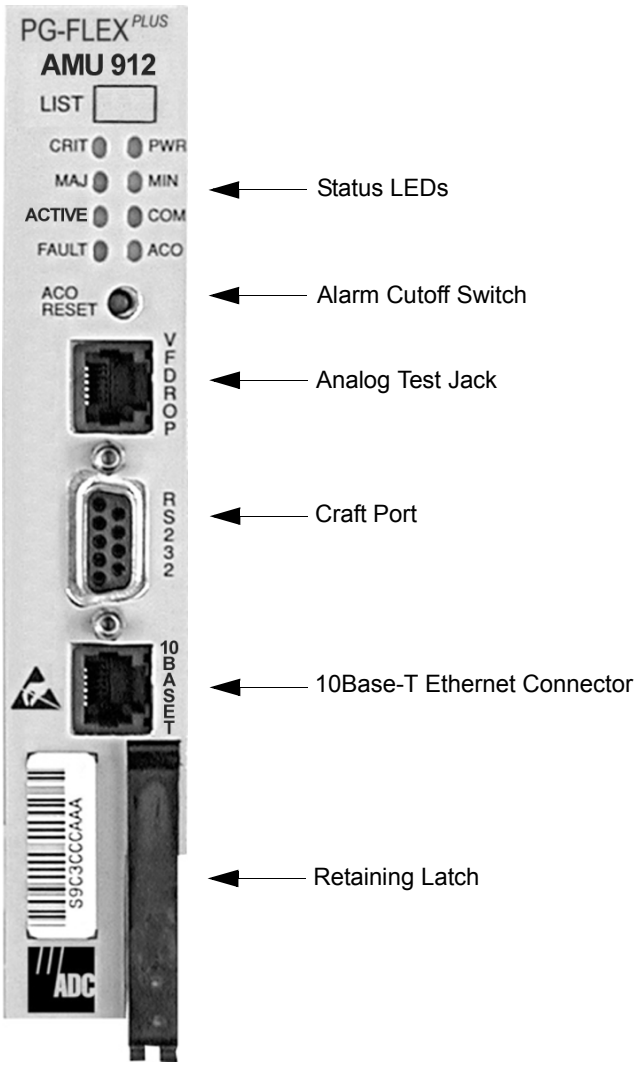


Figure 5. AMU-912 Front Panel

Table 8. AMU-912 Front Panel LEDs

LED	Color	State	Description
CRIT	Red	On	One (or more) Critical Alarm(s) active in shelf
		Off	No Critical alarms active
PWR	Green	On	AMU-912 is receiving power
		Flashing	One of the two battery feeds is not present
		Off	AMU-912 is not receiving power
MAJ	Red	On	One (or more) Major Alarm(s) active in shelf
		Off	No Major alarms active
MN	Yellow	On	One (or more) Minor Alarm(s) active in shelf
		Off	No Minor alarms active
ACTIVE	Green	Flashing	Ethernet activity
		Off	No Ethernet activity
COM	Green	On	Multishelf management is active
		Off	Multishelf management is not active
FAULT	Red	On	Replace the AMU-912
		Off	No fault detected
ACO	Yellow	On	ACO activated
		Off	ACO not activated

Table 9. AMU-912 Diagnostic Indicators

LED State	Description	Action
PWR LED On, All other LEDs Flashing	AMU-912 is running in Boot Mode	Application software must be re-installed. Contact Product Support on page 115 for additional information.
PWR LED On, All other LEDs sequencing downward	Software download to AMU-912	Wait for download to complete and AMU-912 to re-start
FAULT On, All other LEDS Off	AMU-912 hardware failure	Replace AMU-912

INSTALLATION AND TEST

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

The AMU-912 must be installed in the slot labeled COMMON. Refer to the documentation accompanying the shelf for information on MUX and line unit numbering.

INSTALLATION

Install a AMU-912

Step	Action
1	Open the retaining latch at the front bottom of the card.
2	Insert the AMU-912 into the card guides for the slot marked COMMON.
3	Push the card back until it touches the backplane card-edge connector.
4	Engage the retaining latch to hold the card in place.

Initialize and Power Up the AMU-912

After power-up has occurred, all LEDs cycle in upward/downward pairs and then go off. The PWR LED remains on.

The Critical, Major, or Minor Alarm LEDs may turn on if any unit in the shelf is in an alarm condition. If alarm LEDs turn on, you can view detailed information through the MAIN-Shelf Summary screen and ALARM-Alarm Summary screen.

ACO PUSHBUTTON

The ACO can be wired for remote operation by connecting the backplane External ACO input wirewrap pin to Ground through a momentary contact, normally open pushbutton.

The ACO Reset pushbutton is also used to invoke a front panel LED test. To perform an LED test, press and hold the ACO pushbutton for five seconds, any active audible alarm relays are deactivated. This causes all LEDs to go on for 1 second, and then return to their previous state. If a new alarmed event is detected, the new alarm causes the audible relay for that alarm type to be reactivated. When all alarm conditions are cleared for the alarm types that have been silenced, the ACO LED goes off.

ADMINISTRATION

To use the craft interface to provision the AMU-912 or other cards installed in the shelf, 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 AMU-912 front panel or shelf 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 AMU-912 and the craft terminal are shown in Figure 6.

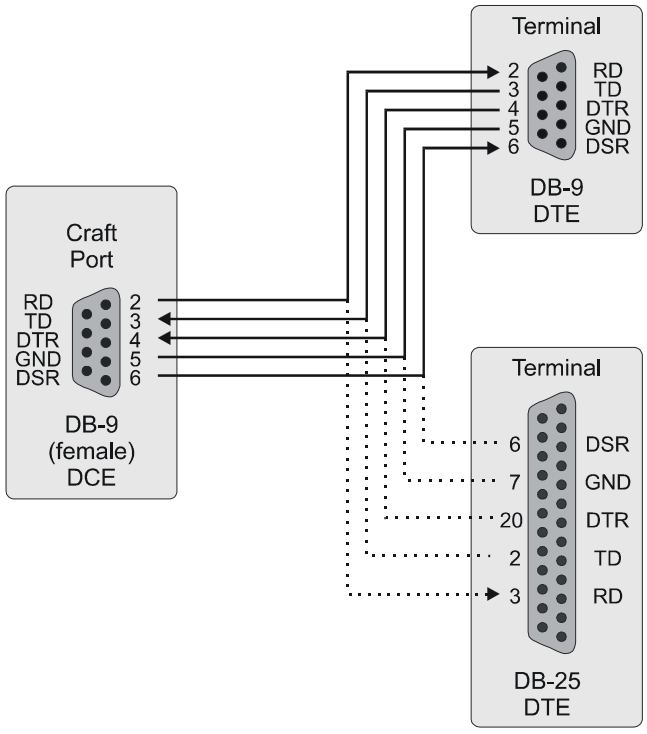


Figure 6. Front Panel Craft Port to Terminal Connections

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 AMU-912 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 7).

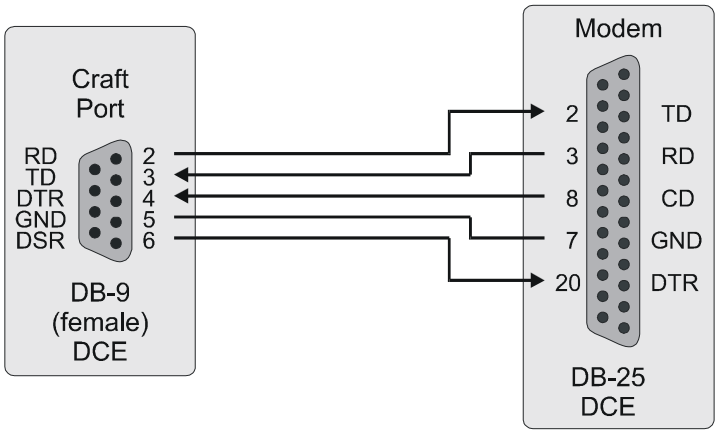


Figure 7. Front Panel Craft Port to Modem Connections

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 8 shows the wiring for the required null modem cable to a DB-9 and a DB-25 connector.

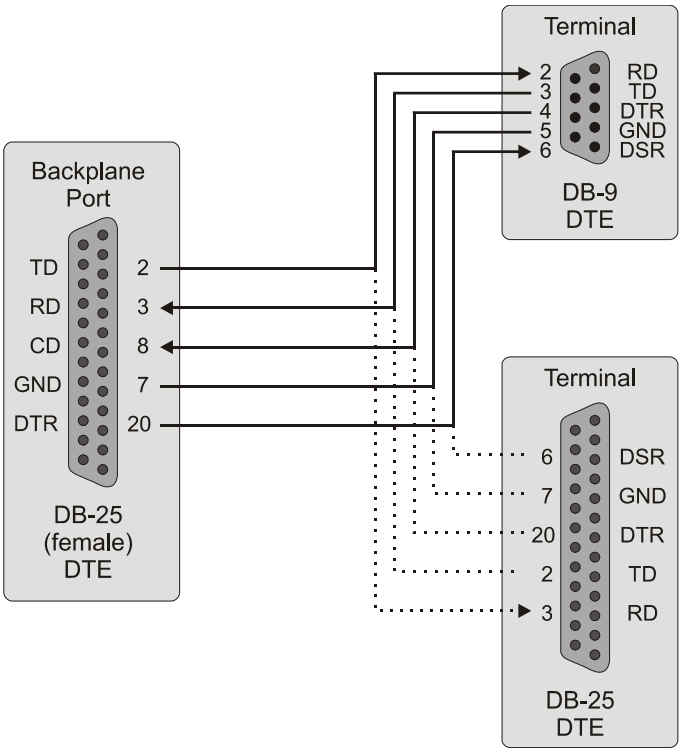


Figure 8. Backplane Craft Port to Terminal Connections Using a Null Modem Cable

BACKPLANE CRAFT PORT TO MODEM CONNECTIONS

The backplane DB-25 is a female connector wired as a DTE interface. Figure 9 shows the cable connections between the backplane connector and a Data Carrier Equipment (DCE) DB-25 connector.

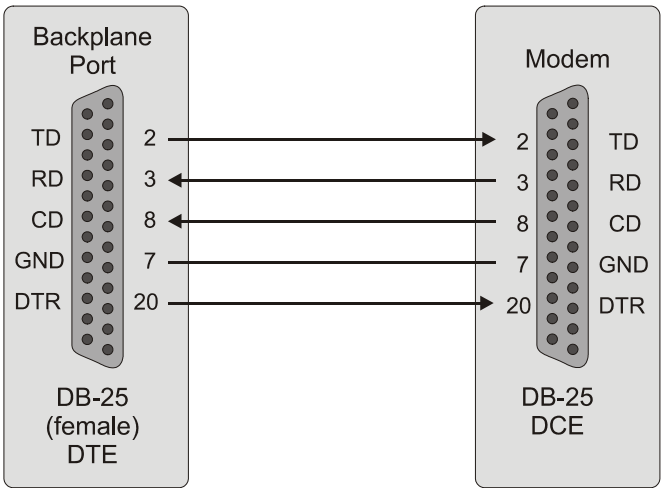


Figure 9. Backplane Craft Port to Modem Connections

Refer to Table 10 to set up the VT-100 craft port connections and Table 11 on page 18 for VT-100 Modem settings.

Table 10. Craft Port Configuration

Control	Setting	Supported	Default
Software Flow Control	XON/XOFF	Enabled	Enabled
Baud Rate		– 1200 – 2400 – 4800 – 9600 – 19200 – 38400 – 57600 – 115200	Autobaud
Asynchronous Communication Parameters	Data Bits	8	8
	Parity	None	None
	Stop Bits	1	1

Table 11. Modem Settings

Control	Setting	Supported
Hardware Flow Control		Off
Software Flow Control	XON/XOFF	Enabled
Baud Rate		1200 2400 4800 9600 19200 38400 57600 115200
Asynchronous Communication Parameters	Data Bits	8
	Parity	None
	Stop Bits	1

CONNECTING OVER TELNET

The AMU-912 supports up to three simultaneous TELNET connections. You can use either the SNMP or the Screens Interface to manage the AMU-912. The logical connection over TELNET provides the same functionality and interface as a locally connected craft port. However, only TELNET clients fully supporting the VT-100 emulation can adequately provide access to the Screens Interface. There exists a number of possible physical configurations to access one or more AMU-912s and each is described below.

TELNET Client

The AMU-912 supports all TELNET client application software complying with (RFC854) "The TELNET Protocol" standard. Additionally, TELNET client applications providing full support for the VT-100 standard may be used to remotely access the Screens and Screens MultiShelf interfaces. Known VT-100 compliant TELNET client applications are:

- ProComm Plus 3.x, 4.x
- Reflection X 7.x

Packages that do not provide the full VT-100 emulation have unpredictable display results. The AMU-912 TELNET Server supports the TELNET negotiation options:

- Suppress Go Ahead
- Will Echo

MS LAN

Accessibility of the Multishelf Local Area Network (MSLAN) is dependent upon its physical connections. An MSLAN can support from one to a maximum or 24 AMU-912s on a single segment. There are two different methods for connecting one or more AMU-912s to a MSLAN:

- The preferred/recommended method to connect an MSLAN consists of one or more shelves connected by means of 10Base-2 cabling and connectors on their respective backplanes. Each end of the daisy-chained LAN must be terminated using 50 Ω BNC-terminations.
- A second/alternative method to connect an MSLAN consists of one or more shelves connected to a network by means of 10Base-T cabling to the front panel of the AMU-912 in a star configuration. In this method, the 10Base-2 connections on the backplane must **NOT** be used.

To remotely connect with the MSLAN, at least one AMU-912 on the segment must have a 10Base-T connection to a user's network. With this type of connection, the AMU-912 must have a correctly configured IP Address and Subnet Mask. You can access these values from CONFIG — IP INFO on page 72. Both of these values must be correctly assigned for IP connectivity.

An MSLAN must NEVER be connected to a network via both 10Base-T and 10Base-2. The only recommended method for connecting the MSLAN to the user's network is via a 10Base-T connection.

Refer to the following four distinct topographies described in the following sections. These topographies can be created to allow or restrict remote access to an MSLAN.

Isolated LAN

The simplest topography of an MSLAN consists of “n” AMU-912s (where 1<= n <= 24), terminated on both ends of the 10Base-2 physical connection (Figure 10). The ability to TELNET to any AMU-912 on this segment requires that the host be connected to a target AMU-912 10Base-T front panel. An example of how this connection is configured is shown in Table 12.

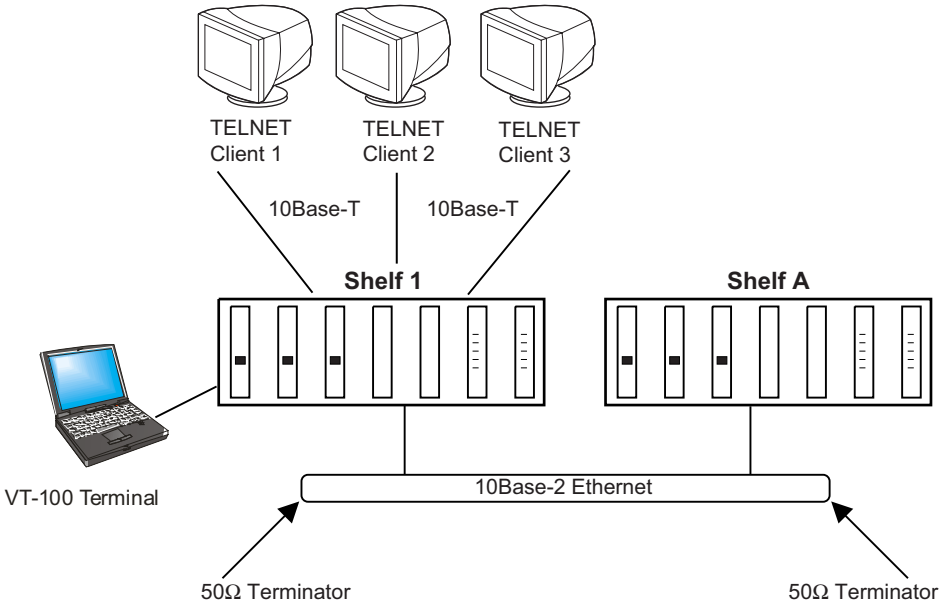


Figure 10. Isolated LAN Model

Table 12. Example of Isolated LAN Connection

Entity	IP Address	Subnet Mask	Gateway IP Address	Default Route	Default Route Mask	Results
Shelf A AMU-912	172.17.0.3	255.255.0.0	0.0.0.0	0.0.0.0	0.0.0.0	Defines that the AMU-912 exists on the 172.17.xxx.xxx network and responds only to requests originating from this network. Thus, the following clients may or may not communicate with the the target AMU-912.
TELNET Client 1	172.17.20.9	255.255.0.0				Able to communicate with target Shelf A AMU-912
TELNET Client 2	172.10.20.9	255.255.0.0				Unable to communicate with target Shelf A AMU-912
TELNET Client 3	172.17.0.12	255.0.0.0				Able to communicate with target Shelf A AMU-912

MSLAN Connection to Hub/Switch – Same Segment

By connecting the MSLAN to a hub/switch, accessibility to the MSLAN expands to the virtual distance of the connected Local Area Network (LAN), Metropolitan Area Network (MAN) or Wide Area Network (WAN) (Figure 11 and Table 13). In this topography, clients attempting to connect by means of the TELNET protocol must have a configured IP Address and Subnet Mask matching that network defined by the target AMU-912.

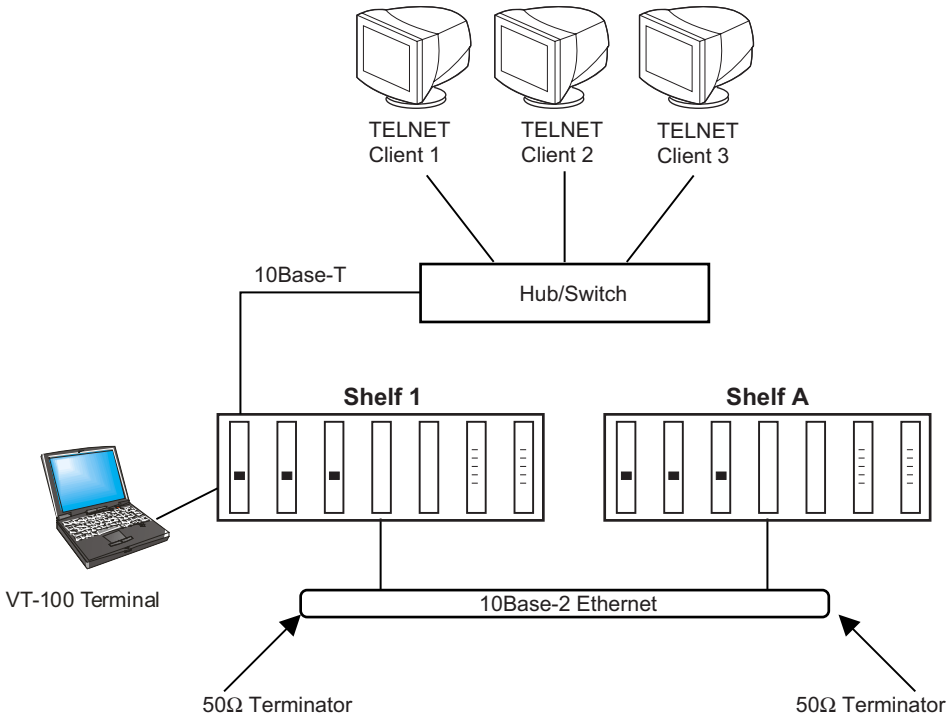


Figure 11. MSLAN Connection to Hub/Switch

Table 13. Example of Connection to Hub/Switch – Same Segment

Entity	IP Address	Subnet Mask	Gateway IP Address	Default Route	Default Route Mask	Results
Shelf A AMU-912	172.17.0.3	255.255.0.0	0.0.0.0	0.0.0.0	0.0.0.0	Defines that the AMU-912 exists on the 172.17.xxx.xxx network and responds only to requests originating from this network. Thus, the following clients may or may not communicate with the the target AMU-912.
TELNET Client 1	172.17.20.9	255.255.0.0				Able to communicate with target Shelf A AMU-912
TELNET Client 2	172.10.20.9	255.255.0.0				Unable to communicate with target Shelf A AMU-912
TELNET Client 3	172.17.0.12	255.0.0.0				Able to communicate with target Shelf A AMU-912

MSLAN Connection to Router – Different Segment, Unrestricted Route

In the set-up illustrated in Figure 12, clients attempting to connect through the TELNET protocol must configure the AMU-912 to respond to packets not originating on the local segment (Table 14 on page 23). This is accomplished by configuring a gateway router to which the AMU-912 can direct its reply packets. You can access these values from the CONFIG — IP INFO on page 72. The gateway IP address must be accessible from the MSLAN, and the Default Route and Default Route Mask fields must have the value of 000.000.000.000.

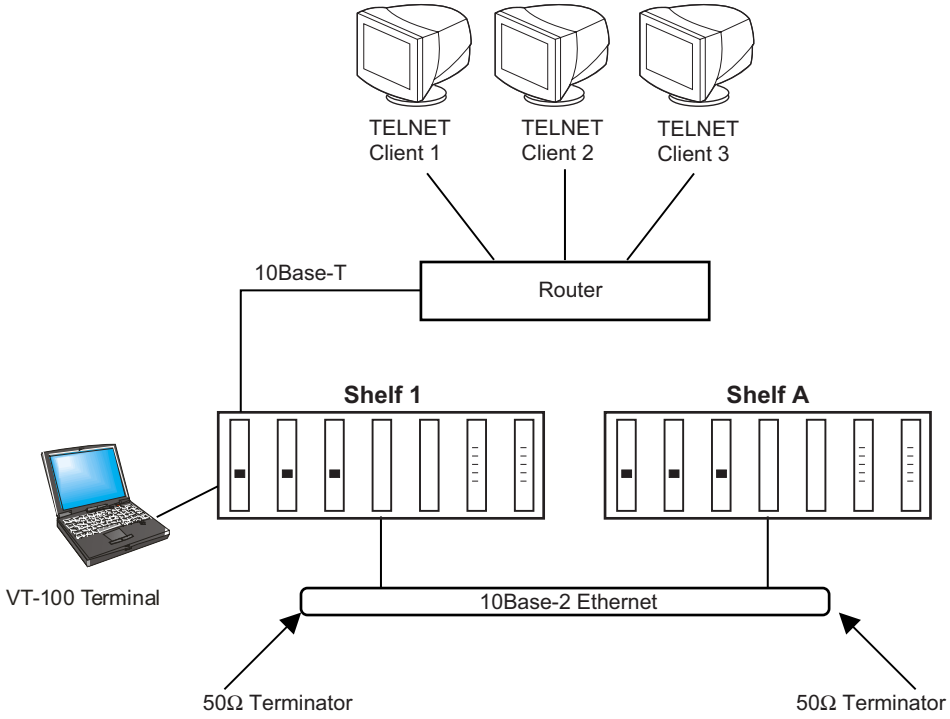


Figure 12. MSLAN Connection with Different Segment, Unrestricted Route Model

Table 14. Example of Connection to Router – Different Segment, Unrestricted Route

Entity	IP Address	Subnet Mask	Gateway IP Address	Default Route	Default Route Mask	Results
Shelf A AMU-912	172.17.0.3	255.255.0.0	172.17.x.x	0.0.0.0	0.0.0.0	Defines that the AMU-912 exists on the 172.17.xxx.xxx network and responds only to requests originating from this network. Thus, the following clients may or may not communicate with the the target AMU-912.
TELNET Client 1	172.17.20.9	255.255.0.0	172.17.0.1			Able to communicate with target Shelf A AMU-912
TELNET Client 2	172.10.20.9	255.255.0.0	172.10.0.1			Able to communicate with target Shelf A AMU-912 (provided that 172.10.xxx.xxx is accessible by the gateway device)
TELNET Client 3	128.33.20.9	255.255.0.0	0.0.0.0			Unable to communicate with target Shelf A AMU-912 (provided that 128.33.xxx.xxx is not accessible by the gateway device) Since no gateway is specified, the client is not able to communicate unless connected to a Hub/Switch instead of a Router

MSLAN Connection to Router – Different Segment, Restricted Route

In the set-up shown in Figure 13, clients attempting to connect by means of the TELNET protocol must configure the AMU-912 to respond to packets not originating on the local segment but confine the accessibility of the MSLAN to a particular network (CONFIG — IP INFO on page 72). Refer to Table 15 on page 25.

- Configure a gateway router to which the AMU-912 can direct its reply packets. The gateway IP address must be accessible from the MSLAN.
- Configure the Default Route and Default Route Mask fields to the values of the external Network to which accessibility is granted.

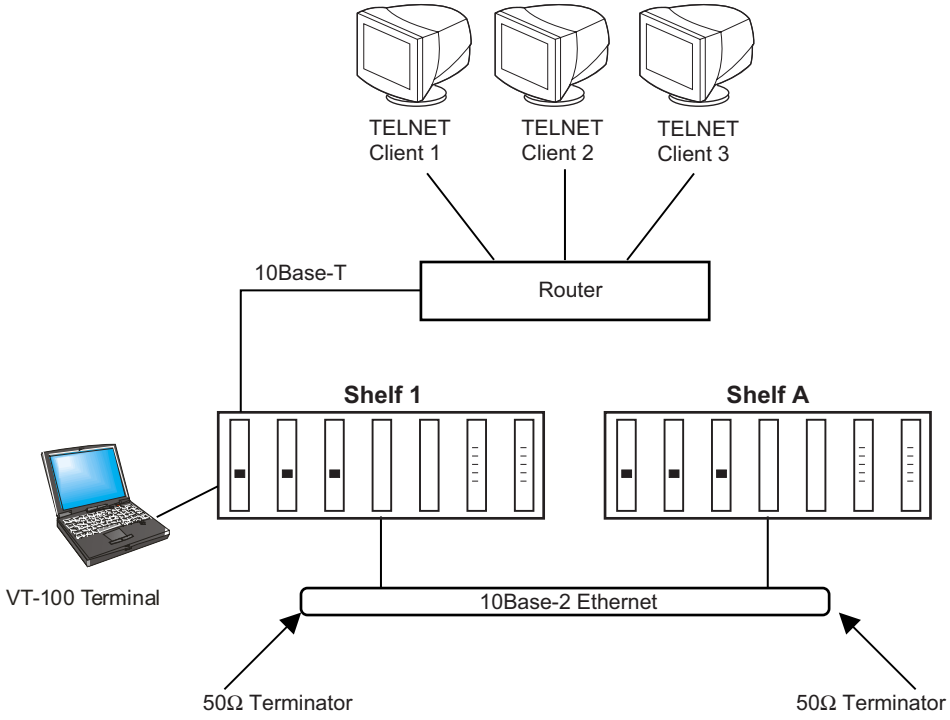


Figure 13. MSLAN Connection with Different Segment, Restricted Route Model

Table 15. Example of Connection to Router – Different Segment, Restricted Route

Entity	IP Address	Subnet Mask	Gateway IP Address	Default Route	Default Route Mask	Results
Shelf A AMU-912	172.17.0.3	255.255.0.0	172.17.0.1	172.2.0.0	255.255.0.0	Defines that the AMU-912 exists on the 172.17.xxx.xxx network and responds only to requests originating from this network or from networks accessible through the gateway. The addition of a Specified Default Route and Default Route Mask limits the accessibility of remote connections as follows below.
TELNET Client 1	172.17.0.10	255.255.0.0	172.17.0.1			Host IP network of 172.17.xxx.xxx matches the AMU-912's network of 172.17.xxx.xxx and is accessible
TELNET Client 2	172.2.0.11	255.255.0.0	172.2.0.1			The Host IP network of 172.2.xxx.xxx does NOT match the AMU-912's network of 172.17.xxx.xxx; however, it does match the Default Route and is accessible.
TELNET Client 3	172.5.0.12	255.255.0.0	172.5.0.1			The Host IP network of 172.5.xxx.xxx does NOT match the AMU-912's network of 172.17.xxx.xxx or the Default Route and is NOT accessible.

NAVIGATIONAL METHODS

Table 16 shows the keys used to navigate through the menus and screens.

Table 16. 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.

In the software section, COLU refers to CO Line Unit.

PROVISIONING, TESTING AND MAINTENANCE

The following sections describe how to navigate the VT-100 screens to configure, check the status and maintain the AMU-912 system. All configurable options are set to factory defaults to minimize field provisioning. This system does not require any provisioning for normal operation. Use the Craft terminal to verify system performance and to customize the units to your requirements.

MENUS AND DISPLAY STRUCTURE

Figure 14 shows the menu structure of the terminal management system.

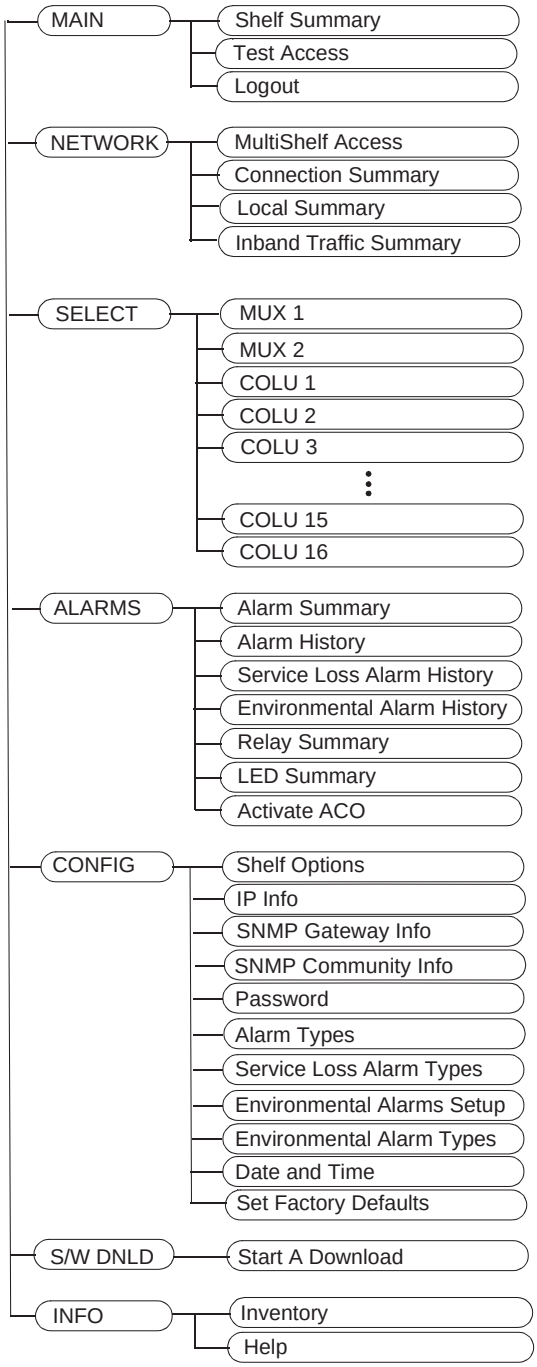


Figure 14. Terminal Menu and Display Structure

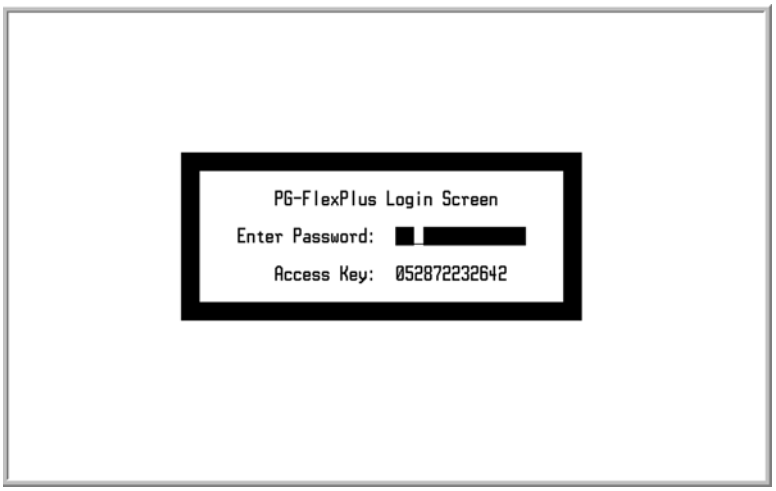
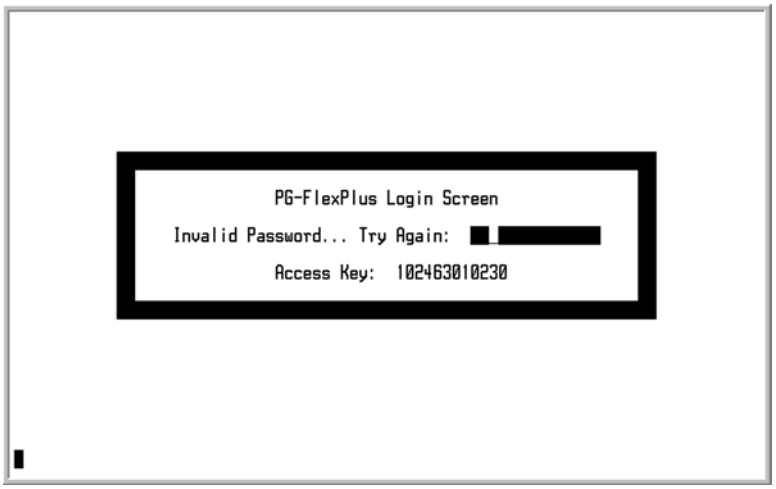
Log On the AMU-912

This screen logs the user into the system.

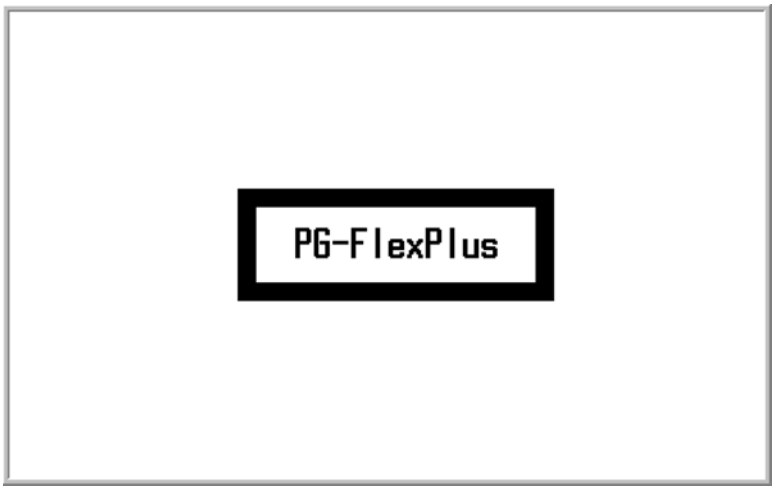
The factory-default password is **password#1**.

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 AMU-912

Step	Action
1	Press SPACEBAR several times to activate the Autobaud feature. When the Login screen displays, type the *Password*, then press ENTER. 
2	If an invalid Password is entered, the Login screen is redisplayed with the message `Invalid Password...Try Again:`. Type the *Password*, then press ENTER. 

Log On the AMU-912 (Continued)

Step	Action
3	After a successful login, the welcome banner screen appears for a few seconds.  Then the AMU-912 Main Menu screen appears. 

MAIN MENU OPTIONS

The Main Menu provides access to other sub-menus to check shelf summary information, test access screens, and log out of the system. Refer to Table 17 for sub-menu options and descriptions, parameters and valid values.

Table 17. Main Menu Options

Sub-Menu Options	Sub-Menu Descriptions	Parameters	Valid Values
Shelf Summary	Shelf Summary (shelf unit types and alarm status)		
Test Access	Allows you to perform test access on individual channels in the shelf Channel Unit cards	DS1 Number Channel Number Test Access Is Currently Active On Channel # Of DS1 # Of MUX#/COLU#. Would You Like To End Test Access On MUX1 (Y/N)?	1 – 8 1 – 24 Y or N
Logout	Log out of the current system session	Current Session will be Logged Out. Continue (Y/N)?:	Y or N

MAIN — Shelf Summary

This screen displays the status (shelf unit types and alarm status) of the system. Refer to Table 18 on page 32 for Shelf Summary information.

MAIN — Shelf Summary

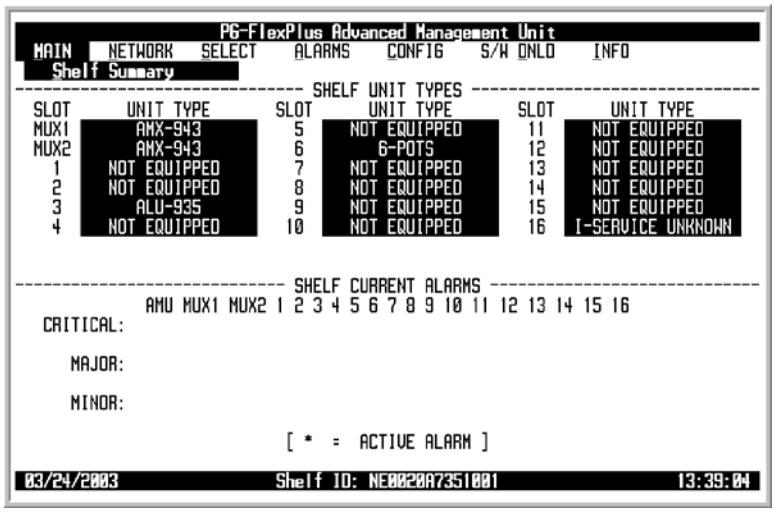
Step	Action
1	At the Main Menu screen, select **MAIN**. Press ↓ to choose **Shelf Summary**. The following screen appears. 
2	Press ENTER. The following screen appears. 
3	Press ESC. The Main Menu screen reappears.

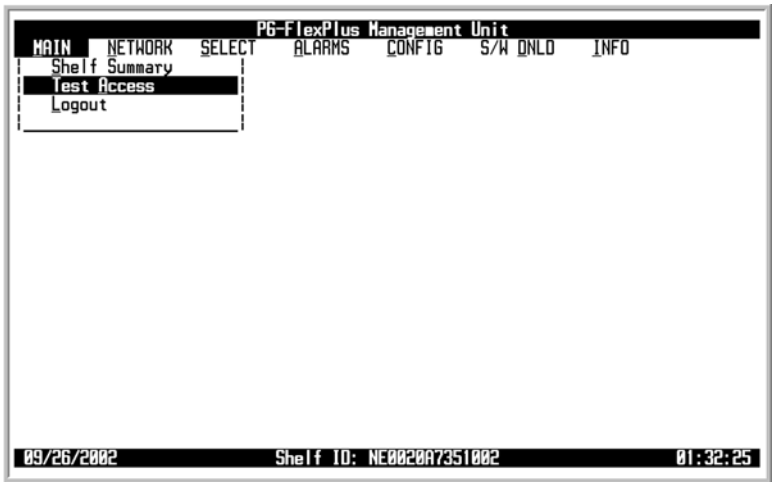
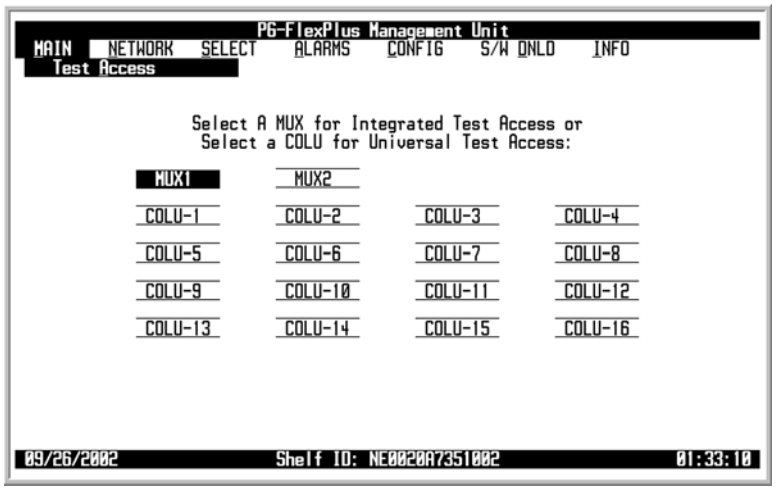
Table 18. Shelf Summary

Entity	Description
Shelf Unit Types	
SLOT	Slot identifier name or number
UNIT TYPE	Identifier for card type or not equipped note
Shelf Current Alarms	
CRITICAL	Summary of Critical alarms for each shelf slot
MAJOR	Summary of Major alarms for each shelf slot
MINOR	Summary of Minor alarms for each shelf slot

MAIN — Test Access

This screen allows you to perform test access on individual channels in the shelf Channel Unit cards.

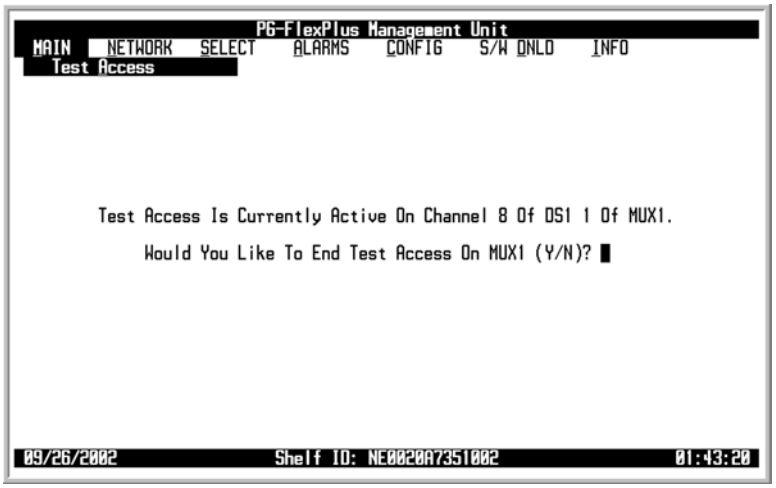
MAIN — Test Access

Step	Action
1	At the Main Menu screen, select **MAIN**. Press ↓ to choose **Test Access**. The following screen appears. 
2	Press ENTER. The following screen appears.  Highlight the applicable entity **(MUX1**, **MUX 2**, **COLU1** through **COLU16**) per your system configuration. As an example, we have chosen MUX1.

MAIN — Test Access (Continued)

Step	Action
3	Enter the applicable *DS1 Number* (1-8) and *Channel Number* (1-24).  Select **ENABLE TEST ACCESS** and press **ENTER**.
4	To start the test, press **ENTER** from the flashing `Test Access On Channel # of DS1 # of MUX#/COLU# Has Started. Hit <CR> To Resume Screens` prompt.  If you do not want to start the test, press **ESC**.

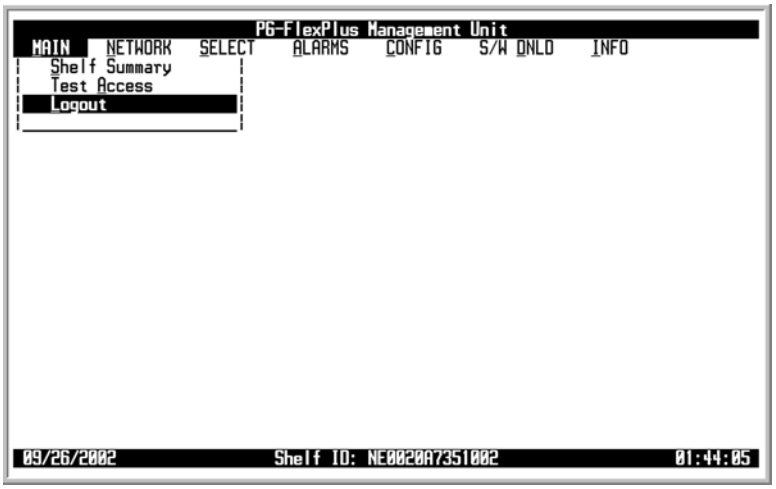
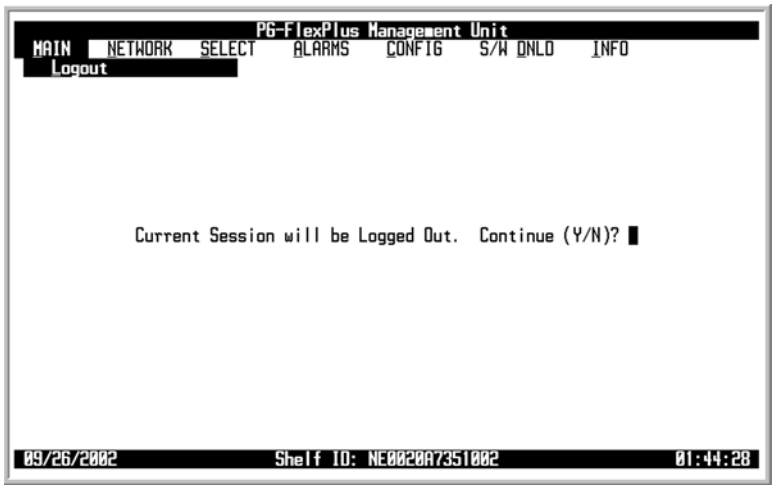
MAIN — Test Access (Continued)

Step	Action
5	To end test access on selected entity (MUX#/COLU#), at the Main Menu screen, select **MAIN**. Press ↓ to choose **Test Access** again. Type **Y** from the `Test Access Is Currently Active On Channel # Of DS1 # Of MUX#/COLU#. Would You Like To End Test Access On MUX#/COLU# (Y/N)?` prompt.  Then press **ENTER**. The Main Menu screen will reappear.  To let the test continue to run, type **N** from the `Test Access Is Currently Active On Channel # Of DS1 # Of MUX#/COLU#. Would You Like To End Test Access On MUX#/COLU# (Y/N)?` prompt. The Main Menu screen reappears.

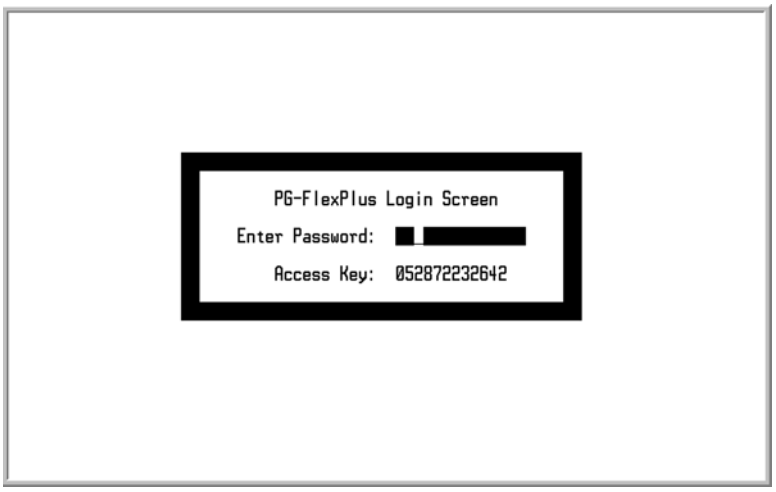
MAIN — Logout

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 Login screen appears. 

NETWORK MENU OPTIONS

The Network Menu provides access to all available and connected AMU-912s on the 10Base-2 Local Area Network (LAN). Refer to Table 19 for sub-menu options and descriptions.

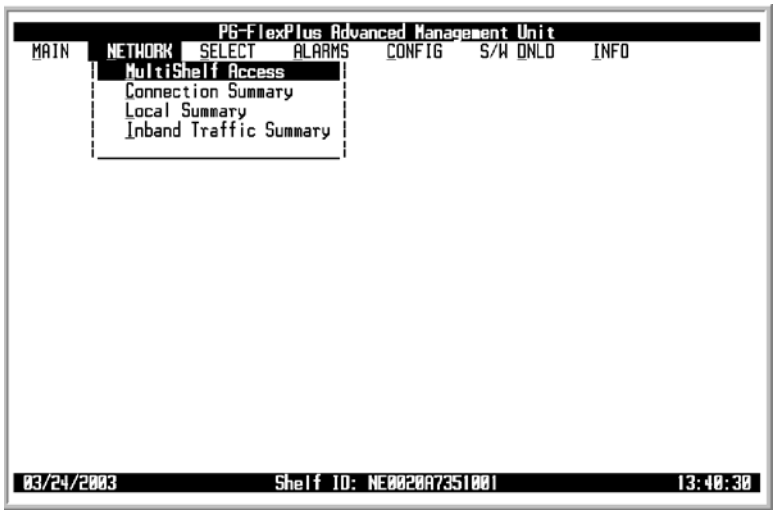


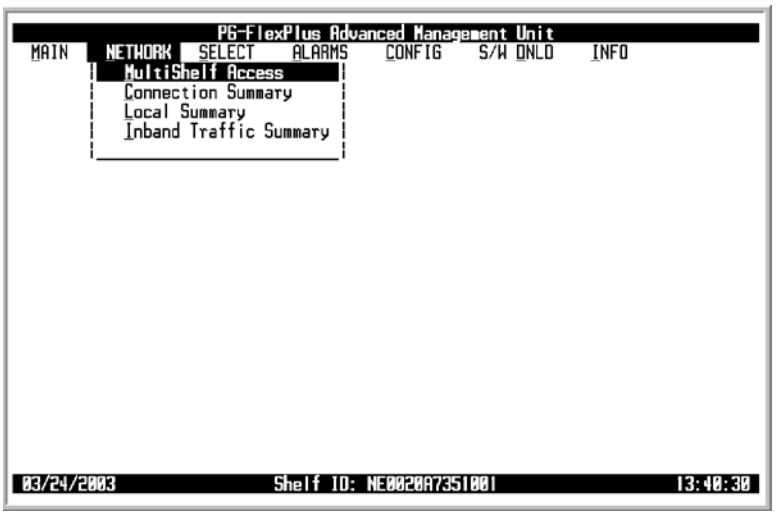
Table 19. Network Menu Options

Sub-Menu Options	Sub-Menu Descriptions
MultiShelf Access	View all accessible Management Units (AMU-912s/PMU-712s) existing on the 10Base-2 LAN
Connection Summary	View all incoming MultiShelf connections (maximum of 3)
Local Summary	View the Local Card Summary for the AMU-912 (includes card identification information, port session locations and states, and alarm activity)
Inband Traffic Summary	View frame counts for inband traffic on individual network DS1 ports

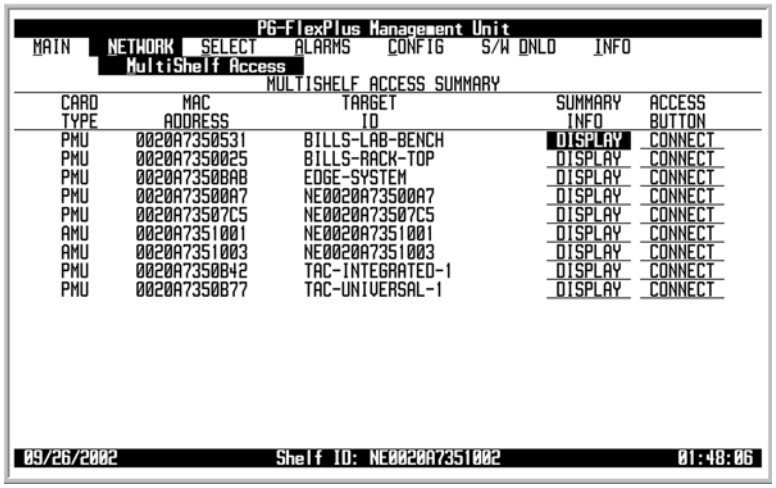
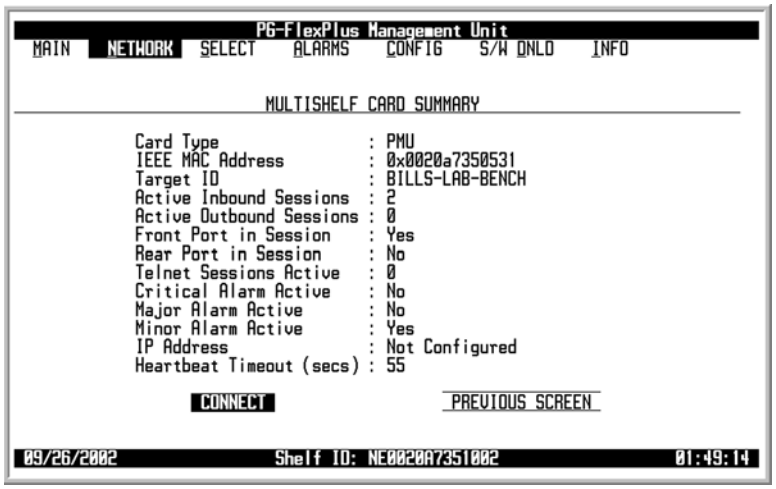
NETWORK — MultiShelf Access

This screen displays a list of all accessible Management Units (AMU-912s and PMU-712s) existing on the 10Base-2 LAN.

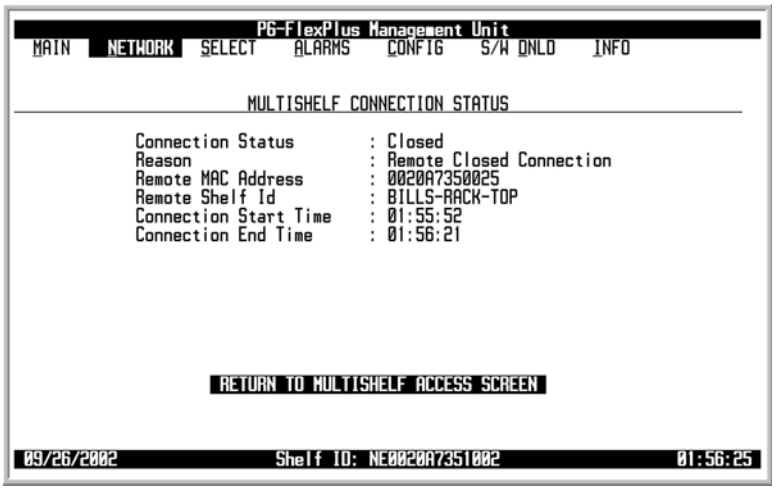
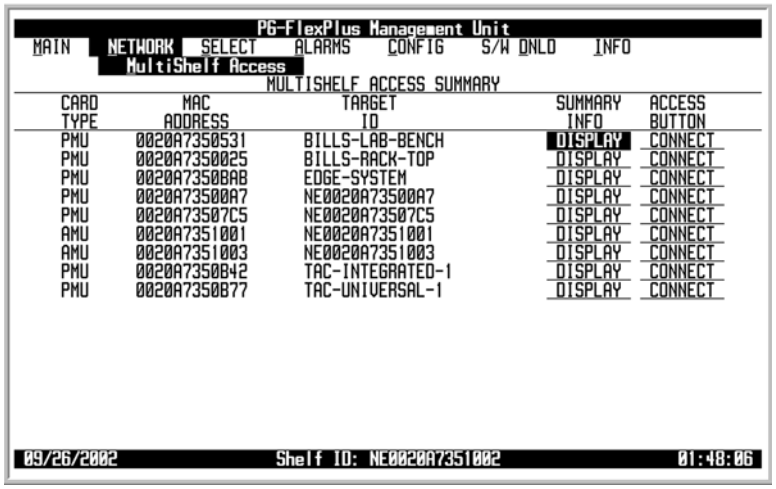
NETWORK — MultiShelf Access

Step	Action
1	At the Main Menu screen, select **NETWORK**. Press ↓ to choose **MultiShelf Access**. The following screen appears. 

NETWORK — MultiShelf Access (Continued)

Step	Action
2	Press ENTER. The following screen appears.  To view the MultiShelf Card Summary, select the AMU-912 or PMU-712 you want to view by selecting the associated **DISPLAY** option. The following screen type appears.  To return to the previous screen, select **PREVIOUS SCREEN** and press ENTER. To connect to another AMU-912 or PMU-712, select **CONNECT** from either of the above two screens. You will see the Welcome Banner screen for a few seconds, then you are connected to the card (AMU-912 or PMU-712) that you chose.

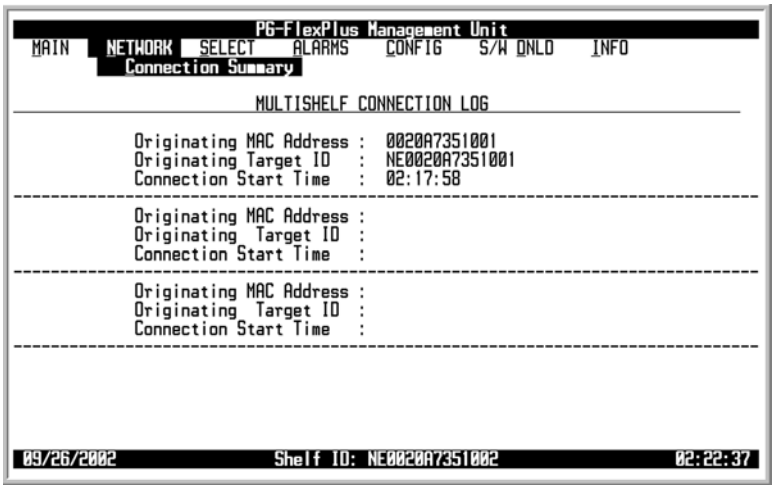
NETWORK — MultiShelf Access (Continued)

Step	Action
3	When you log out of the card (AMU-912 or PMU-712) selected in Step 2, you get this screen.  Press **ENTER**. The following screen appears. 
4	Press **ESC**. The Main Menu screen reappears.

NETWORK — Connection Summary

This screen displays all incoming MultiShelf connections (maximum of three). MultiShelf screens support a series of outbound connections with up to 24 remote AMU-912s and/or PMU-712s while maintaining up to three simultaneous inbound connections.

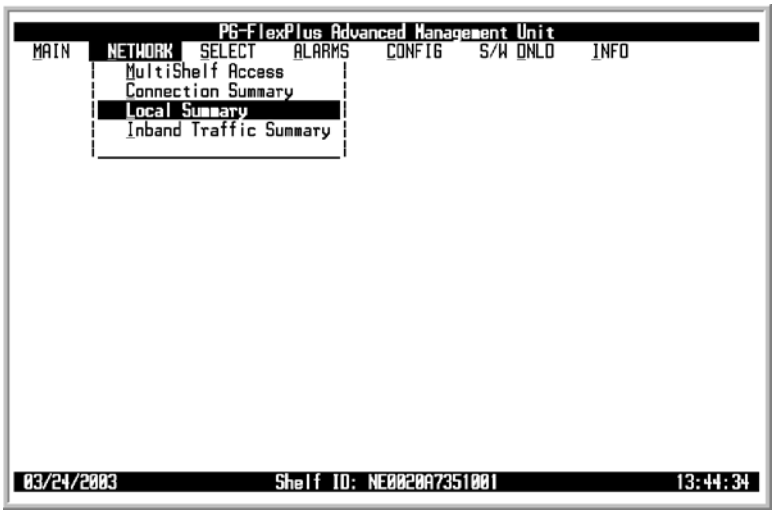
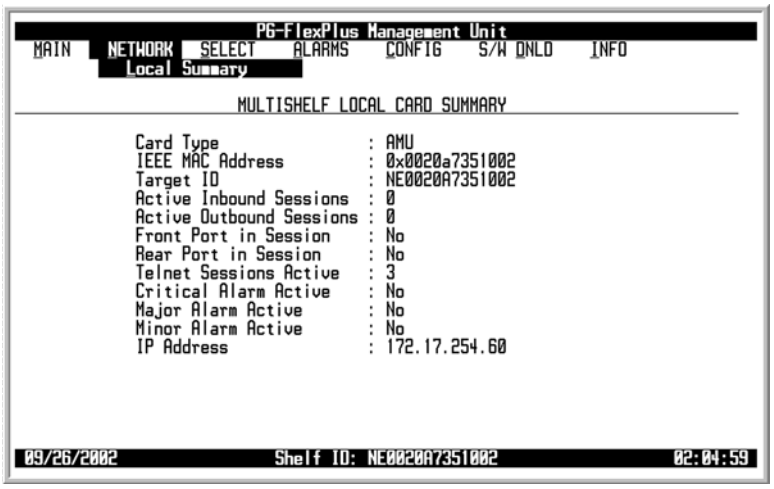
NETWORK — Connection Summary

Step	Action
1	At the Main Menu screen, select **NETWORK**. Press ↓ to choose **Connection Summary**. The following screen appears.  If there is no information in the Connection Summary, the above screen displays a flashing message at the bottom of the screen: `Connection Table Empty. **Hit <CR> to Continue**`. Press **ENTER**. The Main Menu screen reappears.
2	Press **ENTER**. The following screen appears. 
3	Press **ESC**. The Main Menu screen reappears.

NETWORK — Local Summary

This screen displays local card summary for the AMU-912, including card identification information, port session locations and states, and alarm activity.

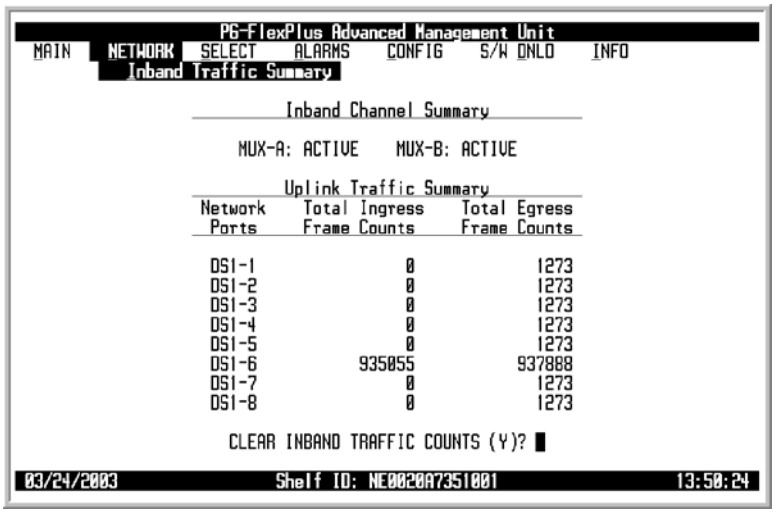
NETWORK — Local Summary

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

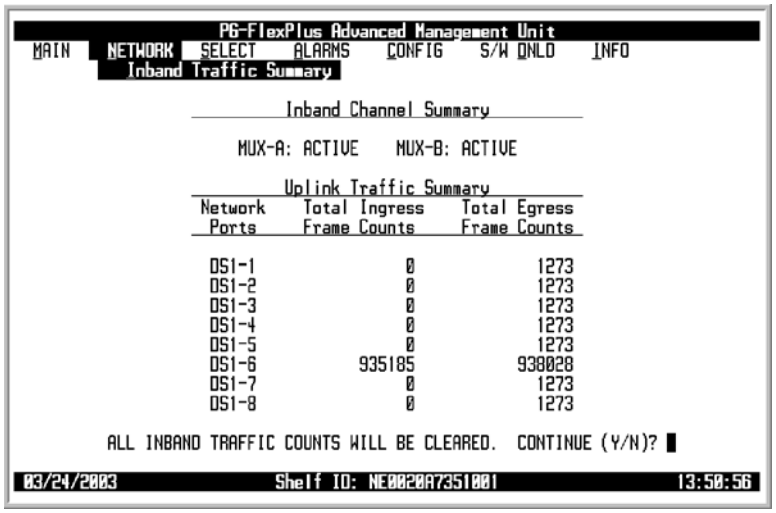
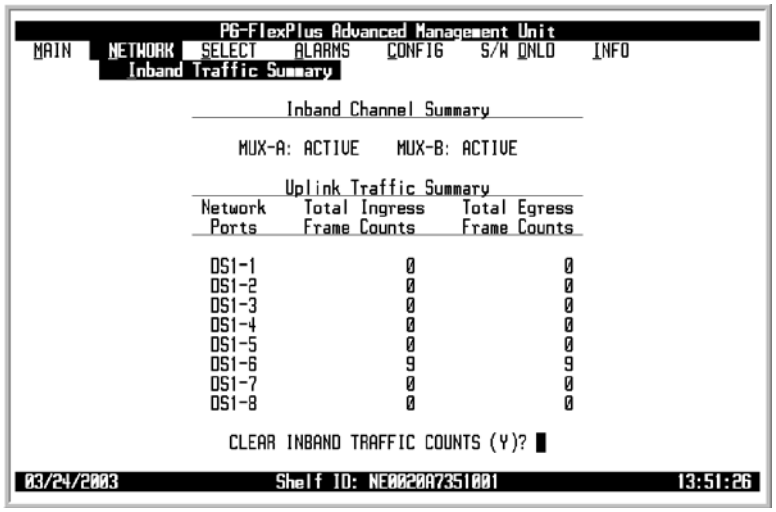
NETWORK — Inband Traffic Summary

This screen displays frame counts for inband traffic on individual network DS1 ports.

NETWORK — Inband Traffic Summary

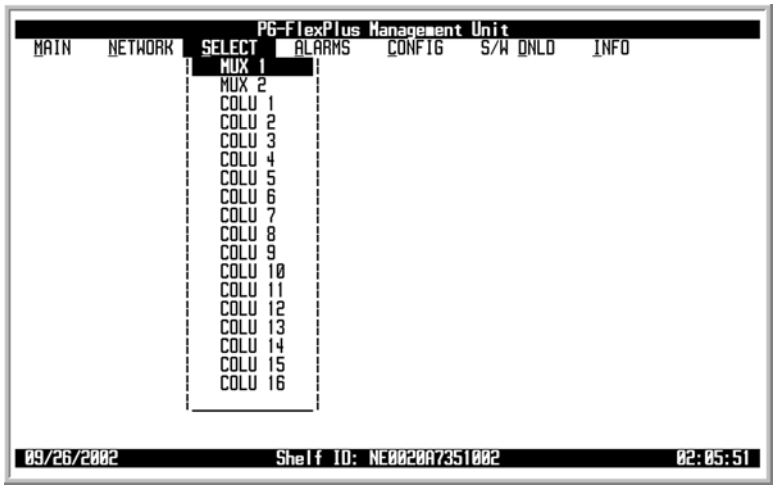
Step	Action
1	At the Main Menu screen, select **NETWORK**. Press ↓ to choose **Inband Traffic Summary**. The following screen appears. 
2	Press **ENTER**. The following screen appears.  To clear inband traffic counts, press **Y**. To retain the existing inband traffic counts, press **ESC**. The Main Menu screen reappears.

NETWORK — Inband Traffic Summary (Continued)

Step	Action
3	The following actions can be taken: • To clear the inband traffic counts, press **Y** at the `ALL INBAND TRAFFIC COUNTS WILL BE CLEARED. CONTINUE (Y/N)?` prompt. All inband traffic counts are cleared.   • To retain the existing inband traffic counts, press **N**.
4	Press **ESC**. The Main Menu screen reappears.

SELECT MENU OPTIONS

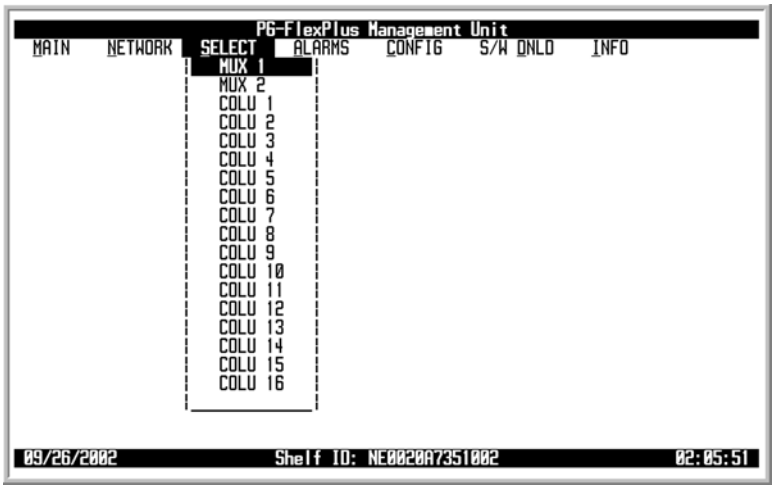
The Select Menu allows you to select any of the cards (MUX 1 or MUX 2, COLU 1 through COLU 16) installed in the shelf.



SELECT — MUX 1 or MUX 2, COLU 1 Through COLU 16

This screen allows you to select any of the cards (MUX 1 or MUX 2, COLU 1 through COLU 16) installed in the shelf.

SELECT — MUX 1 or MUX 2, COLU 1 Through COLU 16

Step	Action
1	At the Main Menu screen, choose **SELECT**. Press ↓ to choose **MUX 1** (or the appropriate choice per your system configuration). The following screen appears. 
2	Press **ENTER**. The following screen type appears.  The above example is the AMX-944 Main Menu screen.
3	Press **ESC** (repeatedly, if needed) until the AMU-912 Main Menu screen reappears.

ALARM MENU OPTIONS

The Alarm Menu provides access to the alarm status and system related alarm events. Refer to Table 20 for sub-menu options and descriptions, parameters and valid values.

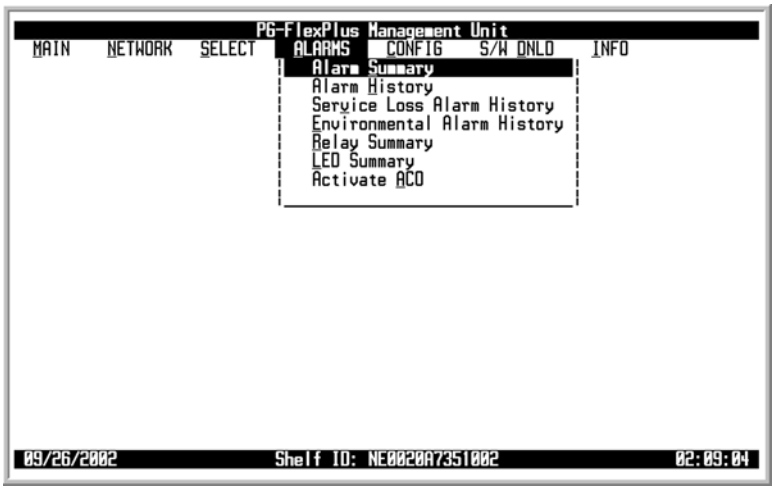


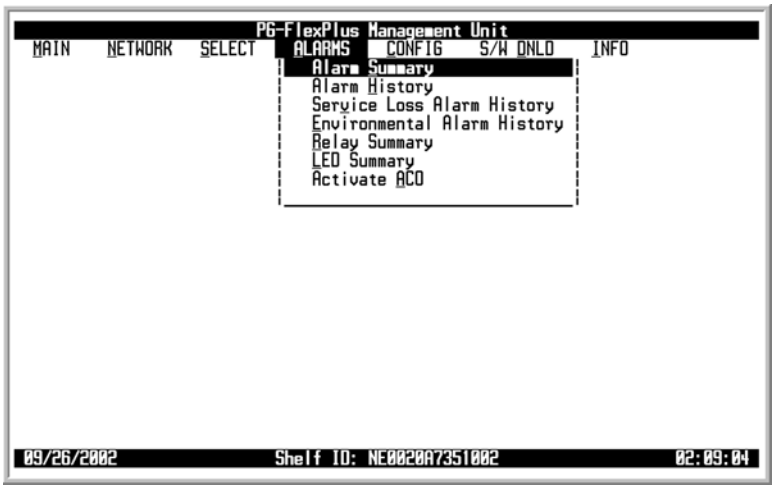
Table 20. Alarm Menu Options

Sub-Menu Options	Sub-Menu Descriptions	Selectable Parameter Options	Valid Values
Alarm Summary	View the AMU-912, MUXs, and COLUs critical, major and minor alarms	• Clear Shelf Alarm History (Y)? • Shelf Alarm History Will Be Cleared. Continue (Y/N)?	• Y • Y or N
Alarm History	View the AMU-912 alarm status	• Clear AMU Alarm History (Y)? • AMU Alarm History Will Be Cleared. Continue (Y/N)?	• Y • Y or N
Service Loss Alarm History	View the service loss alarm status for all COLUs in the shelf	Service Loss Alarm History will be cleared. Continue (Y/N)?	Y or N
Environmental Alarm History	View the status of environmental alarmed events	• Clear Environmental Alarm History (Y)? • Environmental Alarm History Will Be Cleared. Continue (Y/N)?	• Y • Y or N
Relay Summary	View the system relay summary		
LED Summary	View the summary of the LED activity		
Activate ACO	Activate the AMU-912 Alarm Cutoff feature	ACO Will Be Activated. Continue (Y/N)?	Y or N

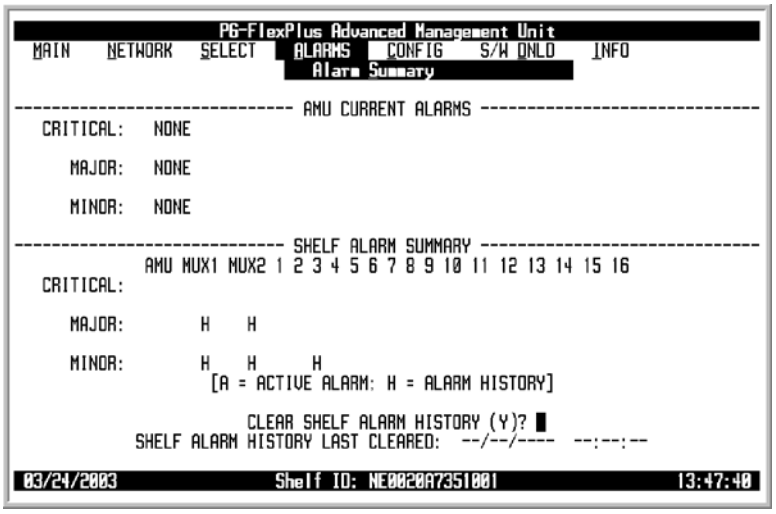
ALARMS — Alarms Summary

This screen displays the AMU-912, MUXs and COLUs critical, major, and minor alarms.

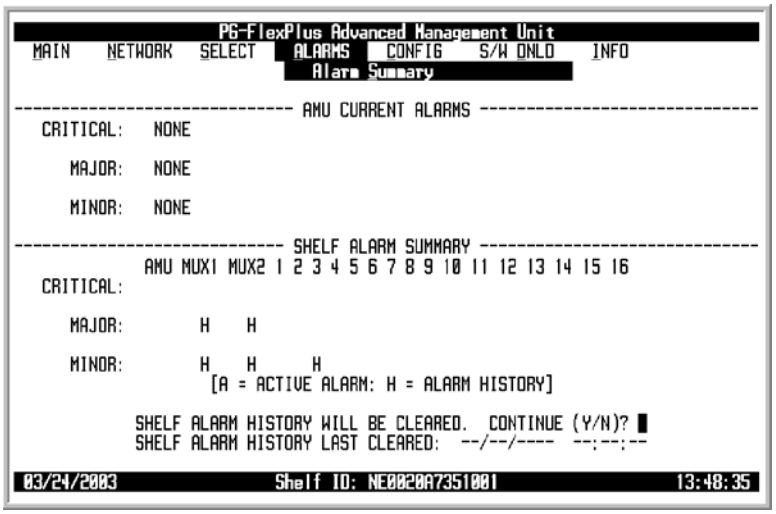
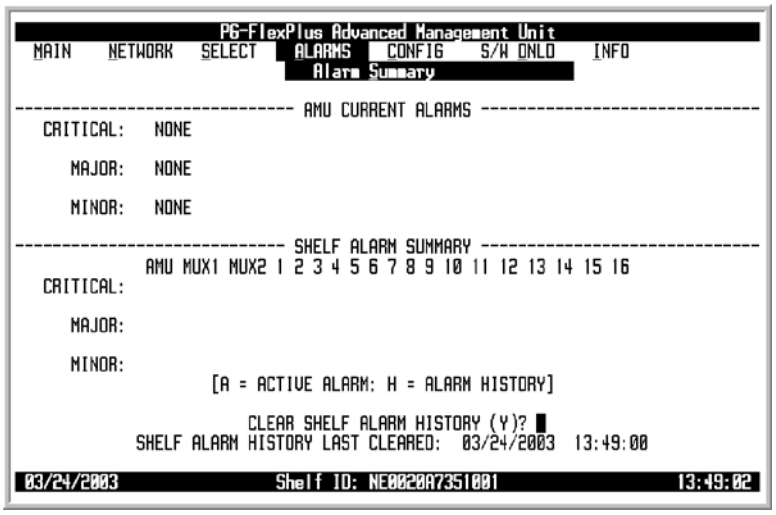
ALARMS — Alarms Summary

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

ALARMS — Alarms Summary (Continued)

Step	Action
2	Press **ENTER**. The following screen appears. To clear the shelf alarm history, press **Y** at the `CLEAR SHELF ALARM HISTORY (Y)?` prompt.  If you want to retain the shelf alarm history, press **ESC**. The Main Menu screen reappears. 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: • A — Designates active alarm • H — Designates history alarm

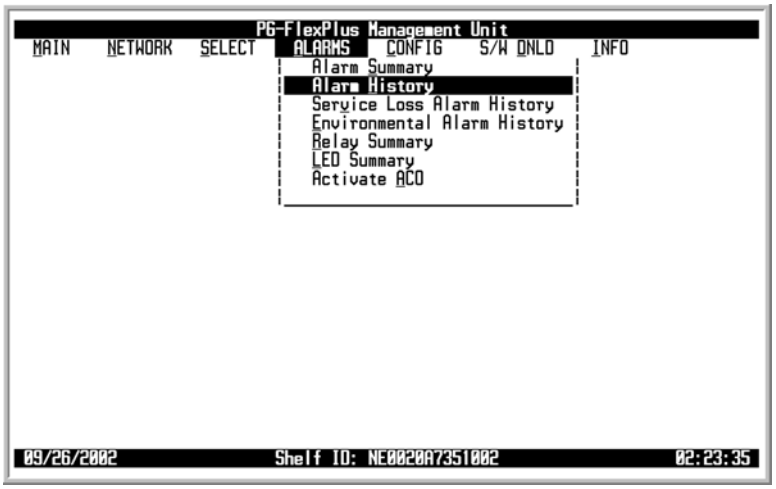
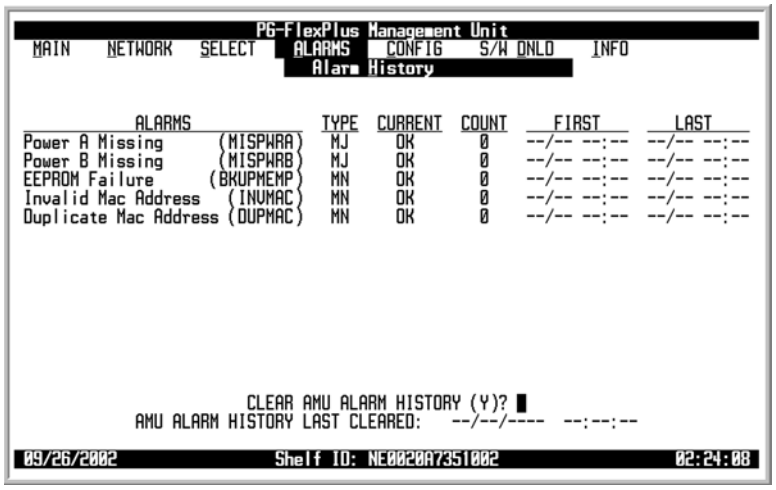
ALARMS — Alarms Summary (Continued)

Step	Action
3	To verify you want to clear the shelf alarm history, press **Y** at the `SHELF ALARM HISTORY WILL BE CLEARED. CONTINUE (Y/N)?` prompt.   If you want to retain the shelf alarm history, press **N**, then press **ESC**. The Main Menu screen reappears.
4	Press **ESC**. The Main Menu screen reappears.

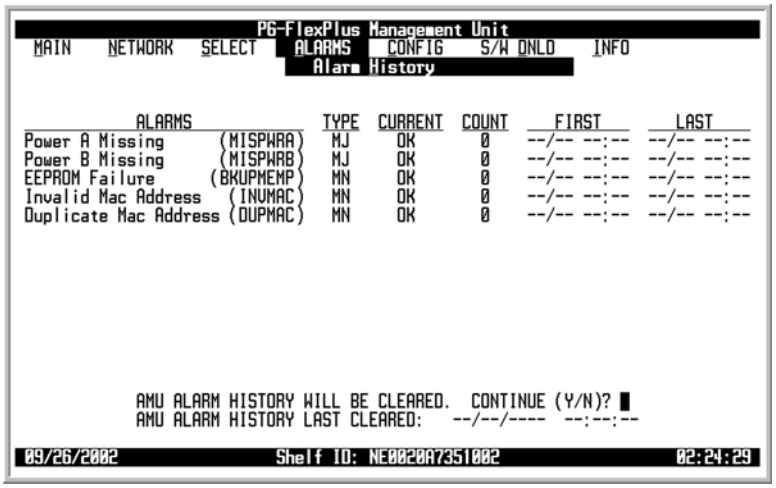
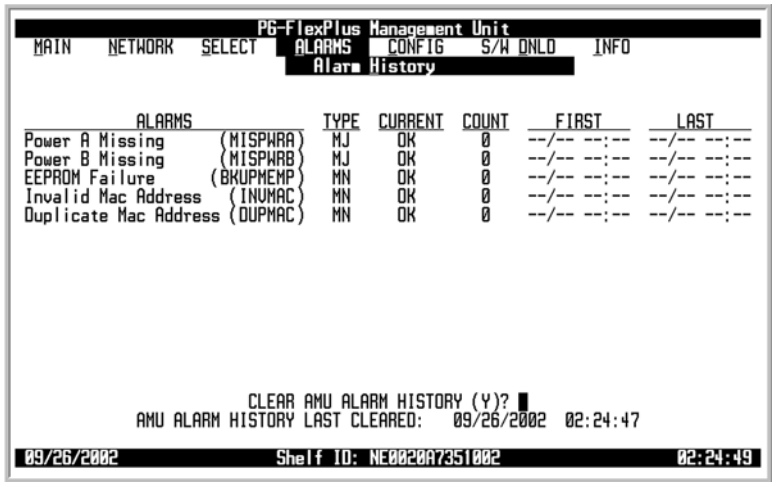
ALARMS — Alarm History

This screen displays the AMU-912 alarm status. 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 — Alarm History

Step	Action
1	At the Main Menu screen, select **ALARMS**. Press ↓ to choose **Alarm History**. The following screen appears. 
2	Press **ENTER**. The following screen appears. To clear the AMU-912 alarm history, press **Y** at the `CLEAR AMU ALARM HISTORY (Y)?` prompt.  If you want to retain the AMU-912 alarm history, press **ESC**. The Main Menu screen reappears. 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 27 on page 87 for Alarm Types). A description of the Alarm types reported is provided in Table 26 on page 86.

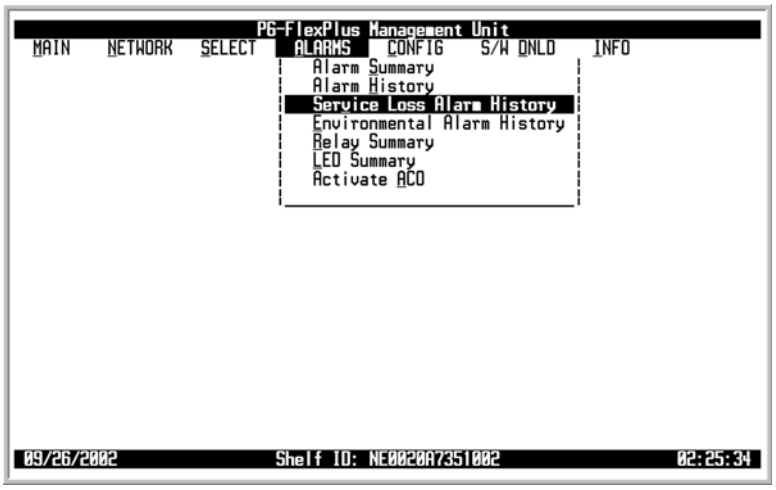
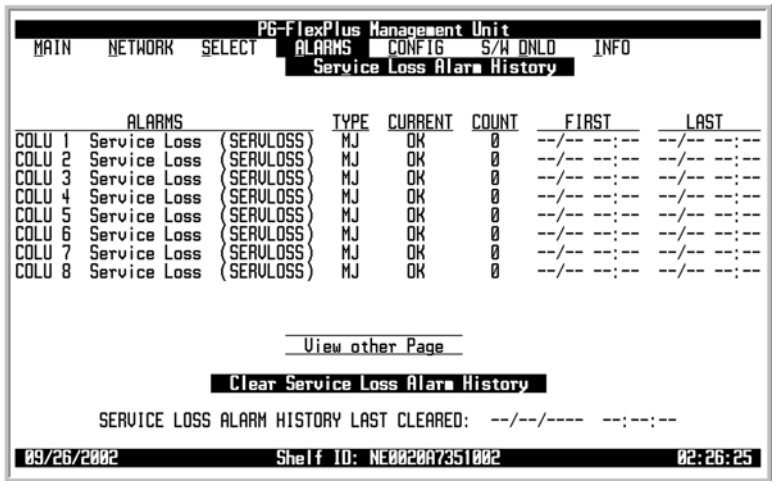
ALARMS — Alarm History (Continued)

Step	Action
3	To verify you want to clear the AMU-912 alarm history, press **Y** at the `AMU ALARM HISTORY WILL BE CLEARED. CONTINUE (Y/N)?` prompt. The following events occur: • AMU-912 alarm history counts are set to zero • time and date that the registers were last cleared are updated   If you want to retain the AMU-912 alarm history, press **N**, then press **ESC**. The Main Menu screen reappears. 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.
4	Press **ESC**. The Main Menu screen reappears.

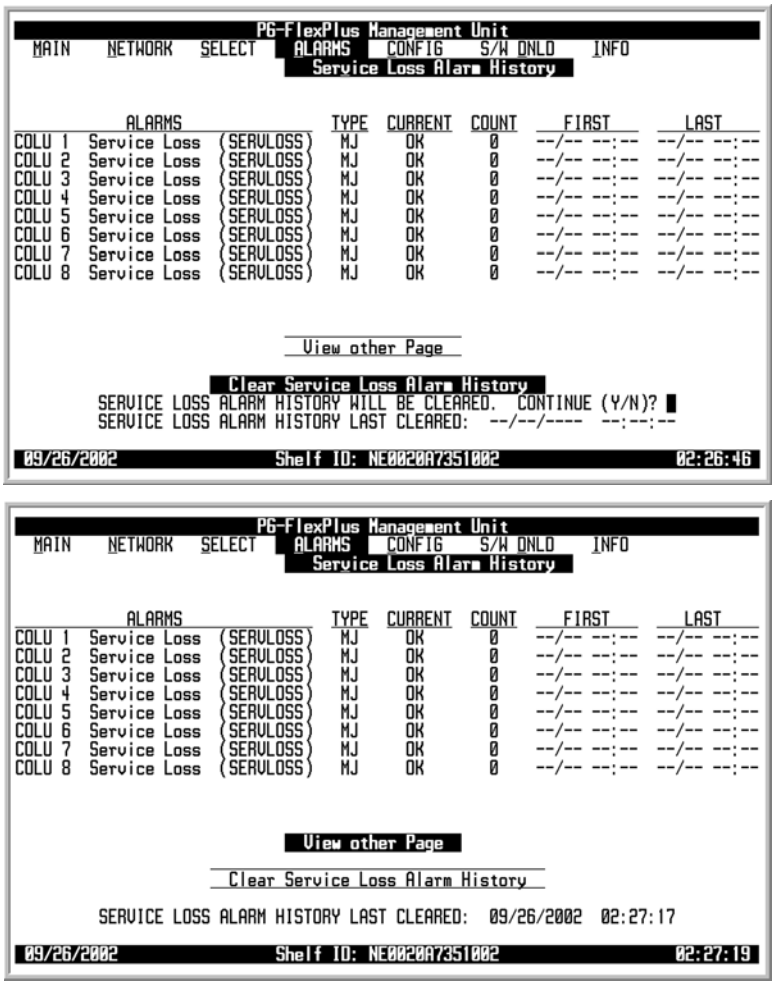
ALARMS — Service Loss Alarm History

This screen displays the service loss alarm status for all COLUs in the shelf. 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 — Service Loss Alarm History

Step	Action
1	At the Main Menu screen, select **ALARMS**. Press ↓ to choose **Service Loss Alarm History**. The following screen appears. 
2	Press **ENTER**. The following screen appears. To view other page(s), select **View Other Page** button, then press **ENTER**. To clear the service loss alarm history, select **Clear Service Loss Alarm History** button, then press **ENTER**.  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 28 on page 90 for Service Loss Alarm Types). A description of the Alarm types reported is provided in Table 26 on page 86.

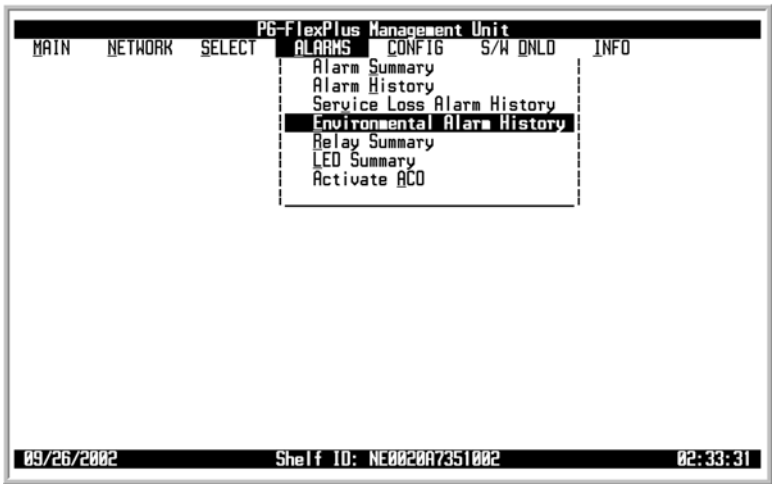
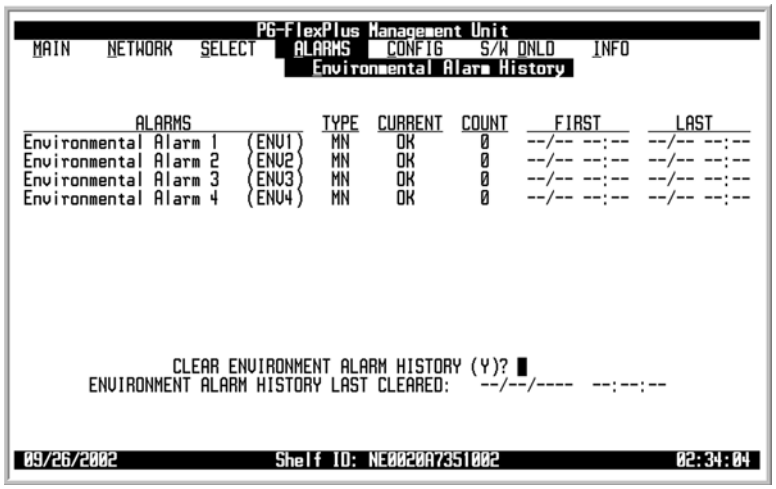
ALARMS — Service Loss Alarm History (Continued)

Step	Action
3	To verify you want to clear the service loss alarm history, press **Y** at the `SERVICE LOSS ALARM HISTORY WILL BE CLEARED. CONTINUE (Y/N)?` prompt. The following events occur: • COLU alarm history counts are set to zero • time and date that the registers were last cleared are updated  If you want to retain the existing alarm history, press **N**, then press **ESC**. The Main Menu screen reappears. 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.
4	Press **ESC**. The Main Menu screen reappears.

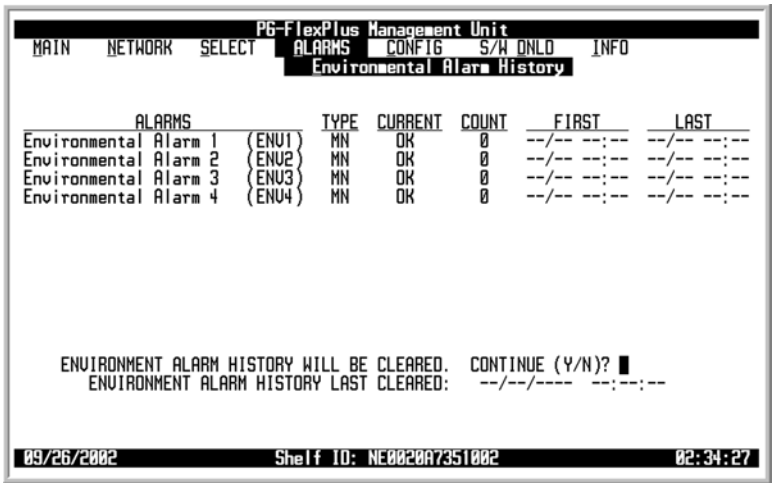
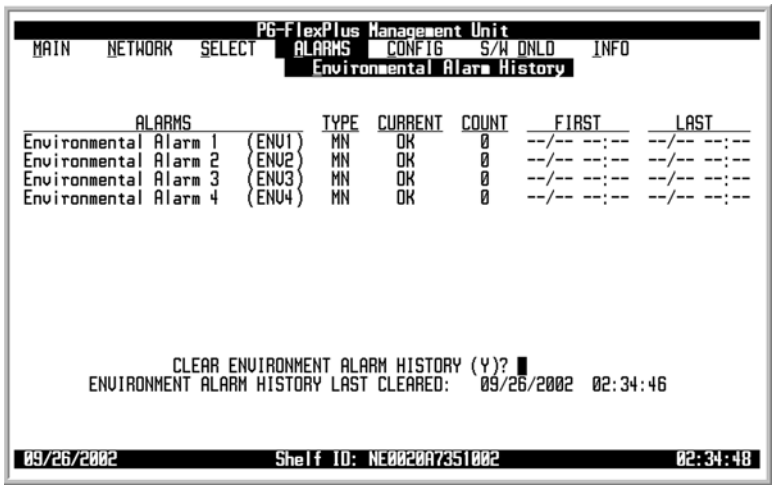
ALARMS — Environmental Alarm History

This screen displays the status of environmental alarmed events. 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 — Environmental Alarm History

Step	Action
1	At the Main Menu screen, select **ALARMS**. Press ↓ to choose **Environmental Alarm History**. The following screen appears. 
2	Press **ENTER**. The following screen appears. To clear the environmental alarm history, press **Y** at the `CLEAR ENVIRONMNENTAL ALARM HISTORY (Y)?` prompt.  If you want to retain the environmental alarm history, press **ESC**. The Main Menu screen reappears. 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 31 on page 96 for Environmental Alarm Types). A description of the Alarm types reported is provided in Table 26 on page 86.

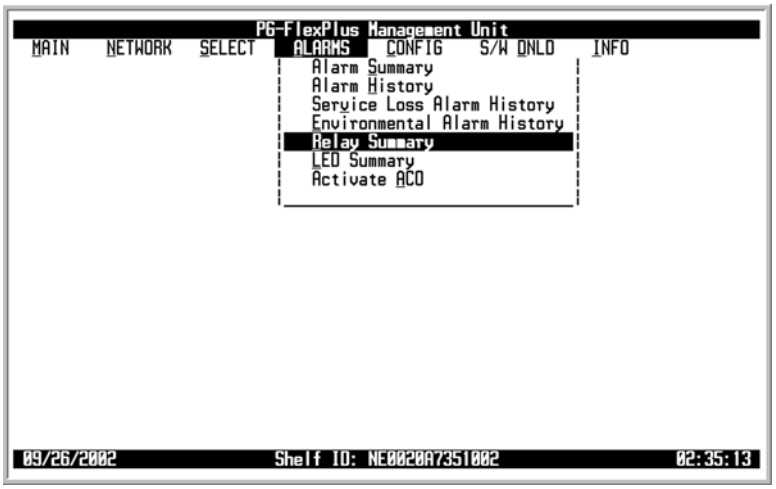
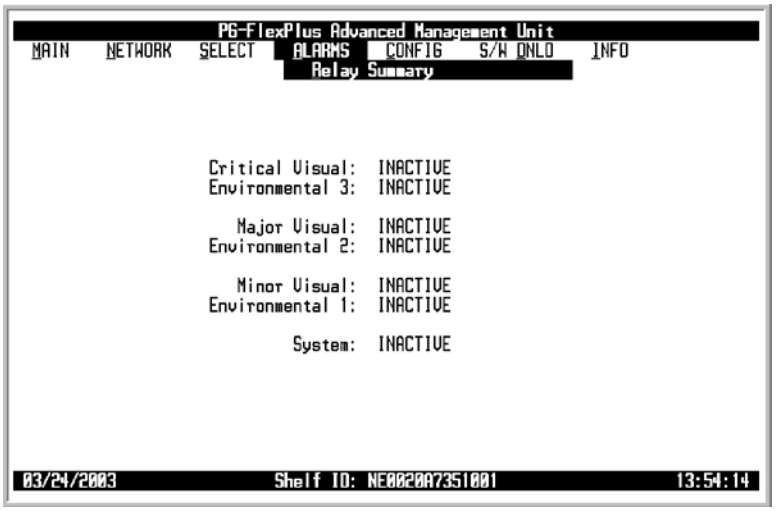
ALARMS — Environmental Alarm History (Continued)

Step	Action
3	To verify you want to clear the environmental alarm history, press **Y** at the `ENVIRONMENTAL ALARM HISTORY WILL BE CLEARED. CONTINUE (Y/N)?` prompt. The following events occur: • environmental alarm history counts are set to zero • time and date that the registers were last cleared are updated   If you want to retain the existing environmental alarm history, press **N**, then press **ESC**. The Main Menu screen reappears. 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.
4	Press **ESC**. The Main Menu screen reappears.

ALARMS — Relay Summary

This screen displays the system relay summary.

ALARMS — Relay Summary

Step	Action
1	At the Main Menu screen, select **ALARMS**. Press ↓ to choose **Relay Summary**. The following screen appears. 
2	Press **ENTER**. The following screen appears.  The alarm information displayed indicates: • ACTIVE Relay is activated • INACTIVE Relay is not activated

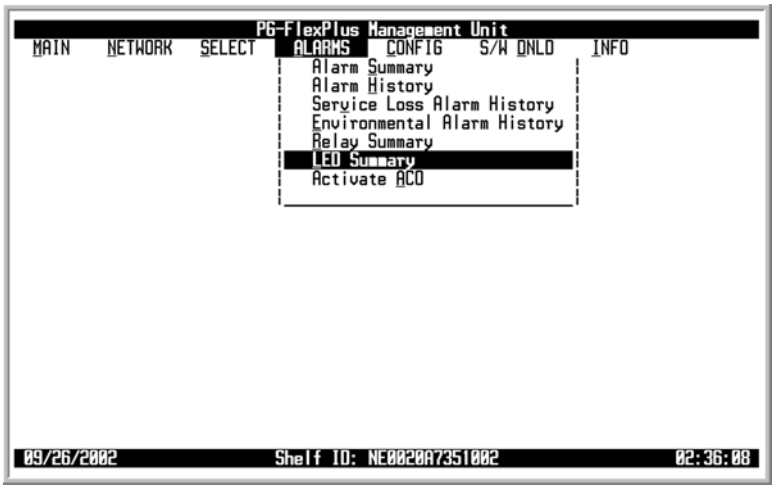
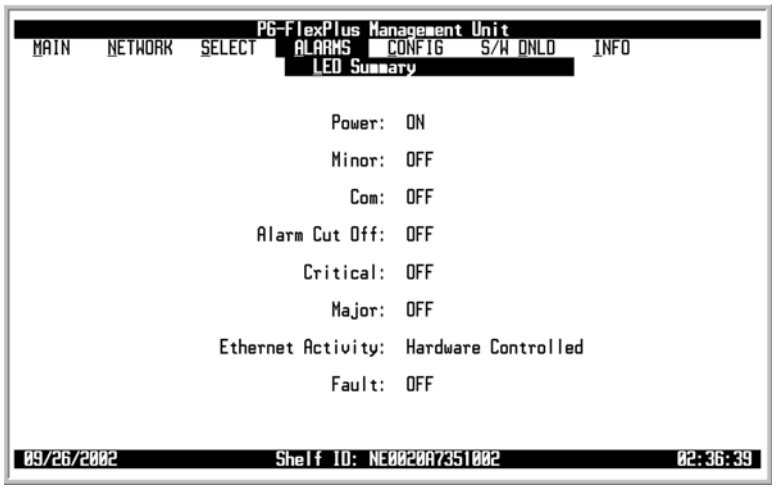
ALARMS — Relay Summary (Continued)

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

ALARMS — LED Summary

This screen displays the summary of the LED activity.

ALARMS — LED Summary

Step	Action
1	At the Main Menu screen, select **ALARMS**. Press ↓ to choose **LED Summary**. The following screen appears. 
2	Press **ENTER**. The following screen appears.  The alarm information displayed indicates: • ON LED is on • OFF LED is off • FLASHING LED is flashing
3	Press **ESC**. The Main Menu screen reappears.

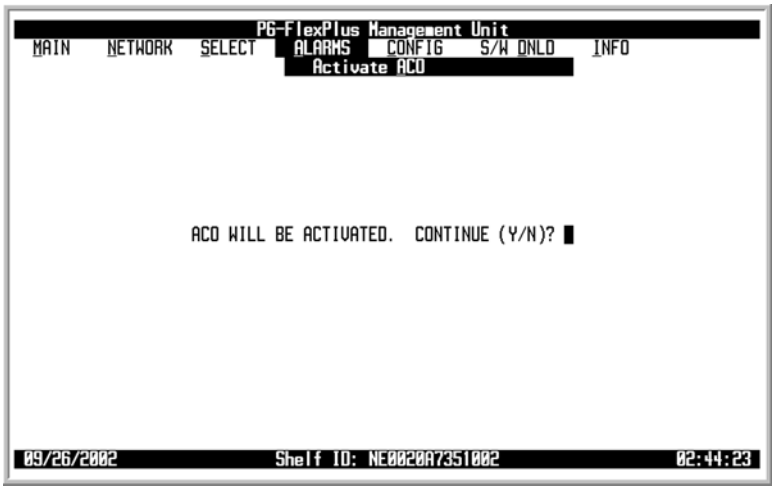
ALARMS — Activate ACO

This screen allows you to activate the AMU-912 Alarm Cutoff feature.

ALARMS — Activate ACO

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

ALARMS — Activate ACO (Continued)

Step	Action
2	Press **ENTER**. The following screen appears. To activate the ACO, press **Y** at the `ACO WILL BE ACTIVATED (Y)?` prompt.  Press **ENTER**. The Main Menu appears.  To refrain from activating the ACO, press **N**.

CONFIGURATION MENU OPTIONS

The Configuration Menu provides access to system provisioning and setting all options to factory defaults, etc. Refer to Table 21 on page 64 for sub-menu options and descriptions, parameters and valid values.

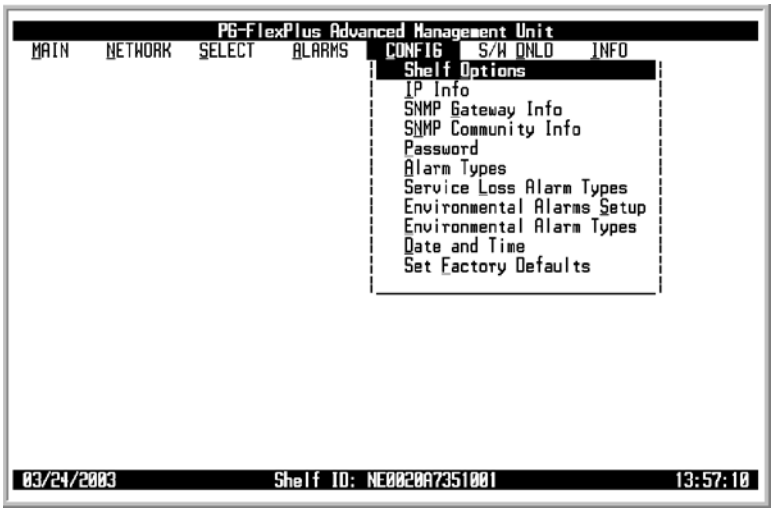


Table 21. Configuration Menu Options

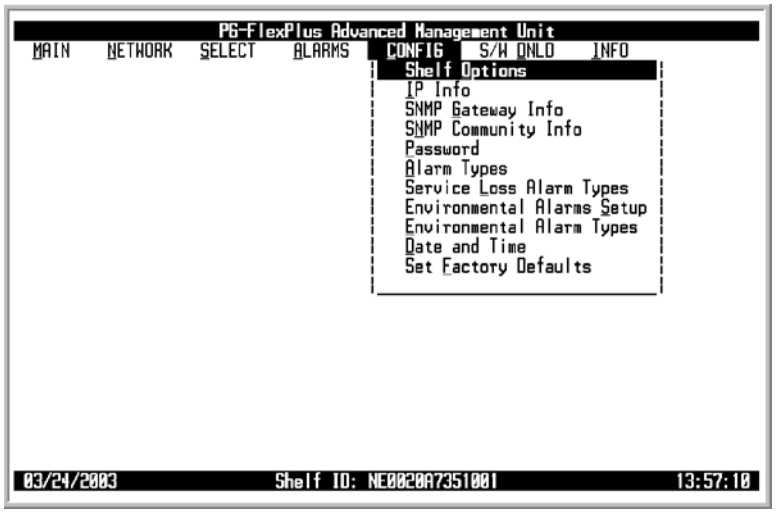
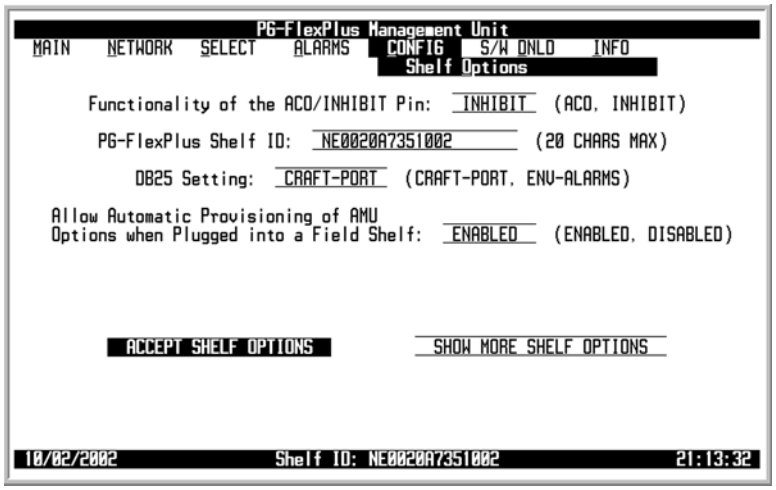
Sub-Menu Options	Sub-Menu Descriptions	Parameters	Valid Values
Shelf Options (Table 22 on page 70 for Shelf Options)	Set shelf options	Shelf Options will be changed. Continue (Y/N)?	Y or N
IP Info (See Table 23 on page 74)	Change the AMU-912's IP Address	AMU IP Info will be changed. If the AMU IP info is changed, the AMU will be reset. Continue (Y/N)?	Y or N
SNMP Gateway Info (See Table 24 on page 78)	Enables/Disables SNMP trap forwarding from the MSLAN to an external network	SNMP Gateway Option will be changed. Continue (Y/N)?	Y or N
SNMP Community Info (See Table 25 on page 80)	Changes Community Access Privileges		
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
Alarm Types (See Table 27 on page 87)	Provision AMU-912 alarm types	AMU Alarm Types will be changed. Continue (Y/N)?	Y or N
Service Loss Alarm Types (See Table 28 on page 90)	Provision service alarm types	Service Loss Alarm Types will be changed. Continue (Y/N)?	Y or N
Environmental Alarms Setup (See Table 29 on page 93)	Provision TR-08 data link alarm types for each environmental alarm	Environmental Alarm Settings will be changed. Continue (Y/N)?	Y or N

Sub-Menu Options	Sub-Menu Descriptions	Parameters	Valid Values
Environmental Alarm Types (See Table 31 on page 96)	Provision the environmental alarm types	Environmental Alarm Types will be changed. Continue (Y/N)?	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 between 2000-2069) • 00 – 24 • 0 – 59 • 0 – 59
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

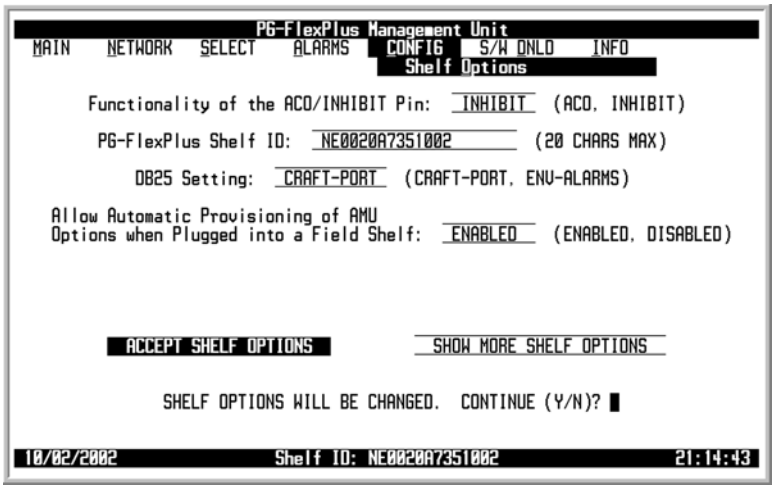
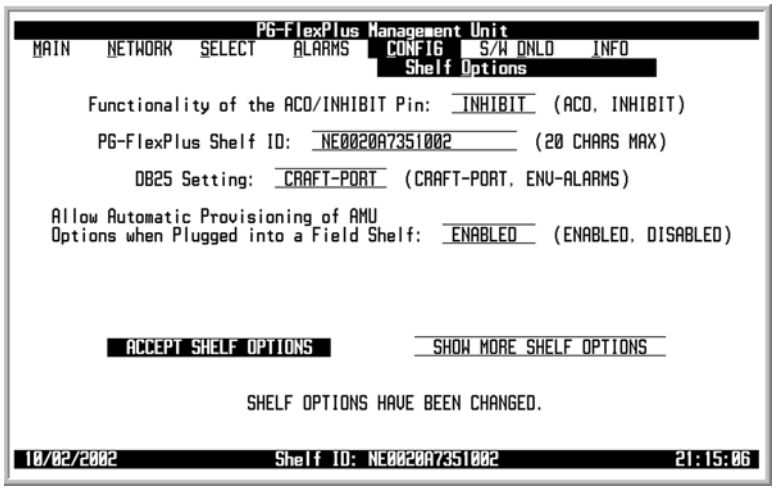
CONFIG — Shelf Options

The Shelf Options screen allows provisioning of system features. Refer to Table 22 on page 70 for Shelf Options.

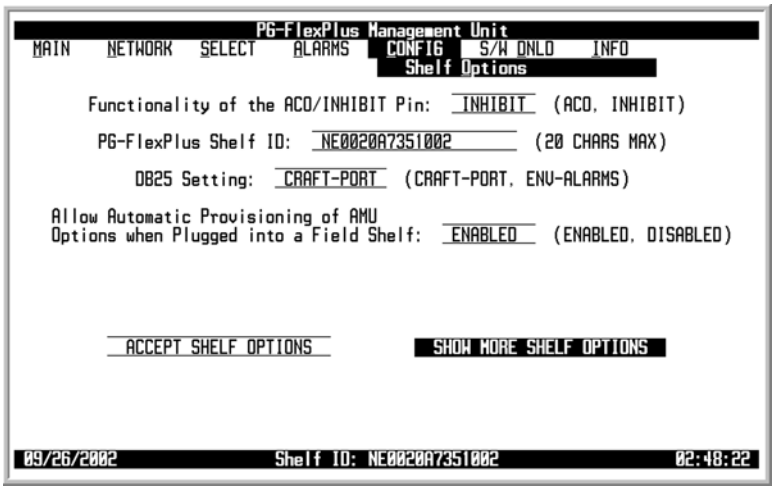
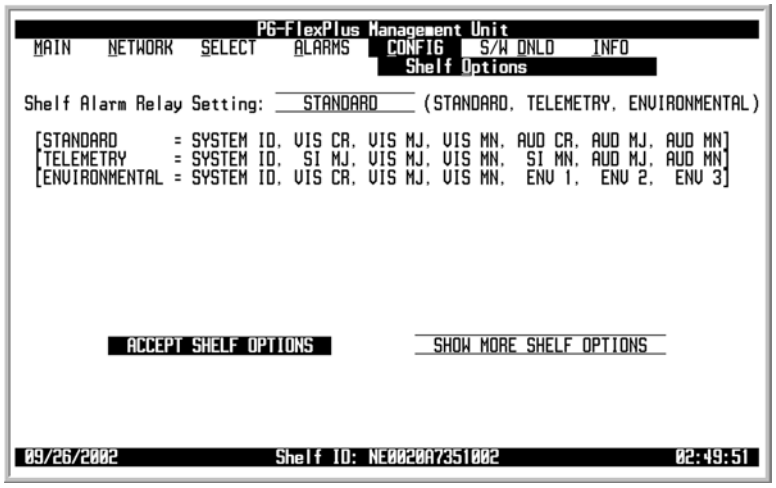
CONFIG — Shelf Options

Step	Action
1	At the Main Menu screen, select **CONFIG**. Press ↓ to choose **Shelf Options**. The following screen appears. 
2	Press **ENTER**. The following screen appears. To change a field value, press **SPACEBAR** to toggle to the desired value, or press ↓ or ↑ to move to the next option.  To save the shelf options, select the **ACCEPT SHELF OPTIONS** button, then press **ENTER**.

CONFIG — Shelf Options (Continued)

Step	Action
3	From the `SHELF OPTIONS WILL BE CHANGED. CONTINUE (Y/N)?` prompt, the following actions can be taken: • To save the shelf options, press **Y**. All current values are set to desired values.   • To retain the existing values, press **N**.

CONFIG — Shelf Options (Continued)

Step	Action
4	To view the rest of the shelf options, select the **SHOW MORE SHELF OPTIONS** button. 
5	To change the field value, press **SPACEBAR** to toggle to the desired value.  To save the shelf option, select the **ACCEPT SHELF OPTIONS** button, then press **ENTER**.

CONFIG — Shelf Options (Continued)

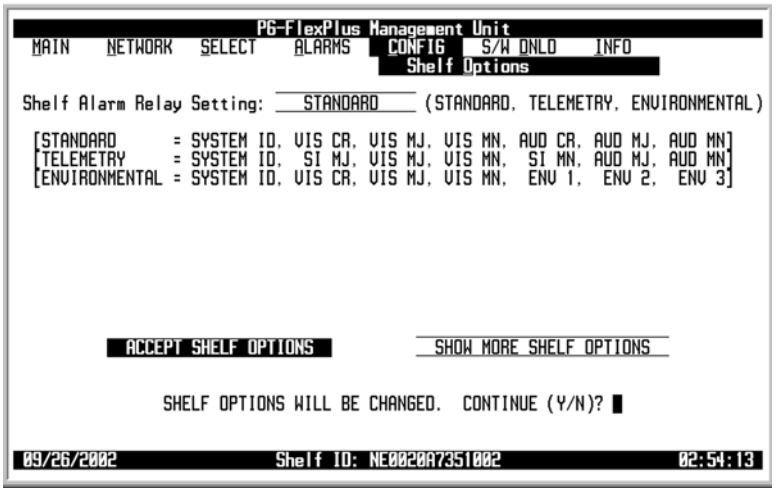
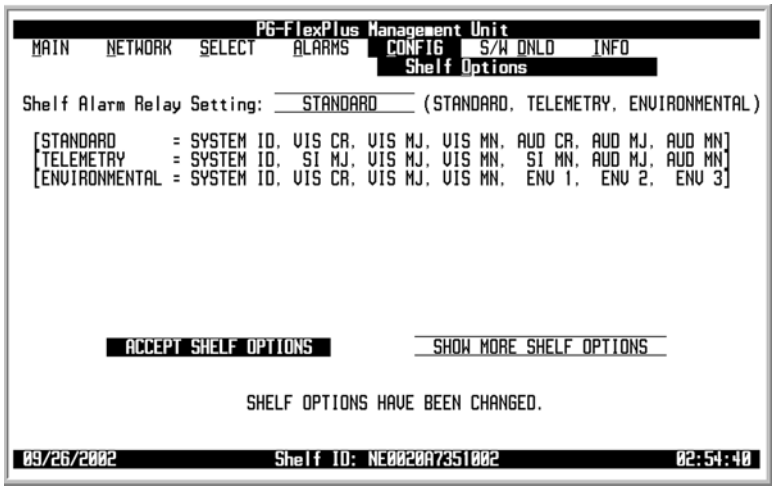
Step	Action
6	From the `SHELF OPTIONS WILL BE CHANGED. CONTINUE (Y/N)?` prompt, the following actions can be taken: • To save the shelf option, press **Y**. The current value is set to the desired value.   • To retain the existing value, press **N**.
7	Press **ESC**. The Main Menu screen reappears.

Table 22. Shelf Options

System Options	Value	Description	Default
Functionality of the ACO/Inhibit Pin	ACO	To silence all audible alarms, place a ground on this pin on the shelf backplane.	INHIBIT
	INHIBIT	When a subscriber drop test is running, this pin on the shelf backplane will be grounded.	
PG-Flex*Plus* Shelf ID	Up to 24 characters maximum - Can contain letters, digits or hyphens	Visible at the bottom of the screen	"NE" followed by the MAC address (e.g., NE0020A7351002)
DB25 Setting	CRAFT-PORT	Rear DB-25 connector is setup to act as a craft port	CRAFT-PORT (This setting is automatically set to ENV-ALARMS when the AMU-912 is plugged into a field shelf and the automatic field shelf provisioning option is set to ENABLED.)
	ENV-ALARMS	Rear DB-25 connector is setup to provide EXT environmental alarm inputs	
Allow Automatic Provisioning of AMU Options Plugged into a Field Shelf	ENABLED	Allows automatic provisioning when the AMU-912 is plugged into a field shelf. When enabled, the setting for Environmental Alarm TR-08 Data Link Reporting Environmental Alarm 2 is set to COM-MN, DB25 Setting is set to ENV-ALARMS, and Shelf Alarm Relay Setting is set to ENVIRONMENTAL when the AMU-912 is plugged into a field shelf. The setting will be set back to the normal default if the AMU-912 is subsequently plugged back into a normal shelf.	ENABLED
	DISABLED	No automatic provisioning occurs when an AMU-912 is plugged into a field shelf	

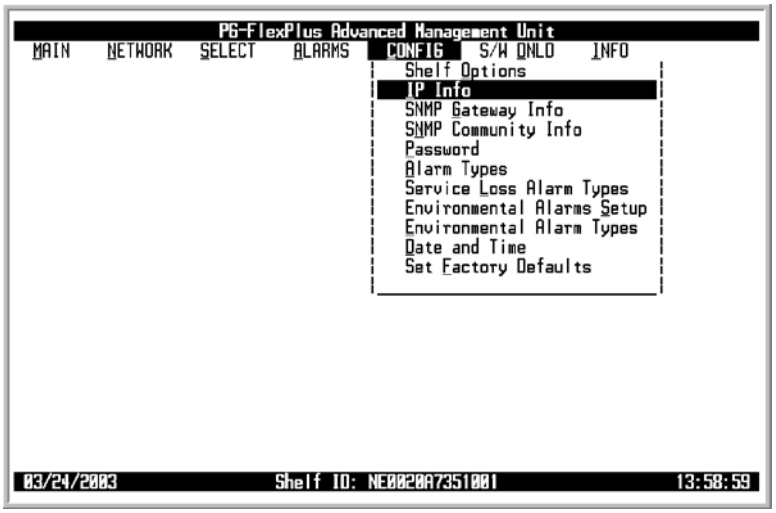
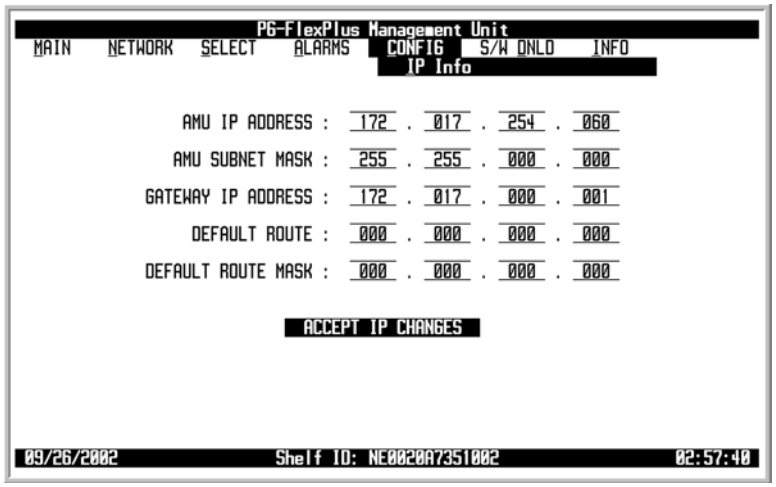
System Options	Value	Description	Default
Shelf Alarm Relay Setting	STANDARD	Alarm relay terminations on the shelf backplane support the following alarms: System ID Critical - Visual Critical - Audible Major - Visual Major - Audible Minor - Visual Minor - Audible	STANDARD (This setting is automatically set to ENVIRONMENTAL when the AMU-912 is plugged into a field shelf and the automatic field shelf provisioning option is set to ENABLED.)
	TELEMETRY	Alarm relay terminations on the shelf backplane support the following alarms: Shelf ID System - Major System - Minor Major - Visual Major - Audible Minor - Visual Minor - Audible	
	ENVIRONMENTAL	Alarm relay terminations on the shelf backplane support the following alarms: System ID Critical - Visual Major - Visual Minor - Visual Environmental #1 Environmental #2 Environmental #3	

CONFIG — IP INFO

The IP information screen allows you to change the AMU-912's IP Address. Refer to Table 23 on page 74 for IP Information.

Anytime the IP Address is changed, the AMU-912 will perform a warm reset.

CONFIG — IP INFO

Step	Action
1	At the Main Menu screen, select **CONFIG**. Press ↓ to choose **IP Info**. The following screen appears. 
2	Press **ENTER**. The following screen appears. To change a field value, press **TAB** to toggle to the desired value, or press ↓ or ↑ to move to the next option. Type the desired values.  To save the shelf options, select the **ACCEPT IP CHANGES** button, then press **ENTER**.

CONFIG — IP INFO (Continued)

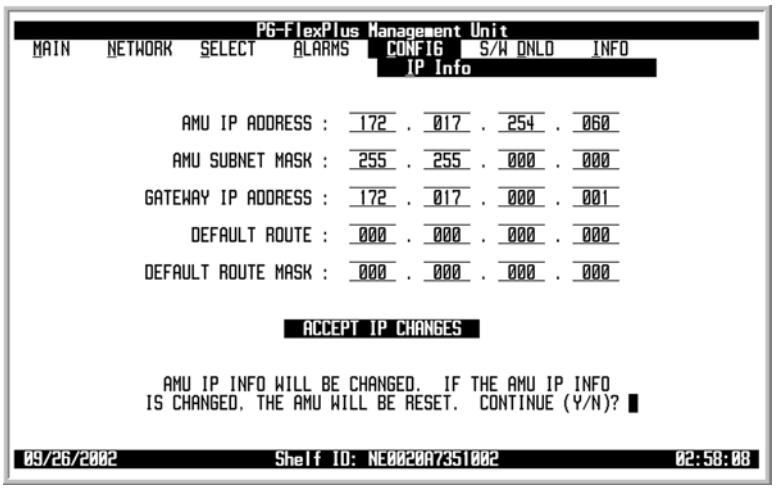
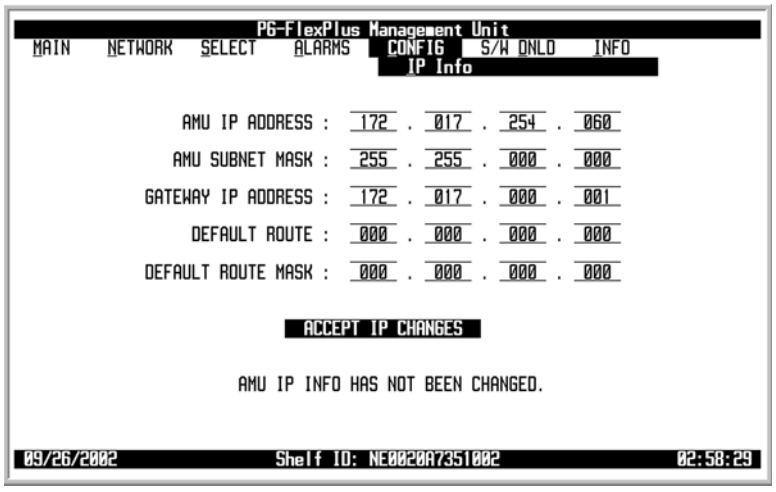
Step	Action
3	From the `AMU IP INFO WILL BE CHANGED. IF THE AMU IP INFO IS CHANGED, THE AMU WILL BE RESET. CONTINUE (Y/N)?` prompt, the following actions can be taken: • To change the IP Info and reset the AMU-912, press **Y**. All current values are set to desired values.   • To retain the existing values, press **N**.
4	Press **ESC**. The Main Menu screen reappears.

Table 23. IP Information

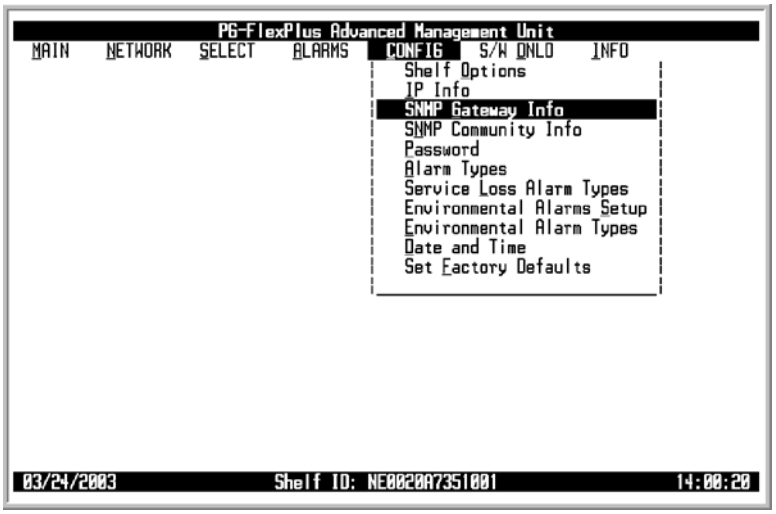
Address	Description
AMU IP Address	Unique 4-byte address
AMU Subnet Mask	Subnet mask assigned to the LAN
Gateway IP Address (Optional)	Unique 4-byte address of the gateway/router/bridge
Default Route (Optional)	Network address assigned to the external LAN
Default Route Mask (Optional)	Subnet Mask assigned to the external LAN

CONFIG — SNMP GATEWAY INFO

If you enable gateway functionality, it is configured as a manageable SNMP node and it receives trap notification from all AMUs on its network then forwards traps to the IP Address that is configured as a trap recipient. If you disable gateway functionality, the AMU is not a manageable node via SNMP and will not forward trap notifications. Refer to Table 24 on page 78 for SNMP Gateway Information

This procedure shows how to enable gateway functionality. Once the gateway is enabled, it works the same way to disable the gateway functionality.

CONFIG — SNMP GATEWAY INFO

Step	Action
1	At the Main Menu screen, select **CONFIG**. Press ↓ to choose **SNMP Gateway Info**. The following screen appears. 

CONFIG — SNMP GATEWAY INFO (Continued)

Step	Action
2	Press **ENTER**. The following screen appears. To enable gateway functionality, press **ENTER**.  To leave gateway disabled, press **ESC**. The Main Menu screen reappears.

CONFIG — SNMP GATEWAY INFO (Continued)

Step	Action
3	The following actions can be taken: • To enable gateway functionality, press **Y** at the `SNMP GATEWAY OPTION WILL BE CHANGED. CONTINUE (Y/N)?` prompt.   • To leave gateway disabled, press **N**.
4	Press **ESC**. The Main Menu screen reappears.

Table 24. SNMP Gateway Information

Gateway	Description	Default
ENABLE	Configured as a manageable SNMP node and receives trap notification from all AMUs on its network then forwards traps to the IP Address that is configured as a trap recipient	DISABLE
DISABLE	AMU is not a manageable node via SNMP and will not forward trap notifications	

CONFIG — SNMP COMMUNITY INFO

The SNMP information screen allows you to change the Community Access Privileges. Once the changes are made, they will be applied in the Multishelf SNMP Communities. The AMU-912 community strings must match the Element Manager. Refer to Table 25 on page 80 for SNMP Community Information.

CONFIG — SNMP COMMUNITY INFO

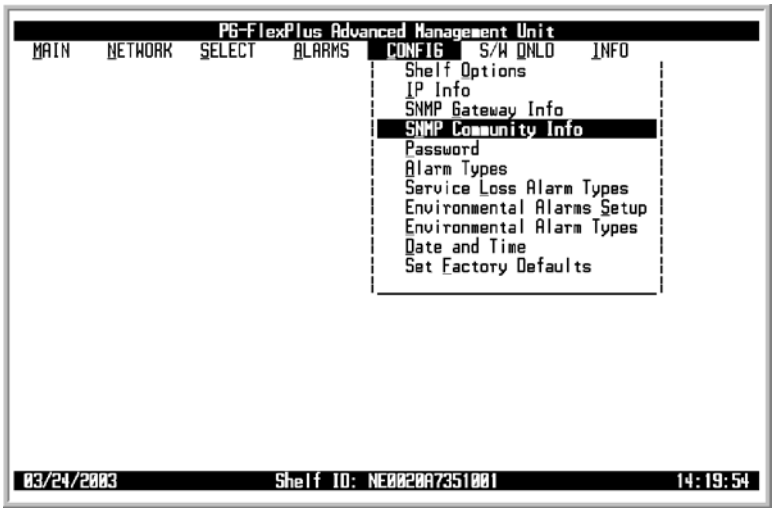
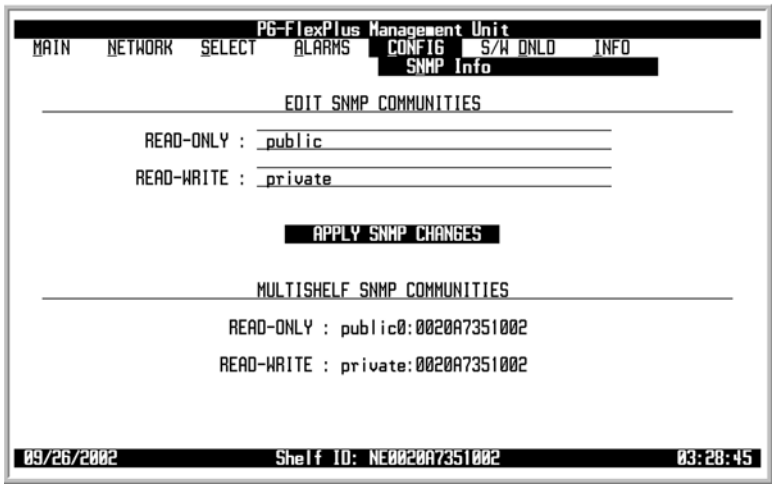
Step	Action
1	At the Main Menu screen, select **CONFIG**. Press ↓ to choose **SNMP Community Info**. The following screen appears. 
2	Press **ENTER**. The following screen appears. To change a field value, press ↓ or ↑ to move to the correct option. Type the desired values.  To apply SNMP changes, select the **ACCEPT SNMP CHANGES** button, then press **ENTER**.
3	Press **ESC**. The Main Menu screen reappears.

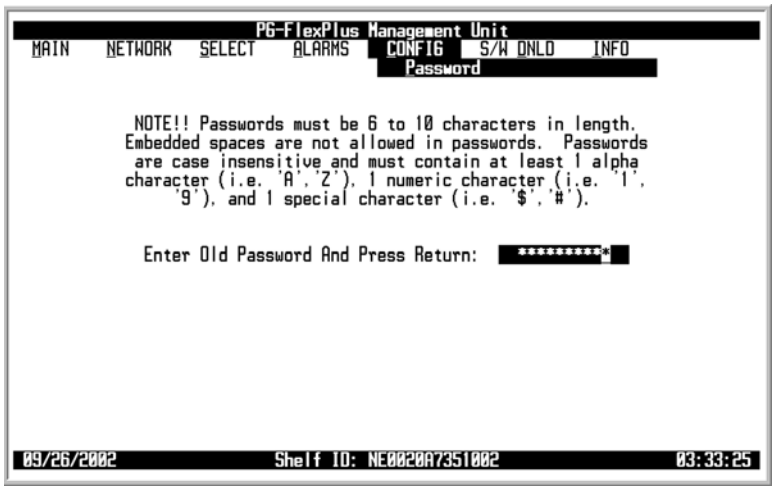
Table 25. SNMP Community Information

Communities	Description	Default
Read-Only	SNMP community string for read-only privileges	adcpublic
Read/Write	SNMP community string for read/write privileges	adcprivate

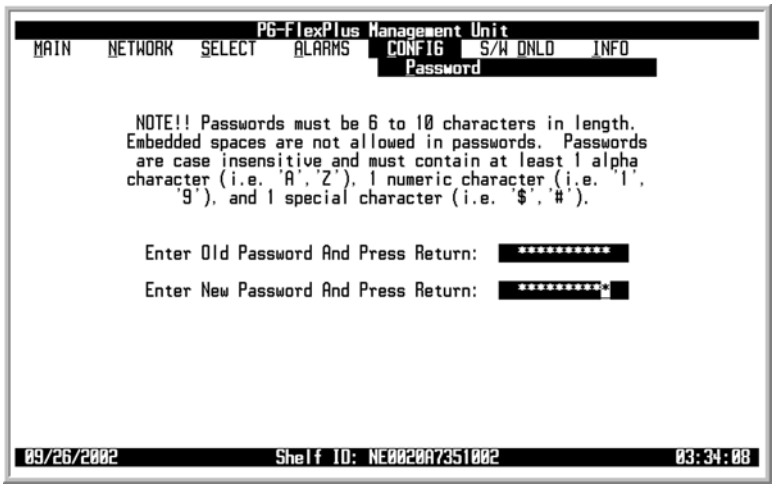
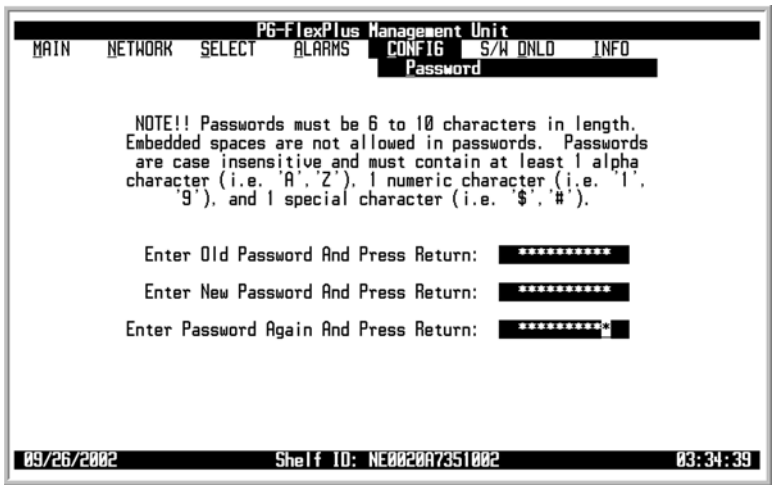
CONFIG — Password

This screen allows you to change the Password for security reasons. Refer to Table 21 on page 64 for valid values.

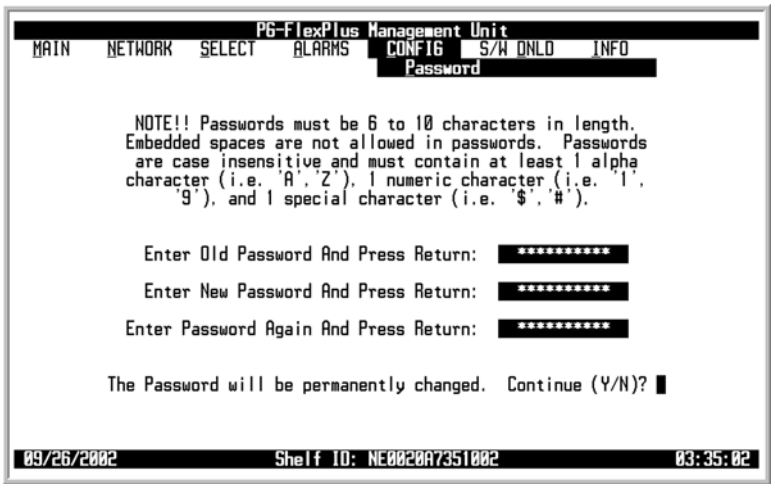
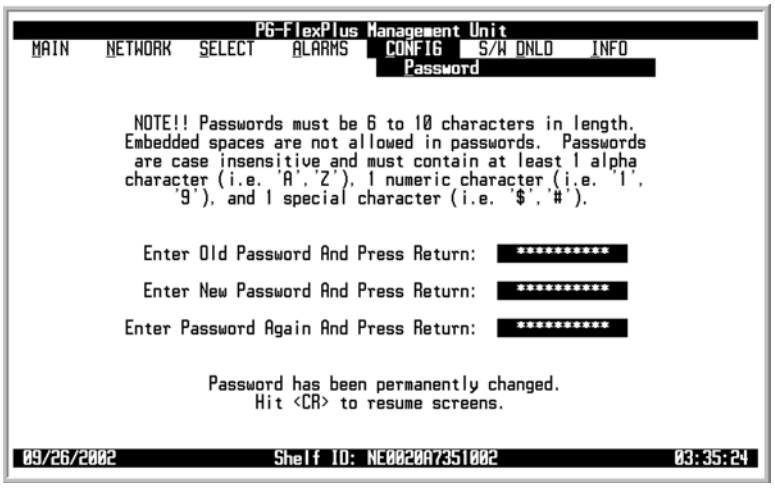
CONFIG — Password

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. 

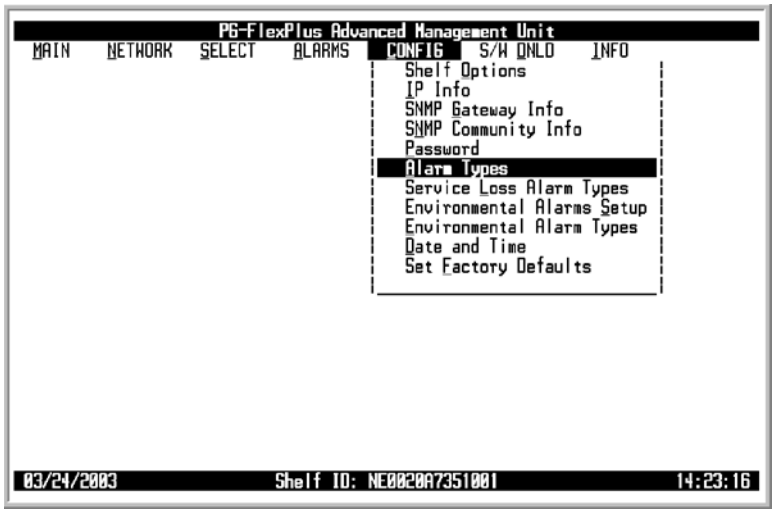
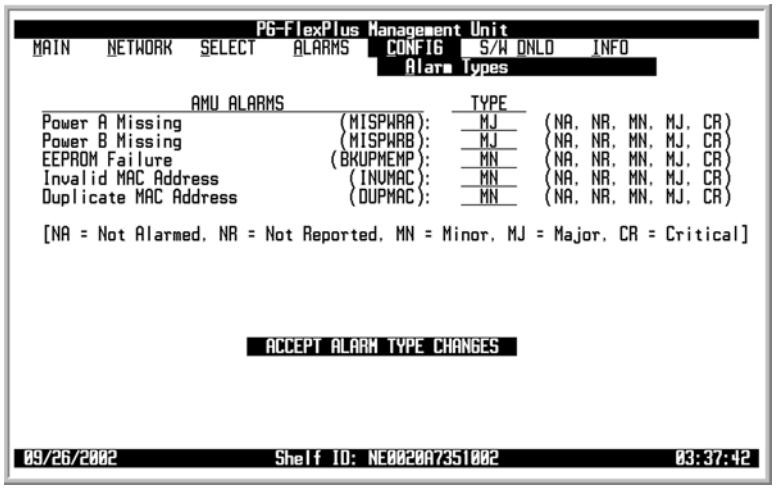
CONFIG — Password (Continued)

Step	Action
5	Enter the new *Password* again. Press **ENTER**. The following screen appears. 
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 — Alarm Types

The alarm types screen allows provisioning of AMU-912 alarm types. Table 27 on page 87 shows the alarm fields, values, descriptions and default settings. Table 26 on page 86 provides a description of the Alarm types reported.

CONFIG — Alarm Types

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

CONFIG — Alarm Types (Continued)

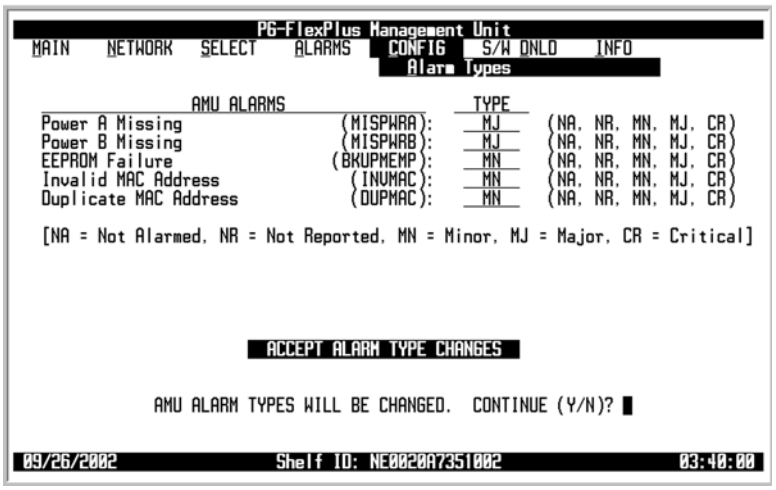
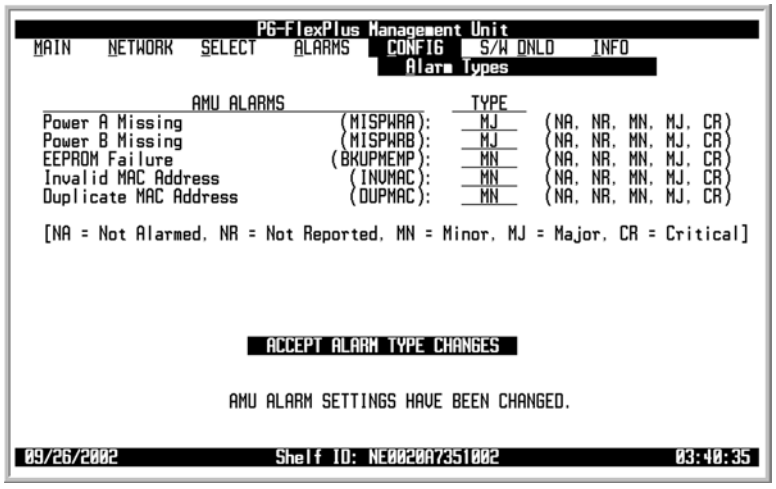
Step	Action
3	The following actions can be taken: a. To change the field value, press **SPACEBAR** to toggle to the desired value, or press ↓ or ↑ to move to the next option. b. To save the alarm type changes, select the **ACCEPT ALARM TYPE CHANGES** button, then press **ENTER**. From the `AMU ALARM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

Table 26. Alarm Types Reported

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

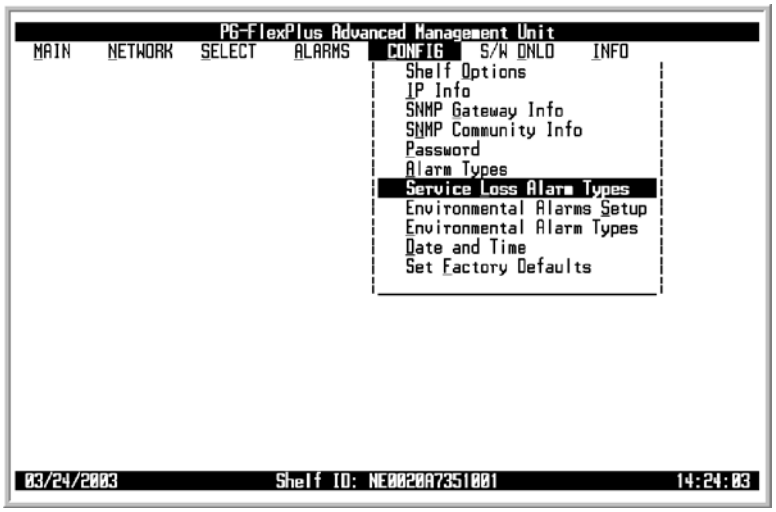
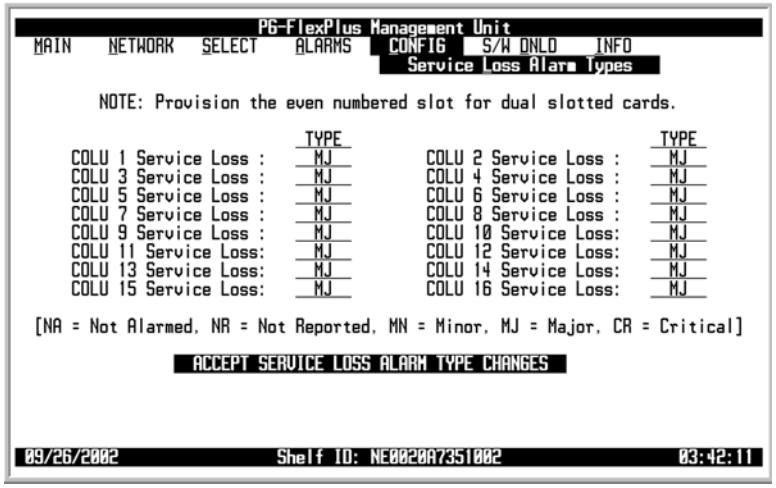
Table 27. Alarm Types

Alarm	Value	Description	Default
Power A Missing	CR, MJ, MN, NA, NR	AMU-912 has detected missing “A” -48 V battery	MJ
Power B Missing	CR, MJ, MN, NA, NR	AMU-912 has detected missing “B” -48 V battery	MJ
EEPROM Failure	CR, MJ, MN, NA, NR	Non-volatile database is corrupt	MN
Invalid MAC Address	CR, MJ, MN, NA, NR	AMU-912 has an invalid MAC address	MN
Duplicate MAC Address	CR, MJ, MN, NA, NR	AMU-912 has the same MAC address as another AMU-912 connected to the 10BASE-2 backplane network	MN

CONFIG — Service Loss Alarm Types

The service loss alarm types screen allows service alarm types to be provisioned. Table 28 on page 90 shows the service loss alarm fields, values, descriptions and default settings. Table 26 on page 86 provides a description of the alarm types reported.

CONFIG — Service Loss Alarm Types

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

CONFIG — Service Loss Alarm Types (Continued)

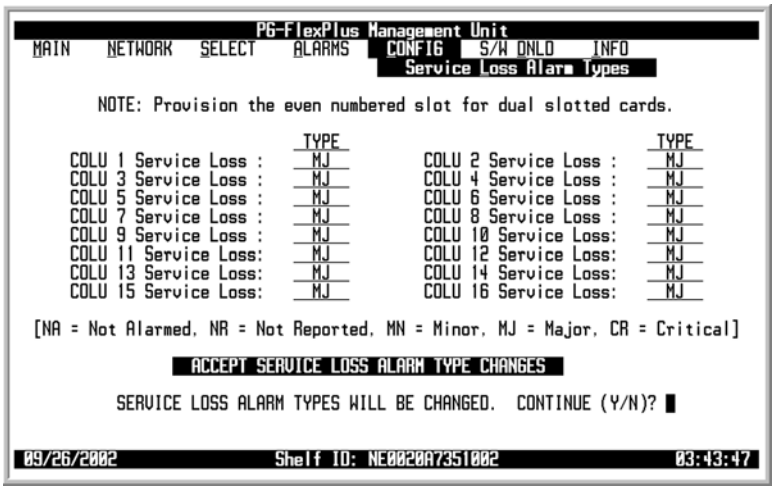
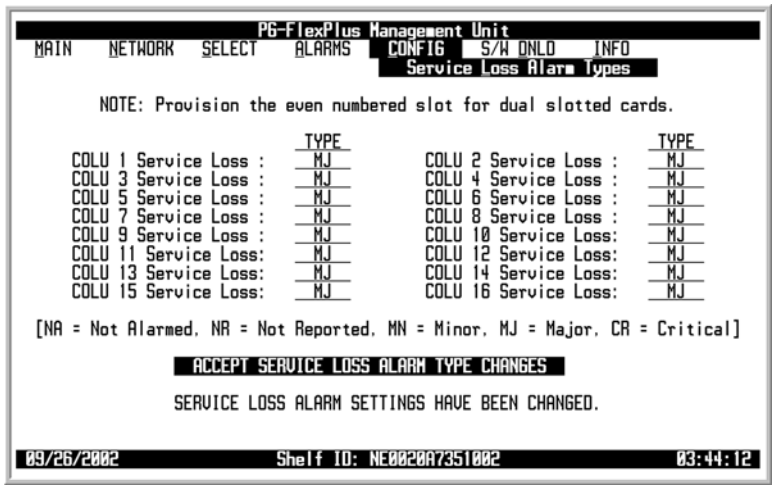
Step	Action
3	The following actions can be taken: a. To change the field value, press **SPACEBAR** to toggle to the desired value, or press ↓ or ↑ to move to the next option. b. To save the service loss alarm type changes, select the **ACCEPT SERVICE LOSS ALARM TYPE CHANGES** button, then press **ENTER**.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

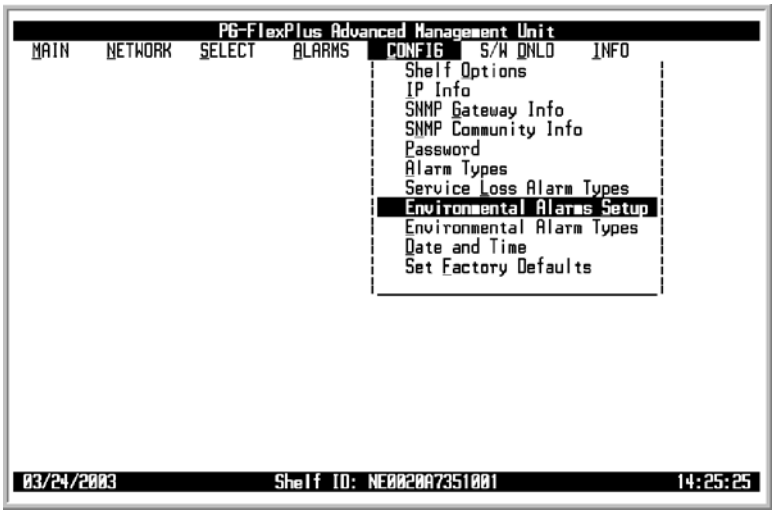
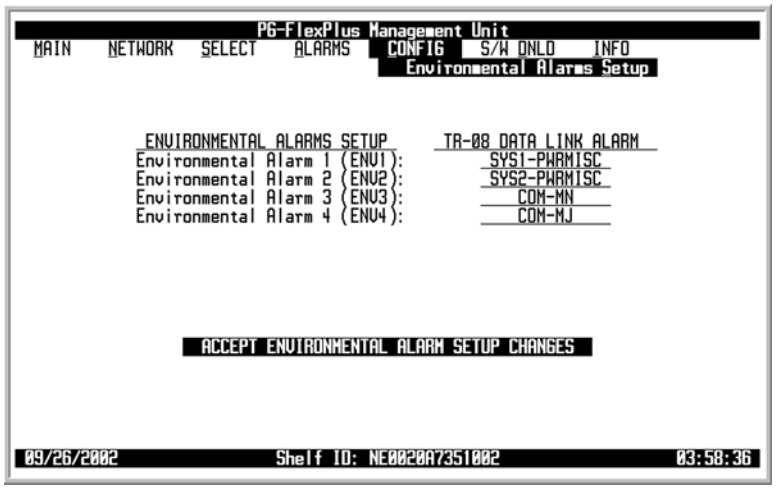
Table 28. Service Loss Alarm Types

Alarms	Value	Description	Default
Service Loss COLU*n* (where *n* = 1 – 16)	CR, MJ, MN, NA, NR	Service to an RT serviced by a COLU has been lost	MJ

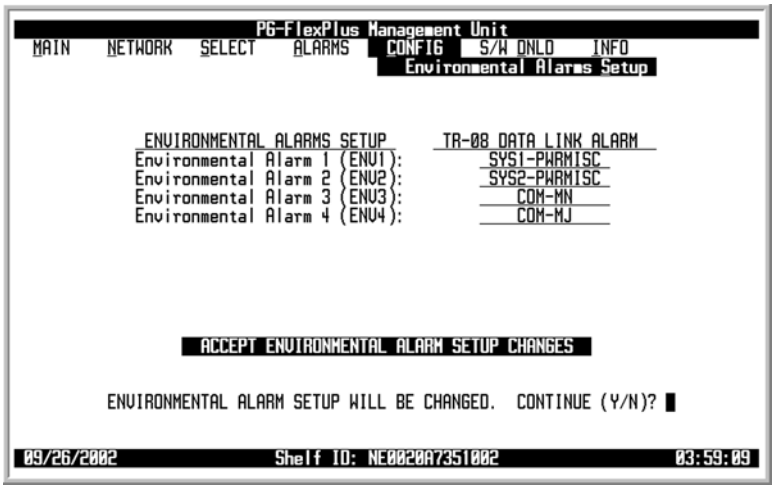
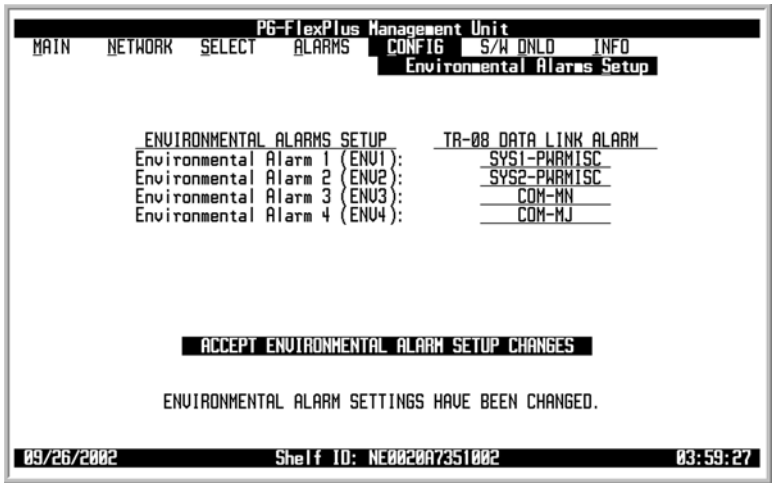
CONFIG — Environmental Alarms Setup

This screen allows TR-08 data link alarm types to be provisioned for each environmental alarm. Table 29 on page 93 shows the environmental alarm setup fields, values, descriptions and default settings.

CONFIG — Environmental Alarms Setup

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

CONFIG — Environmental Alarms Setup (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 environmental alarm type changes, select the **ACCEPT ENVIRONMENTAL ALARM TYPE CHANGES** button, then press **ENTER**. From the `ENVIRONMENTAL ALARM TYPE CHANGES WILL BE CHANGED. CONTINUE (Y/N)?` prompt, the following actions can be taken: • To save the environmental alarm type changes, press **Y**. All current values are set to desired values.   • To retain the existing environmental alarm types, press **N**.
4	Press **ESC**. The Main Menu screen reappears.

Each environmental alarm can be sent via specific bit locations in the datalink. Refer to Table 29 for a list of possible alarm bit values. Refer to Table 30 for alarm defaults.

Table 29. Environmental Alarm TR-08 Bit Positions

Value	Description
NOT REPORTED	Not reported
SYS1-PWRMISC	Reported via the system 1 PWR/MISC bit
SYS1-MN	Reported via the system 1 MN bit
SYS1-MJ	Reported via the system 1 MJ bit
SYS2-PWRMISC*	Reported via the system 2 PWR/MISC bit
SYS2-MN*	Reported via the system 2 MN bit
SYS2-MJ*	Reported via the system 2 MJ bit
COM-PWRMISC*	Reported via the system 1 and system 2 PWR/MISC bit
COM-MN*	Reported via the system 1 and system 2 MN bit
COM-MJ*	Reported via the system 1 and system 2 MJ bit
* DS1 5 (System 2 SHELF A) must be up and operating in TR-08 mode for these alarms to work correctly.	

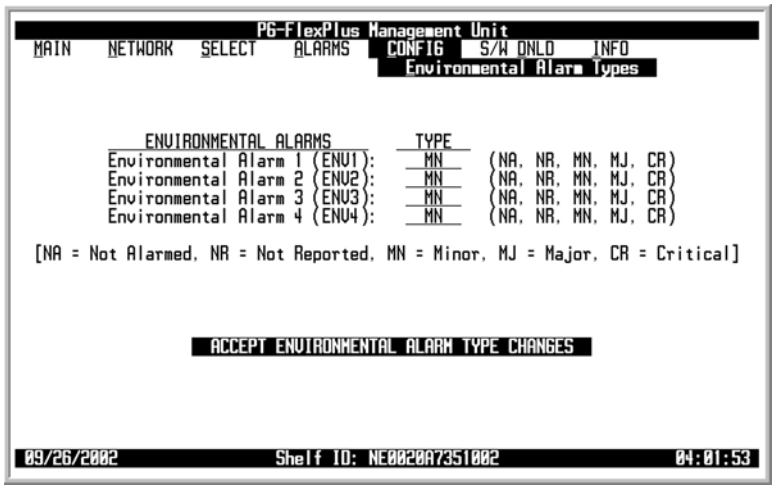
Table 30. Environmental Alarm Defaults

Alarms	Default
Environmental #1	SYS1-PWRMISC
Environmental #2	SYS2-PWRMISC*
Environmental #3	COM-MN
Environmental #4	COM-MJ
* Defaults to COM-MN in Field Shelf	

CONFIG — Environmental Alarm Types

The environmental alarm types screen allows the environmental alarm types to be provisioned. Table 31 on page 96 shows the environmental alarm type fields, values, descriptions and default settings. Table 26 on page 86 provides a description of the Alarm types reported.

CONFIG — Environmental Alarm Types

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

CONFIG — Environmental Alarm Types (Continued)

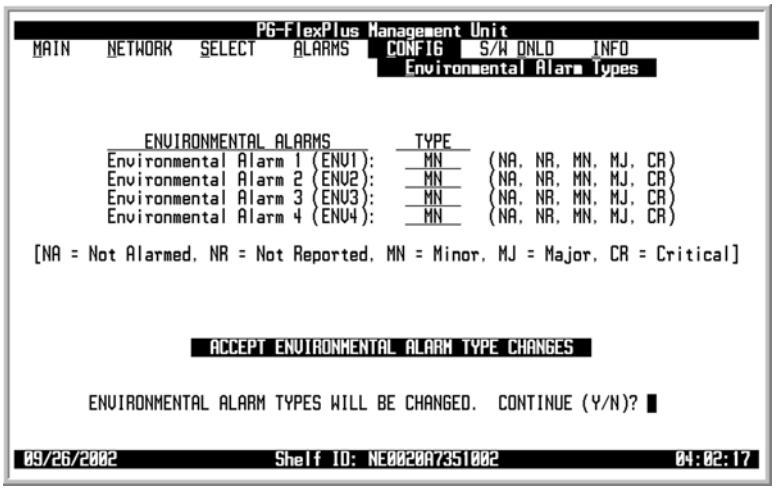
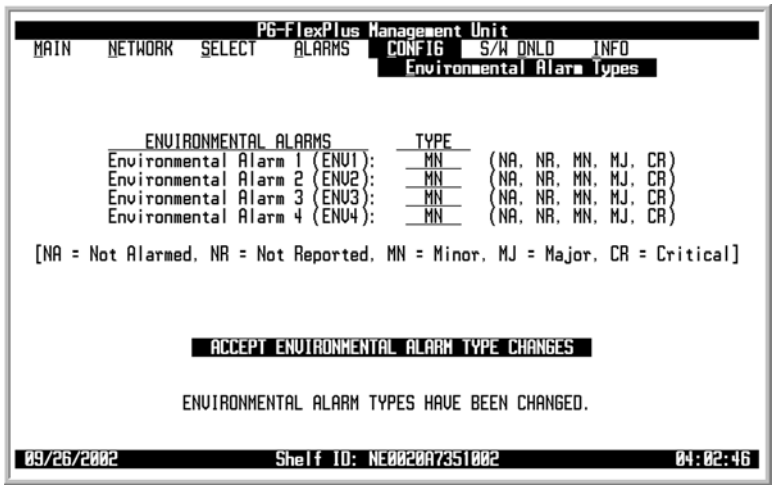
Step	Action
3	The following actions can be taken: a. To change the field value, press **SPACEBAR** to toggle to the desired value, or press ↓ or ↑ to move to the next option. b. To save the service loss alarm type changes, select the **ACCEPT ENVIRONMENTAL ALARM TYPE CHANGES** button, then press **ENTER**.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

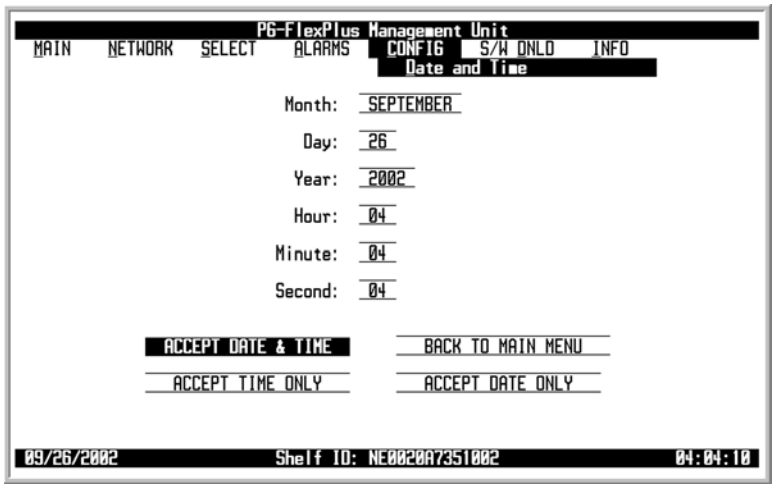
Table 31. Environmental Alarm Types

Alarms	Value	Description	Default
Environmental Alarm *n* (where *n* = 1 – 4)	CR, MJ, MN, NA, NR	Severity of Environmental Alarm that is active	MN

CONFIG — Date and Time

This screen allows you to set the system date and time. Refer to Table 21 on page 64 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.

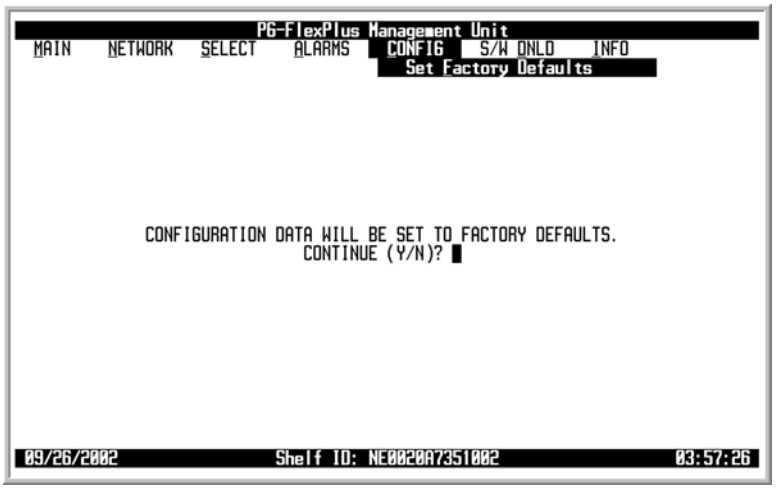
CONFIG — Date and Time (Continued)

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.

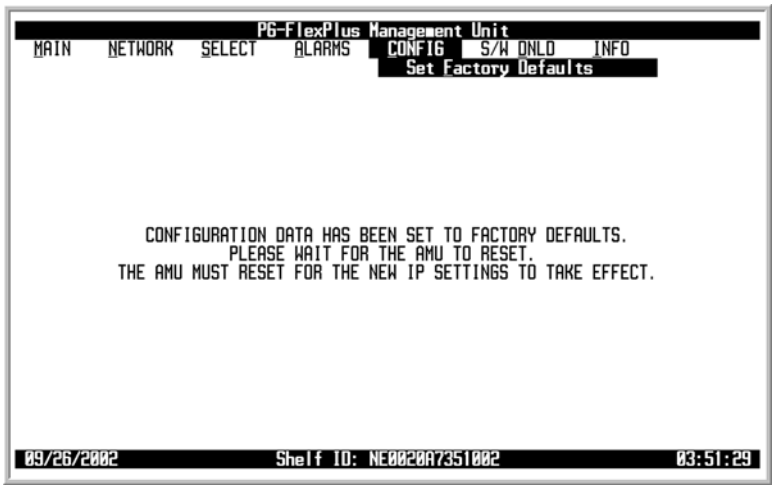
CONFIG — Set Factory Defaults

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. 

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.

SOFTWARE DOWNLOAD

This screen allows you to download new software to the AMU-912, COLU, MUXs and RT cards from the PC. Refer to Table 32 for sub-menu option and description, parameters and valid values.

Table 32. Software Download Option

Sub-Menu Options	Sub-Menu Descriptions	Parameters	Valid Values
Software Download	Allows you to download new software to the AMU-912, COLU, MUXs and RT cards from the PC	AMU Chosen for Software Download. Please Confirm (Y/N)?	Y or N

S/W DNLD— Start a Download

This screen allows you to download new software to the AMU-912, COLU, MUXs and RT cards from the PC. Refer to Table 9 on page 12 for download status information provided by AMU-912 LEDs.

This procedure covers a serial software download. If you want to download software through file transfer protocol (ftp) or trivial file transfer protocol (tftp – only initiated through an SNMP interface), please follow the onscreens instructions.

CAUTION

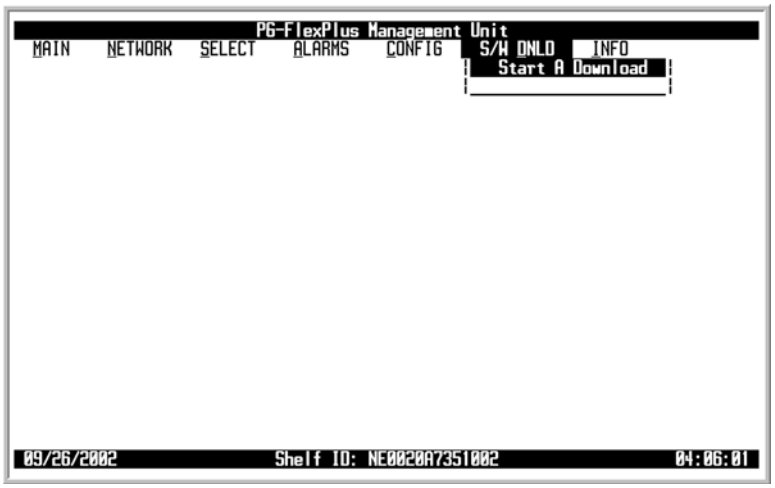
Before attempting a software download to an RT, make sure all units are synchronized (the High-bit-rate Digital Subscriber Line (HDSL) status is Normal).

If you are downloading new software to both the COLU and RT, download the new software to the RT first. Otherwise, you may not be able to communicate with the RT.

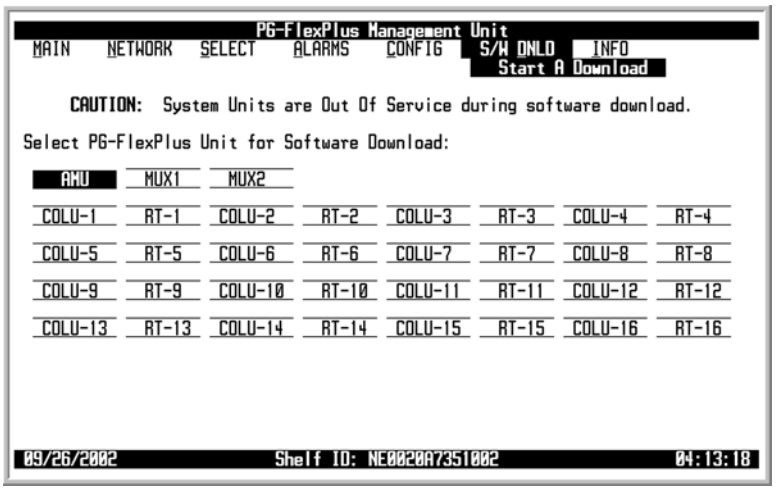
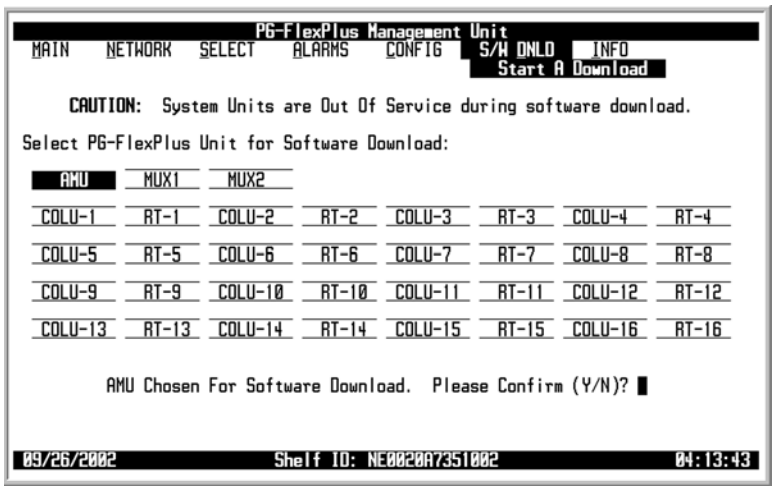
Performing a software download to a COLU, MUX or an RT interrupts service to all the lines served by the unit.

Verify the compatibility of the software before downloading. Release notes supplied with the diskette provides system compatibility information.

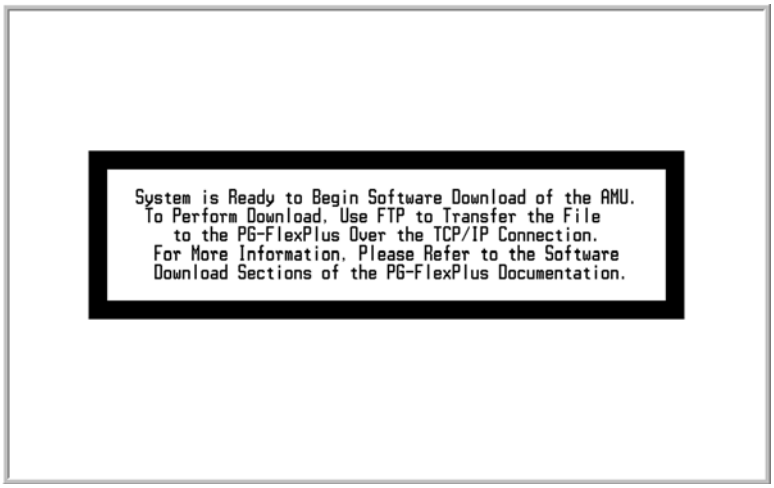
S/W DNLD— Start a Download

Step	Action
1	Connect a PC running a terminal emulator program to the AMU-912 RS-232 craft port. The terminal emulator program must emulate a VT-100 terminal, and support XMODEM program uploads. Downloading to the AMU-912 uses the same settings as the terminal, thus downloads can be done faster if the AMU-912 to PC link is operating at the highest baud rate supported by both devices. If the terminal emulator has the ability to support “relaxed” XMODEM protocol timing, also select this option. At the Main Menu screen, select **S/W DNLD**. Press ↓ to choose **Start A Download**. The following screen appears. 

S/W DNLD— Start a Download (Continued)

Step	Action
2	Press **ENTER**. The following screen appears.  Software download works the same way for the MUXs, RTs, and COLUs. This example shows software download to the AMU-912 card.
3	To download software to the AMU-912, press **Y** at the `AMU Chosen For Software Download. Please Confirm (Y/N)?` prompt. An RT download may take up to several minutes to prepare for a software download.  If you do not want to download software to the AMU-912 card, press **N**. Then press **ESC** and the Main Menu reappears.

S/W DNLD— Start a Download (Continued)

Step	Action
4	A message is displayed that informs you the system is ready and the applicable steps to follow to continue the software download. 
5	Instruct the terminal emulator to begin an XMODEM download. The file to be downloaded from the terminal to the AMU-912 has a .DWN extension and a prefix that identifies the card to which it should be downloaded. For example, if a AMU-912 was the target card, the file name would be similar to AMUAPPL.DWN, indicating that AMU-912 Application Code is to be transferred. Most terminal emulators indicate the progress of the download until completion. The AMU-912 provides a visual indication of download activity from the terminal to the AMU-912 by alternately blinking each of the front panel LEDs, except for the PWR LED. Do not interrupt the download process, unplug the system units or the cable connecting the VT-100 terminal to the system unit. Upon completion, the AMU-912 displays a message of success or failure of the download. If the download failed, see Download Retry on page 106 and Table 35 on page 108 for further instructions.

S/W DNLD— Start a Download (Continued)

Step	Action
6	If the download is unsuccessful or the **ESC** is pressed several times, a message is displayed indicating a failure.  At the `Press Any Key To Continue` prompt, press **ENTER**. The ADC banner is displayed briefly, then the Main Menu is displayed. Repeat this procedure again.

DOWNLOAD RETRY

If a download failure occurs, the AMU-912 may remain in boot mode. The AMU-912 indicates this by flashing all front panel LEDs with the exception of the PWR LED. An AMU-912 in boot mode is unable to process system alarms.

If you are unable to prepare for the download in a timely fashion (two minutes or less), an error message displays indicating a time-out has occurred.

If the AMU-912 fails to download, you can continue to retry until a successful download is achieved. If a failure occurs on a AMU-912 and no response is received to subsequent download attempts, remove and then reinsert the AMU-912 into the shelf and retry the download. Refer to Table 35 on page 108 for error messages.

SOFTWARE DOWNLOAD WITH MODEM

To perform software downloads of the system software through a modem connection, you may need to make some changes to the modem's configuration settings. The settings at the modem connected to the system unit are slightly different than the settings required at the modem connected to the PC used for the download. The following tables identify the functional characteristics required at each modem.

If you are using a modem that is not Hayes compatible, refer to the modem manufacturer's documentation for command codes required to implement the stated functional characteristics.

Modem Connected to PC

For a modem connected to a PC, use the settings in Table 33.

Table 33. PC Modem

Item	Functional Characteristic	Hayes Command String
1	Enable Flow Control	AT&F2
2	Disable TX Flow Control	AT&H0
3	Disable RX Flow Control	AT&I0
4	Disable Data Compression	AT&K0
5	Normal Mode (Error Control Disabled)	AT&M0

Modem Connected to System

For a modem connected to the system, use the settings in Table 34.

Table 34. System Modem

Item	Functional Characteristic	Hayes Command String
1	Enable Flow Control	AT&F2
2	Disable TX Flow Control	AT&H0
3	Disable RX Flow Control	AT&I0
4	Disable Data Compression	AT&K0
5	Normal Mode (Error Control Disabled)	AT&M0
6	No Command Echo	ATE0
7	Quiet (No Result Codes)	ATQ1

ERROR MESSAGES

Table 35 defines potential download error messages.

Table 35. Error Messages

Message	Description
Download Failed. Bad X-Modem Data Received.	A number of factors can cause this error to occur, such as a cable pulled during download or user cancellation. Basically, a generic error indicating a failure to complete the download occurred somewhere between the AMU-912 and the terminal emulator.
Download Failed. General Failure.	A number of factors can cause this error to occur. Retry downloading.
Download Timeout. X-Modem Session Never Started By Craft Terminal.	The user did not instruct the terminal emulator to begin an upload within two minutes of the AMU-912 indicating that it was ready for the download to begin.
Download Failed. Unknown Failure.	A number of factors can cause this error to occur. Retry downloading.
Download Failed. X-Modem Timeout Occurred During Download.	Displayed in situations where the terminal program began sending data, but for some reason the AMU-912 has stopped receiving data. If possible, verify that the terminal emulator is functioning correctly.
Download Failed. Invalid File For This Card.	The file selected for download was the wrong file for the card selected or the file has been corrupted.
Download Failed. Invalid Memory Boundaries For File Type.	The file selected for download was the wrong file for the card selected or the file has been corrupted.
Download Failed. Incorrect Download File Selected. Need To Download Boot Code.	The file selected for download was the wrong file for the card selected or the file has been corrupted.
Download Failed. Incorrect Download File Selected. Need To Download Application Code.	The file selected for download was the wrong file for the card selected or the file has been corrupted.
Download Failed. XMODEM Session Stopped By The User.	The user manually stopped the downloading while the downloading session was in process.

INFORMATION MENU OPTIONS

The Information Menu provides technical information about the system. Refer to Table 36 for sub-menu options and descriptions.

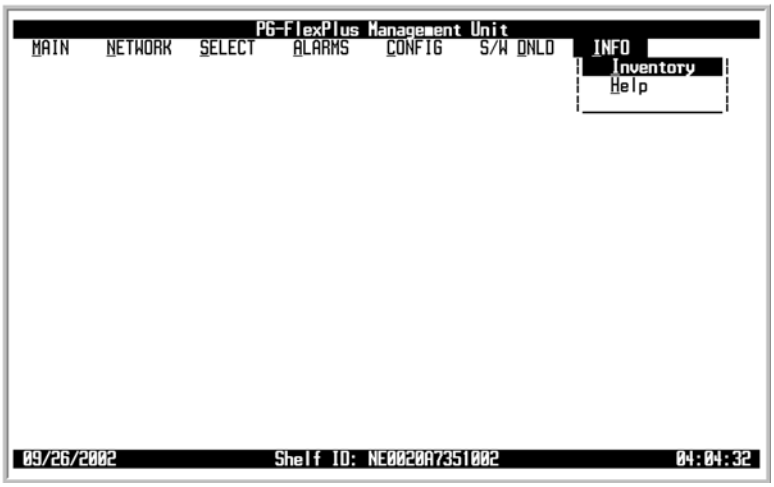
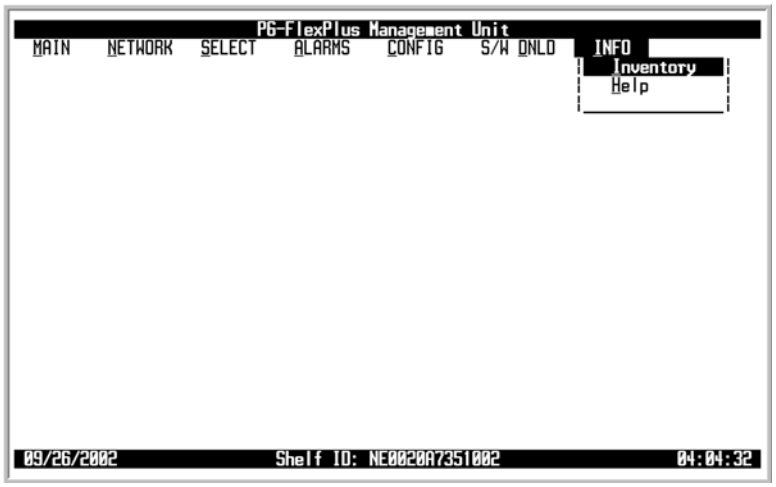
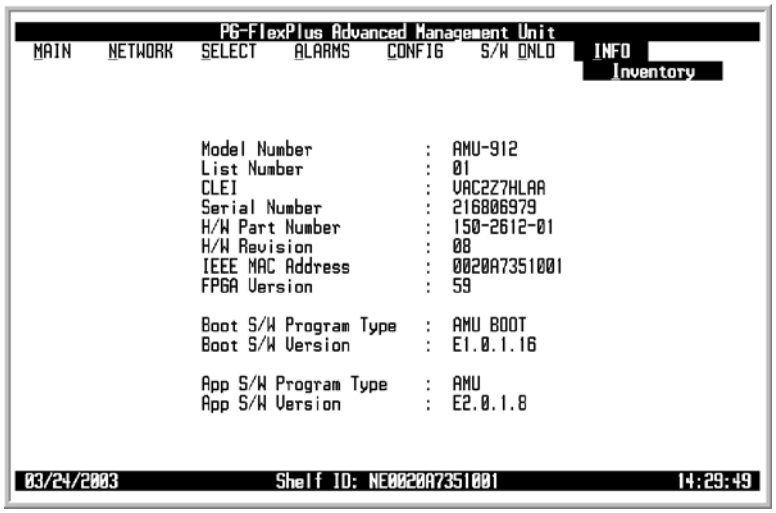


Table 36. Information Menu Options

Sub-Menu Options	Sub-Menu Descriptions
Inventory	Displays product identification information, manufacturing data, software versions and the hardware revisions for the AMU-912
Help	Provides information on using the system screens and menus

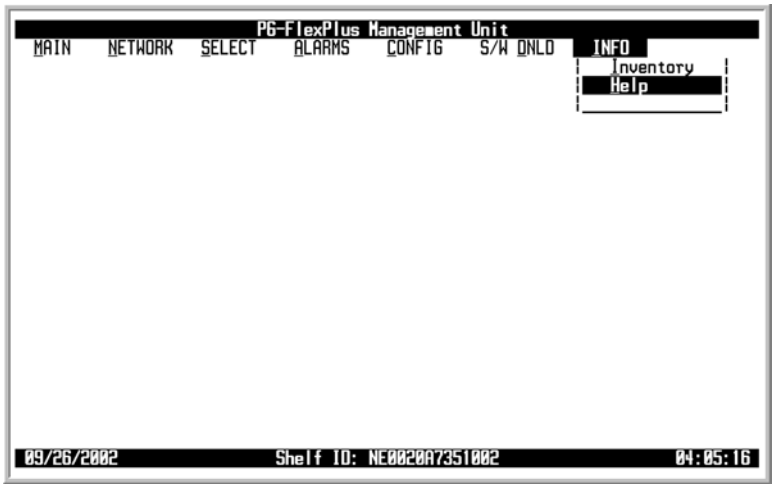
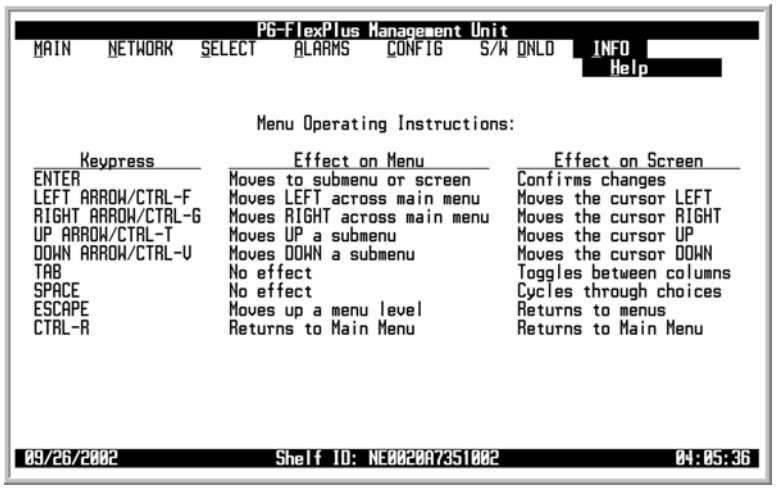
INFO — Inventory

This screen displays product identification information, manufacturing data, software versions and the hardware revisions for the AMU-912.

Step	Action
1	At the Main Menu screen, select **INFO**. Press ↓ to choose **Inventory**. 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 37 provides fault isolation and troubleshooting procedures for the AMU-912.

Table 37. Fault Isolation and Troubleshooting

LED	State	Probable Cause	Solution
PWR	Off	• No input power • AMU-912 power fuse blown • AMU-912 processor stopped	• Verify fuses on bay fuse panel • Check input power on the shelf battery terminations • Remove and re-insert AMU-912 • Replace the AMU-912
	Flashing	One of the two CO battery feeds is not present	• Verify fuses on bay fuse panel • Check input power on the shelf battery terminations • Remove and re-insert AMU-912 • From the Main Menu (Alarms sub-menu), verify no alarms exist on the AMU-912 • Replace the AMU-912
	On	OK	
FAULT	On	Problem with the AMU-912	Replace the AMU-912
	Off	OK	
CRIT MJ MN	On	Alarm on the shelf	From the Main Menu (Alarms sub-menu), view the alarms and clear the indicated trouble
	Off	OK	
ACO	On	ACO function has been activated while an alarm exists on the shelf	LED extinguishes when the alarm is cleared
	Off	OK	

ACRONYMS

A

ACO – Alarm Cut-Off

AWG – American Wire Gauge

C

CD – Carrier Defect

CEV – Controlled Environment Vault

CO – Central Office

COLU – Central Office Line Unit

COT – Central Office Terminal

CR – Critical

D

DCE – Data Carrier Equipment

DDL – Derived Data Link

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

EMS – Element Management System

ES – Errored Seconds

ESD – Electrostatic Discharge

F

FCC – Federal Communications Commission

G

GND – Ground

H

HDSL – High-bit-rate Digital Subscriber Line

I

IDLC – Integrated Digital Loop Carrier

ISDN – Integrated Services Digital Network

L

LAN – Local Area Network

LCF – Loop Current Feed

LCFO – Loop Current Feed Open

LED – Light Emitting Diode

LOF – Loss of Frame

LOS – Loss of Signal

M

MAN – Metropolitan Area Network

MIB – Management Information Base

MJ – Major

MLT – Mechanized Loop Testing

MN – Minor

MSLAN – Multishelf Local Area Network

MUX – Multiplexer

N

NA – Not Alarmed

NEBS – Network Equipment Building System

NR – Not Reported

P

PGTC – Pair Gain Test Controller

POTS – Plain Old Telephone Service

R

RD – Receive Data

RFC854 – Request for Comment 854 TELNET Protocol Standard for TL1

RINGGRD – Ring Ground

RMA – Return Material Authorization

RT – RemoteTerminal

S

SES – Severely Errored Seconds

SHDSL – Symmetric High-bit-rate Digital Subscriber Line

SNMP – Simple Network Management Protocol

SYNC – Synchronization

T

TD – Transmit Data

U

UAS – Unavailable Seconds

UDLC – Universal Digital Loop Carrier

W

WAN – Wide Area Network

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:	www.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: repair.return@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.

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.

World Headquarters:
ADC Telecommunications, Inc.
PO Box 1101
Minneapolis, Minnesota USA 55440-1101

For Technical Assistance:
800.366.3891

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