

XtendLan

XL-GDB TDM over G.SHDSL Users's Guide



XL-GDB101V	V.35 over 2-wire G.SHDSL
XL-GDB101S	RS-449/EIA-530 over 2-wire G.SHDSL
XL-GDB101F	Ethernet over 2-wire G.SHDSL
XL-GDB101E	E1 over 2-wire G.SHDSL
XL-GDB102E	E1 over 4-wire G.SHDSL
XL-GDB101T	T1 over 2-wire G.SHDSL
XL-GDB102T	T1 over 4-wire G.SHDSL

*This Manual is for S/W ver. 3.14 or above
Manual version 1.01*

XL-GDB SHDSL series Executive Summary

Today's bandwidth requirement applications, such as Internet access, remote LAN access, teleconferencing, workgroup and data sharing, telecommuting and numerous varieties of digital video services and the increasing volume of traditional data, are driving demand for high-speed data network access.

We, XTENDLAN, design, develop and market transmission systems based on Digital Subscriber Line (DSL) technology for copper wire plant. They support all contemporary data rates, from 64kbps to multi-megabit symmetric and asymmetric transmission for voice, video and data communications over a twisted copper pair. Our access systems link enterprise LANs and Network Service Providers over private and public networks across the local loop, the connection between the customer and the first network node.

Deploying in nearly any symmetric application requiring bandwidths from 192kbps to 2.3Mbps, G.SHDSL is poised for the best cost-effective solution for business-based applications such as Internet access and remote LAN access. By adapting G.SHDSL, Small to Medium Enterprises (SME) no longer afford the expensive enterprise data solutions such as T1/E1. **XL-GDB** offers Telecom service providers the best cost-effective solution for immediate implementation of replacing T1/E1 leased line.

XL-GDB provides full duplex capability of supporting selected symmetric user data rates of T1, E1 or $n \times 64$ kbit/s (range from 192 kbit/s to 2 304 kbit/s) leased line services or Ethernet interface extension using a Trellis Coded Pulse Amplitude Modulation (TCPAM) line code over one non-loaded two-wire metallic cable pair. The line speed for transmitted and received data shall be multiple for lengthening the transmission distance. These selectable line rates empower Telecom to create high-bandwidth service offerings or select the proper speed for distance-sensitive deployments, thereby deploying the high-bandwidth efficiently and fitting subscribers' needs simultaneously.

Chapter 1: Product Description

1.1 Introduction

The XL-GDB SHDSL access system provides high-speed data access over single-pair copper wires. It can transmit up to 2.304 Mbps V.35 or Ethernet signal without a repeater for more than 7km (24 AWG line) at a Bit Error Rate of less than 10^{-7} . Using SHDSL transmission technology, the XL-GDB SHDSL network access system allows fiber quality transmission on a single pair of copper wire. Using lower gauge larger copper wire may allow you to attain greater distances.

1.2 Product Interaction

XL-GDB desktop SHDSL modem that is part of the XtendLan SHDSL access system. Used in conjunction with the XL-GDB shelf type CO (Central Office) line card or desktop SHDSL modem, the unit provides repeater less data transport of up to 2.304 Mbps, over a single pair of unconditioned copper wire. Also models with 2-pair transmissions provide rates up to 4.096 Mbps.

The rate is automatically adjusted to synchronize at specified rates, corresponding to the distance between the local and remote units. For instance, under the E1 transmission specification, the data rate is software selectable at any of the available Nx64 kbps rates where N is from 3 to 32. (see chart 1,).

Chart 1: Transmission Distance (2wire, w/o noise)

Speed (kbps) vs. cable diameter	2048	1544	1024	768	512	384	256	192	128	64
0.4 mm	3.2km	3.6km	4.5km	4.8km	5.1km	5.3km	5.7km	6.3km	6.3km	6.3km
0.5 mm	3.6km	3.9km	4.8km	5.1km	5.8km	6.3km	7.4km	8.0km	8.0km	8.0km

Chart 1: Transmission Distance (4 wire, w/o noise)

Speed (kbps) vs. cable diameter	4096	3072	2048	1756	1024	768	512	384	256	128
0.4 mm	3.2km	3.6km	4.5km	4.8km	5.1km	5.3km	5.7km	6.3km	6.3km	6.3km
0.5 mm	3.6km	3.9 km	4.8km	5.1km	5.8km	6.3km	7.4km	8.0km	8.0km	8.0km

1.2.1 Operation

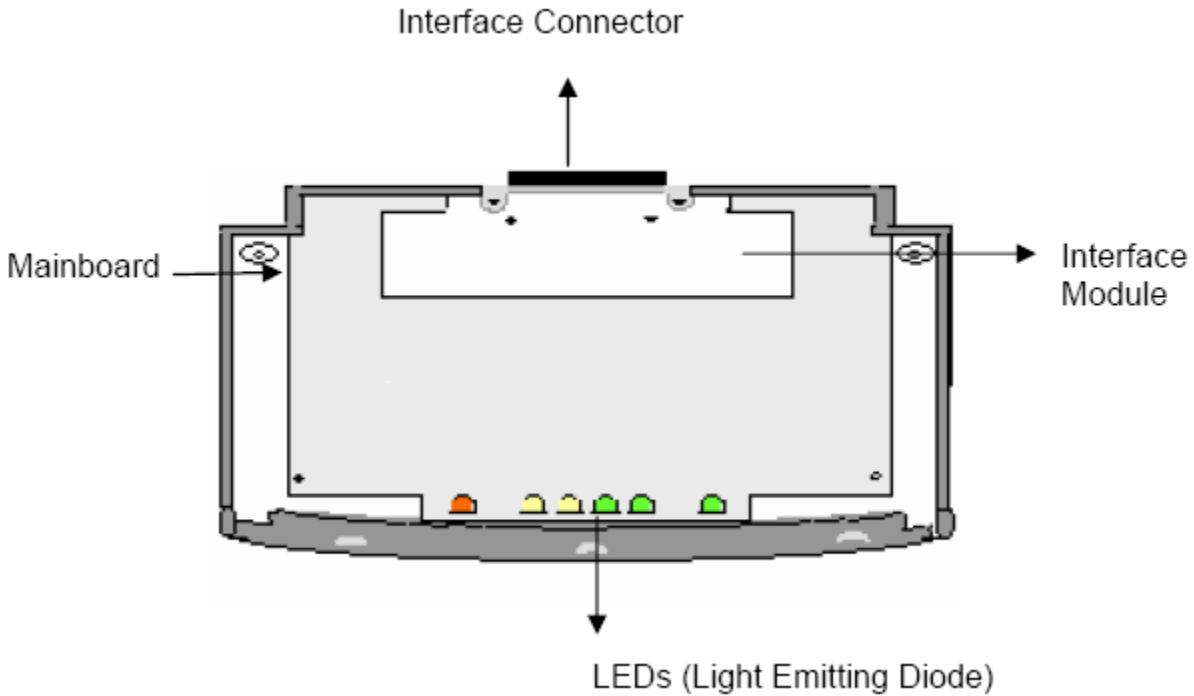


Figure 1.1 XL-GDB with external AC power architecture

The XL-GDB receives its power from the AC power source via an AC adapter provided by XtendLan. In E1 or Fractional E1 mode (also in T1 or Fractional T1 mode), the local equipment (i.e.: router or PBX) supplies data at full or fractional E1 speed to the G.703 data port of the XL-GDB. The XL-GDB produces a digitized data stream, which is transmitted over the single copper pair to the line port of its associated XL-GDB line interface card.

The XL-GDB interface card then directs the data stream to the central office switch or other central office equipment for transmission to its destination. Payload rate can be automatically adjusted downwards until it finds the highest speed it can sync to the remote unit, thereby maximizing the rate and reach. At the central office site, manual rate selection can be performed. It has to base on what fixed rate service is desired. Utilizing the V.35 or 10/100Base-TX data port, the XL-GDB SHDSL system can support un-channelized data rates up to 2.304 Mbps.

1.2.2 System Interface

The XL-GDB system supports four high-speed digital interfaces:

- V.35, model ***XL-GDB101V***
- RS-449/EIA-530, model ***XL-GDB101S***
- Ethernet Remote Bridge (10/100 BaseT Port), model ***XL-GDB101F***
- E1 (G.703), model ***XL-GDB101E*** and ***XL-GDB102E***
- T1 , model ***XL-GDB101T*** and ***XL-GDB102T***

Configurable items vary depending on the type of interface being used. System alarms, diagnostics, and transmission line history will also differ depending on the interface type.

- Data Rate: $n \times 64 + i \times 8$ Kbps, $1 \leq n \leq 36$ and $0 \leq i \leq 7$, 64 ~ 2312 Kbps.
- Symbol Rate: (Data rate+8000)/3 symbol/sec.
- Modulation Method: 16-TCPAM, G.SHDSL
- Impedance: 135 ohms.

1.2.2.1 V.35

The XL-GDB101V supports a V.35 interface with the following characteristics:

- Bit Rate: $N \times 64$ Kbps, $1 \leq N \leq 36$, 192, 256, 384, 512, 768, 1024, 1168, 1280, 1544, 2048, 2312 Kbps.
- Clock Source: Internal, DSL or DTE ,
- The I/O connectors: The pin lists for the interface connectors appear in Appendix A.

1.2.2.2 Ethernet Remote Bridge

The XL-GDB101F provides an Ethernet Remote Bridge interface. The Ethernet Remote Bridge (IEEE standard 802.3/802.3u) provides one port connected to an Ethernet LAN running at 10/100 Mbps and the DSL port connected to the WAN at up to 2.304 Mbps. The bridge allows an individual Ethernet computer or an Ethernet LAN to connect to the network through the XL-GDB. in addition, it also has following features:

- Operate as a self-learning bridge specified in the IEEE 802.1d full protocol transparent bridging function.
- Supporting up to 4096 MAC learning addresses.
- Supporting Bridge filter function

1.2.2.3 EIA-530/RS-449

The XL-GDB101S supports both RS-449 and EIA-530. These two interfaces have the same characteristics, which listed below: Both RS-449 and EIA-530 are synchronous, high-speed digital

type interface. It uses multiple-wire to carry data and control signals. RS-449 and EIA-530 have two timing signals produced by the DCE and supplied to the DTE. The pin lists for the interface connectors appear in Appendix A. RS-449 interface uses the EIA-530 interface module in combination with a

converter cable, which adapts the DB25 connector to DB37 connector.

1.2.2.4 E1 (G.703)

The G.703 (E1) interface uses one pair to carry digital data. This interface transfers data at full E1 rate of 2.048 Mbps or at any available Fractional E1 rate. The E1 clock signal is either synchronized to the network (CO) or recovered by the CPE. The detailed features of E1 are:

- Bit Rate: $N \times 64 \text{Kbps}$, $1 \leq N \leq 32$, 192 ~ 2048Kbps.
- Frame Format: UNFRAMED or Structured FRAME and selectable with FAS, FAS+CRC and UNFRAME mode.
- Impedance: 120 ohms & 75 ohms.
- Line Code: HDB3 (High Density Bipolar of Order 3)

XL-GDB101E working over 2 wires (1-pair). XL-GDB102E is able to combine 4 wires (2-pairs) to extend transmission distance.

1.2.2.5 T1

The T1 interface uses one pair to carry digital data. This interface transfers data at T1 rate of 1.536 Mbps or at any available Fractional T1 rate. The T1 clock signal is either synchronized to the network (CO) or recovered by the CPE.

- Bit Rate: $N \times 64 \text{Kbps}$, $1 \leq N \leq 24$, 192 ~ 1544Kbps.
- Frame Format: SF, ESF or UNFRAMED selectable.
- Impedance: 100 ohms
- Line Code: AMI or B8ZS selectable.

1.3 Physical Description

XL-GDB has for user's manual operation from LCD panel. Device is housed in a plastic and metal enclosure. It is 203 mm long, 198 mm wide, 36 mm high, and weighs approximately 0.9 Kg.

1.4 System Interaction

You interact with your system using a terminal or PC connected to the CID port; you can select a desired function from the system's multi-level menu structure. That function enables you to either: Define or change an operating parameter of the system or, display the status and alarm of the system.

1.4.1 External PC Interaction

The rear panel of the XL-GDB includes an RS-232 port marked CID for connection to a terminal at baud rate of **9600, no parity, 1 stop bit and 8 bits**. When performing CRC and QRSS tests from supervisory port, the connection between the external PC and the SHDSL unit must always be presented. The tests will be terminated when the connection is removed. Chapter 5 contains detailed supervisory port operating directions.

Chapter 2: System Overview

2.1 General

The following section describes the XL-GDB access system, DSL transmission, performance monitoring, and configuration, alarm management, diagnostics and common applications.

2.2 System Description

The typical XL-GDB SHDSL access system consists of a XL-GDB at the customer site interfacing with a XL-GDB line card at the central office over a Symmetric Digital Subscriber Line transmission line. The system transmits data symmetrically, at the same rate in both directions, over one pair of copper wires. XL-GDB allows existing and new telephone companies to expeditiously and economically providing this high-speed access to their customers. In order to satisfy increasing demand for high data rate services, XL-GDB provides transmission over a single copper pair more than doubling the transmission capacity of the existing copper plant. The XL-GDB single-pair SHDSL access system maximizes network performance and provisioning flexibility by providing automatic rate/reach adjustment at the various symmetric data rates (see chart 1). XL-GDB is configured and managed locally via a VT-100 type Terminal connected to the unit through the CID port on the rear of the unit. It can also be configured and managed remotely via a terminal connected to the far-end XL-GDB.

2.3 SHDSL Transmission

Today's bandwidth-hungry applications such as Internet access, remote LAN access, teleconferencing, workgroup and data sharing, telecommuting and numerous varieties of digital video services are driving today's demand for high-speed data network access. These content rich applications have put extraordinary stress on that vital connection between the customer and the first network node... the local loop. To address this need for higher bandwidth and to minimize the bottleneck at the local loop, the telecommunications industry has developed a set of new technologies, the most significant of which is Digital Subscriber Line (DSL) transmission. Many types of DSL have been developed for various applications. XtendLan SHDSL address both the need for higher bandwidth and the efficient use of existing copper by combining the latest SHDSL technology to transmit and receive traffic from 64kbps to 2.304 Mb/s and up to 6,300 meters while using only one-pair of 24 AWG copper wire. Because only one pair of copper wire is needed with SHDSL technology, the capacity of the local loop infrastructure is enhanced dramatically. The

multi-rate capability of the XL-GDB SHDSL access system provides needed flexibility for service providers deploying today's digital services.

2.4 Real-time Performance Monitoring

The system provides extensive real-time, non-disruptive monitoring of system performance. DSL transmission and interface port parameters are continuously monitored. Current and historical data is available to assist you in identify sources of problems during troubleshooting.

2.4.1 Monitored Parameters

Signal/Noise Ratio: This is a DSL transmission parameter, measured in dB, which indicates the Signal-to-Noise (S/N) ratio at a receiver point. The signal-to-noise value is available on the CID's status screen and the value is updated every second.

DSL CRC-6: This is a 6-bit word in every DSL frame, representing a calculation based on all the bits in that frame except for FAW and CRC-6 bit word. Any mismatch at the receiver, between the received CRC-6 and the one calculated based on the received data in the frame, indicates one or more bits were received in error in that second and it is considered an Errored Second (ES).

DSL Sync Loss: To assure proper synchronization between DSL transceivers, a sync word is generated in every frame. A sync loss is declared when one or more bits in five consecutive sync words are detected in error. When this happens, the entire second of data is considered an Unavailable Second(UAS).

2.4.2 History Reports Based on detected parameters, the following derived performance parameters are calculated:

Error Seconds (ES): a second in which at least 1 CRC-6 error is detected.

Sever Error Seconds (SES): a second in which at least 150 CRC-6 errors are detected.

Unavailable Seconds (UAS): a second in which one or more sync loss ebeny has occurred.

Cumulative counts of these parameters are displayed via the console as discussed in Chapter 5 "Configuration/Operation." The readout displays the total count of each parameter since the last time the count was cleared.

2.4.3 Status Readouts

In addition to history reports, the XL-GDB provides current status readouts via CID. The Status menu displays the signal/noise ratio as well as loss of sync or errored CRC. For the synchronous interfaces such as V.35, the status of clock and control lead is shown. For the G.703 interface, such status items as HDB3 detected, frame bit error, carrier loss, yellow alarm and sync loss are indicated if they are present.

2.5 Interface Configuration

Parameters can be changed by using CID. When using a terminal, the parameters are selected from the Configuration menu.

2.6 Interface Type

The XL-GDB is configured as DCE and is provided with a female connector for V.35, EIA-530, RS-449 and X.21 interfaces. Appendix A lists each of the signals, pin numbers, and their relative direction for the different interfaces. G.703 (E1) and T1 interfaces are available.

2.7 Alarm management

The XL-GDB includes alarm to alert you of problem conditions on both the DSL transmission facility and the data interface. On the DSL line, loss of Sync will activate an alarm, independent of the access interfaces.

Loss of Sync: This alarm indicates that the facility cannot transmit data until the XL-GDB can re-synchronize itself. This is always considered an alarm. The alarm indication is shown as a local and a remote sync loss. On the G.703 and T1 interfaces, numerous alarm conditions will be reported if they are present:

1. Loss of Frame (LOF)
2. BPV Detected
3. RAI/YEL: Remote alarm indicator/Yellow alarm
4. AIS: Alarm indication signal
5. CRC Error
6. LOS: Loss of signal

2.8 Diagnostics

In addition to the real-time, non-disruptive performance monitoring discussed in Section 2.4, the XL-GDB System provides for disruptive (out-of-service) diagnostic testing. For detailed Loopback points, please refer to Appendix D Loopback Diagram. The XL-GDB system does this by incorporating four loopback modes as follows:

2.8.1 Near End Loopback (NearEndLB)

In this mode, The NLB capability is set up inside STU-C/STU-R as close as possible to the network side interfaces. The NLB is capable of control (activation and deactivation) by CID. The received signal is sent to the loop during the NLB is activated. For example, if Near End Loopback is activated at STU-C, the direction of Near End Loopback would be like (A) in figure 2.1.

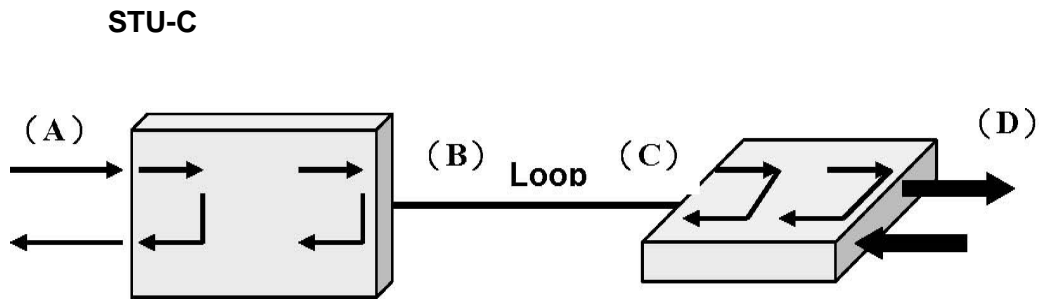


Figure 2.1 Near End Loop Back

2.8.2 Local Loopback(LocalLB)

The local loopback capability is set up inside STU-C/STU-R as close as possible to the loop interfaces. The local loopback is capable of control (activation and deactivation) by CID. The received signal is sent to the loop during local loopback. For example, if local loopback is activated at STU-C, the direction of local loopback would be like (B) in figure 2.2

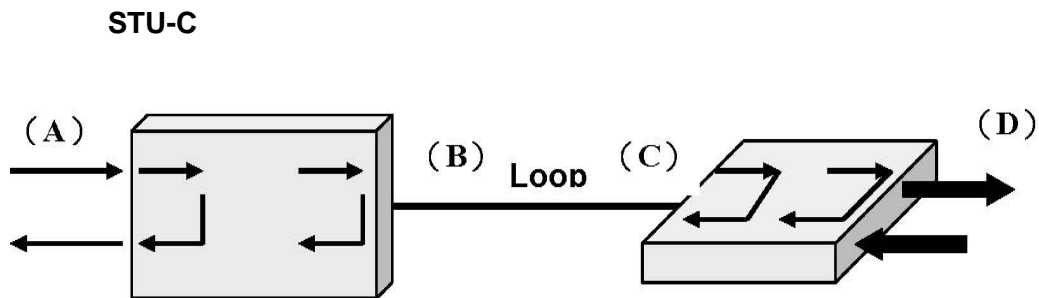


Figure 2.2 Local DSL Loopback

2.8.3 Remote Loopback (RemoteLB)

The Remote Loopback is able to be activated and deactivated through EOC via CID interfaces. This loopback is used for checking the loop and transceiver units of STU-C/STU-R. The received signal is sent to network side interface during the RLB loopback. For example, if Remote Loopback is activated at STU-C, the direction of local loopback would be like (c) in figure 2.3

STU-C

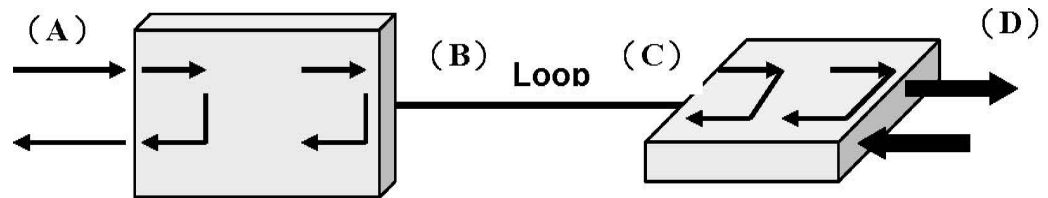


Figure 2.3 Remote Loopback

2.8.4 Remote Payload Loopback (PayloadLB)

The Remote Payload Loopback is able to be activated and deactivated through EOC via CID interfaces, and is set up inside STU-C/STU-R as close as possible to the network side interfaces. The received signal is sent to network side interface. For example, if Remote Payload Loopback is activated at STU-C, the direction of Remote loopback would be like (D) in figure 2.4

STU-C

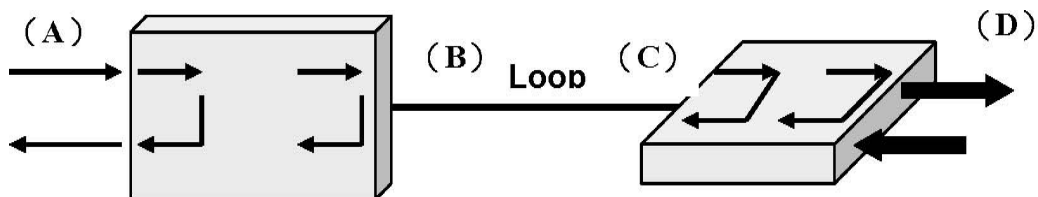


Figure 2.4 Remote Payload Loopback When any of these modes is activated, the loopback path causes the system operation to be disrupted. In particular, the Local SHDSL Loopback path opens the line, causing the system to lose synchronization. Once this loopback is deactivated, the system will reinitialize.

Chapter 3: APPLICATIONS

XtendLan XL-GDB offers several interface options to customers. The interface options help service providers target customer applications, such as synchronous E1/FE1, V.35, and Ethernet. In regulated environments, these products quickly solve the challenges of connecting many subscribers at high data rates. In unregulated environments, these products bring Internet, Intranet and other new services to campus and ISP markets. The following examples illustrate the variety of applications served by the XL-GDB SHDSL access system. These configurations are but a sampling of the many combinations of interface modules. XL-GDB access system interface options are continually being added and enhanced in order to provide high-speed WAN access to all telecommunications and data communications environments.

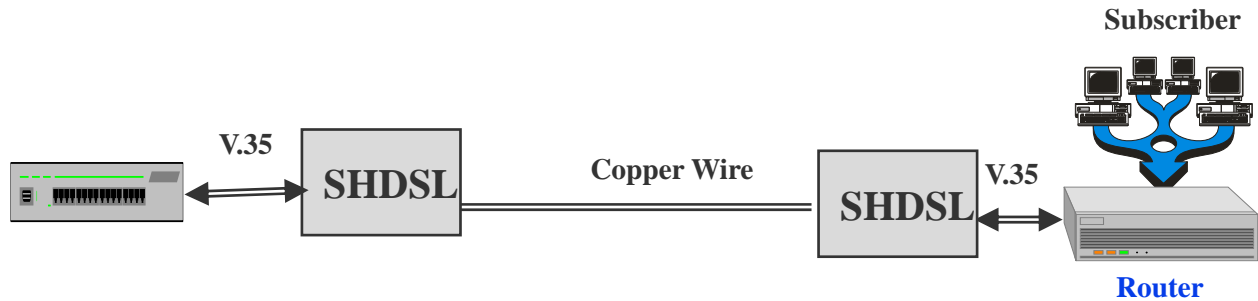
3.1 Far Reach Single Pair E1 or T1

The XL-GDB101E and XL-GDB101T (G.703 or T1 interface) products replace a four-wire transmission system, effectively doubling the utilization of the copper loop while extending the reach from below 9,000 feet to beyond 11,000 feet.



3.2 Fast Synchronous Interfaces

The XL-GDB101V provides V.35 fast synchronous interface. A M34F, V.35 connector for connection to the selected synchronous interface is accessible from the back of the unit. These V.35 interface modules facilitate new applications such as teleconferencing and commuting. The V.35 interface modules facilitate new applications such as teleconferencing and commuting. The V.35 interface can be mixed with E1 or Fractional E1 interfaces for end-to-end transmission. Typical applications include MPEG quality video, video conferencing, and telecommuting and fast file transfer.

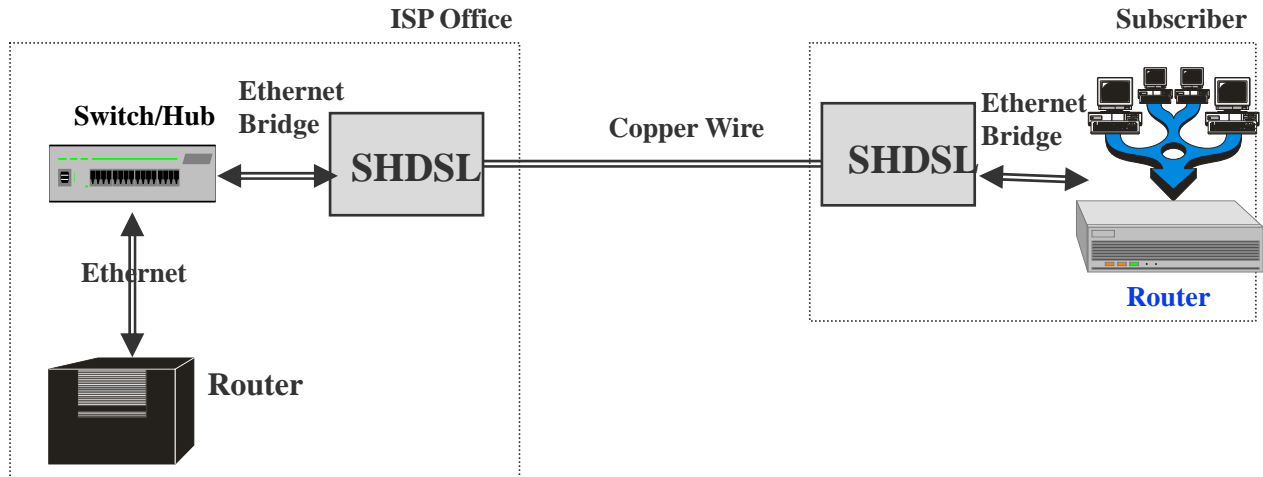


3.3 Selectable Data Rates

XL-GDB interfaces allow software selectable data rates at selected Fractional E1 rates set from the designated central office unit. The XL-GDB V.35 module can be programmed for numerous Fractional E1 rates or set to automatically adjust to the fastest available rate. Appropriate applications include programmable frame relay, channelized E1 service to PBX, bandwidth on demand for teleconferencing, distributed instruction, and Internet accesses.

3.4 Packet Interface: Ethernet

Ethernet access is provided as a remote Ethernet bridge (standard 802.3). A single workstation can directly connect the XL-GDB101F Ethernet port to a personal computer. Alternately, the XL-GDB Ethernet port can be interfaced to an Ethernet LAN and used as a multiple-user remote Ethernet bridge as shown in figure.



Applications for remote Ethernet connectivity are as numerous as the use of business systems and as ubiquitous as the prevalence of LAN environments. Examples include Internet Service Providers, corporate campus networks, remote computing, and video services.

Chapter 4: Installation

4.1 General

The following section will help you to understand how to install the XL-GDB access system. Understanding these topics will definitely make you knowing the XL-GDB better.

4.1.1 Unpacking your XL-GDB

Depending upon the number of units and spares you ordered, your shipment consists of one or more boxes containing the following materials:

- One XL-GDB unit.
- One AC power adapter with cord or power cord.
- This document.
- Any other accessories requested by user at time of ordering.

Check the contents of the package and inspect the unit for any signs of damage. Reports any damage to the carrier or contact XtendLan Corporation's customer service representative.

4.1.2 Site Selection

The following are guidelines for site selection. These guidelines must be followed to ensure a proper installation site. The installation site should have a 100V to 240V AC power receptacle for the AC adapter. The installation site should provide space for adequate ventilation and cable routing reserve at least 5 inches at the rear of the unit for cables and airflow. Moreover, the units are designed for indoor use only.

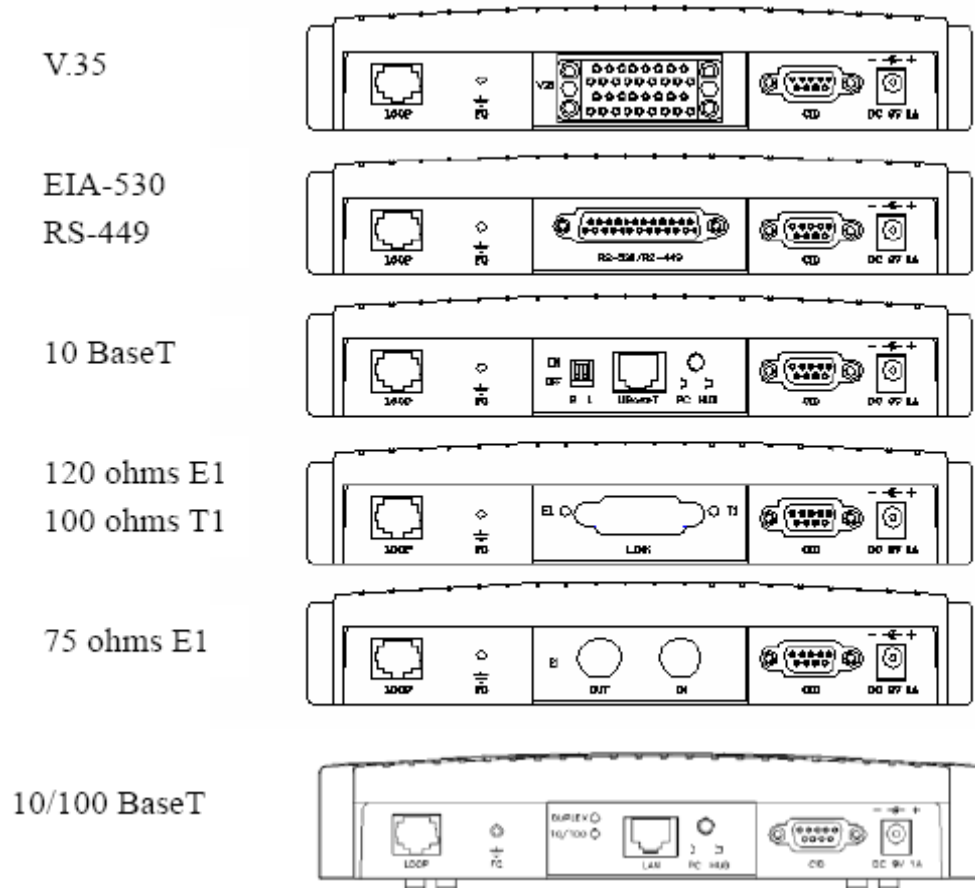
4.1.4 Installation

Installing a XL-GDB requires several I/O cables, which you will have to supply. The I/O cables should be long enough to connect your local and remote equipment to the system's local and remote jacks. All of the cables are identified below: Link cable. Connects your data equipment to the XL-GDB unit. The connector on the XL-GDB end of the cable must be depends upon the type of mating connector on your equipment. The pin assignments for these connectors appear in Appendix A. Line cables. Line cables connect the DSL line to the XL-GDB. The SHDSL loop connection uses pins 4 and 5 of the 8 pins RJ-45 jack. One can use the optional RJ45 to RJ11

cable line cable supplied for connection to telephone jack.

4.1.5 Rear Panel

As the following figures shown, XL-GDB with external AC power can be equipped with different interfaces, including V.35, E1/T1 and Ethernet to meet user's needs.

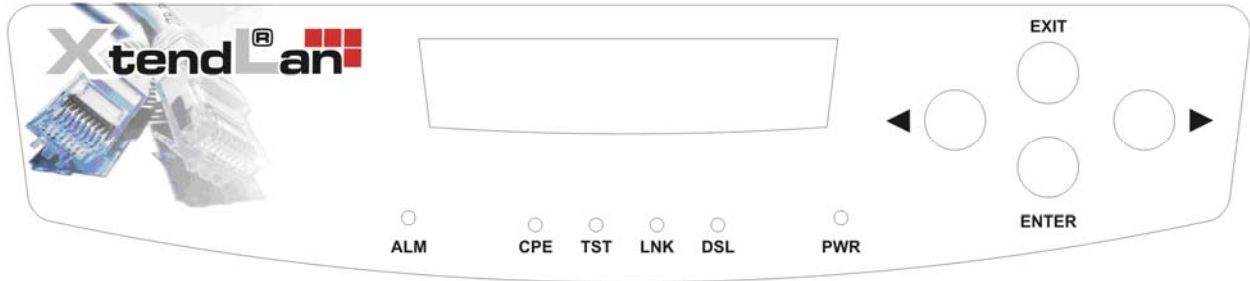


4.2 Installation Procedure

1. Place the XL-GDB within 5 meters (15 feet) of your equipment. The actual distance depends on how long the link cable is.
2. Connect the power adapter (supplied with the unit) to the AC power receptacle on the rear of the unit. Connect the other end of the power adapter to the appropriate AC power source, and this action will turn the unit on.
3. Connect and install the DSL line cable to the SHDSL modem unit's LOOP jack. The 8 pins LOOP RJ-48 jack uses pins 4 and 5 for loop connection. As an optional accessory, XTENDLAN can include a DSL line cable, which has RJ-48 connector on one side and RJ-11 connector on the other side. Appendix A lists the pin assignments for this cable.
4. The XL-GDB modem unit goes through an initialization and startup process; during this time, the LEDs will flash to indicate that system initialization is in process.
5. Attach the end of the link cable to the port in the center of the rear panel. This connector is M34F for V.35 interface, DB25 for EIA-530/RS-449 interface and RJ-45 for an Ethernet interface.
6. If you are using the CID port, connect the cable between your PC and CID port on the rear of the local unit. This port is configured as DCE.
7. For detailed information about the dip switches and push button on the 10/100 BaseT interface, please check Appendix C.

4.3 LED Descriptions

The SHDSL unit has six LEDs (light emitting diode)



and their meanings and actions are listed in the table below:

PWR	On	It indicates that the unit has normal power
	Off	The unit has no power
DSL	On	Loop has synchronized
	Off	Loop has not synchronized
	Flash	Loop has achieved handshake
LNK	On	User interface is present
	Off	User interface is not present
TST	On	Performing the maintenance tests
	Flash	The maintenance test is being performed on the other unit
	Off	Not performing the maintenance tests
CPE	On	The unit is customer premises equipment
	Off	The unit is central office equipment
ALM	On	The system has alarm
	Off	The system is operating normally
	Flash	Remote Alarm

Chapter 5: Configuration/Operation

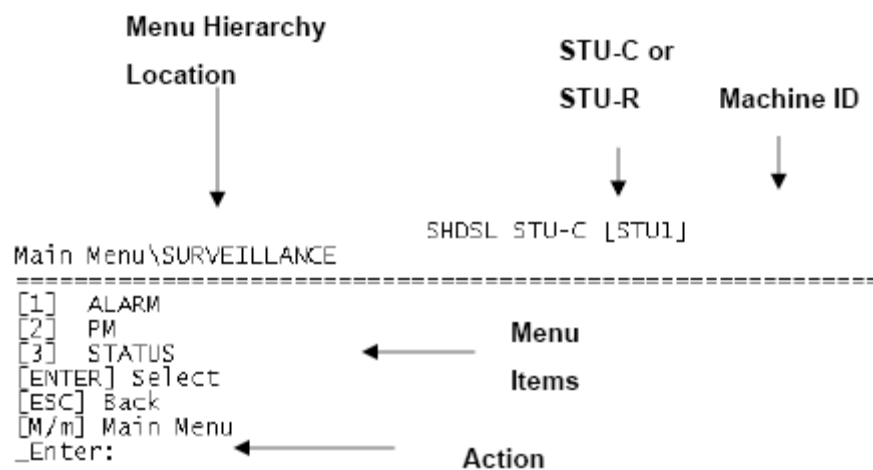
5.1 Terminal Operation

This chapter describes how to use an external PC to configure the system and monitor status and statistics. On each screen, the available commands and the configurable fields are highlighted. Alarm messages can be retrieved by using the supervisory (CID) port and show on the screen.

5.1.1 Screen Definition

STU-C mode operation as as Central site (CO)

STU-R mode operation as Remote site (CPE)



5.2 Main Menu – V. 35

Following is the menu structure for the XL-GDB101V with a V.35 interface in STU-C and STU-R.

STU-C:

```
SHDSL STU-C [STU1]
Main Menu
-----
[1] CONFIGURATION
[2] SURVEILLANCE
[3] MAINTENANCE
[4] MTS/CFI/ANFOHS
[5] REMOTE LOGON
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter: █
```

STU-R:

```
SHDSL STU-R [STU1]
Main Menu
-----
[1] CONFIGURATION
[2] SURVEILLANCE
[3] MAINTENANCE
[4] MISCELLANEOUS
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter:
```

In order to bring up the main menu, press the “Esc” until the screen listed above show. If the terminal screen is illegible, presses the “Esc” repeatedly for bring up the main menu. If all efforts fail, make sure the proper cable has been used and the supervisory port parameter (9600, No parity, 1 stop bit and 8 data bits) settings match the terminal settings. Note: Press the “Esc” for returning to previous page and press the “m/M” for returning to main menu.

5.2.1 Configuration Menu

STU-C (CENTRAL SITE)

```
SHDSL STU-C [STU1]
Main Menu\CONFIGURATION
=====
[1] UNIT
[2] INTF
[3] DTE
[4] DSL
[5] PAYLOAD RATE
[6] PCLK
[7] BACKUP
[8] RECALL
[9] DEFAULT
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter:
```

STU-R (REMOTE SITE)

```
SHDSL STU-R [STU1]
Main Menu\CONFIGURATION
=====
[1] UNIT
[2] BACKUP
[3] RECALL
[4] DEFAULT
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter: █
```

As you can see the examples above, both central site and remote site have differences in term of their functions. The central site has the power to set up INTF, DTE/E1/T1/LAN, DSL, Payload rate and PCLK, and STU-R is incapable of doing so, if the loop is connected between STU-C and STU-R. One way to access and set up STU-R is through remote logon. Our examples will focus more on the central site and if you have any questions or problems during the operation please call our customer service representative.

5.2.1.1 Unit Menu

```
SHDSL STU-R [STU1]
Main Menu\CONFIGURATION\UNIT
=====
[1] STU-C
[2] *STU-R
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter:
```

Enter "1" for assigning the unit as the central site. If you want to assign the unit as the remote site,

then Enter "2". Returning to the previous screen, just press the "Esc" key. Hit the "Enter" key to access the select mode screen.

5.2.1.2 INTF Menu (Combo interface card only)

Currently, two kinds of combo interface card are selectable, E1/T1/V.35 and E1/T1 Combo card. E1/T1/V.35 combo card provides three interfaces, E1, T1 and V.35. E1/T1 combo card provide two interfaces, E1 and T1. In the configuration menu, enter "2" to enter INTF menu in which different interfaces are selectable. To change the interface, key in the desired selection and hit Enter.

```
SHDSL STU-C [STU1]
Main Menu\CONFIGURATION\INTF
=====
[1] *DTE
[2] T1
[3] E1
[ENTER] Select
[ESC] Back
_Enter:
```

E1/T1/V.35 Combo interface screen

```
SHDSL STU-C [STL1]
Main Menu\CONFIGURATION\INTF
=====
[1] *1
[2] F1
[ENTER] Select
[ESC] Back
_Enter: █
```

E1/T1 Combo interface screen

5.2.1.3 DTE Menu

```
SHDSL STU-C [STU1_
Main Menu\CONFIGURATION\DTE
=====
[1] DATA
[2] RTS
[3] V54
[4] CLOCK
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter: █
```

The DTE (Data Terminal Equipment) menu is used to perform DTE interface configuration, Data, RTS, V54 and Clock. Note: STU-C has the power to set up Data, RTS, V54 and Clock; however, STU-R only has the privilege to set up Clock.

5.2.1.2.1 DATA

```
SHDSL STU-C [STU1]
Main Menu\CONFIGURATION\DTE\DATA
=====
[-] *NORMAL
[2] INVERTED
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter: █
```

The data menu shows the current DTE data polarity (either normal or inverted) by placing an asterisk (*) by the appropriate selection. To change the DTE data polarity, key in the desired selection and hit Enter.

5.2.1.2.2 RTS (request to send)

```
SHDSL STU-C [STU1]
Main Menu\CONFIGURATION\DTE\RTS
=====
[1] PERMANENT
[2] *NORMAL
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter: █
```

The RTS (Request to send) menu shows the current DTE RTS operation mode (either permanent or normal) by placing an asterisk (*) by the appropriate selection. To change the DTE RTS operation mode, key in the desired selection and hit "Enter". The permanent mode turns on all

output control signal; while the normal mode turns on the output control signals according to input control signals.

5.2.1.2.3 V54

```
SHDSL STU-C [STU1]
Main Menu\CONFIGURATION\DTE\V54
=====
[1] DISABLE
[2] *ENABLE
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter: █
```

The V54 menu shows current V54 mode (either disable or enable) by placing asterisk (*) by the desired selection. To change the V54 mode, key in the desired selection and hit "Enter".

5.2.1.2.4 CLOCK

```
SHDSL STU-C [STU1]
Main Menu\CONFIGURATION\DTE\CLOCK
=====
[1] NORMAL
[2] *INVERTED
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter:
```

The clock menu shows the current DTE clock polarity status (either normal or inverted) by placing an asterisk (*) by the appropriate selection. To change the DTE clock polarity, key in the desired selection and hit Enter. When normal is selected, data from DTE is sampled using rising edge. For inverted selection, the sampling is using the falling edge of the clock. Clock can be set up both at STU-C and STU-R side. Note: To change the setting of Clock at STU-R through remote logon from STU-C is invalid.

5.2.1.3 DSL

```
SHDSL STU-C [STU1]
Main Menu\CONFIGURATION\DSL
=====
[1] WORST CASE TARGET SNR
[2] LINE PROBING
[3] POWER BACKOFF
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter:
```

DSL menu allows user to change related DSL settings including worst case target SNR, Line probing and power Backoff. Select the desired item to change DSL settings. Note: only STU-C has the power to set up DSL.

5.2.1.3.1 WORST CASE TARGET SNR

```
SHDSL STU-C [STU1]
Main Menu\CONFIGURATION\DSL\WORST CASE TARGET SNR
=====
```

```
[ENTER]:quit with save [ESC]:quit without save
```

```
SNR Target Margin[-10...21] -      0
```

You can change the SNR Target Margin by enter your desired number (range from -10~21), and press "ENTER" to save your setting when you want to suit this screen.

5.2.1.3.2 LINE PROBING

```
SHDSL STU-C [STU1]
Main Menu\CONFIGURATION\DSL\LINE PROBING
=====
[1] DISABLE
[2] *ENABLE
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter: █
```

In this screen, you can disable or enable Line Probing function. Select “1” to disable or “2” to enable Line Probing function.

5.2.1.3.3 POWER BACKOFF

```
SHDSL STU-C [STU1]
Main Menu\CONFIGURATION\DSL\POWER BACKOFF
=====
[1] *AUTO
[2] MANUAL
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter: █
```

When the line probing is enable, In the power back off menu, you can select “1” , AUTO, or “2” , Manual, to execute the power Backoff function.

```
SHDSL STU-C [STU1]
Main Menu\CONFIGURATION\DSL\POWER BACKOFF\MANUAL
=====

[ENTER]:quit with save [ESC]:quit without save

Power back off[0...30 db] = 0█
```

If you choose the “MANUAL” to configure the range of power Backoff, the “MANUAL” screen will appear so that you can set the power back off from 0~30 db. After your configuration, press

“ENTER” to quit with save or “ESC” to quit without save. When the line probing is disable, only “MANUAL” is available, the screen shows as follows:

```
SHDSL STU-C [STU1]
Main Menu\CONFIGURATION\DSL\POWER BACKOFF
=====
[1]  MANUAL
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter:
```

Moreover, Power Backoff at STU-R is only set up by manual through remote logon from STU-C, which shows as follows:

```
<<Remote Logon STU-R>>  SHDSL STU-C [STU1]
Main Menu\CONFIGURATICN\DSL\POWER BACKOFF
=====

[ENTER]:quit with save [ESC]:quit without save

Power back off[0...30 db] = 0█
```

5.2.1.4 TRANSMISSION Mode Menu

The Transmission mode screen only appears in the STU-R. Please use remote logon to access STU-R and then enter DSL menu to set up transmission mode. When transmission mode screen appears, Annex A and Annex B is available to select. key in “1” to select Annex A or “2” to select Annex B. Press Enter to submit your setting and press “ESC” to quit this screen. Press “M/m” to back to main menu.

```
                <<Remote Logon STU-R>>  SHDSL STU-C [STU1]
Main Menu\CONFIGURATION\DSL\TRANSMISSION MODE
=====
[1] *ANNEX A
[2] ANNEX B
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter: █
```

5.2.1.5 Set Rate Menu

```
                SHDSL STU-C [STU1]
Main Menu\CONFIGURATION\RATE
=====
[1] MAX
[2] MIN
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter: █
```

The data rate for network interface is set at the STU-C (Central Site) only. After configuration, the SHDSL system will use the line rate, which has been requested by user. User can select the desired rate by using [+] or [-] and then pressing the “Enter” key to complete the setting. The following screen show how to configure the max rate.

```
SHDSL STU-C [STU1]
Main Menu\CONFIGURATION\RATE\MAX
=====
```

[+]:up [-]:down [ENTER]:save [ESC]:quit

Maximum Rate = 36 x 64K

In the MAX screen, you can press [+] or [-] to increase or decrease max rate and press “ENTER” to save your setting or “ESC” to quit this screen. As to MIN RATE configuration, it’s the same with MAX RATE configuration.

5.2.1.6 PCLK

```
SHDSL STU-C [STU1]
Main Menu\CONFIGURATION\PCLK
=====
[1] DTE
[2] DSL
[3] *INT
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter: █
```

The PCLK (Primary clock) menu is used to configure the primary clock source; it shows the current clock source as either internal, DTE port or DSL by placing an asterisk (*) by the appropriate selection. To change the selection, key in the desired selection and hit “Enter”. Note: only STU-C has the power to set up PCLK.

5.2.1.7 Backup Menu

```
SHDSL STU-C [STU1]
Main Menu\CONFIGURATION\BACKUP
=====
```

```
<< Save OK ! [ESC] RETURN >>
```

BACKUP menu is used to store the current working configuration to the user-stored configuration by press appropriate selection and hitting the “Enter” key. The screen above shows that the configuration is saved.

5.2.1.7 Recall Menu

```
SHDSL STU-C [STU1]
Main Menu\CONFIGURATION\RECALL
=====
```

```
<< Restore OK ! [ESC] RETURN >>
```

```
SHDSL SYSTEM LOADER
Version 1.0
█
```

RECALL menu is used to recall the user-stored configuration by press appropriate selection and hitting the Enter key. The screen above shows that the configuration has been restored. Recall user-stored configuration will not change the unit selection; therefore, a STU-C unit will not change to STU-R unit after configuration recall.

5.2.1.8 Default Menu

```
SHDSL STU-C [STU1]
Main Menu\CONFIGURATION\DEFAULT
=====

<< Default Restore OK ! [ESC] RETURN >>

SHDSL SYSTEM LOADER
Version 1.0
```

DEFAULT menu is used to recall the default configuration by press the appropriate selection and hitting the “Enter”. all the setting will return to the original value except the role of unit you’ve selected. **Note:** Recall default configuration will not change the unit selection; therefore, a STU-C unit will not change to STU-R unit.

5.2.2 Surveillance Menu

```
SHDSL STU-C [STU1]
Main Menu\SURVEILLANCE
=====
[1] ALARM
[2] PM
[3] STATUS
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter:
```

The Surveillance menu consists of three groups of commands: Alarm, PM (Performance) and Status. The alarm menu will enable user to gather information about current alarm state of the SHDSL units and also past alarm history. The PM menu allows the user to monitor the system's performance in real-time basis and past performance recorded in 96 intervals with the duration of each interval equivalent to 15 minutes. The status menu gives the user an instant overview to all the configuration and maintenance settings.

5.2.2.1 Alarm Menu

```
SHDSL STU-C [STU1]
Main Menu\SURVEILLANCE\ALARM
=====
[1] HISTORY
[2] CURRENT
[3] CLEAR
[4] THRESHOLD
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter: █
```

To show the alarm history report, Enter “1”. To show the current alarm report, press “2” and hit “Enter”. The “CLEAR” selection will clear all alarms from history buffer and reset all counters to zero in current alarm. Besides, you can configure the alarm threshold in the “THRESHOLD” menu.

5.2.2.1.1 History Menu

```
SHDSL STU-C [STU1]
Main Menu\SURVEILLANCE\ALARM\HISTORY
=====
[ESC]: Abort, [ENTER]: Next Page

**** Alarm History Report ****
Index Alarm-Type State mm-dd-yyyy hh:mm:ss
```

The alarm history is used to track the occurrence of alarm and when it was cleared for a maximum of 64 entries. The entries are recorded onto the history buffer according to the time of occurrence. It is recommended that the date and time in Miscellaneous menu is set to the correct time after each time power is applied in order to make the alarm history more meaningful. For more details about the alarm types, please refer to Appendix B. The alarm history screen will not automatically update the alarm list, the user need to press “Enter” to update new alarms on to the list.

5.2.2.1.2 Current Menu

```
SHDSL STU-C [STU1]
Main Menu\SURVEILLANCE\ALARM\CURRENT
=====
[ESC]: Abort

**** Current Alarm Report ****
Alarm-Type State Alarm-Type State
DSLLOS Alarm DTELOS Alarm
DSLLOSW Ok
DSLLOSd Ok
DSLsnr Ok
DSLAttn Ok
DSLlAS15Min Ok
DSLSES15Min Ok
DSLSES15Min Ok
DSLASDay Ok
DSLSESDay Ok
DSLSESDay Ok

**** End of Alarm View ****
```

For the current alarm display, the alarm type and state will appear on the screen. For more details about the explanations of the alarm types, please refer to Appendix B. The state column indicates the current state of the alarm and the count column indicates the number of times this alarm has happened.

5.2.2.1.3 Clear Menu

```
SHDSL STU-C [STU1]
Main Menu\SURVEILLANCE\ALARM\CLEAR
=====
```

```
<< Clear OK ! [ESC] or [ENTER] RETURN >>
```

The clear menu is used to clear both history and current alarm queue. Press “ESC” or “ENTER” to return to Alarm menu.

5.2.2.1.4 Threshold Menu

```
SHDSL STU-C [STU1]
Main Menu\SURVEILLANCE\ALARM\THRESHOLD
=====
[1] DSL
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter: █
```

This menu sets the threshold values for the alarm types displayed. It is used as an alarm threshold for the 15-minute alarm count register. When the PM counters' values is greater than the set threshold, an alarm will occur. For detailed information about the alarm types please refer to Appendix B.

5.2.2.1.4.1 DSL Threshold

```
SHDSL STU-C [STU1]
Main Menu\SURVEILLANCE\ALARM\THRESHOLD\DSL
=====
[1] 15MIN
[2] 1DAY
[3] SNR
[4] ATTENUATION
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter:
```

In the screen of DSL Threshold menu, four categories of DSL threshold are listed: 15MIN, 1DAY, SNR and ATTEBUATION which will be introduced explicitly in the following sections.

5.2.2.1.4.1.1 15 minutes Threshold

```
SHDSL STU-C [STU1]
Main Menu\SURVEILLANCE\ALARM\THRESHOLD\DSL\15MIN
=====
[1] UAS
[2] SES
[3] ES
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter: █
```

In the 15MIN screen, you can configure the UAS (unavailable seconds), SES (serious Errored seconds) and ES (Errored seconds) threshold in the 15 minutes duration. The following screens show how to set the 15 minutes UAS, SES and ES threshold.

5.2.2.1.4.1.1.1 15 minutes UAS

```
SHDSL STU-C [STU1]
Main Menu\SURVEILLANCE\ALARM\THRESHOLD\DSL\15MIN\UAS
=====

[ENTER]:quit with save [ESC]:quit without save

UAS Threshold[0...900, 0:DISABLE] =      0
```

You can enter the your desired value to set the 15 minutes UAS threshold from 0 to 900 and "0" disable the 15 minutes UAS threshold. After finishing your setting, press "ENTER" to quit this screen and save your setting, or press "ESC" to quit without saving your setting.

5.2.2.1.4.1.1.2 15 minutes SES

```
SHDSL STU-C [STU1]
Main Menu\SURVEILLANCE\ALARM\THRESHOLD\DSL\15MIN\SES
=====
```

[ENTER]:quit with save [ESC]:quit without save

SES Threshold[0...900, 0:DISABLE] = 0

Similar with 15 minutes UAS, 15 minutes SES (serious errored seconds) could be configured by entering 0 to 900, whereas "0" means disable. After finishing your setting, press "ENTER" to quit this screen and save your setting, or press "ESC" to quit without saving your setting.

5.2.2.1.4.1.1.3 15 minutes ES

```
SHDSL STU-C [STU1]
Main Menu\SURVEILLANCE\ALARM\THRESHOLD\DSL\15MIN\ES
=====
```

[ENTER]:quit with save [ESC]:quit without save

ES Threshold[0...900, 0:DISABLE] = 0

In the 15 minutes ES (errored seconds) screen, ES threshold could be configured by entering 0 to 900, whereas "0" means disable ES threshold. After finishing your setting, press "ENTER" to quit this screen and save your setting, or press "ESC" to quit without saving your setting.

5.2.2.1.4.1.2 1-DAY

```
SHDSL STU-C [STU1]
Main Menu\SURVEILLANCE\ALARM\THRESHOLD\DSL\1DAY
=====
[1] UAS
[2] SES
[3] ES
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter:
```

In the 1DAY screen, UAS (unavailable seconds), SES (serious Errored seconds) and ES (Errored seconds) threshold in the 1 day duration could be configured by entering a specified item, from 1 to 3. The following screens show how to set the 1 DAY UAS, SES and ES threshold.

5.2.2.1.4.1.2.1 1-DAY UAS

```
SHDSL STU-C [STU1]
Main Menu\SURVEILLANCE\ALARM\THRESHOLD\DSL\1DAY\UAS
=====

[ENTER]:quit with save [ESC]:quit without save

UAS Threshold[0...86400] = 0
```

You can enter the your desired vlaue to set the 1 Day UAS threshold from 0 to 86400. After finishing your setting, press "ENTER" to quit this screen and save your setting, or press "ESC" to quit without saving your setting.

5.2.2.1.4.1.2.2 1-DAY SES

```
SHDSL STU-C [STU1]
Main Menu\SURVEILLANCE\ALARM\THRESHOLD\DSL\1DAY\SES
=====
```

[ENTER]:quit with save [ESC]:quit without save

SES Threshold[0...86400] = 0

Similar with 1 Day UAS, 1 Day SES (serious errored seconds) could be configured by entering from 0 to 86400. After finishing your setting, press "ENTER" to quit this screen and save your setting, or press "ESC" to suit without saving your setting.

5.2.2.1.4.1.2.3 1-DAY ES

```
SHDSL STU-C [STU1]
Main Menu\SURVEILLANCE\ALARM\THRESHOLD\DSL\1DAY\ES
=====
```

[ENTER]:quit with save [ESC]:quit without save

ES Threshold[0...86400] = 0

In the 1 Day ES (errored seconds) screen, ES threshold could be configured by entering from 0 to 86400. After finishing your setting, press "ENTER" to suit this screen and save your setting, or press "ESC" to quit without saving your setting.

5.2.2.1.4.1.3 SNR

```
SHDSL STU-C [STU1]
Main Menu\SURVEILLANCE\ALARM\THRESHOLD\DSL\SNR
=====
```

[ENTER]:quit with save [ESC]:quit without save

SNR Threshold[0...15, 0:OFF] = 0

In the SNR (signal-to-noise ratio) screen, SNR threshold could be configured by entering from 0 to 15, whereas "0" means SNR threshold off. After finishing your setting, press "ENTER" to quit this screen and save your setting, or press "ESC" to quit without saving your setting.

5.2.2.1.4.1.4 ATENUATION

```
SHDSL STU-C [STU1]
Main Menu\SURVEILLANCE\ALARM\THRESHOLD\DSL\ATTENUATION
=====
```

[ENTER]:quit with save [ESC]:quit without save

Attenuation Threshold[0...127, 0:OFF] = 0

In the ATTENUATION screen, attenuation threshold could be configured by entering 0 to 127, whereas "0" means attenuation threshold off. After finishing your setting, press "ENTER" to quit this screen and save your setting, or press "ESC" to quit without saving your setting.

5.2.2.2 Performance Monitor Menu

```
SHDSL STU-C [STU1]
Main Menu\SURVEILLANCE\PM
=====
[1] DSL
[2] CLEAR
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter: █
```

The PM menu consists of two commands: DSL and CLEAR. To show the PM interval counters, press “1” and hit “Enter”. CLEAR will erase all PM intervals and counters.

5.2.2.2.1 DSL Menu

```
SHDSL STU-C [STU1]
Main Menu\SURVEILLANCE\PM\DSL
=====
[1] CURRENT-15M
[2] CURRENT-1DAY
[3] PREVIOUS-15M
[4] PREVIOUS-1DAY
[5] TOTAL
[ENTER] Select
[ESC] Back
[M/m] Main Meru
_Enter: █
```

The DSL PM menu consists of Current 15 minutes (900 seconds), Current 1 Day, Previous 96 intervals of 15 minutes, Previous 1 Day and total performance monitoring counters.

5.2.2.2.1.1 Current - 15M Menu 5.2.2.2.1.3 Previous - 15M Menu

```
SHDSL STU-C [STU1]
Main Menu\SURVEILLANCE\PM\DSL\CURRENT-15M
=====
[ESC]: Abort
```

Elapse	CRC	ES	SES	UAS	LOSWS
747	0	0	0	747	747

The current menu displays the performance monitoring values for the current 15 minutes interval. Unavailable Seconds (UAS) are calculated by counting the number of seconds that the interface is unavailable. LOSWS is the Loss of Synchronization Second. For more detailed explanation about the acronyms, please refer to Appendix B.

5.2.2.2.1.2 Current 1 Day Menu

```
SHDSL STJ-C [STU1]
Main Menu\SURVEILLANCE\PM\DSL\CURRENT-1DAY
=====
[ESC]: Abort
```

Elapse	CRC	ES	SES	UAS	LOSWS
56628	0	0	0	56628	56628

The values shown are the total for the 96 previous 15 minutes' counter values. Unavailable Seconds (UAS) are calculated by counting the number of seconds that the interface is unavailable within 1 Day. LOSWS is the Loss of Synchronization Seconds within 1 Day. For more detailed explanation about the acronyms, please refer to Appendix B.

5.2.2.2.1.3 Previous - 15M Menu

```
SHDSL STU-C [STU1]
Main Menu\SURVEILLANCE\PM\DSL\PREVIOUS-15M
=====
[ESC]: Abort, [ENTER]: Next Page
Index      CRC      ES      SES      UAS      LOSWS
  1         0        0        0       900       900
  2         0        0        0       900       900
  3         0        0        0       900       900
  4         0        0        0       900       900
  5         0        0        0       900       900
  6         0        0        0       900       900
  7         0        0        0       765       765
```

Previous 15 minutes menu displays the performance monitoring count for up to 96 intervals; each interval is 15 minutes long. For more detailed explanation about the acronyms listed, please refer to Appendix B.

5.2.2.2.1.4 Previous – 1 Day Menu

```
SHDSL STU-C [STU1]
Main Menu\SURVEILLANCE\PM\DSL\CURRENT-1DAY
=====
[ESC]: Abort

Elapse      CRC      ES      SES      UAS      LOSWS
56737       0        0        0     56737     56737
```

The values shown are the total for the 96 current 15 minutes' counter values. Unavailable Seconds (UAS) are calculated by counting the number of seconds that the interface is unavailable within 1 Day. For more detailed explanation about the acronyms, please refer to Appendix B.

5.2.2.2.1.5 Total Menu

```
SHDSL STU-C
Main Menu\SURVEILLANCE\PM\DSL\TOTAL
=====
[ESC]: Abort
```

```
CRC   ES   SES   UAS
  0    0    0   233█
```

DSL total menu displays the total number of performance monitoring count for CRC (Cyclic Redundancy Check), ES (Errored Seconds), SES (Serious Errored Seconds) and UAS (Unavailable Seconds). Press “ESC” to quit this screen.

5.2.2.2.2 Clear Menu

```
SHDSL STU-C [STU1]
Main Menu\SURVEILLANCE\PM\CLEAR
=====
```

```
<< Clear OK ! [ESC] or [ENTER] RETURN >>█
```

The clear menu is used to clear all PM buffers, including Current-15M, Current-1DAY, Previous-15M, Previous-1 DAY and TOTAL buffers. Click on “Enter” or “ESC” to return to PM menu screen.

5.2.2.3 Status Menu

Status screen shows the current status of XL-GDB standalone. Click on “CR” (Enter) to browse next page or “ESC” to exit status menu.

Page 1

```
SHDSL STU-C [STU1]
Main Menu\SURVEILLANCE\STATUS
=====
[ESC].Exit [CR].Next page

**Configuration:
-----
UNIT: STU-C
MACHINE ID: STU1
INTERFACE: DTE
MAX PAY_LOAD RATE(x64K): 36
MIN PAY_LOAD RATE(x64K): 3
CLOCK SOURCE: INTERNAL
CURRENT TARGET MARGIN: 0
LINE PROBE: ENABLE
POWER BACK OFF: DEFAULT
TRANSMISSION MODE: ANNEX A & ANNEX B
DATA: NORMAL
RTS: NORMAL
V54: ON

**Version:
-----
S/w: 2.50
H/w: 4.1
FPGA: 2.3
DSP CHIP: 0x12
DSP CODE: 0x96

**Status Value:
-----
SNR MARGIN: N/A
ATTENUATION: N/A
POWER BACKOFF: N/A
ACTUAL LINE RATE: N/A ■
```

In the page2, Threshold, maintenance and status value are displayed separately.

Page 2

```
SHDSL STU-C [STU1]
Main Menu\SURVEILLANCE\STATUS
=====
[ESC].Exit [CR].Next page

**Threshold:
-----
DSL 15MIN/1DAY UAS: 0/0
DSL 15MIN/1DAY SES: 0/0
DSL 15MIN/1DAY ES: 0/0
SNR MARGIN: 0
ATTENUATION: 0

**Maintenance:
-----
LOOPBACK: Disable
RMT ISSUE LOOPBACK: Disable
RMT SIDE LOOPBACK: Disable
RMT SIDE PRBS: Disable
BUTTON LOOPBACK: Disable
RMT BUTTON LOOPBACK: Disable
V54 STATUS: OFF
RMT V54 STATUS: OFF

**Status Value:
-----
SNR MARGIN: N/A
ATTENUATION: N/A
■ POWER BACKOFF: N/A
ACTUAL LINE RATE: N/A
```

5.2.3 Maintenance Menu

This menu consists of the maintenance Loopback functions, PRBS (PRBS; Pseudo-Random Bit Stream) and SELFTEST. Those items will be explained in detail below.

```
SHDSL STU-C [STU1]
Main Menu\MAINTENANCE
=====
[1] LOOPEACK
[2] PRBS
[3] SELFTEST
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter: █
```

5.2.3.1 Loopback Menu

```
SHDSL STU-C [STU1]
Main Menu\MAINTENANCE\LOOPBACK
=====
[1] FROM LOCAL
[2] FROM REMOTE
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter: █
```

The screen is used to control the local SHDSL equipment's network interface loopback tests. Two kinds of loopback is selectable, the direction of loopback toward Local site or remote site. They will be explained in detail below.

5.2.3.1.1 FROM LOCAL

```
SHDSL STU-C [STU1]
Main Menu\MAINTENANCE\LOOPBACK\FROM LOCAL
=====
[1] *Disable
[2] NearEndLB
[3] LocalLB
[4] RemoteLB
[5] PayloadLB
[6] V54LB
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter: █
```

The From Local Loopback menu is used to perform local Loopback tests which would be looped back toward the user. For V.35 interface, there are 6 Loopback modes for selection:

1. Disable
2. NearEndLB
3. LocalLB
4. RemoteLB
5. PayloadLB
6. V54LB

Note: V54 function in configuration menu must be pre-configured as enable if to proceed V54LB test.

For E1, T1 and Ethernet interfaces, users can only activate five loopbacks where V54LB is not available :

1. Disable
2. NearEndLB
3. LocalLB
4. RemoteLB
5. PayloadLB

For more detailed description about Loopback, please refer to 2.8 Diagnostics or Appendix D: Loopback Illustration.

5.2.3.1.2 FROM REMOTE

```
SHDSL STU-C [STU1]
Main Menu\MAINTENANCE\LOOPBACK\FROM REMOTE
=====
[1] *Disable
[2] PayloadLB
[3] RemoteLB
[4] LocalLB
[5] NearEndLB
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter: █
```

The From Remote Loopback menu is used to perform local Loopback tests which would be looped back toward the remote side. For V.35 interface, there are six Loopback modes for selection:

1. Disable
2. NearEndLB
3. LocalLB
4. RemoteLB
5. PayloadLB
6. V54LB

Note: V54 function in configuration menu must be configured as enable if to proceed V54LB test. For E1, T1 and Ethernet interfaces, users can only activate five loopbacks where V54LB is not available :

1. Disable
2. NearEndLB
3. LocalLB
4. RemoteLB
5. PayloadLB For more detailed description about Loopback, please refer to 2.8 Diagnostics or Appendix D: Loopback Illustration.

5.2.3.1.3 PRBS Menu

```
SHDSL STU-C [STU1]
Main Menu\MAINTENANCE\PRBS
=====

[CR]Start [R]:ReSync [E]:Inject 1 Error Bit [ESC]:Exit

Elapsed Time   : 0: 0:15
Bit Error Count : 0
PRBS SYNC     : Unsync█
```

For each STU-C and STU-R, the built-in PRBS (pseudo-random binary sequence) generation and detection are provided for Loopback performance test. Test results are displayed in the PRBS screen. Click on “CR” (Enter) to start the PRBS test so that the TST LED of local SHDSL device

will be lit and remote SHDSL device will flash simultaneously when receiving PRBS. PRBS SYNC will display SYNC when local SHDSL device receives correct PRBS test code, and PRBS SYNC will display Unsync when local SHDSL device receives incorrect PRBS test code. Clicking on "E" will result in injecting 1 error bit to test. The Bit Error Count will be cleared by Clicking on "R" (ReSync).

5.2.3.1.4 SELFTEST

```
SHDSL STU-C [STU1]
Main Menu\MAINTENANCE\SELFTEST
=====

<<< PRBS TO DSL >>>

[CR]Start [R]:ReSync [E]:Inject 1 Error Bit [ESC]:Exit

Elapsed Time   : 0: 0: 7
Bit Error Count : 1
PRBS SYNC      : Sync █
```

will result in injecting 1 error bit to test. The Bit Error Count will be cleared by Clicking on "R" (ReSync).

5.2.4 Miscellaneous

```
SHDSL STU-C [STU1]
Main Menu\MISCELLANEOUS
=====
[1] DATE
[2] _LOCK
[3] CHANGE PASSWORD
[4] CHANGE ID
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter:
```

To select the Miscellaneous options, press "4" in the main menu and hit "Enter". The menu for STU-R is the same as above except that PASSWORD and ID cannot be changed. DATE and ID

can only be changed from STU-C. To change these two items, one will have to remote logon to STU-C unit to make the changes.

5.2.4.1 Date Menu

```
SHDSL STU-C [STU1]
Main Menu\MISCELLANEOUS\DATE
=====

[SPACE]:next [+] :up [-] :down
[ENTER]:save and Exit [ESC]:quit

Current Time/Date = hh:mm:ss MM/DD/YYYY
Current Time/Date = 10: 6:20 1/ 1/2003
```

The Date menu shows the current date and time as shown above. The corresponding is (MM) for month, (DD) for day, (YY) for year, (hh) for hour, (mm) for minute and (ss) for second. This option must be concluded by [Enter] to save the changes. The date is the same for STU-C and STU-R and can only be changed on the STU-C unit. To change the date, one will have to remote logon to STU-C unit to make the changes.

5.2.4.2 Lock Menu

```
SHDSL STU-C [STU1]
Main Menu\MISCELLANEOUS\LOCK
=====
[1] *OFF
[2] ON
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter: █
```

The lock menu is used to control CID port operation. Normally, configurations and maintenance can be changed CID port. To avoid unauthorized user from change the SHDSL system's setting, CID port's ability to change configuration and maintenance can be disabled by selecting LOCK MENU to "on". With locked "ON", user still can operate to obtain the configuration information and status from surveillance menu. To disable LOCK function, user must enter a password.

5.2.4.3 Change Password Menu

```
SHDSL STU-C [STU1]
Main Menu\MISCELLANEOUS\CHANGE PASSWORD
=====
[ESC] Exit. [ENTER] End. [BACKSPACE] Clear Char.
```

Enter Password:

Using this screen can change password. The old password will be prompted once along with the new password entered twice to confirm the new password.

5.2.4.4 Change ID Menu

```
SHDSL STU-C [STU1]
Main Menu\MISCELLANEOUS\CHANGE ID
=====
[ESC] Exit. [ENTER] Save. [BACKSPACE] Clear Char.
```

Enter New Machine ID:

The machine ID is useful in identifying the particular unit. Using this screen can change the Machine ID. The machine ID can have up to 9 digits and is shown on the top right hand corner. The ID is the same for STU-C and STU-R and can only be changed on the STU-C unit. To change the ID, one will have to remote logon to STU-C unit to make the changes.

5.2.5 Remote Logon

```
SHDSL STU-C [STU1]
Main Menu\REMOTE LOGON
=====
[1] *OFF
[2] ON
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter:
```

To control the remote logon menu, key in the desired selection and hit Enter. The remote logon is STU-C 's privilege and used to control the STU-R on the other end of the DSL connection. Once the remote logon is turned on, the users will have access to STU-R's configuration and urveillance selections. All other operating procedures are the same as local operation, except on top of the screen will show <<Remote Logon STU-R>> when logon from STU-C.

```
<<Remote Logon STU-R>> SHDSL STU-C [STU1]
Main Menu
=====
[1] CONFIGURATION
[2] SURVEILLANCE
[3] REMOTE LOGON
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter: █
```

5.3 Main Menu - Ethernet

Following figure is the menu structure for the XL-GDB101F with an Ethernet interface. STU-C (CENTRAL SITE)

```
SHDSL STU-C [STU1]
Main Menu
=====
[1] CONFIGURATION
[2] SURVEILLANCE
[3] MAINTENANCE
[4] MISCELLANEOUS
[5] REMOTE LOGON
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter:
```

STU-R (REMOTE SITE)

```
SHDSL STU-R [STU1]
Main Menu
=====
[1] CONFIGURATION
[2] SURVEILLANCE
[3] MAINTENANCE
[4] MISCELLANEOUS
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter:
```

For more detail information, please refer to section 5.2 Main Menu-V.35.

5.3.1 Configuration Menu

For more detail information, please refer to section 5.2.1 Configuration Menu.

STU-C (CENTRAL SITE)

```
SHDSL STU-C [STU1]
Main Menu\CONFIGURATION
=====
[1] UNIT
[2] DSL
[3] PAYLOAD RATE
[4] PCLK
[5] BACKUP
[6] RECALL
[7] DEFAULT
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter:
```

STU-R (REMOTE SITE)

```
SHDSL STU-R [STU1]
Main Menu\CONFIGURATION
=====
[1] UNIT
[2] BACKUP
[3] RECALL
[4] DEFAULT
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter:
```

5.3.1.1 Unit Menu

Please refer to section 5.2.1.1 Unit Menu for details.

5.3.1.2 DSL Menu

5.3.1.3 Set Rate Menu

See section 5.2.1.5 Set Rate Menu for all detail information.

5.3.1.4 Primary Clock Menu (PCLK)

```
SHDSL STU-C [STU1]
Main Menu\CONFIGURATION\PCLK
=====
[1] DTE
[2] DSL
[3] *INT
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter: █
```

The Primary clock menu is used to configure the primary clock source; it shows the current clock source as internal, the INT ports, DTE or DSL by placing an asterisk (*) by the appropriate selection. To change the selection, key in the desired selection and hit Enter.

5.3.1.5 Backup Menu

Please refer to section 5.2.1.7 Backup Menu for details.

5.3.1.6 Recall Menu

Please refer to section 5.2.1.7 Recall Menu for detail information.

5.3.1.7 Default Menu

Please refer to section 5.2.1.8 Default Menu for detail information.

5.3.2 Surveillance Menu

Please refer to section 5.2.2 Surveillance Menu for detail information.

5.3.2.1 Alarm Menu

Please refer to section 5.2.2.1 Alarm Menu for detail information.

5.3.2.1.1 History menu

Please refer to section 5.2.2.1.1 History Menu for detail information. Moreover, refer to Appendix B for the definition of alarm types.

5.3.2.1.2 Current Menu

Please refer to section 5.2.2.1.2 Current Menu for detail information. Moreover, please refer to Appendix B for the definition of names.

5.3.2.1.3 Clear Menu

Please refer to section 5.2.2.1.3 Clear Menu for all the details.

5.3.2.1.4 Threshold Menu

Please refer to section 5.2.2.1.4 Threshold Menu for detail information.

5.3.2.2 Performance Monitor Menu

Please refer to section 5.2.2.2 Performance Monitor Menu for all the details.

5.3.2.2.1 DSL Menu

Please refer to section 5.2.2.2.1 DSL Menu for all the details.

5.3.2.2.1.1 Current - 15M Menu

Please refer to section 5.2.2.2.1.1 Current - 15M Menu for details. Furthermore, see Appendix B for the definition of names.

5.3.2.2.1.2 Current 1 Day Menu

Please refer to section 5.2.2.2.1.2 Current 1 Day Menu for further details. Moreover, see Appendix B for the definition of names.

5.3.2.2.1.3 Previous – 15 Minutes Menu

Please refer to section 5.2.2.2.1.3 Previous - 15M Menu for details.

5.3.2.2.1.4 Previous – 1 Day Menu

Please refer to section 5.2.2.2.1.4 Previous – 1 Day Menu for details.

5.3.2.2.1.4 Total Menu

Please refer to section 5.2.2.2.1.5 Total Menu for details.

5.3.2.2.2 Clear Menu

Please refer to section 5.2.2.2.2 Clear Menu for detail information.

5.3.2.3 Status Menu

Please refer to section 5.2.2.3 Status Menu for detail information.

Page 1

```
SHDSL STU-C [STU1]
Main Menu\SURVEILLANCE\STATUS
=====
[ESC].Exit [CR].Next page

**Configuration:
-----
UNIT: STU-C
MACHINE ID: STU1
INTERFACE: LAN
MAX PAYLOAD RATE(x64K): 36
MIN PAYLOAD RATE(x64K): 3
CLOCK SOURCE: INTERNAL
CURRENT TARGET MARGIN: 0
LINE PROBE: DISABLE
POWER BACK OFF: DEFAULT
TRANSMISSION MODE: ANNEX A & ANNEX B

**Version:
-----
S/W: 3.12
H/W: 1.2
FPGA: 2.3
DSP CHIP: 0x12
DSP CODE: 0x97

**Status Value:
-----
SNR MARGIN: N/A
ATTENUATION: N/A
POWER BACKOFF: N/A
ACTUAL LINE RATE: N/A
```

Page 2

```
SHDSL STU-C [STU1]
Main Menu\SURVEILLANCE\STATUS
=====
[ESC].Exit [CR].Next page

**Threshold:
-----
DSL 15MIN/10DAY UAS: 0/0
DSL 15MIN/10DAY SES: 0/0
DSL 15MIN/10DAY ES: 0/0
SNR MARGIN: 0
ATTENUATION: 0

**Maintenance:
-----
LOOPBACK: Disable
RMT ISSUE LOOPBACK: Disable
RMT SIDE LOOPBACK: Disable
RMT SIDE PRBS: Disable
BUTTON LOOPBACK: Disable
RMT BUTTON LOOPBACK: Disable

**status value:█
-----
SNR MARGIN: N/A
ATTENUATION: N/A
POWER BACKOFF: N/A
ACTUAL LINE RATE: N/A
```

5.3.3 Maintenance Menu

This menu consists of the maintenance loopback functions. Refer to section 5.2.3 Maintenance Menu for detail information.

5.3.3.1 Local Loopback Menu

Refer to section Loopback Menu for detail information.

5.3.3.2 PRBS Menu

Refer to section 5.2.3.1.3 PRBS Menu for detail information.

5.3.4 Miscellaneous Refer section **Miscellaneous** menu for detail information.

5.3.4.1 Date Menu

Refer to section 5.2.4.1 Date Menu for detail information.

5.3.4.2 Lock Menu

Refer to section 5.2.4.2 Lock Menu for detail information.

5.3.4.3 Change Password Menu

Refer to section 5.2.4.3 Change Password Menu for details.

5.3.4.4 Change ID Menu

Refer to section 5.2.4.4 Change ID Menu for detail information.

5.3.5 Remote Logon

Refer to section 5.2.5 Remote Logon for detail information.

5.4 Main Menu - E1 Interface

Following is the menu structure for the XL-GDB101E, GDB102E with an E1 interface. STU-C
(CENTRAL SITE)

```
SHDSL STU-C [STU1]
Main Menu
-----
[1] CONFIGURATION
[2] SURVEILLANCE
[3] MAINTENANCE
[4] MISCELLANEOUS
[5] REMOTE LOGON
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter: █
```

STU-R (REMOTE SITE)

```
SHDSL STU-R [STU1]
Main Menu
-----
[1] CONFIGURATION
[2] SURVEILLANCE
[3] MAINTENANCE
[4] MISCELLANEOUS
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter:
```

5.4.1 Configuration Menu

```
SHDSL STU-C [STU1]
Main Menu\CONFIGURATION
-----
[1] UNIT
[2] INTF
[3] E1
[4] DSL
[5] PAYLOAD RATE
[6] PCLK
[7] BACKUP
[8] RECALL
[9] DEFAULT
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter: █
```

Note: INTF will appear in STU-C, if using the combo interface card.

STU-R (REMOTE SITE)

```
SHDSL STU-C [STU1]
Main Menu\CONFIGURATION
=====
[1] UNIT
[2] INTF
[3] E1
[4] DSL
[5] PAYLOAD RATE
[6] PCLK
[7] BACKUP
[8] RECALL
[9] DEFAULT
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter: █
```

Refer to section 5.2.1 Configuration Menu for detail information.

5.4.1.1 Unit Menu

Refer to section 5.2.1 Configuration Menu for detail information.

5.4.1.2 INTF Menu (Combo Interface Card only)

Refer to section 5.2.1 Configuration Menu for detail information.

5.4.1.3 E1 Menu

```
SHDSL STU-R [STU1]
Main Menu\CONFIGURATION\E1
=====
[1] FRAME
[2] FRAME INSERT
[3] LINE CODE
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter: █
```

Under the configuration menu of E1 screen, Frame, Frame Insert and line code could be configured. The following screens show how to set Frame, Frame Insert and Line code. Only STU-C has the power to set up E1.

5.4.1.3.1 FRAME Menu

```
SHDSL STU-C
Main Menu\CONFIGURATION\E1\FRAME
=====
[1] UNFRAME
[2] *FAS+CRC
[3] FAS
[ENTER] Select
[ESC] Back
[M/w] Main Menu
_Enter: █
```

This menu is to select whether the E1 interface uses either the unframed, FAS+CRC or FAS. When the Frame is configured as UNFRAME, the whole bandwidth (2.304Mbps) is used for transmitting data without checking CRC.

5.4.1.3.2 Frame Insert Menu

```
SHDSL STU-R [STU1]
Main Menu\CONFIGURATION\E1\FRAME INSERT
=====
[1] INSERT
[2] *BYPASS
[ENTER] Select
[ESC] Back
_Enter: █
```

The above menu is for framing; the user can select either insert or bypass framing word. Time slot zero can be inserted or bypassed by the local unit. When in bypass mode, time slot zero is added to the number of payload time slots to form the line rate used by the G.SHDSL system. For example, when the user selects time slots 1,2 and 3 as the payload time slots, and user selects bypass framing, time slot zero is added to the total payload rate count for a total count of four. When user selects insert framing, time slot zero is not added to the total payload rate count for a total count of three. When STU-R's user interface is either DTE or Ethernet, framing will always be inserted by the E1 interface.

5.4.1.3.3 Line Code Menu

```
SHDSL STU-C
Main Menu\CONFIGURATION\E1\LINE CODE
=====
[1] *HDB3
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter: █
```

In the screen of E1 line code, the Line Code for E1 is HDB3 (High Density Bipolar of Order 3) that is a European digital network transmission protocol allowing information and control data to be embedded in the transmission bit stream.

5.4.1.4 DSL Menu

```
SHDSL STU-C [STU1]
Main Menu\CONFIGURATION\DSL
=====
[1] WORST CASE TARGET SNR
[2] LINE PROBING
[3] POWER BACKOFF
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter: █
```

DSL menu allows user to change related DSL settings including worst case target SNR, Line probing and power Backoff. Select the desired item to change DSL settings. Only STU-C has the power to set up DSL.

5.4.1.4.1 WORST CASE TARGET SNR Menu

```
SHDSL STU-C
Main Menu\CONFIGURATION\DSL
=====
[1] WORST CASE TARGET SNR
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter: █
```

In the DSL menu, you can change the value of WORST CASE TARGET SNR by entering “1” to enter WORST CASE TARGET SNR screen.

```
SHDSL STU-C
Main Menu\CONFIGURATION\DSL\WORST CASE TARGET SNR
=====

[ENTER]:quit with save [ESC]:quit without save

SNR Target Margin[-10...21] =      0█
```

In the WORST CASE TARGET SNR, You can change the SNR Target Margin by enter your desired Value (range from –10~21), press “ENTER” to save your setting when you want to quit this screen.

5.4.1.4.2 LINE PROBING

```
SHDSL STU-C [STU1]
Main Menu\CONFIGURATION\DSL\LINE PROBING
=====
[1] DISABLE
[2] *ENABLE
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter: █
```

In this screen, you can disable or enable Line Probing function. Select “1” to disable or “2” to enable Line Probing function.

5.4.1.4.3 POWER BACKOFF

```
SHDSL STU-C [STU1]
Main Menu\CONFIGURATION\DSL\POWER BACKOFF
=====
[1] *AUTO
[2] MANUAL
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter: █
```

When the line probing is enable, In the power back off menu, you can select “1” , AUTO, or “2” , Manual, to execute the power Backoff function.

```
SHDSL STU-C [STU1]
Main Menu\CONFIGURATION\DSL\POWER BACKOFF\MANUAL
=====

[ENTER]:quit with save [ESC]:quit without save

Power back off[0...30 db] =      0█
```

If you choose the “MANUAL” to configure the range of power Backoff, the “MANUAL” screen will appear so that you can set the power back off from 0 to 30 db. After your configuration, press “ENTER” to quit with save or “ESC” to quit without save. When the line probing is disable, only “MANUAL” is available, the screen shows as follows:

```
SHDSL STU-C [STU1]
Main Menu\CONFIGURATION\DSL\POWER BACKOFF
=====
[1] MANUAL
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter:
```

Moreover, Power Backoff at STU-R is only set up by manual through remote logon from STU-C, which shows as follows:

```
<<Remote Logon STU-R>> SHDSL STU-C [STU1]
Main Menu\CONFIGURATION\DSL\POWER BACKOFF
```

```
[ENTER]:quit with save [ESC]:quit without save
```

```
Power back off[0...30 db] = 0
```

5.4.1.4.4 TRANSMISSION Mode Menu

The Transmission mode screen only appears in the STU-R. Please use remote logon to access STU-R and then enter DSL menu to set up transmission mode. When transmission mode screen appears, Annex A and Annex B is available to select. key in "1" to select Annex A and "2" to select Annex B. Press Enter to submit your setting and press "ESC" to quit this screen. Press "M/m" to back to main menu.

```
<<Remote Logon STU-R>> SHDSL STU-C [STU1]
Main Menu\CONFIGURATION\DSL\TRANSMISSION MODE
```

```
[1] *ANNEX A
[2] ANNEX B
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter: █
```

5.4.1.5 Set Rate Menu

```
SHDSL STU-C
Main Menu\CONFIGURATION\RATE
```

```
[+]:up [-]:down [ENTER]:quit with save [ESC]:quit without save
```

```
Rate[3...31] = 31
```

```
PayloadRate = 1984 kbps
```

The data rate for network interface is set at the STU-C (Central Site) only. After configuration, the SHDSL system will use the line rate, which has been requested by user. User can select the desired rate and data location in relation to an E1 frame by using the function keys located above the current map. Whenever an asterisk appears under a number, the associated time slot/64K channel is enabled and contains data to be transmitted between the two SHDSL units. During

unframed (transparent) E1 mode, the data rate is automatically set to 2.048 Mbps and all 31 time slots are used to transmit data.

5.4.1.6 Primary Clock Menu (PCLK)

```
SHDSL STU-C
Main Menu\CONFIGURATION\PCLK
-----
[1] INT
[2] DSL
[3] *E1
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter: █
```

The Primary clock menu is used to configure the primary clock source; it shows the current clock source as internal, the E1 interface port or DSL by placing an asterisk (*) by the appropriate selection. To change the selection, key in the desired selection and hit Enter. Only STU-C has the power to set up PCLK.

5.4.1.7 Backup Menu

Please refer to section 5.2.1.7 Backup Menu for details.

5.4.1.8 Recall Menu

Please refer to section 5.2.1.7 Recall Menu for detail information.

5.4.1.9 Default Menu

Please refer to section 5.2.1.8 Default Menu for detail information.

5.4.2 Surveillance Menu

```
SHDSL STJ-C
Main Menu\SURVEILLANCE
-----
[1] ALARM
[2] PM
[3] STATUS
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter: █
```

The Surveillance menu consists of three groups of commands: Alarm, PM (Performance) and Status. The alarm menu will not only enable user to gather information about current alarm state of the SHDSL units but also collect past alarm history. The PM menu allows the user to monitor the system's performance in real-time basis and past performance recorded in 96 intervals with the duration of each interval equivalent to 15 minutes and 1 day. The status menu gives the user an instant overview to all the configuration and maintenance settings.

5.4.2.1 Alarm Menu

Please refer to section 5.2.2.1 Alarm Menu for detail information.

5.4.2.1.1 History menu

```
SHDSL STU-C
Main Menu\SURVEILLANCE\ALARM\HISTORY
-----
[ESC]: Abort, [ENTER]: Next Page

**** Alarm History Report ****
Index Alarm-Type State mm-dd-yyyy hh:mm:ss
  1     ETILos Alarm  1- 1-2003  0: 0: 2
  2     DslLos Alarm  1- 1-2003  0: 0: 1
```

The alarm history is used to track the occurrence of alarm and when it was cleared for a maximum of 64 entries. The entries are recorded onto the history buffer according to the time of occurrence. It is recommended that the date and time in Miscellaneous menu is set to the correct time after each time power is applied in order to make the alarm history more meaningful. For more details about the alarm types, please refer to Appendix B. The alarm history screen will not automatically update the alarm list, the user need to press "Enter" to update new alarms on to the list.

5.4.2.1.2 Current Menu

```
SHDSL STU-C
Main Menu\SURVEILLANCE\ALARM\CURRENT
-----
[ESC]: Abort

**** Current Alarm Report ****
Alarm-Type State Alarm-Type State
DSLLOS Alarm ET1LOS Alarm
DSLLOSW Ok ET1LOF Ok
DSLLOSD Ok ET1AIS Ok
DSLSNR Ok ET1RAI Ok
DSLATTN Ok ET1UAS15Min Ok
DSLUAS15Min Ok ET1SES15Min Ok
DSLES15Min Ok ET1ES15Min Ok
DSLES15Min Ok ETUASDay Ok
DSLUSADay Ok ETSESDay Ok
DSLESADay Ok ETESDay Ok
DSLESADay Ok

**** End of Alarm View ****
```

For the current alarm display, the alarm type, state and count will appear on the screen. For more details about the explanations of the alarm types, please refer to Appendix B. The state column indicates the current state of the alarm and the count column indicates the number of times this alarm has happened.

5.4.2.1.3 Clear Menu

Please refer to section 5.2.2.1.3 Clear Menu for all the details.

5.4.2.1.4 Threshold Menu

```
SHDSL STU-C
Main Menu\SURVEILLANCE\ALARM\THRESHOLD
-----
[1] DSL
[2] ET
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter: █
```

This menu sets the threshold values for the alarm types displayed. It is used as an alarm threshold for the 15-minute alarm count register. When the PM counters' values is greater than the set threshold, an alarm will occur. For detailed information about the alarm types please refer to Appendix B.

5.4.2.2 Performance Monitor Menu

```
SHDSL STU-C  
Main Menu\SURVEILLANCE\PM  
-----  
[1] DSL  
[2] E1  
[3] CLEAR  
[ENTER] Select  
[ESC] Back  
[M/m] Main Menu  
_Enter: █
```

The PM menu consists of three commands: DSL, E1 and Clear. To show the PM interval counters for DSL, press “1” and hit “Enter”. To show the PM interval counters for E1, press “2” and hit “Enter”. CLEAR will erase all PM intervals and counters.

5.4.2.2.1 DSL Menu

Please refer to section 5.2.2.2.1 DSL Menu for all the details.

5.4.2.2.1.1 Current - 15M Menu

Please refer to section 5.3.2.2.1.1 Current - 15M Menu for details. Furthermore, see Appendix B for the definition of names.

5.4.2.2.1.2 Current – 1 Day Menu

Please refer to section 5.2.2.2.1.2 Current 1 Day Menu for all the details.

5.4.2.2.1.3 Previous - 15M Menu

Please refer to section 5.2.2.2.1.3 Previous - 15M Menu Previous Menu for details.

5.4.2.2.1.4 Previous – 1 Day Menu

Please refer to section 5.2.2.2.1.4 Previous – 1 Day Menu Previous Menu for details.

5.4.2.2.1.5 Total Menu

Please refer to section 5.2.2.2.1.5 Total Menu Previous Menu for details.

5.4.2.2.2 E1 PM Menu

```
SHDSL STU-C
Main Menu\SURVEILLANCE\PM\E1
=====
[1] CURRENT-15M
[2] CURRENT-1DAY
[3] PREVIOUS-15M
[4] PREVIOUS-1DAY
[5] TOTAL
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter: █
```

The E1 PM menu consists of current 15 minutes, Current 1 Day, Previous 15 minutes, Previous 1 Day and Total performance monitoring counters.

5.4.2.2.2.1 Current - 15M Menu

```
SHDSL STU-C
Main Menu\SURVEILLANCE\PM\E1\CURRENT-15M
=====
[ESC]: Abort

Elapse  ES  SES  UAS  CRC  LCV
:13    0   0  113   0   0█
```

The current 15 minute menu displays the performance monitoring values for the current 15 minutes interval. Unavailable Seconds (UAS) are calculated by counting the number of seconds that the interface is unavailable. LCV is Line Code Violation counted within current 15 minute.

5.4.2.2.2.2 Current – 1Day Menu

```
SHDSL STU-C  
Main Menu\SURVEILLANCE\PM\E1\CURRENT-1DAY
```

[ESC]: Abort

Elapse	ES	SES	UAS	CRC	LCV
5453	0	0	5453	0	0

The current 1 Day menu displays the performance monitoring values for the current 1 Day interval. Unavailable Seconds (UAS) are calculated by counting the number of seconds that the interface is unavailable. LCV is Line Code Violation counted within current 1 Day.

5.4.2.2.3 Previous - 15M Menu

```
SHDSL STU-C  
Main Menu\SURVEILLANCE\PM\E1\PREVIOUS-15M
```

[ESC]: Abort, [ENTER]: Next Page

Index	ES	SES	UAS	CRC	LCV
1	0	0	900	0	0
2	0	0	900	0	0
3	0	0	900	0	0
4	0	0	900	0	0
5	0	0	900	0	0

The Previous 15 minute menu displays the performance monitoring count for up to 96 intervals; each interval is 15 minutes long.

5.4.2.2.4 Previous – 1Day Menu

```
SHDSL STU-C  
Main Menu\SURVEILLANCE\PM\E1\CURRENT-1DAY  
=====
```

[ESC]: Abort

Elapse	ES	SES	UAS	CRC	LCV
5453	0	0	5453	0	0

The Previous 1 Day menu displays the performance monitoring count for up to 96 intervals; each interval is 1 Day long.

5.4.2.2.2 Total Menu

```
SHDSL STU-C  
Main Menu\SURVEILLANCE\PM\E1\TOTAL  
=====
```

[ESC]: Abort

ES	SES	UAS	CRC	LCV
0	0	6022	0	0

The values shown are the total counter values.

5.4.2.2.3 Clear Menu

Please refer to section 5.2.2.2.2 Clear Menu for detail information.

5.4.2.3 Status Menu

Page 1

```
SHDSL STU-R [STU1]
Main Menu\SURVEILLANCE\STATUS
=====
[ESC].Exit [CR].Next page

**Configuration:
-----
UNIT: STU-R
MACHINE ID: STU1
INTERFACE: E1
CLOCK SOURCE: DSL
CURRENT TARGET MARGIN: 0
TRANSMISSION MODE: ANNEX A
FRAME: FAS+CRC
LINE CODE: HDB3
FRAMEINS: BYPASS

**Version:
-----
S/W: 3.12
H/W: 1.2
FPGA: 2.3
DSP CHIP: 0x12
DSP CODE: 0x17

**Status Value:
-----
SNR MARGIN: N/A
ATTENUATION: N/A
POWER BACKOFF: N/A
ACTUAL LINE RATE: N/A
```

Page 2

```
SHDSL STU-R [STU1]
Main Menu\SLRVEILLANCE\STATUS
=====
[ESC].Exit [CR].Next page

**Threshold:
-----
DSL 15MIN/1DAY UAS: 0/0
DSL 15MIN/1DAY SES: 0/0
DSL 15MIN/1DAY ES: 0/0
E1 15MIN/1DAY UAS: 0/0
E1 15MIN/1DAY SES: 0/0
E1 15MIN/1DAY ES: 0/0
SNR MARGIN: 0
ATTENUATION: 0

**Maintenance:
-----
LOOPBACK: Disable
RMT ISSUE LOOPBACK: Disable
RMT SIDE LOOPBACK: Disable
RMT SIDE PRBS: Disable
BUTTON LOOPBACK: Disable
RMT BUTTON LOOPBACK: Disable

**Status Value:
-----
SNR MARGIN: N/A
ATTENUATION: N/A
POWER BACKOFF: N/A
ACTUAL LINE RATE: N/A
```

please refer to 5.2.2.3 Status Menu for detail information.

5.4.3 Maintenance Menu

```
SHDSL STU-C
Main Menu\MAINTENANCE
=====
[1] LOOPBACK
[2] PRBS
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter: █
```

Please refer to section 5.2.3 Maintenance Menu for detail information.

5.4.4 Miscellaneous Refer section **Miscellaneous** for detail information.

5.4.4.1 Date Menu

Refer to section 5.2.4.1 Date Menu for detail information.

5.4.4.2 Lock Menu

Refer to section 5.2.4.2 Lock Menu for detail information.

5.4.4.3 Change Password Menu

Refer to section 5.2.4.3 Change Password Menu for details.

5.4.4.4 Change ID Menu

Refer to section 5.2.4.4 Change ID Menu for detail information.

5.4.5 Remote Logon

Refer to section 5.2.5 Remote Logon for detail information.

5.5 Main Menu - T1 Interface

Following is the menu structure for the XL-GDB101T, GDB102T with a T1 interface at STU-C and STU-R side. STU-C:

```
SHDSL STU-C [STU1]
Main Menu
-----
[1] CONFIGURATION
[2] SURVEILLANCE
[3] MAINTENANCE
[4] MISCELLANEOUS
[5] REMOTE LOGON
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter:
```

STU-R:

```
SHDSL STU-R [STU1]
Main Menu
-----
[1] CONFIGURATION
[2] SURVEILLANCE
[3] MAINTENANCE
[4] MISCELLANEOUS
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter: █
```

5.5.1 Configuration Menu

```
STU-C (CENTRAL SITE)
SHDSL STU-C [STU1]
Main Menu\CONFIGURATION
-----
[1] UNIT
[2] INTF
[3] T1
[4] DSL
[5] PAYLOAD RATE
[6] PRI K
[7] BACKUP
[8] RECALL
[9] DEFAULT
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter: █
```

STU-R (REMOTE SITE)

```
SHDSL STU-R [STU1]
Main Menu\CONFIGURATION
=====
[1] UNIT
[2] BACKUP
[3] RECALL
[4] DEFAULT
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter:
```

Refer to section 5.2.1.1 Unit Menu for detail information.

5.5.1.1 Unit Menu

Refer to section 5.2.1.1 Unit Menu for detail information.

5.5.1.2 INTF Menu

Refer to section 5.2.1.1 Unit Menu for detail information.

5.5.1.3 T1 Menu

```
SHDSL STU-C [STU1]
Main Menu\CONFIGURATION\T1
=====
[1] FRAME
[2] FRAME INSERT
[3] LINE CODE
[4] LBO
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter:
```

For this setup, the T1 menu selections consists of Frame, Frame Insert, Line code and LBO (Line build out) selections that are used by the SHDSL unit. The T1 can only be set at CO (STU-C) side and used through out the SHDSL system.

5.5.1.2.1 FRAME Menu

```
SHDSL STU-C [STU1]
Main Menu\CONFIGURATION\T1\FRAME
=====
[1] UFRAME
[2] *ESF
[3] SF
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter: █
```

This menu is to select whether the T1 interface uses either the Super Frame (SF), Extended Super Frame (ESF) or UNFRAME mode. The Frame format can only be set at CO (STU-C) side and used through out the SHDSL system.

5.5.1.2.2 Frame Insert Menu

```
SHDSL STU-C [STU1]
Main Menu\CONFIGURATION\T1\FRAME INSERT
=====
[1] INSERT
[2] *BYPASS
[ENTER] Select
[ESC] Back
_Enter: █
```

The above menu is for framing; the user can select either insert or bypass framing word. Time slot zero can be inserted or bypassed by the local unit. When in bypass mode, time slot zero is added to the number of payload time slots to form the line rate used by the G.SHDSL system. For example, when the user selects time slots 1,2 and 3 as the payload time slots, and user selects bypass framing, time slot zero is added to the total payload rate count for a total count of four. When user selects insert framing, time slot zero is not added to the total payload rate count for a total count of three. When STU-R's user interface is either DTE or Ethernet, framing will always be inserted by the E1 interface.

5.5.1.2.3 LINE CODE Menu

The above menu is for setting each T1 unit's line code to be used with interconnecting T1 equipment. The line code, B8ZS or AMI, can be individually set to different line codes depending on the T1 equipment attached.

```
SHDSL STU-C [STU1]
Main Menu\CONFIGURATION\T1\LINE CODE
=====
[1] *B8Z3
[2] AMI
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter: █
```

5.5.1.2.4 LBO Menu

```
SHDSL STU-C [STU1]
Main Menu\CONFIGURATION\T1\LBO
=====
[1] *0~133 FEET
[2] 133~266 FEET
[3] 266~399 FEET
[4] 399~533 FEET
[5] 533~655 FEET
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter: █
```

The above menu is for configure the T1 reach parameter. The T1's transmit pulse is increased with the change of distance. The transmit pulse is the largest when the LBO setting is at 533 ~ 655 feet and the transmit pulse is the smallest when the LBO setting is at 0 ~ 133 feet. This parameter is used to compensate for the loss that will occur when longer wires are used for T1 transmission. The conversion factor between feet and meters is that 1 meter is approximately 3.3 feet. Hence, 655 feet is approximately 200 meters. When this parameter is used incorrectly, the T1 interface will be receiving no signals or too strong of a signal which will cause T1 interface malfunction.

5.5.1.4 Set Rate Menu

```
SHDSL STJ-C [STU1]
Main Menu\CONFIGURATION\RATE
=====

[+]:up [-]:down [ENTER]:quit with save [ESC]:quit without save

Rate[3...24] = 24
PayloadRate = 1536 kbps
```

The data rate for network interface is set at the STU-C (Central Site) only. After configuration, the SHDSL system will use the line rate, which has been requested by user. User can select the desired rate (from 3 to 24). Whenever an asterisk appears under a number, the associated time slot/64K channel is enabled and contains data to be transmitted between the two SHDSL units.

5.5.1.5 Primary Clock Menu (PCLK)

```
SHDSL STU-C [STU1]
Main Menu\CONFIGURATION\PCLK
=====
[1] INT
[2] DSL
[3] *T1
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter: █
```

Primary clock menu is set at STU-C and used to configure the primary clock source; it shows the current clock source as internal, the T1 interface port or DSL by placing an asterisk (*) by the appropriate selection. To change the selection, key in the desired selection and hit Enter.

5.5.1.6 Backup Menu

Please refer to section 5.2.1.7 Backup Menu for details.

5.5.1.7 Recall Menu

Please refer to section 5.2.1.7 Recall Menu for detail information.

5.5.1.8 Default Menu

Please refer to section 5.2.1.8 Default Menu for detail information.

5.5.2 Surveillance Menu

```
SHDSL STU-C [STU1]
Main Menu\SURVEILLANCE
=====
[1]  ALARM
[2]  PM
[3]  STATUS
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter: █
```

The Surveillance menu consists of three groups of commands: Alarm, PM (Performance) and Status. The alarm menu will enable user to gather information about current alarm state of the SHDSL units and also past alarm history. The PM menu allows the user to monitor the system's performance in real-time basis and past performance recorded in 96 intervals with the duration of each interval equivalent to 15 minutes. The status menu gives the user an instant overview to all the configuration and maintenance settings.

5.5.2.1 Alarm Menu

Please refer to section 5.2.2.1 Alarm Menu for detail information.

5.5.2.1.1 History menu

Please refer to section 5.2.2.1.1 History Menu for detail information.

5.5.2.1.2 Current Menu

Please refer to section 5.2.2.1.2 Current Menu for detail information.

5.5.2.1.3 Clear Menu

Please refer to section 5.2.2.1.3 Clear Menu for all the details.

5.5.2.1.4 Threshold Menu

Please refer to section 5.2.2.1.4 Threshold Menu for all the details.

5.5.2.2 Performance Monitor Menu

```
SHDSL STU-C [STU1]
Main Menu\SURVEILLANCE\PM
=====
[1] DSL
[2] T1
[3] CLEAR
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter:
```

The PM menu consists of three commands: DSL, T1 and Clear. To show the PM interval counters for DSL, press “1” and hit “Enter”. To show the PM interval counters for T1, press “2” and hit “Enter”. Clear will erase all PM intervals and counters.

5.5.2.2.1 DSL Menu

Please refer to section 5.2.2.2.1 DSL Menu for all the details.

5.5.2.2.1.1 Current - 15M Menu

Please refer to section 5.2.2.2.1.1 Current - 15M Menu for details. Furthermore, see Appendix B for the definition of names.

5.5.2.2.1.2 Current – 1Day Menu

Please refer to section 5.2.2.2.1.2 Current 1 Day Menu for all the details.

5.5.2.2.1.3 Previous - 15M Menu

Please refer to section 5.2.2.2.1.3 Previous - 15M Menu for details.

5.5.2.2.1.4 Previous – 1Day Menu

Please refer to section 5.2.2.2.1.4 Previous – 1 Day Menu for details.

5.5.2.2.1.5 Total Menu

Please refer to section 5.2.2.2.1.5 Total Menu for details.

5.5.2.2.2 T1 PM Menu


```
SHDSL STU-C [STU1]
Main Menu\SURVEILLANCE\PM\T1
=====
[1] CURRENT-15M
[2] CURRENT-1DAY
[3] PREVIOUS-15M
[4] PREVIOUS-1DAY
[5] TOTAL
[ENTER] Select
[ESC] Back
[M/m] Main Menu
_Enter:
```

The T1 PM menu consists of current 15 minutes (900 seconds), Current 24 hours and Previous 96 intervals of 15 minutes performance monitoring counters.

5.5.2.2.2.1 Current - 15M Menu

```
SHDSL STU-C [STU1]
Main Menu\SURVEILLANCE\PM\T1\CURRENT-15M
=====
[ESC]: Abort

Elapse   ES   SES   UAS   CRC   LCV
  151     0     0   151     0     0
```

The current 15 minute menu displays the performance monitoring values for the current 15 minutes interval. Unavailable Seconds (UAS) are calculated by counting the number of seconds that the interface is unavailable. Line Code Violations (LCV) are errors received when the T1 line code is not as expected. For more detailed explanation about the acronyms, please refer to Appendix B.

5.5.2.2.2.2 Current – 1Day Menu

```
SHDSL STU-C [STU1]
Main Menu\SURVEILLANCE\PM\T1\CURRENT-1DAY
=====
[ESC]: Abort

Elapse   ES   SES   UAS   CRC   LCV
  199     0     0   199     0     0
```

The current 1 Day menu displays the performance monitoring values for the current 1 Day interval. Unavailable Seconds (UAS) are calculated by counting the number of seconds that the interface is unavailable. Line Code Violations (LCV) are errors received when the T1 line code is not as expected. For more detailed explanation about the acronyms, please refer to Appendix B.

5.5.2.2.3 Previous -15M Menu

```
SHDSL STU-C [STU1]
Main Menu\SURVEILLANCE\PM\T1\PREVIOUS-15M
=====
[ESC]: Abort, [ENTER]: Next Page
Index      ES      SES      UAS      CRC      LCV
```

The Previous 15 minute menu displays the performance monitoring count for up to 96 intervals; each interval is 15 minutes long. For more detailed explanation about the acronyms listed, please refer to Appendix B.

5.5.2.2.4 Previous -1 Day Menu

```
SHDSL STU-C [STU1]
Main Menu\SURVEILLANCE\PM\T1\PREVIOUS-1DAY
=====
[ESC]: Abort, [ENTER]: Next Page
Index      ES      SES      UAS      CRC      LCV
```

The Previous 1 Day menu displays the performance monitoring count for up to 96 intervals; each interval is 1 Day long. For more detailed explanation about the acronyms listed, please refer to Appendix B.

5.5.2.2.5 Total Menu

```
SHDSL STU-C [STU1]
Main Menu\SURVEILLANCE\PM\T1\TOTAL
=====
[ESC]: Abort

      ES      SES      UAS      CRC      LCV
      0        0      282        0        0
```

The TOTAL menu displays the total performance monitoring count. For more detailed explanation about the acronyms listed, please refer to Appendix B.

5.5.2.2.3 Clear Menu

Please refer to section 5.2.2.2.2 Clear Menu for detail information.

5.5.2.3 Status Menu

Page 1

```
SHDSL STU-C [STU1]
Main Menu\SURVEILLANCE\STATUS
=====
[ESC].Exit [CR].Next page

**Configuration:
-----
      UNIT: STU-C
      MACHINE ID: STU1
      INTERFACE: T1
      PAYLOAD RATE(x64K): 24
      CLOCK SOURCE: T1
      CURRENT TARGET MARGIN: 0
      LINE PROBE: DISABLE
      POWER BACK OFF: DEFAULT
      TRANSMISSION MODE: ANNEX A & ANNEX B
      FRAME: ESF
      LINE CODE: B8ZS
      LB0: 0~133 FEET
      FRAMEINS: BYPASS

**Version:
-----
      S/W: 3.12
      H/W: 1.2
      FPGA: 2.3
      DSP CHIP: 0x12
      DSP CODE: 0x97

**Status Value:
-----
      SNR MARGIN: N/A
      ATTENUATION: N/A
      POWER BACKOFF: N/A
      ACTLAL LINE RATE: N/A
```

```
SHDSL STU-C [STU1]
Main Menu\SURVEILLANCE\STATUS
-----
[ESC].Exit [CR].Next page

**Threshold:
-----
DSL 15MIN/1DAY UAS: 0/0
DSL 15MIN/1DAY SES: 0/0
DSL 15MIN/1DAY ES: 0/0
TL 15MIN/1DAY UAS: 0/0
TL 15MIN/1DAY SES: 0/0
TL 15MIN/1DAY ES: 0/0
SNR MARGIN: 0
ATTENUATION: 0

**Maintenance:
-----
LOOPBACK: Disable
RMT ISSUE LOOPBACK: Disable
RMT SIDE LOOPBACK: Disable
RMT SIDE PRBS: Disable
BUTTON LOOPBACK: Disable
RMT BUTTON LOOPBACK: Disable

**Status Value:
-----
SNR MARGIN: N/A
ATTENUATION: N/A
POWER BACKOFF: N/A
ACTUAL LINE RATE: N/A
```

The status menu shows the status of the local unit only, for this case it is STU-C. To display the STU-R status, one can either use remote logon method or direct CID connection to STU-R.

5.5.3 Maintenance Menu

Please refer to section 5.2.3 Maintenance Menu for all the details.

5.5.4 Miscellaneous Refer section **Miscellaneous** for detail information.

5.5.4.1 Date Menu

Refer to section 5.2.4.1 Date Menu for detail information.

5.5.4.2 Lock Menu

Refer to section 5.3.4.2 Lock Menu for detail information.

5.5.4.3 Change Password Menu

Refer to section 5.2.4.3 Change Password Menu for details.

5.5.4.4 Change ID Menu

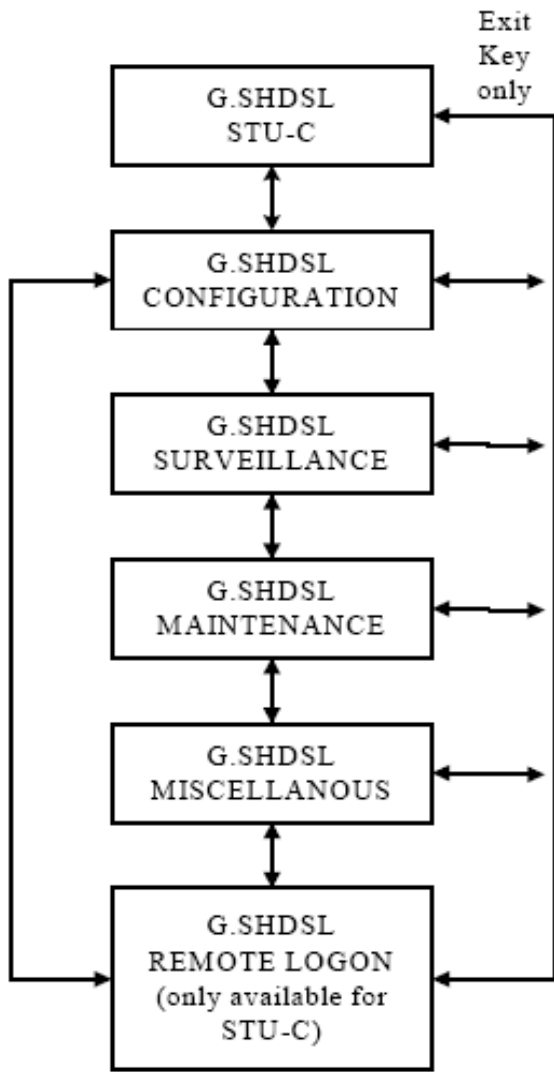
Refer to section 5.2.4.4 Change ID Menu for detail information.

5.5.5 Remote Logon

Refer to section 5.4.5 Remote Logon for detail information.

Chapter 6 Configuration/Operation using LCD Panel

This chapter describes how to use the LCD front panel to configure the system, monitor status and gathering statistics. The LCD menu consists of five main selections: Configuration, Surveillance, Maintenance, Miscellaneous and Remote Logon. Each selection has multiple selection items, which can be used to configure, monitor and examine the unit and the pair's condition. Please note that CID operation has priority over LCD panel operation; therefore, when the CID port has a terminal or PC connected to it, the LCD will only show the first screen and the unit will ignore key press on the LCD panel.

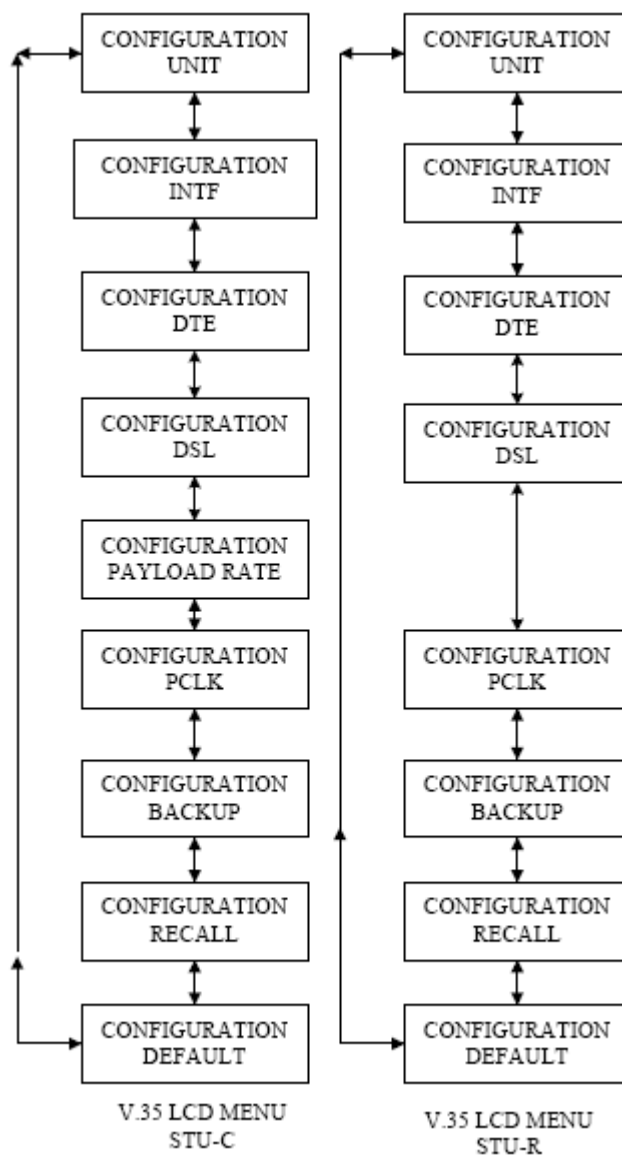


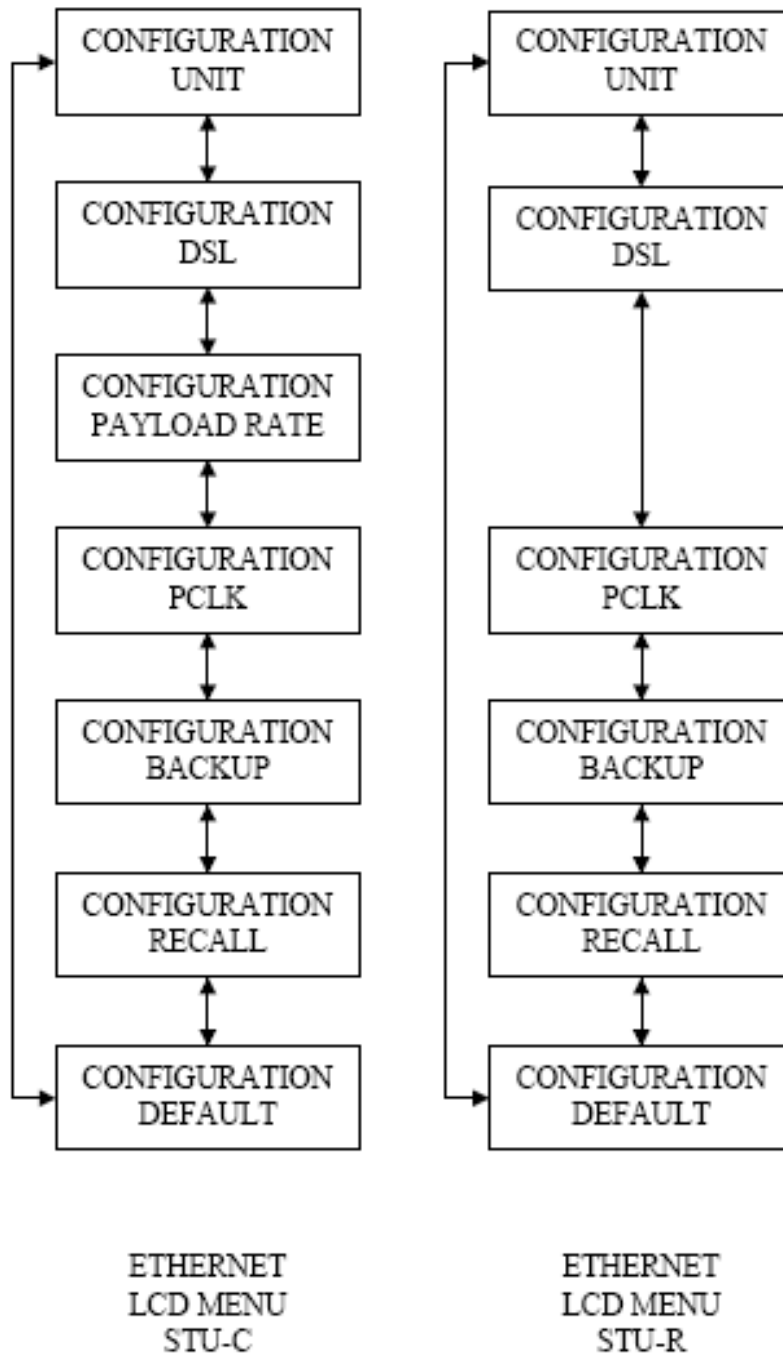
The LCD front panel consists of a 16 characters by 2 lines Liquid Crystal Display (LCD) and four keys. The keys are designated with 3, 4, EXIT and ENTER. The EXIT key is used to jump up to the previous level of menu. The 3 and 4 keys are used to scroll through the menu items or make changes. The ENTER key is used to confirm an operation and in some screens, change displayed items.

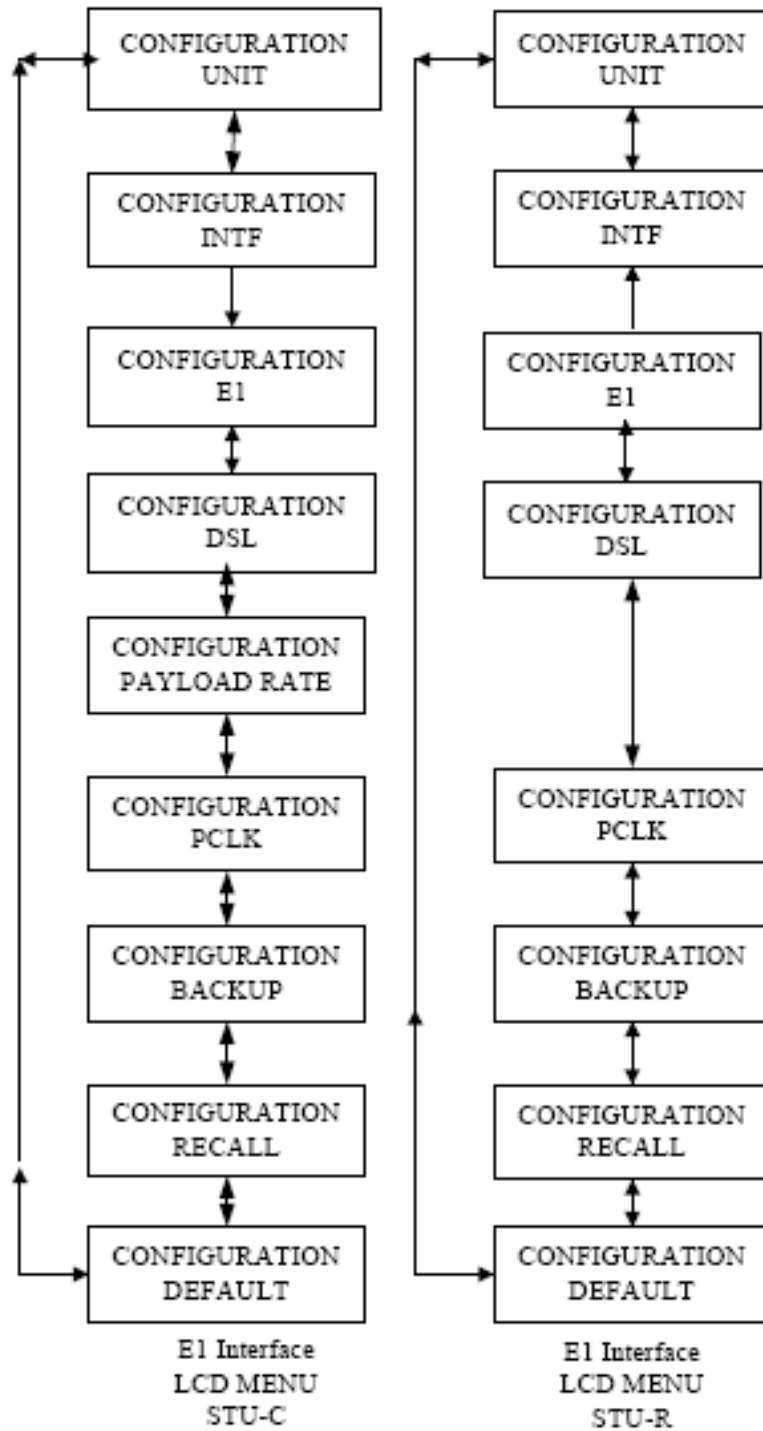
The main screen consists of information about the current unit. The first line displays G.SHDSL and The second line shows the STU-C or STU-R. To move from the main screen to the other operations menu, one can press ◀ or ▶ keys. To jump back to the main screen from the menu level below the main screen one can press EXIT key. The menu structure is similar to that of CID operations menu. There are five main selections: Configuration, Surveillance, Maintenance, Miscellaneous and Remote Logon. Each selection will be explained in more detail in the following sections.

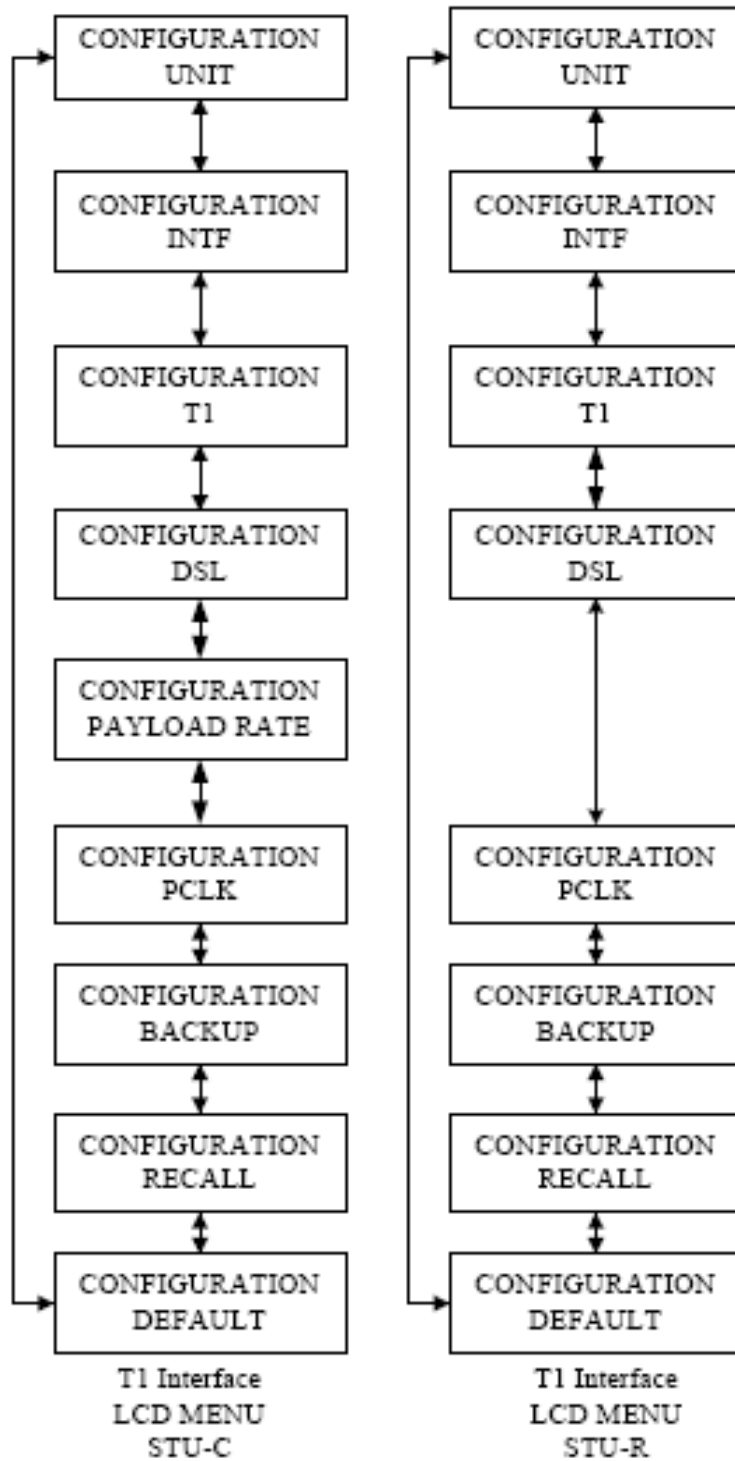
6.1 Configuration Screen

The configuration menu, depending on the type of interface and the unit's designation, will have several variations are shown below. The main purpose of the configuration menu is to configure the unit for operation. The first line shows current selection: Configuration while the second line shows all the selections available one at a time when scrolling. The ◀ and ▶ keys are used to scroll through the menu items. The **ENTER** key is used to confirm and save the selection in memory while the **EXIT** key is used to jump back to previous menu level without saving the changes.









APPENDIX A: Interface Pin Assignments

DTE Interface Pin Assignment Table

EIA DESCRIPTION	ABBR.	SIGNAL TO	V.35	EIA-530	RS-449	X.21
Shield			A	1	1	Case
Signal Gnd	SG		B	7	19	8
DTE Common RTN					37	
DCE Common RTN					20	
Transmit Data (A)	TD(A)	DCE	P	2	4	2
Transmit Data (B)	TD(B)	DCE	S	14	22	9
Receive Data (A)	RD(A)	DTE	R	3	6	4
Receive Data (B)	RD(B)	DTE	T	16	24	11
Request To Send (A)	RTS(A)	DCE	C	4	7	3
Request To Send (B)	RTS(B)	DCE		19	25	10
Clear To Send (A)	CTS(A)	DTE	D	5	9	
Clear To Send (B)	CTS(B)	DTE		13	27	
Data Set Ready (A)	DSR(A)	DTE	E	6	11	
Data Set Ready (B)	DSR(B)	DTE		22	29	
Data Terminal Ready (A)	DTR(A)	DCE	H	20	12	
Data Terminal Ready (B)	DTR(B)	DCE		23	30	
Data Carrier Detect (A)	DCD(A)	DTE	F	8	13	5
Data Carrier Detect (B)	DCD(B)	DTE		10	31	12
Terminal Transmit Clock (A)	TTC(A)	DCE	U	24	17	7
Terminal Transmit Clock (B)	TTC(B)	DCE	W	11	35	14
Transmit Clock (A)	TC(A)	DTE	Y	15	5	
Transmit Clock (B)	TC(B)	DTE	AA	12	23	
Receive Clock (A)	RC(A)	DTE	V	17	8	6
Receive Clock (B)	RC(B)	DTE	X	9	26	13
Remote Loopback	RLB	DCE	N	21	14	
Local Loopback	LLB	DCE	L	18	10	
Test Mode	TM	DTE	NN	25	18	

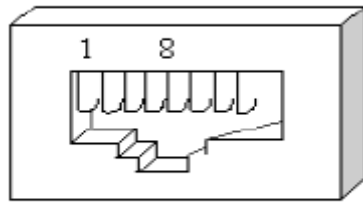
CID (RS-232) PIN ASSIGNMENT TABLE

EIA DESCRIPTION	ABBR.	SIGNAL TO	RS-232
Signal Gnd	SG		5
Transmit Data (A)	TD(A)	DCE	3
Receive Data (A)	RD(A)	DTE	2
Request To Send (A)	RTS(A)	DCE	7
Clear To Send (A)	CTS(A)	DTE	8
Data Set Ready (A)	DSR(A)	DTE	6
Data Terminal Ready (A)	DTR(A)	DCE	4
Data Carrier Detect (A)	DCD(A)	DTE	1

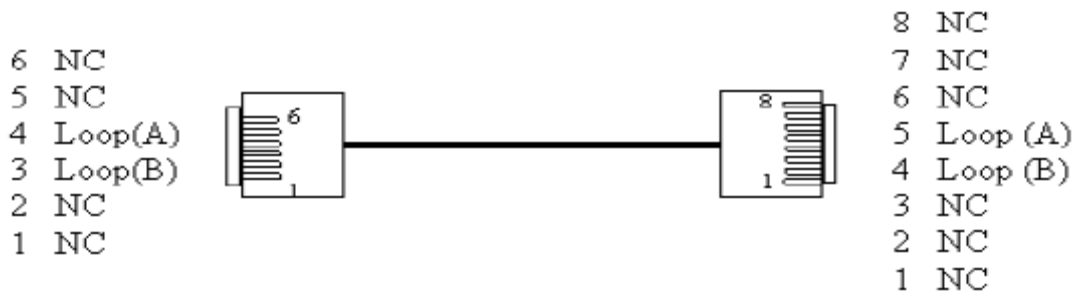
E1 and T1 INTERFACE PIN ASSIGNMENT TABLE

SIGNAL DESCRIPTION	DIRECTION	DB-15	TERMINAL BLOCK	RJ-45
TTIP	OUT	1	T	1
TRING	OUT	9	R	2
RTIP	IN	3	T1	4
RRING	IN	11	R1	5
Frame Ground		2	GND	3
		4		6

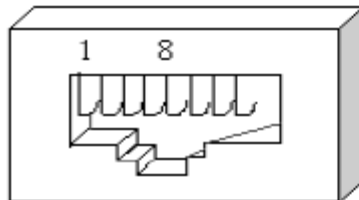
Ethernet Assignment



PC		HUB	
8	NC	8	NC
7	NC	7	NC
6	TX -	6	Rx -
5	NC	5	NC
4	NC	4	NC
3	Tx +	3	Rx +
2	Rx -	2	Tx -
1	Rx +	1	Tx +



Loop Assignment



Loop RJ48 PIN Assignment

8	NC
7	NC
6	NC
5	Loop (A)
4	Loop (B)
3	NC
2	NC
1	NC

APPENDIX B: Acronym Definitions

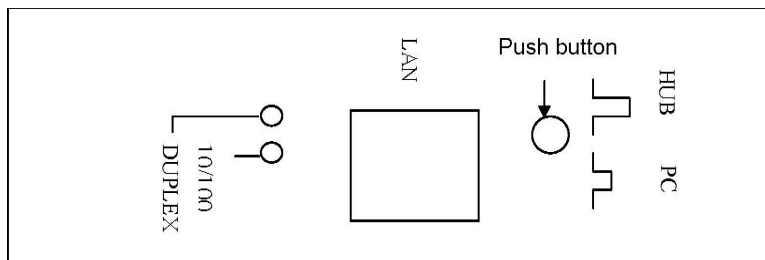
Below are the definitions for the Alarms and PM acronyms.

DSLLos	The Loop is in Loss of Sync state when in Alarm state.
DSLLosW	Loss of Sync Word, the DSL SYNC word received was corrupted and when this occurs continuously for more than 2 seconds, DSLLos will be declared.
DSLLosd	Far end user interface is not active when in Alarm state.
DSLsnr	Received DSL SNR value is lower than set value.
DSLAttn	DSL attenuation value is higher than set value.
DSL15Min	PM Threshold alarm for 15-Minute count. Alarm will active when DSL15 value for the 15-minute interval is larger than set threshold value.
DSLSES15Min	PM Threshold alarm for 15-Minute count. Alarm will active when DSLSES value for the 15-minute interval is larger than set threshold value.
DSLES15Min	PM Threshold alarm for 15-Minute count. Alarm will active when DSLES value for the 15-minute interval is larger than set threshold value.
DSL1Day	PM Threshold alarm for 1-Day count. Alarm will active when DSL1 value for the 1-Day interval is larger than set threshold value.
DSLSESDay	PM Threshold alarm for 1-Day count. Alarm will active when DSLSES value for the 1-Day interval is larger than set threshold value.
DSLESDay	PM Threshold alarm for 1-Day count. Alarm will active when DSLES value for the 1-Day interval is larger than set threshold value.
DTELos	Local DTE or Ethernet user interface is not active when in Alarm state.
ET1Los	The E1 or T1 interface does not have input signal, Loss of Signal (LOS).
ET1Lof	The E1 or T1 interface cannot obtain the input frame, Loss of Frame (LOF).
ET1Ais	The E1 or T1 interface is receiving an Alarm Indicator Signal.
ET1Rai	The E1 or T1 interface is receiving a Yellow alarm or Remote Alarm Indication (RAI).
ET115Min	PM Threshold alarm for 15-Minute count. Alarm will active when ET115 value for the 15-minute interval is larger than set threshold value.
ET1SES15Min	PM Threshold alarm for 15-Minute count. Alarm will active when ET1SES value for the 15-minute interval is larger than set threshold value.
ET1ES15Min	PM Threshold alarm for 15-Minute count. Alarm will active when ET1ES value for the 15-minute interval is larger than set threshold value.
ET11Day	PM Threshold alarm for 1 Day count. Alarm will active when ET11 value for the 1-Day interval is larger than set threshold value.
ET1SESDay	PM Threshold alarm for 1 Day count. Alarm will active when ET1SES value for the 1-Day interval is larger than set threshold value.
ET1ESDay	PM Threshold alarm for 1 Day count. Alarm will active when ET1ES value for the 1-Day interval is larger than set threshold value.

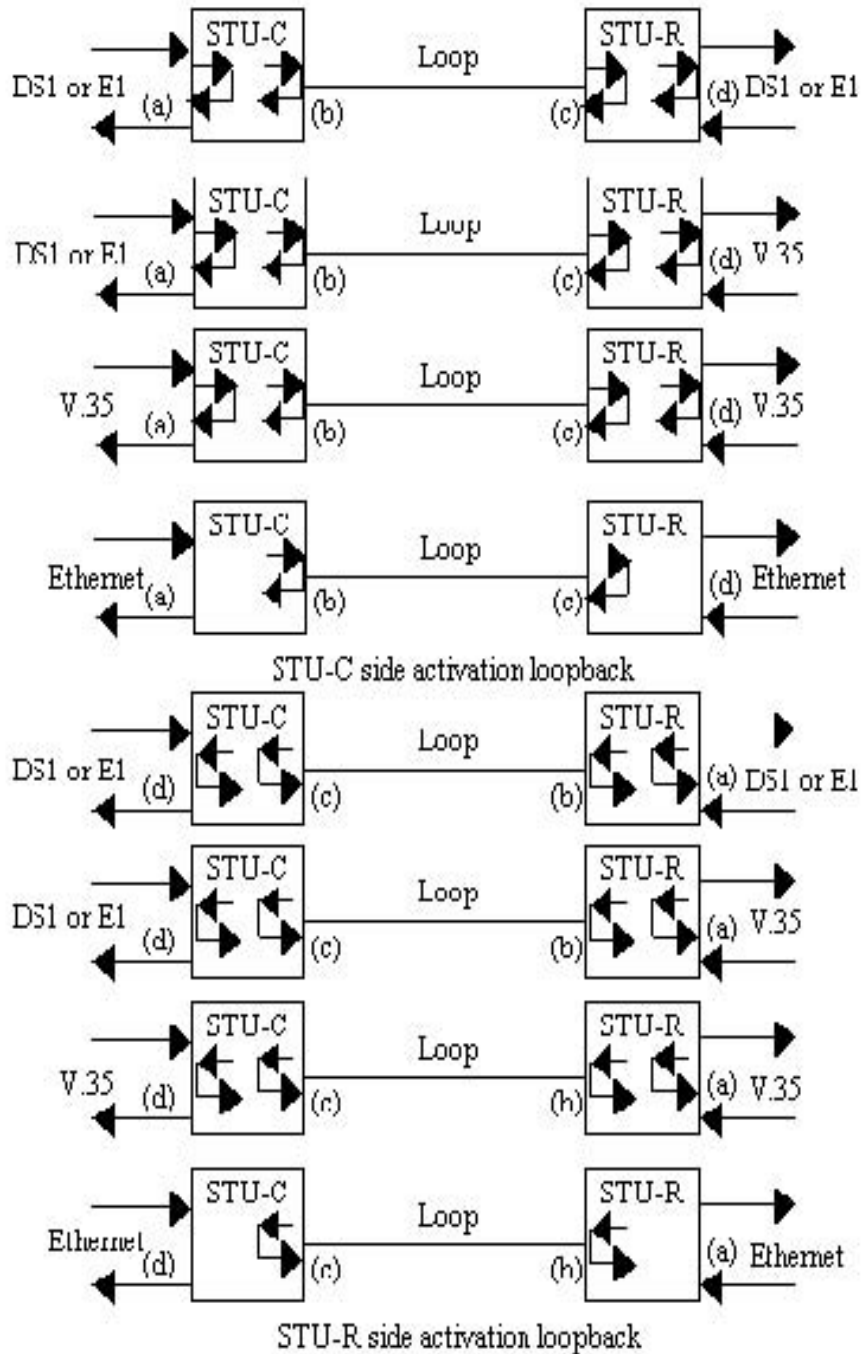
APPENDIX C: Ethernet Interface Setting for XL-GDB101F

10/100 BaseT Ethernet Interface: There are two LEDs on the panel of 10/100 BaseT Ethernet Interface: DUPLEX and 10/100.

DUPLEX: the DUPLEX LED will be green when this interface is power on; if the LED turns into red, the DUPLEX mode is activated. 10/100: red shows the speed is 10Mbps and green shows the speed is 100Mbps. In addition, there is also a push button on the 10/100 BaseT Ethernet panel. The push button selects which device the 10/100 BaseT port is connected to. When it is pushed in, it is a direct connection to the computer and when it is in the out position, it is a direction connection to the HUB. 10/100 BaseT Ethernet Interface



APPENDIX D: Loopback Illustration



(a) Near end loopback (c) Remote loopback
 (b) Local loopback (d) Remote payload loopback