

TDM G.SHDSL

PAMSPAN-2000

Standalone Type

User Manual

Ver. UM-PAMSPAN-2000-3-E



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

Contents:

PAMSPAN-2000 SHDSL Executive Summary	5
Chapter 1: Product Description	6
1.1 Introduction	6
1.2 Product Interaction	6
1.2.1 Operation	7
1.2.2 System Interface	9
1.3 Physical Description	10
1.4 System Interaction	11
1.4.1 External PC Interaction	11
Chapter 2: System Overview.....	12
2.1 General	12
2.2 System Description	12
2.3 SHDSL Transmission	12
2.4 Real-time Performance Monitoring.....	13
2.4.1 Monitored Parameters.....	13
2.4.2 History Reports.....	13
2.4.3 Status Readouts.....	14
2.5 Interface Configuration	14
2.6 Interface Type.....	14
2.7 Alarm management	14
2.8 Diagnostics	14
2.8.1 Near End Loopback (NearEndLB)	15

2.8.2	Local Loopback(LocalLB).....	15
2.8.3	Remote Loopback (RemoteLB)	15
2.8.4	Remote Payload Loopback (PayloadLB)	16
Chapter 3: APPLICATIONS		17
3.1	Far Reach Single Pair E1 or T1	17
3.2	Fast Synchronous Interfaces	18
3.3	Selectable Data Rates.....	18
3.4	Packet Interface: Ethernet	19
Chapter 4: Installation		20
4.1	General	20
4.1.1	Unpacking your PAMSPAN-2000	20
4.1.2	Site Selection	20
4.1.4	Installation.....	20
4.1.5	Rear Panel	21
4.2	Installation Procedure	21
4.3	LED Descriptions.....	23
Chapter 5: Configuration/Operation		24
5.1	Terminal Operation	24
5.1.1	Screen Definition	24
5.2	Main Menu – V. 35.....	25
5.2.1	Configuration Menu.....	25
5.2.2	Surveillance Menu	34
5.2.3	Maintenance Menu.....	45
5.2.4	Miscellaneous	49

5.2.5 Remote Logon	50
5.3 Main Menu - Ethernet	52
5.3.1 Configuration Menu	52
5.3.2 Surveillance Menu	54
5.3.3 Maintenance Menu	56
5.3.4 Miscellaneous	56
5.3.5 Remote Logon	56
5.4 Main Menu - E1 Interface	57
5.4.1 Configuration Menu	57
5.4.2 Surveillance Menu	64
5.4.3 Maintenance Menu	70
5.4.4 Miscellaneous	70
5.4.5 Remote Logon	70
5.5 Main Menu - T1 Interface	71
5.5.1 Configuration Menu	71
5.5.2 Surveillance Menu	76
5.5.3 Maintenance Menu	80
5.5.4 Miscellaneous	80
5.5.5 Remote Logon	80
Chapter 6 Configuration/Operation using LCD Panel	81
6.1 Configuration Screen	82
6.1.2 INTF Menu	87
6.1.3 DTE Menu	88
6.2 Surveillance Menu	99

6.2.1 Alarm Menu	99
6.2.2 Performance Monitor Menu	105
6.2.3 Status Menu	111
6.3 Maintenance Menu	116
6.3.1 Loopback Menu	116
6.3.2 PRBS Menu	118
6.3.3 SELFTEST Menu	118
6.4 Miscellaneous Menu	120
6.4.1 Date Menu	120
6.4.2 Lock Menu	120
6.4.3 Change Password Menu	121
6.4.4 Change Unit ID	121
6.5 Remote Logon	121
APPENDIX A: Interface Pin Assignments	122
APPENDIX B: Acronym Definitions	125
APPENDIX C: Ethernet Interface Setting	127
APPENDIX D: Loopback Illustration	129
APPENDIX E: PAMSPAN-2000 Specification	130

PAMSPAN-2000 SHDSL 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, C-COM, 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. **PAMSPAN-2000** offers Telecom service providers the best cost-effective solution for immediate implementation of replacing T1/E1 leased line.

PAMSPAN-2000 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 2304 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 PAMSPAN-2000 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 7 Km (24 AWG line) at a Bit Error Rate of less than 10^{-7} .

Using SHDSL transmission technology, the PAMSPAN-2000 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.

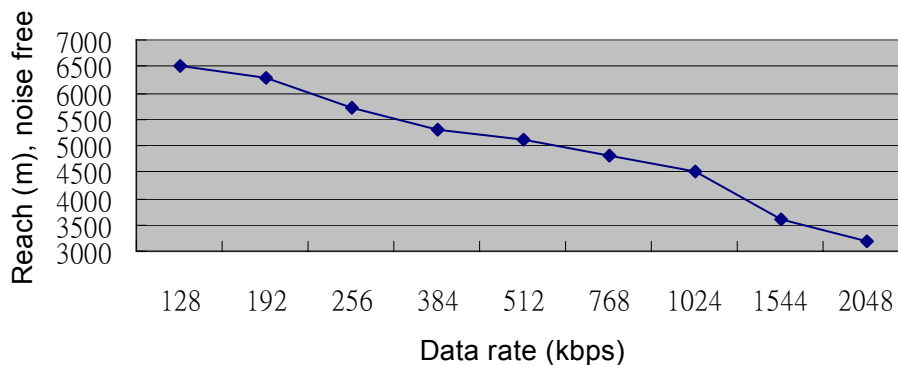
1.2 Product Interaction

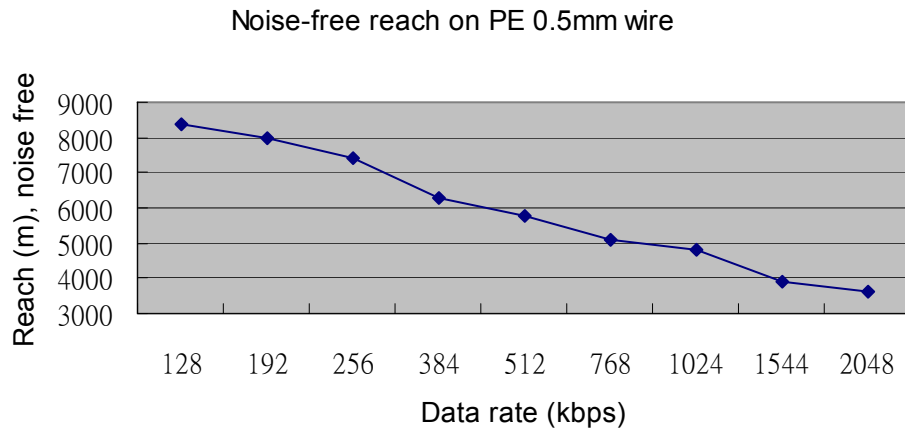
PAMSPAN-2000 desktop SHDSL modem that is part of the C-Com SHDSL access system. Used in conjunction with the PAMSPAN-2000 shelf type CO (Central Office) line card or desktop SHDSL modem, the unit provides repeater less data transport of up to 2.304 Mbps, over a single pair of unconditioned copper wire. 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 $N \times 64$ kbps rates where N is from 3 to 32. (see chart 1,).

Chart 1: SHDSL E1 Transimission Specification (Noise Free)

DATA (kbps) \ DIA	2048	1544	1024	768	512	384	256	192	128
0.4mm	3200m	3600m	4500m	4800m	5100m	5300m	5700m	6300m	6500m
0.5mm	3600m	3900m	4800m	5100m	5800m	6300m	7400m	8000m	8400m

Noise-free reach on PE 0.4mm wire





1.2.1 Operation

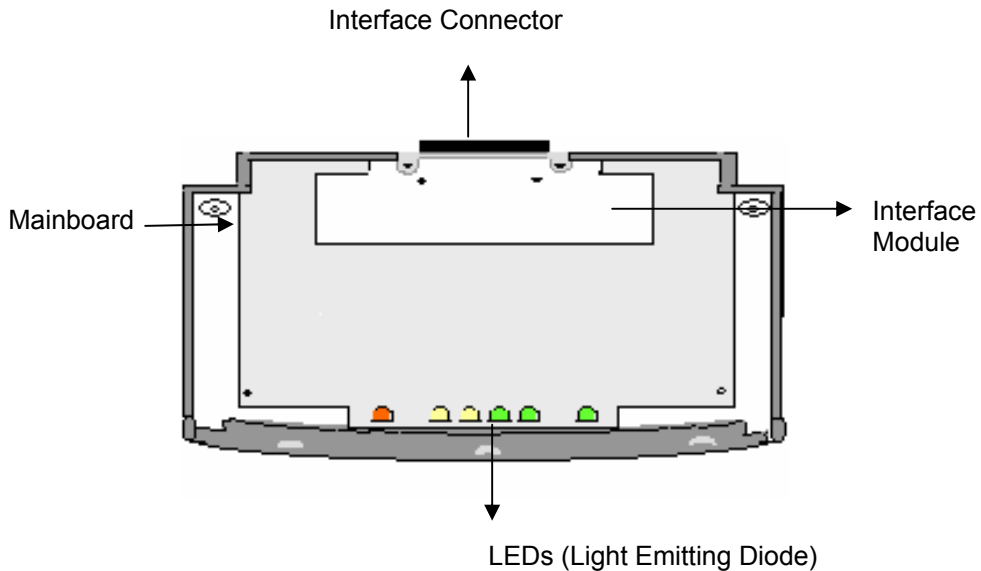


Figure 1.1 PAMSPAN-2000 with external AC power architecture

The PAMSPAN-2000 receives its power from the AC power source via an AC adapter provided by C-Com.

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 PAMSPAN-2000. The PAMSPAN-2000 produces a digitized data stream, which is transmitted over the single copper pair to the line port of its associated PAMSPAN-2000 line interface card. The PAMSPAN-2000 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 10/100BaseT data port, the PAMSPAN-2000 SHDSL system can support un-channelized data rates up to 2.304 Mbps.

1.2.2 System Interface

The PAMSPAN-2000 system supports four high-speed digital interfaces, V.35, RS-449/EIA-530, Ethernet Remote Bridge (10/100 BaseT Port), and E1 (G.703) and T1. 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: $(\text{Data rate} + 8000) / 3$ symbol/sec.
- Modulation Method: 16-TCPAM
- Impedance: 135 ohms.

1.2.2.1 V.35

The PAMSPAN-2000 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 PAMSPAN-2000 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 PAMSPAN-2000. 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 PAMSPAN-2000 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 PAMSPAN-2000 (CPE). The detailed features of E1 are:

- Bit Rate: Nx64Kbps, $1 \leq N \leq 32$, 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)

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 PAMSPAN-2000 (CPE).

- Bit Rate: Nx64Kbps, $1 \leq N \leq 24$, 192 ~ 1544Kbps.
- Frame Format: SF, ESF or UNFRAMED selectable.
- Impedance: 100 ohms
- Line Code: AMI or B8ZS selectable.

1.3 Physical Description

At present, the PAMSPAN-2000 has two kinds of form factor: one is the model with external AC power, and the other one is with AC/DC dual power. They are introduced as follows:

1. PAMSPAN-2000 with external AC power: as Figure 1.3 shows, the PAMSPAN-2000 with six light-emitting diodes (LED's), is a compact, lightweight device housed in a plastic and metal enclosure. It is 203 mm long, 198 mm wide, 36 mm high, and weighs approximately 0.9 Kg.



Figure 1.2 PAMSPAN-2000 with external AC power front view

Moreover, for user's manual operation from LCD panel, the model with LCD panel is optional for customers. Following two figures show the

PAMSPAN-2000 with LCD panel.



Figure 1.3 PAMSPAN-2000 with external AC power and LCD panel



Figure 1.4 PAMSPAN-2000 with AC/DC dual power front view and LCD panel

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 PAMSPAN-2000 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 PAMSPAN-2000 access system, DSL transmission, performance monitoring, and configuration, alarm management, diagnostics and common applications.

2.2 System Description

The typical PAMSPAN-2000 SHDSL access system consists of a PAMSPAN-2000 at the customer site interfacing with a PAMSPAN-2000 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.

PAMSPAN-2000 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, PAMSPAN-2000 provides transmission over a single copper pair more than doubling the transmission capacity of the existing copper plant. The PAMSPAN-2000 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).

PAMSPAN-2000 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 PAMSPAN-2000.

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. C-Com 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 PAMSPAN-2000 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 event 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 PAMSPAN-2000 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 PAMSPAN-2000 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 PAMSPAN-2000 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 PAMSPAN-2000 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 PAMSPAN-2000 System provides for disruptive

(out-of-service) diagnostic testing. For detailed Loopback points, please refer to Appendix D Loopback Diagram. The PAMSPAN-2000 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.

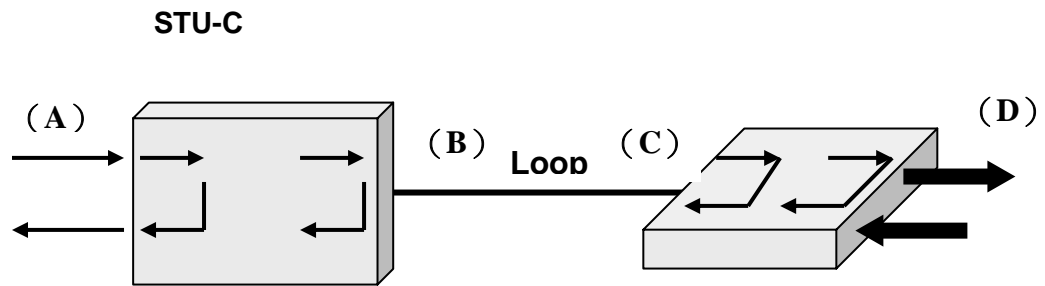


Figure 2.1 Near End Loop Back

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

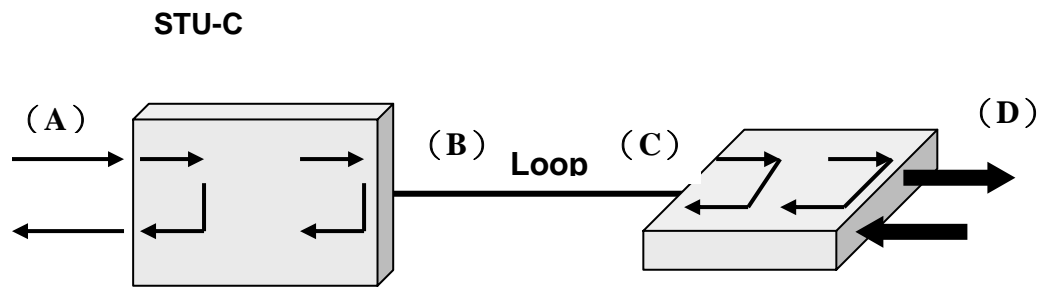


Figure 2.2 Local DSL Loopback

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

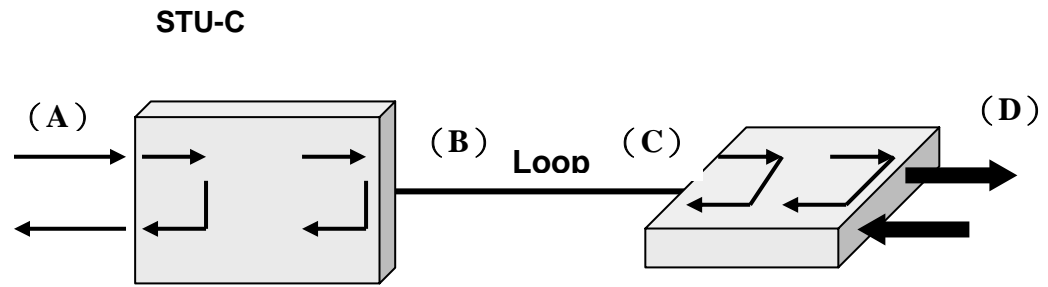


Figure 2.3 Remote Loopback

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

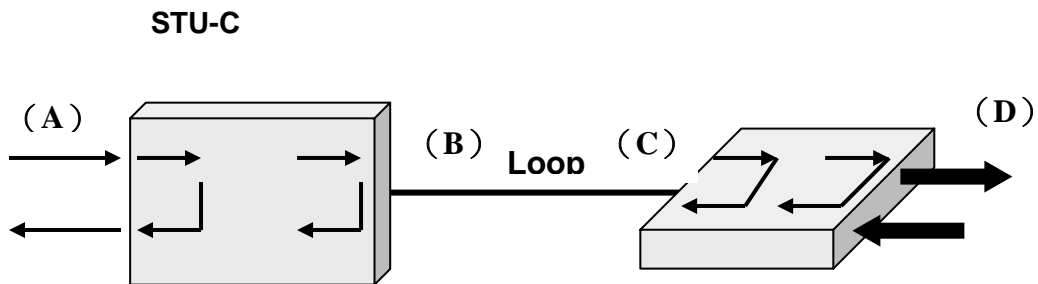


Figure 2.4 Remote Payload Loopback

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

C-Com PAMSPAN-2000 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 PAMSPAN-2000 SHDSL access system. These configurations are but a sampling of the many combinations of interface modules. PAMSPAN-2000 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 PAMSPAN-2000 (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. A configuration is shown in (figure 3.1).

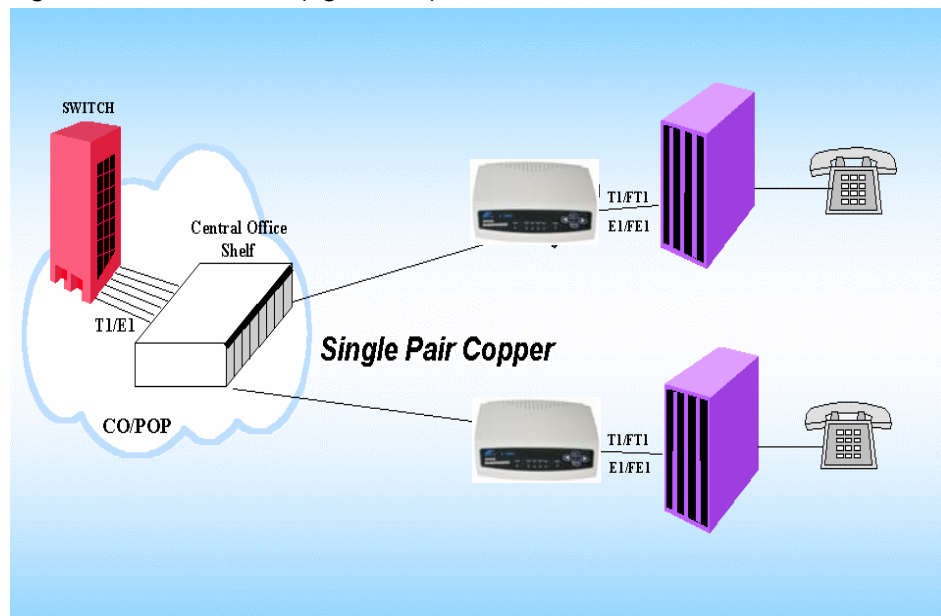


Figure 3.1 PAMSPAN-2000 E1, T1 replaces four wires with two wire systems

The E1 (G.703) or T1 interface provides standard data rate wherever E1 or

Fractional E1, also T1 or Fractional T1, service is deployed or planned.

3.2 Fast Synchronous Interfaces

The PAMSPAN-2000 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 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.

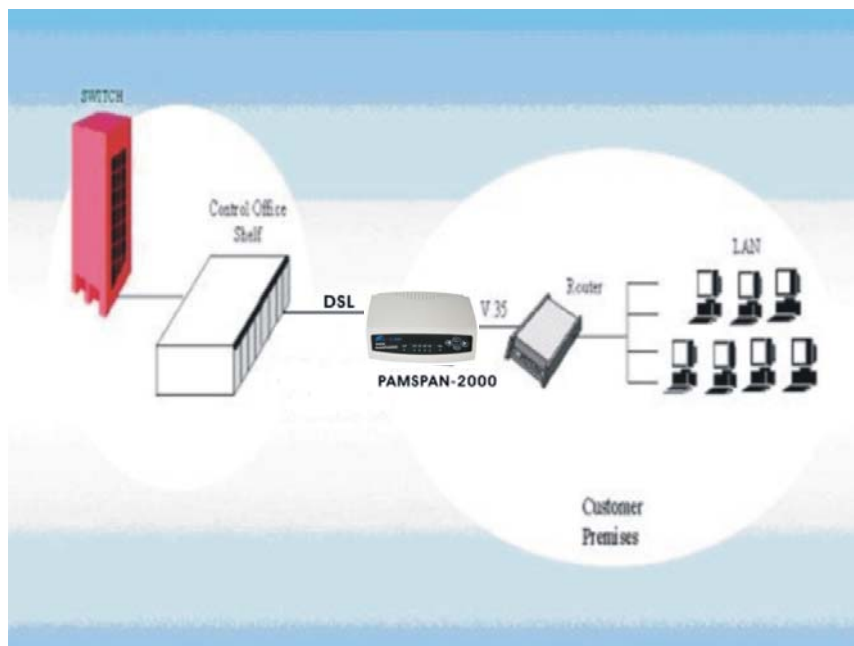


Figure 3.2 V.35 access with PAMSPAN-2000

3.3 Selectable Data Rates

PAMSPAN-2000 interfaces allow software selectable data rates at selected Fractional E1 rates set from the designated central office unit. The PAMSPAN-2000 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 PAMSPAN-2000 Ethernet port to a personal computer. Alternately, the PAMSPAN-2000 Ethernet port can be interfaced to an Ethernet LAN and used as a multiple-user remote Ethernet bridge as shown in (Figure 3.3).

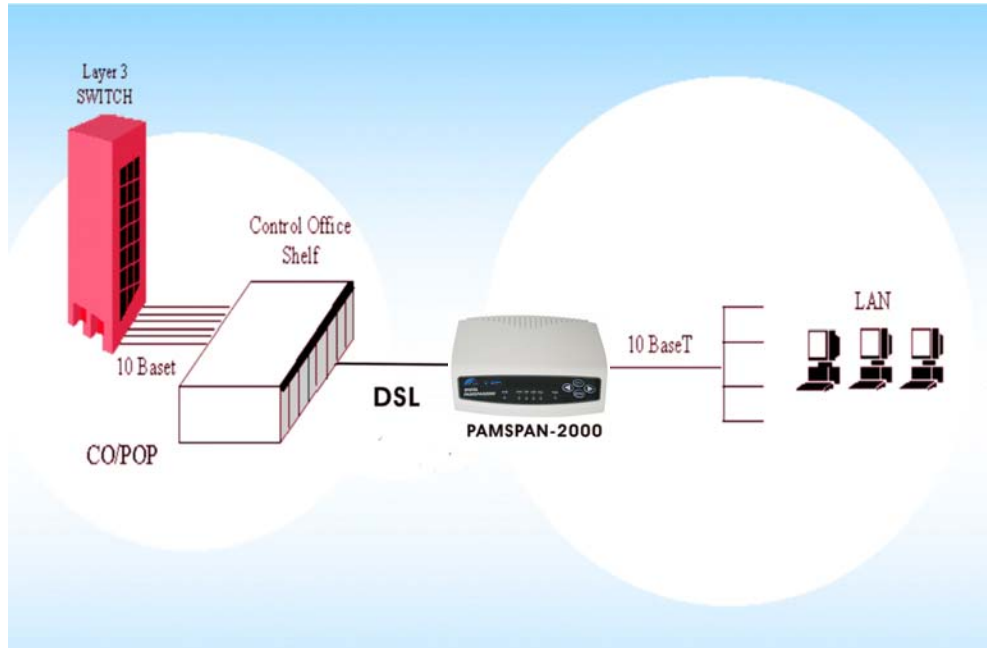


Figure 3.3 LAN access with a PAMSPAN-2000 remote Ethernet bridge

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 PAMSPAN-2000 access system. Understanding these topics will definitely make you knowing the PAMSPAN-2000 better.

4.1.1 Unpacking your PAMSPAN-2000

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

- One PAMSPAN-2000 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 C-Com 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 PAMSPAN-2000 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:

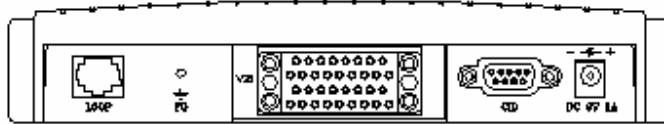
Link cable. Connects your data equipment to the PAMSPAN-2000 unit. The connector on the PAMSPAN-2000 end of the cable must be depends upon the type of mating connector on your equipment. The pin assignments for these connectors appear in Appendix A.

Line cables. Line cables connect the DSL line to the PAMSPAN-2000. 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.

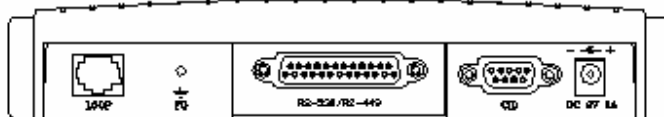
4.1.5 Rear Panel

As the following figures shown, PAMSPAN-2000 with external AC power can be equipped with different interfaces, including V.35, E1/T1 and Ethernet to meet user's needs.

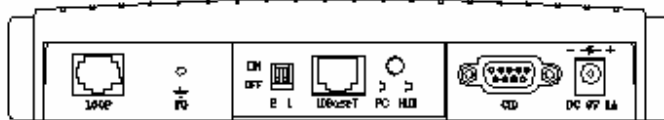
V.35



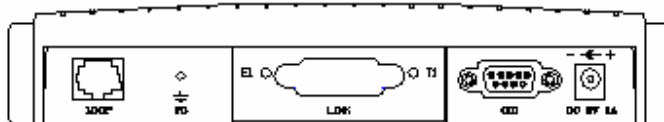
EIA-530
RS-449



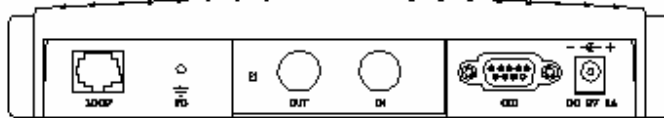
10 BaseT



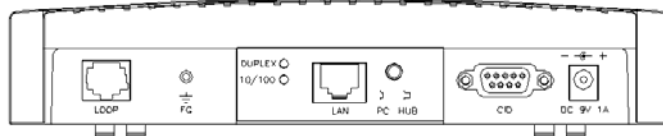
120 ohms E1
100 ohms T1



75 ohms E1



10/100 BaseT



PAMSPAN-2000 with AC/DC dual power can be equipped with different interface modules as well, eventough its housing is different from PAMSPAN-2000 with external AC power. The following figure shows the PAMSPAN-2000 equipped with V.35 interfcce.



4.2 Installation Procedure

1. Place the PAMSPAN-2000 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. For

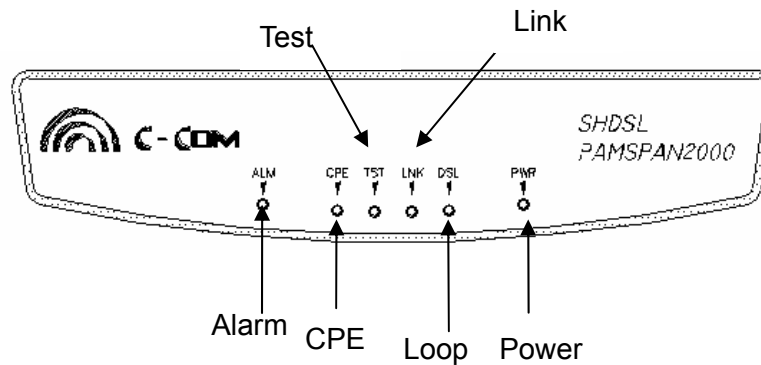
DC converter, connect the -48V input to the terminal labeled -48V, connect the -48VRTN input to the terminal labeled RTN. Connect the terminal labeled FG to the system's frame ground.

Note: Don't turn both AC and DC power switch as "ON", while inputting AC and DC power simultaneously to PAMSPAN-2000 with AC/DC dual power.



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, C-COM 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 PAMSPAN-2000 modem unit goes through an initialization and startup process; during this time, the LEDs will flash to indicate that system initialization is in process. When this is completed, the front panel LED display should show as follows:



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 BaseT and 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:

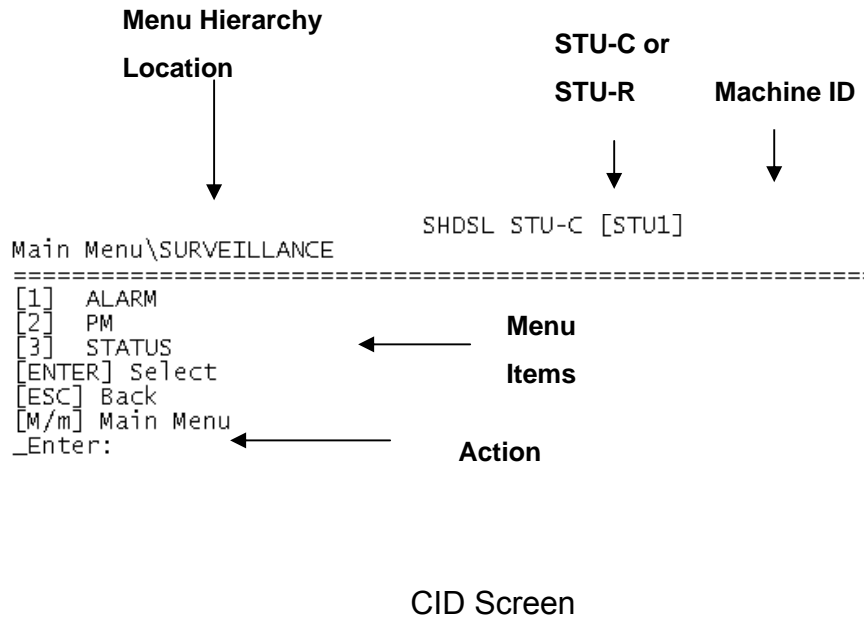
PWR	On	It indicates that the unit has normal power
	Off	The unit has no power
DSL	On	Loop has synchronized
	Off	Loop has not synchronized
	Flash	Loop has achieved handshake
LNK	On	User interface is present
	Off	User interface is not present
TST	On	Performing the maintenance tests
	Flash	The maintenance 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



5.2 Main Menu – V. 35

Following is the menu structure for the PAMSPAN-2000 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] 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:
```

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 [STU1]
Main Menu\CONFIGURATION\INTF
=====
[1] *T1
[2] E1
[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
=====
[1] *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 quit 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\CONFIGURATION\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 shows how to configure the max rate.

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

```
[+]:up [-]:down [ENTER]:save [ESC]:quit
Maximum Rate = 3█ 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
  Ds\Losd   Ok
  DSLSnr    Ok
  DSLAttn   Ok
  DSLUAS15Min  Ok
  DSLES15Min  Ok
  DSLES15Min  Ok
  DSLUASDay   Ok
  DSLESDay    Ok
  DSLESDay    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] ATTEBUATION
[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 quit

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 quit 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 ATTENUATION

```
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 Menu
_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

```

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 STU-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 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 PAMSPAN-2000 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 PAYLOAD RATE(x64K): 36
MIN PAYLOAD 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 page1, system configuration, version 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
```

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

5.2.3 Maintenance Menu

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

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

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 █

```

The SELFTEST test code is transmitted toward the DSL and returned at the transceiver side to test the SHDSL equipment is functioning well or not. Press the “CR” (ENTER) to start to the SELFTEST so that the TST LED of local SHDSL device will be lit. 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).

5.2.4 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 = 18: 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 surveillance 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 PAMSPAN-2000 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

5.2.1.2.4 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

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

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/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

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

```

Please refer to section 5.2.2.3 Status Menu for detail information.

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 PAMSPAN-2000 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-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 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/m] 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] = █1

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 STU-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     ET1Los 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
DSLUSAS15Min Ok ET1SES15Min Ok
DSLSES15Min Ok ET1ES15Min Ok
DSLES15Min Ok ET1UASDay Ok
DSLJASDay Ok ET1SESDay Ok
DSLSESDay Ok ET1ESDay Ok
DSLESDay 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] E1
[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
113	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.

5.4.2.2.2.3 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.

5.4.2.2.2.4 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.

5.4.2.2.2.2 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\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
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 PAMSPAN-2000 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] 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:

```


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

```
SHDSL STU-C [STU1]  
Main Menu\CONFIGURATION\T1\LINE CODE
```

```
=====
```

```
[1] *B8ZS  
[2] AMI  
[ENTER] Select  
[ESC] Back  
[M/m] Main Menu  
_Enter: █
```

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.

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.

5.5.1.3 DSL Manu

Refer to section 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 for detail information.

5.5.1.4 Set Rate Menu

```

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

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

Rate[3...24] = *4
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: █

```

The 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 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 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
      LBO: 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
      ACTUAL LINE RATE: N/A
  
```

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
T1 15MIN/1DAY UAS: 0/0
T1 15MIN/1DAY SES: 0/0
T1 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

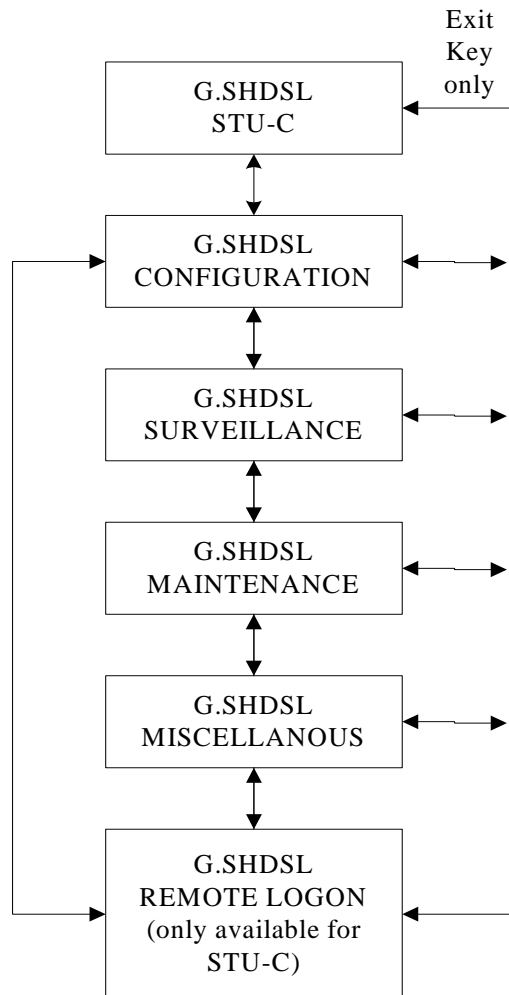
Refer to section 5.2.4.4 Change ID Menu for detail information.

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 ◀, ▶, **EXIT** and **ENTER**. The EXIT key is used to jump up to the previous level of menu. The ◀ and ▶ 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

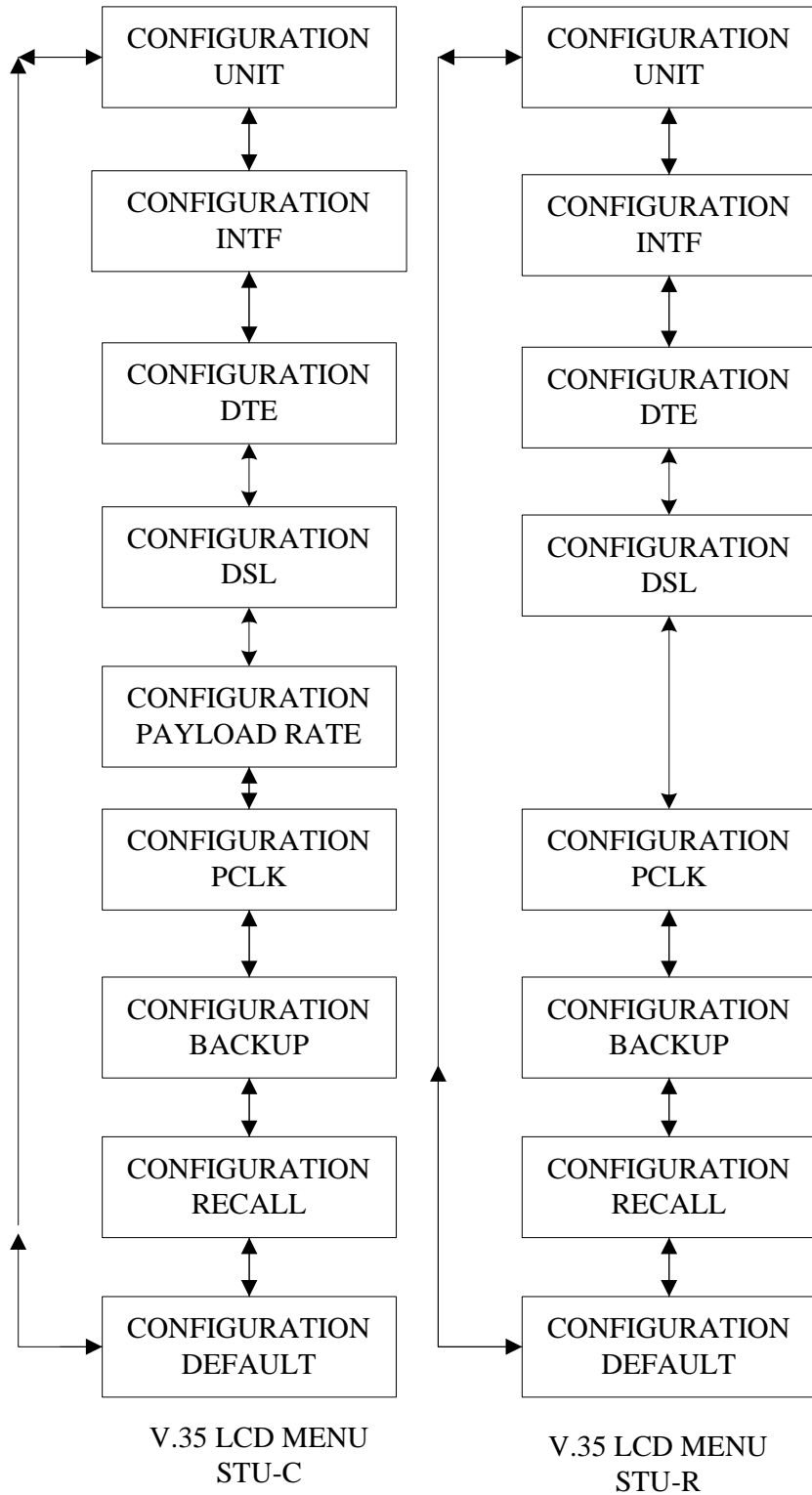
operations menu, one can press ◀ or ▶ keys. To jump back to the main

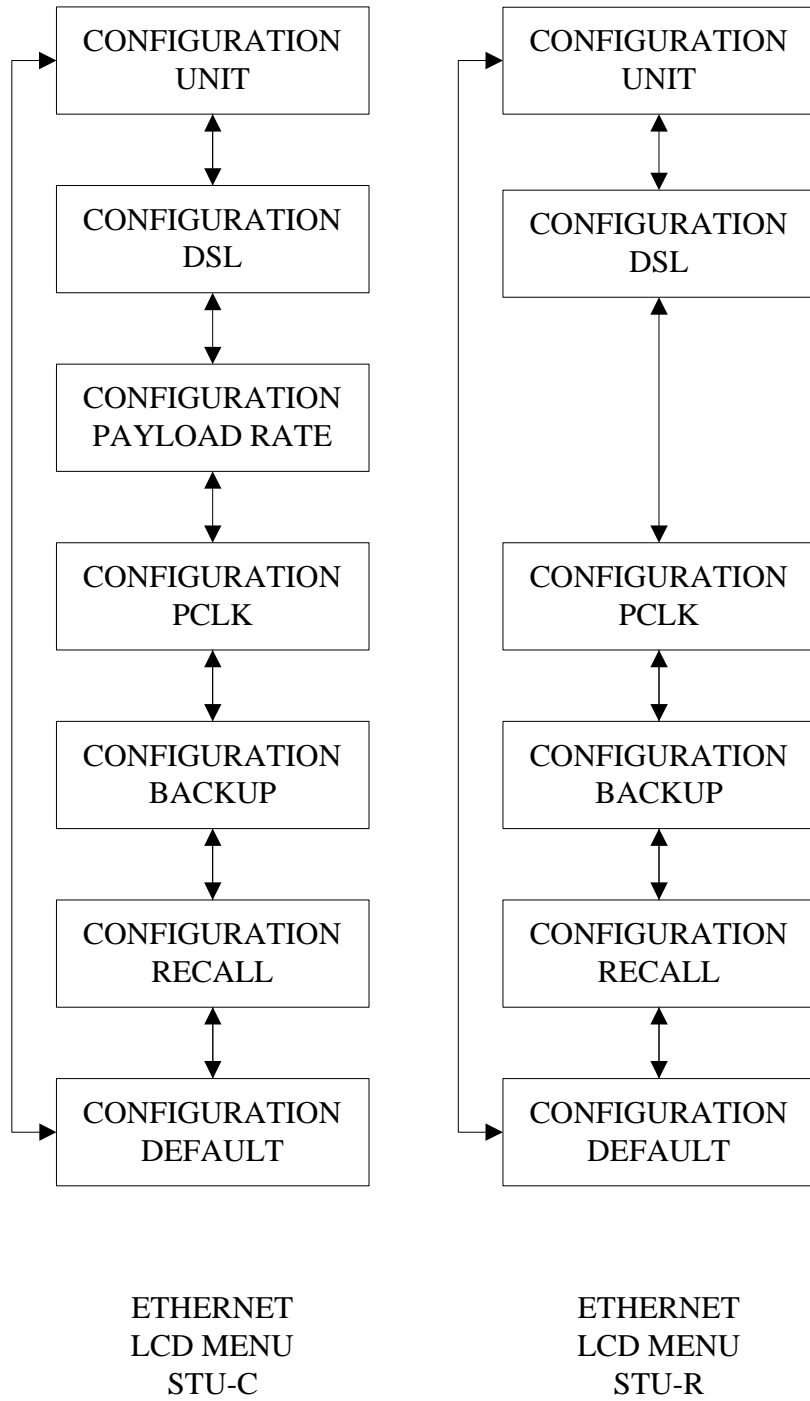
screen from the menu level below the main screen one can press EXIT key. The menu structure is similar to that of CID operations menu. There are five main selections: Configuration, Surveillance, Maintenance, Miscellaneous and Remote Logon. Each selection will be explained in more detail in the following sections.

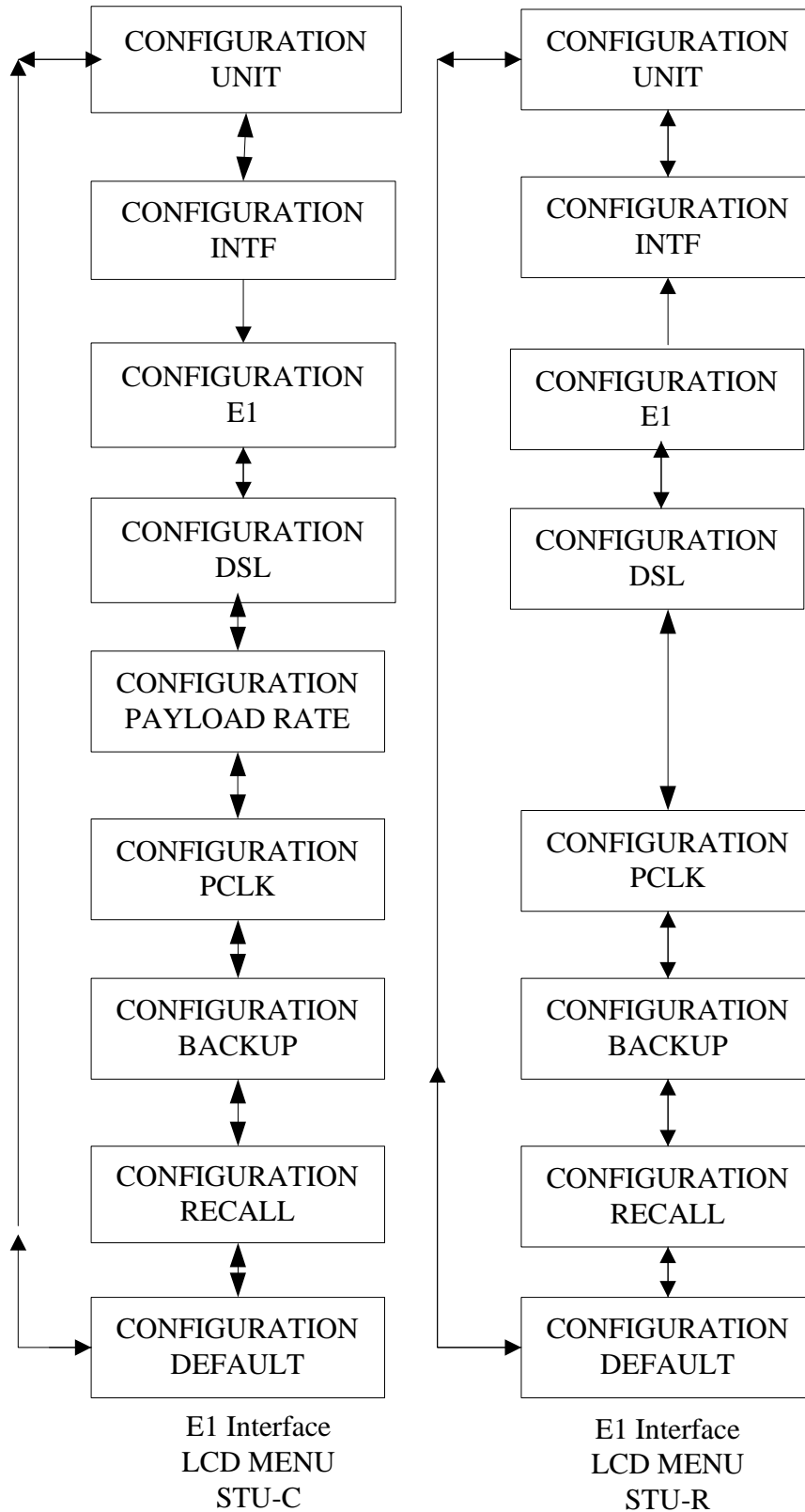
6.1 Configuration Screen

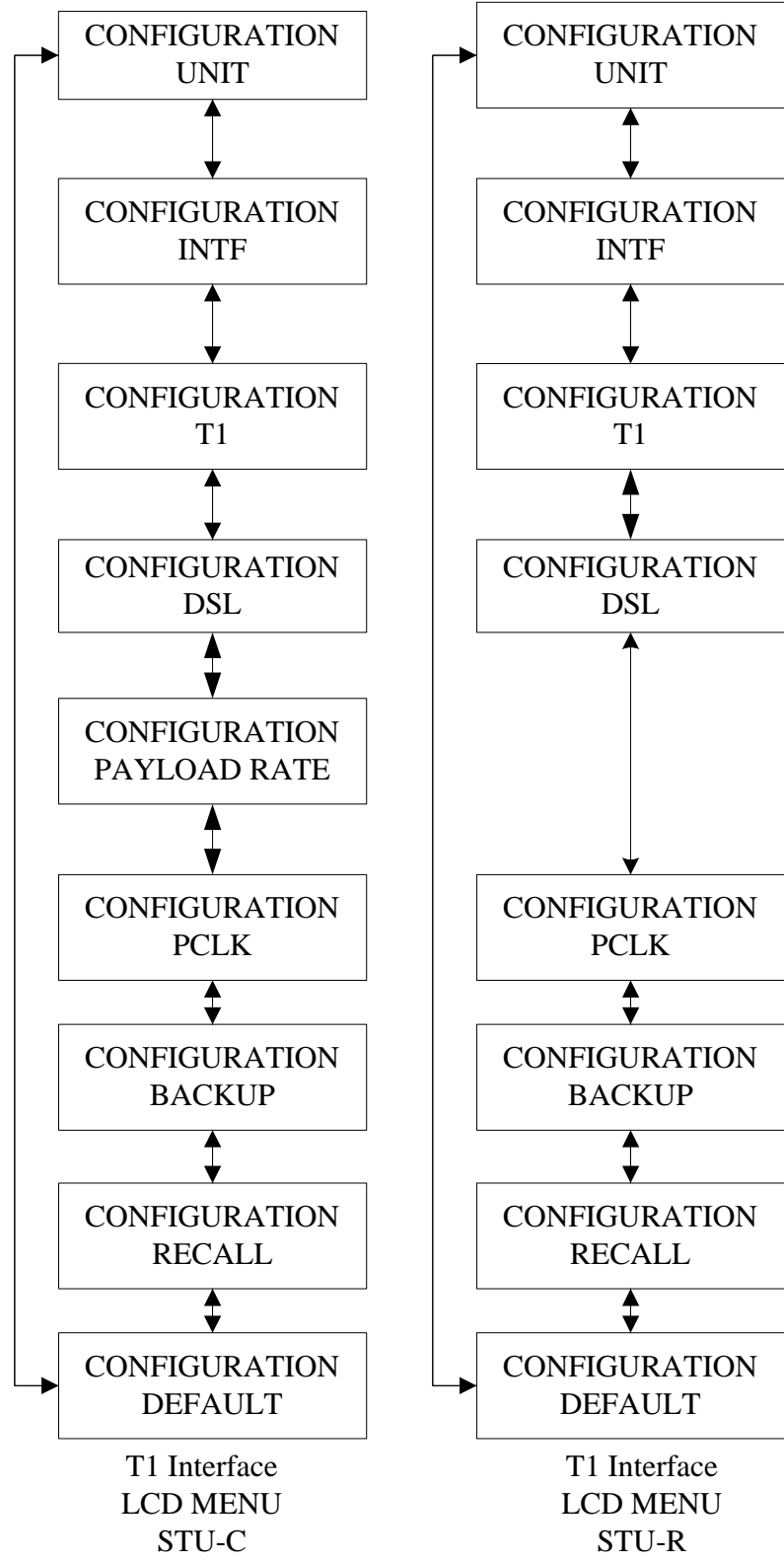
The configuration menu, depending on the type of interface and the unit's designation, will have several variations are shown below. The main purpose of the configuration menu is to configure the unit for operation. The first line shows current selection: Configuration while the second line shows all 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.



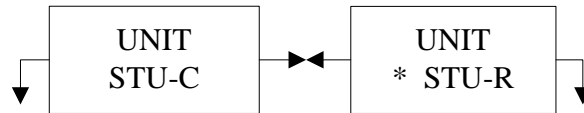






6.1.1 Unit Menu

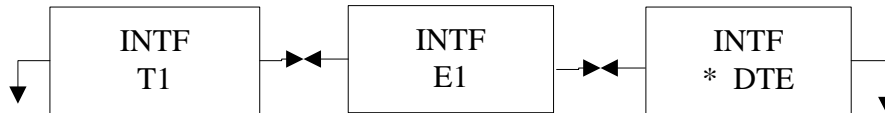
The unit menu is to designate the unit as a Central Office (STU-C) unit or a Customer Premises Equipment (STU-R). Once the unit menu is selected in the configuration menu, the following screens will be available for selection, by pushing the keys ◀ or ▶.



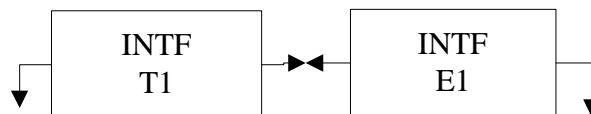
For the selected item, an asterisk (*) appears. To change and save the selection, press **ENTER** at the appropriate selection and the * will appear at selected item. Press **EXIT** will move back to previous configuration menu level without saving the changes.

6.1.2 INTF Menu

The INTF menu will be displayed only when the PAMSPAN-2000 is equipped with Combo Card. Users can select the interface they need while the PAMPAN-2000 is deployed. Once the INTF menu is selected in the configuration menu, the following screens will be available for selection, by pushing the keys ◀ or ▶.



T1/E1/V.35 combo card

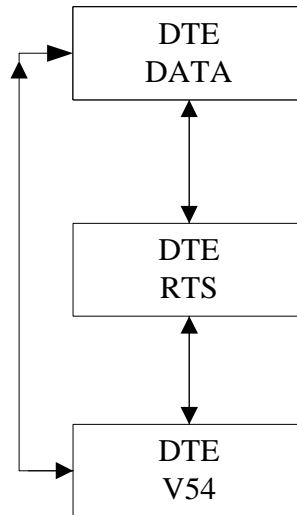


T1/E1 Combo card

For the selected item, an asterisk (*) appears. To change and save the selection, press **ENTER** at the appropriate selection and the * will appear at selected item. Press **EXIT** will move back to previous configuration menu level without saving the changes.

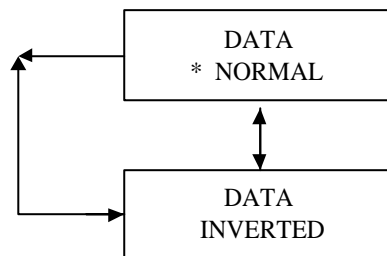
6.1.3 DTE Menu

The DTE menu is used to set Data, RTS and V.54, while the V.35 interface is selected. One may scroll through the available menu items by pushing the ◀ or ▶ keys. Press **ENTER** to enter the sub-menu level of the selected item. Press **EXIT** will move back to previous configuration menu level without saving the changes.



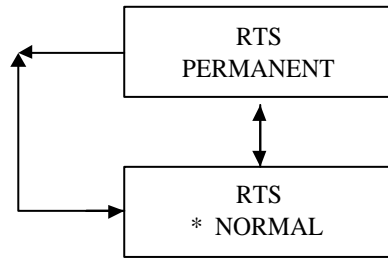
6.1.3.1 Data Menu

This menu shows the current DTE data polarity as normal or inverted by placing an asterisk (*) by the selected option. Modify the data polarity by pushing the ◀ or ▶ keys and hit **ENTER** to enable and save the modified changes. Press **EXIT** will move back to previous menu level without saving the changes.



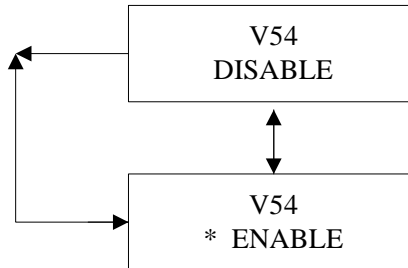
6.1.3.2 RTS Menu

This menu shows the current DTE RTS detection scheme as permanent or normal by placing an asterisk (*) by the selected option. Modify the RTS scheme by pushing the ◀ or ▶ keys and hit **ENTER** to enable and save the modified changes. Press **EXIT** will move back to previous menu level without saving the changes.



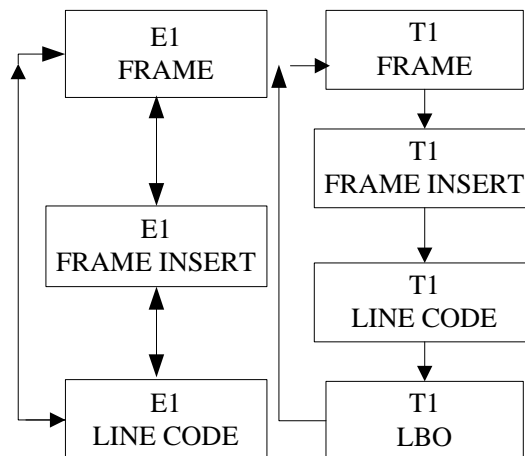
6.1.3.3 V54 Menu

V54 menu is used to disable or enable the V54 loopback by placing an asterisk (*) by the selected option. Modify the V54 scheme by pushing the ◀ or ▶ keys and hit **ENTER** to enable and save the modified changes. Press **EXIT** will move back to previous menu level without saving the changes.



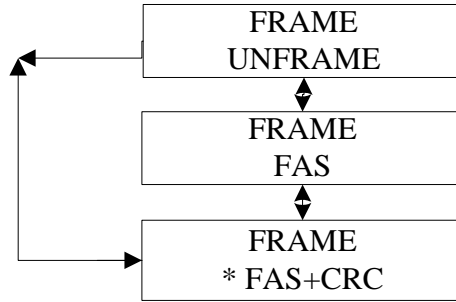
6.1.4 E1 and T1 Menu

The menu on the left shows the selections for configuring E1 interfaces. Note that Framing selection will display only when both sides are E1 interfaces. When the CPE interface is either V.35 or Ethernet, the Frame insert selection will automatically set to INSERT; therefore, the selection will not be available for user modification. The menu on the right shows the selections for configuring T1 interfaces.



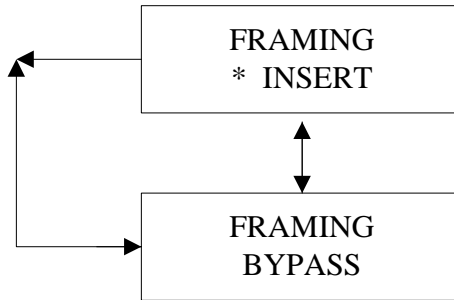
6.1.4.1 E1 FRAME Menu

This menu shows the current E1 frame selection as unframed, FAS, or FAS+CRC by placing an asterisk (*) by the selected option. Modify the selection by pushing the ◀ or ▶ keys and hit **ENTER** to enable and save the modified changes. Press **EXIT** will move back to previous menu level without saving the changes. Unframe selection uses the full 32 time slots for data transport and no framing boundaries are recovered from received E1 data.



6.1.4.2 E1 FRAME INSERT Menu

This menu shows the current E1 framing selection as insert or bypass by placing an asterisk (*) by the selected option. Modify the selection by pushing the ◀ or ▶ keys and hit **ENTER** to enable and save the modified changes. Press **EXIT** will move back to previous menu level without saving the changes. This menu will only be enabled when both STU-C and STU-R are E1 interfaces. Otherwise, the framing mode will always set to insert.



6.1.4.3 E1 LINE CODE Menu

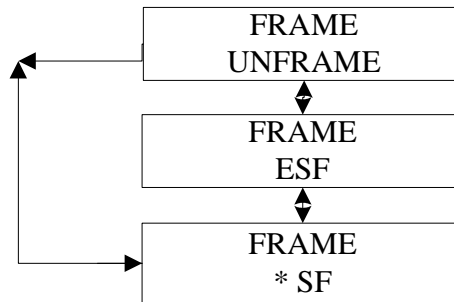
The E1 Line code menu is used for selecting the line code of E1. currently, only HDB3 is available.



6.1.4.4 T1 FRAME Menu

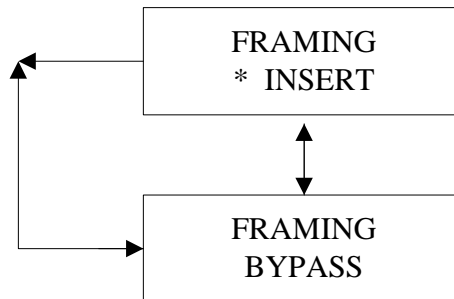
This menu shows the current T1 frame format selection as on or off by placing an asterisk (*) by the selected option. Modify the selection by pushing the ◀ or ▶ keys and hit **ENTER** to enable and save the modified changes. Press **EXIT** will move back to previous menu level without saving the changes.

▶ keys and hit **ENTER** to enable and save the modified changes. Press **EXIT** will move back to previous menu level without saving the changes.



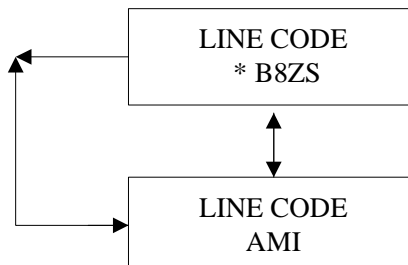
6.1.4.5 T1 FRAME INSERT Menu

This menu shows the current E1 framing selection as insert or bypass by placing an asterisk (*) by the selected option. Modify the selection by pushing the ◀ or ▶ keys and hit **ENTER** to enable and save the modified changes. Press **EXIT** will move back to previous menu level without saving the changes. This menu will only be enabled when both STU-C and STU-R are E1 interfaces. Otherwise, the framing mode will always set to insert.



6.1.4.6 T1 LINE CODE Menu

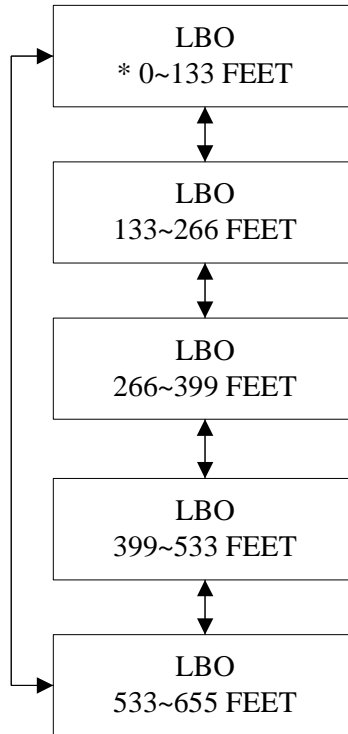
This menu shows the current T1 line code selection as on or off by placing an asterisk (*) by the selected option. Modify the selection by pushing the ◀ or ▶ keys and hit **ENTER** to enable and save the modified changes. Press **EXIT** will move back to previous menu level without saving the changes.



6.1.4.7 T1 LBO Menu

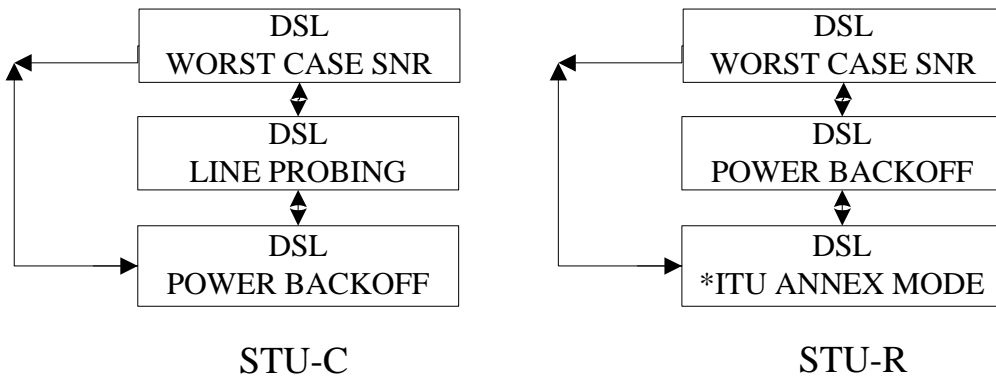
This menu shows the current T1 LBO (Line Build Out) selection as different distances by placing an asterisk (*) by the selected option. Modify the

selection by pushing the ◀ or ▶ keys and hit **ENTER** to enable and save the modified changes. Press **EXIT** will move back to previous menu level without saving the changes.



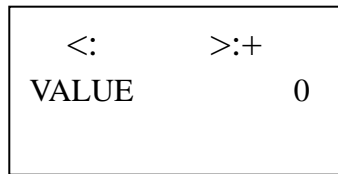
6.1.5 DSL Menu

If the DSL menu is set as STU-C, those DSL selections, WORST CASE SNR, LINE PROBING and POWER BACKOFF, will be available for users to configure. However, WORST CASE SNR, POWER BACKOFF and ITU ANNEX are available for configuration while the unit is set as STU-R. Modify the selection by pushing the ◀ or ▶ keys and hit **ENTER** to enable and save the modified changes. Press **EXIT** will move back to previous menu level without saving the changes.



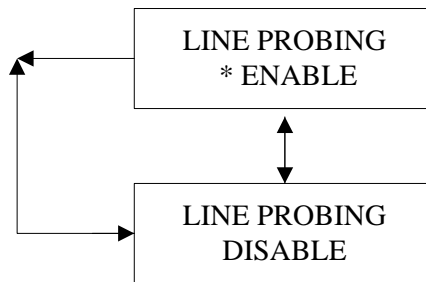
6.1.5.1 WORST CASE SNR Menu

In the WORST CASE SNR menu, the value of WORST CASE TARGET SNR is configurable, range from -10 to 21. To change the WORST CASE SNR value, modify the figures by pushing the ◀ or ▶ keys and hit **ENTER** to enable and save the modified value. Press **EXIT** will move back to previous menu level without saving the changes.



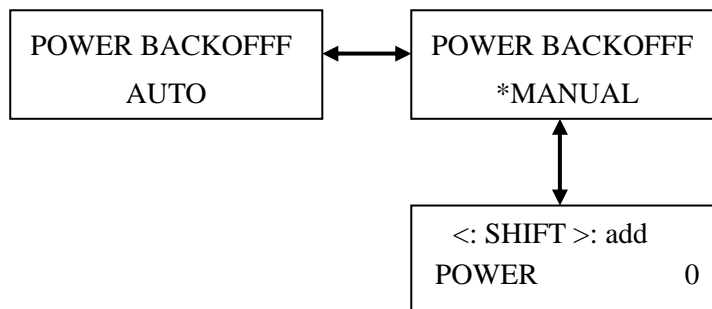
6.1.5.2 LINE PROBING Menu

The menu is only available when the unit is set as STU-C. Users can activate line probing by using the ◀ or ▶ keys and hit **ENTER** to enable and save the modified value. Press **EXIT** will move back to previous menu level without saving the changes.

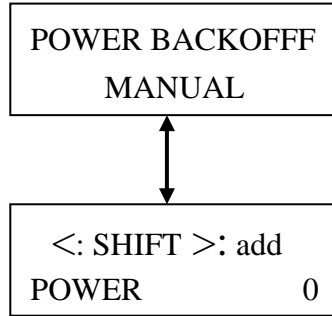


6.1.5.2 POWER BACKOFF Menu

If the line probing is set as enable, Auto or manual is selectable in the POWER BACKOFF menu. Under Auto mode, the range of POWER BACKOFF can be set from 0 to 30, pressing ◀ to jump the cursor to the next entry field and pressing ▶ to change numbers, 0~9, sequentially.

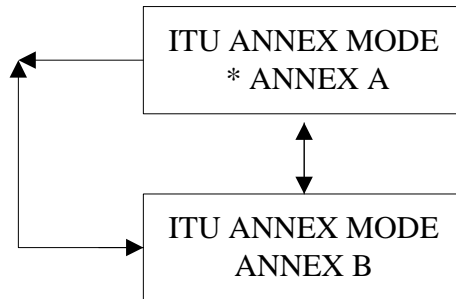


If the line probing is set as disable, only Manual is available. Under the manual mode, the range of POWER BACKOFF can be set from 0 to 30, pressing ◀ to jump the cursor to the next entry field and pressing ▶ to increase numbers from 0~9 sequentially.



6.1.5.3 ITU ANNEX MODE Menu

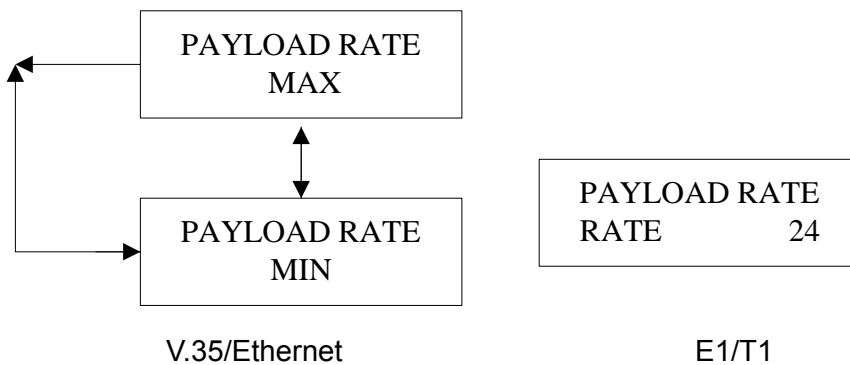
The menu is only available when the unit is set as STU-R. Users can press ◀ or ▶ to select ANNEX A or ANNEX B. Hit **ENTER** to enable and save the modified value. Press **EXIT** will move back to previous menu level without saving the changes.



6.1.6 PAYLOAD RATE Menu

In the PAYLOADRATE menu, users can configure the maximum and minimum payload rate of V.35 and Ethernet interface by pressing ◀ or ▶ to select MAX or MIN and Hit **ENTER** to enable and save the modified value. Press **EXIT** will move back to previous menu level without saving the changes. Note: if MAX=MIN, the payload rate is fix mode; if MAX≠MIN, the payload rate is adaptive mode.

Different from V.35/Ethernet payload rate menu, users can modify E1/T1 payload rate directly in the E1/T1 payload rate menu.



6.1.6.1 V.35/Ethernet Max Payload rate menu

The V.35/Ethernet max payload rate menu shows the current V.35/Ethernet max payload rate. To change it, modify the rate by pushing the ◀ or ▶ keys and hit **ENTER** to enable and save the modified rate. Press **EXIT** will move back to previous menu level without saving the changes.

MAX	
Rate	36

6.1.6.2 V.35/Ethernet Min Payload rate menu

The V.35/Ethernet min payload rate menu shows the current V.35/Ethernet min payload rate. To change it, modify the rate by pushing the ◀ or ▶ keys and hit **ENTER** to enable and save the modified rate. Press **EXIT** will move back to previous menu level without saving the changes.

MIN	
Rate	3

6.1.6.3 E1/T1 Payload rate menu

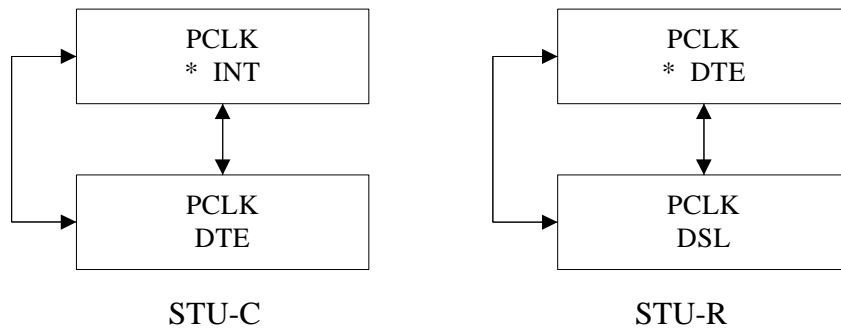
This menu is to configure the payload rate of E1/T1 where $3 \leq T1 \leq 24$, $3 \leq E1 \leq 31$. To change it, modify the rate by pushing the ◀ or ▶ keys and hit **ENTER** to enable and save the modified rate. Press **EXIT** will move back to previous menu level without saving the changes.

PAYLOAD RATE	
RATE	24

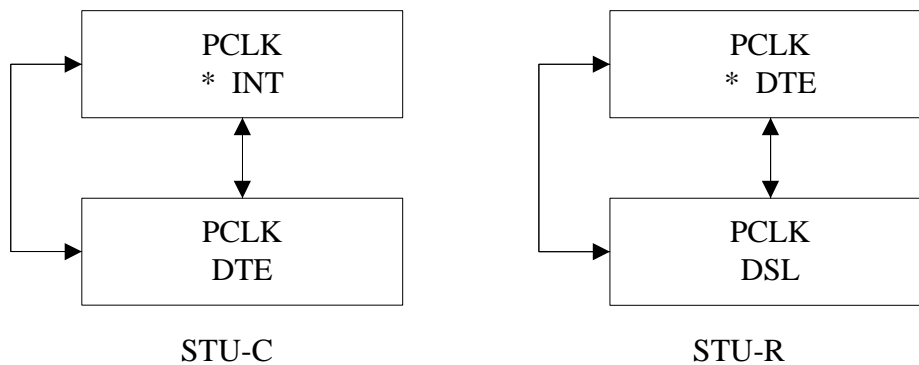
6.1.7 PCLK (Primary Clock) Menu

This menu shows the current primary clock (PCLK) timing scheme as either internal, DSL recovered, or DTE/E1 interface recovered clock by placing an asterisk (*) by the selected option. Modify the PCLK scheme by pushing the ◀ or ▶ keys and hit **ENTER** to enable and save the modified changes. Press **EXIT** will move back to previous menu level without saving the changes.

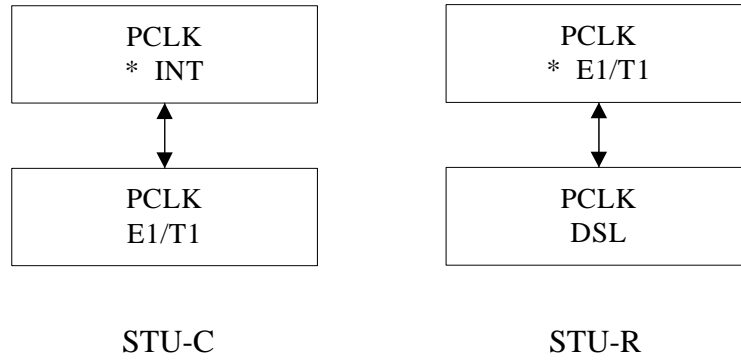
The PCLK selection varies with the type of interface the unit is equipped with and STU-C and STU-R have different PCLK selections. For units equipped with V.35 interface, the selections available is shown as follows, where there are three selections available. Those three selections are: internal generated clock (INT), DTE recovered clock (DTE), and DSL recovered clock (DSL). INT and DTE are selectable in STU-C and DSL and DTE are selectable in STU-C.



The PCLK selection has only two items available for Ethernet interface. They are INT, DTE and DSL.

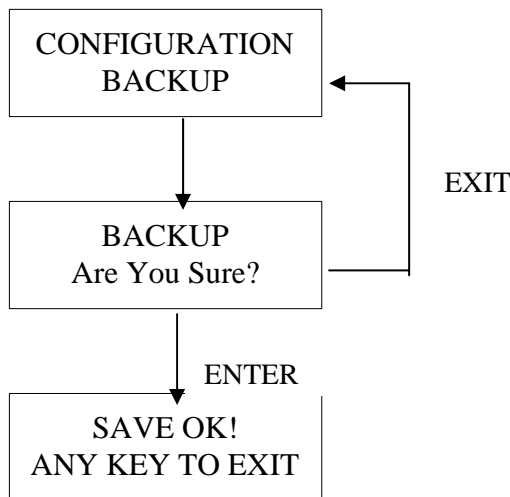


The PCLK selections for E1 and T1 interface are internal generated clock (INT), E1 or T1 recovered clock (E1 or T1), and DSL recovered clock (DSL).



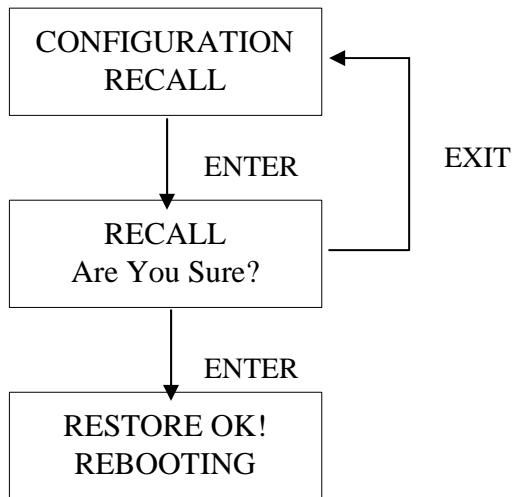
6.1.8 Backup Menu

This menu saves the current operating parameters into the non-volatile memory on the unit. This level is entered from selecting the BACKUP item in the configuration menu and parameters are automatically saved upon entering this level. The following screen will display to inform that the operation has completed. Pressing ENTER or EXIT key will move back to previous menu level.



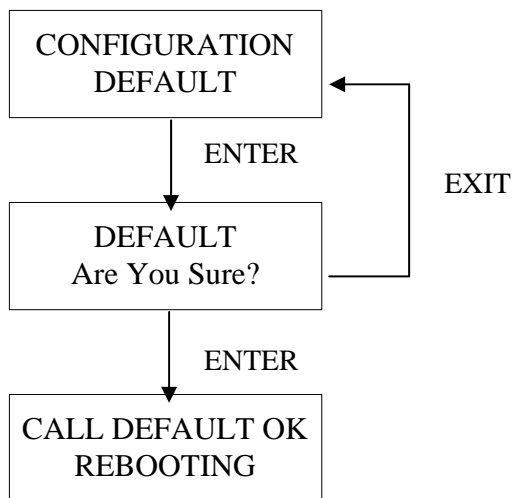
6.1.9 Recall Menu

This menu recalls the previously saved operating parameters from the non-volatile memory on the unit. This level is entered from selecting the RECALL item in the configuration menu and parameters are automatically restored upon entering this level. The following screen will display to inform that the operation has completed. Pressing **ENTER** or **EXIT** key will move back to previous menu level.



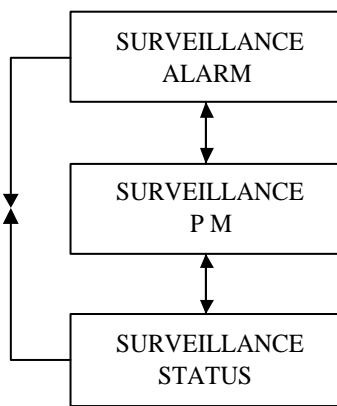
6.1.10 Default Menu

This menu recalls the default operating parameters from the non-volatile memory on the unit. This level is entered from selecting the DEFAULT item in the configuration menu and parameters are automatically restored upon entering this level. The following screen will display to inform that the operation has completed. Pressing **ENTER** or **EXIT** key will move back to previous menu level.



6.2 Surveillance Menu

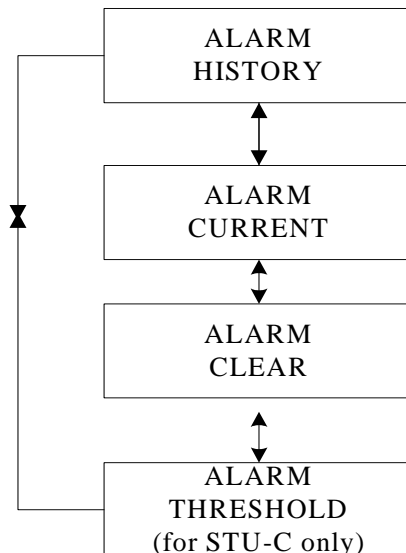
The Surveillance menu consists of three groups of commands: Alarm, PM (Performance) and Status. The alarm menu will enable user to gather information about current alarm state of the MSDSL units. The PM menu allows the user to monitor the system's performance in real-time basis and past performance recorded 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.



The **EXIT** key is used to jump up to the previous level of menu. The ◀ and ▶ keys are used to scroll through the menu items. The **ENTER** key is used to confirm an operation and in some screens, change displayed items.

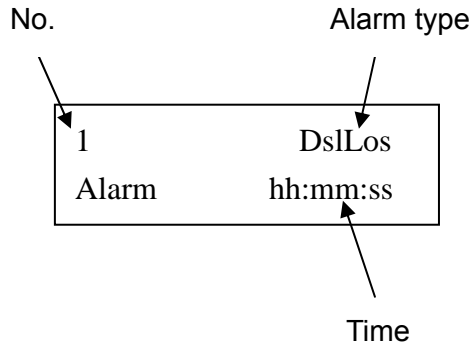
6.2.1 Alarm Menu

The Alarm menu consists of four menu selections, history, current, clear and threshold. Note: Threshold is for STU-C only.



6.2.1.1 History Menu

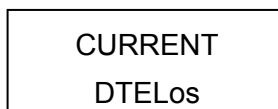
This screen shows the history of alarm including the warning types, No., and time. Users can press ◀ or ▶ to browse current alarms. As to the meaning of alarm message, please refer to appendix B. If to retrieve the alarm message in STU-R, use Remote Logon to browse STU-R's alarm history.



Note: the LCD panel is only capable of showing time (hh:mm:ss). If to show date (yy:mm:dd), please use CID to browse detailed alarm message.

6.2.1.2 Current Menu

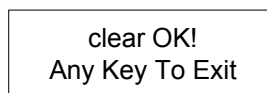
The Current menu, when selected, will display all alarms that are happening to the G.SHDSL unit. To retrieve alarms occurring at the opposite of the DSL loop, use Remote Logon \Surveillance \Alarm \Current. The first line of this screen displays the title “CURRENT” and the second line displays the alarm condition. Use the ◀ or ▶ keys to scroll through all available alarms. Only alarms that are happening will be displayed on the screen. Once the alarm condition is cleared, it is no longer displayed. The **EXIT** key is used to jump back to previous menu.



The complete list of alarms is displayed in Appendix B.

6.2.1.3 Clear Menu

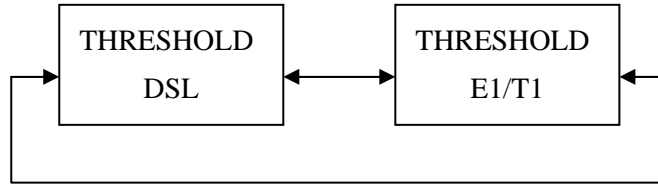
The Clear menu, when selected, clears all the counters and the Current alarm and History alarm buffers immediately upon selection. The response from the unit is the following screen.



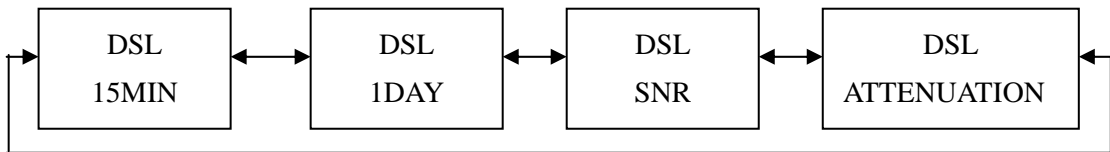
6.2.1.4 Threshold Menu

The threshold menu is only configurable at STU-C and it varies with the type of interface equipped with the unite. If the interface is Ethernet or V.35, only

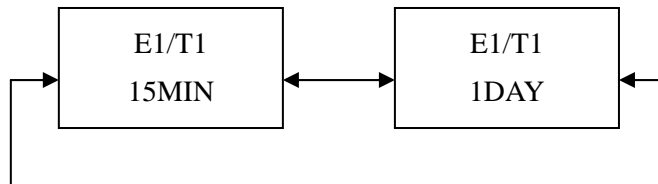
DSL can be configured. If the interface is E1 or T1, DSL and E1/T1 threshold are available for configuration as the following figure shows:



15MIN, 1DAY, SNR and Attenuation are configurable under the DSL menu as the following figure shows:



15MIN and 1DAY are configurable under E1/T1 threshold menu as the following figure shows:

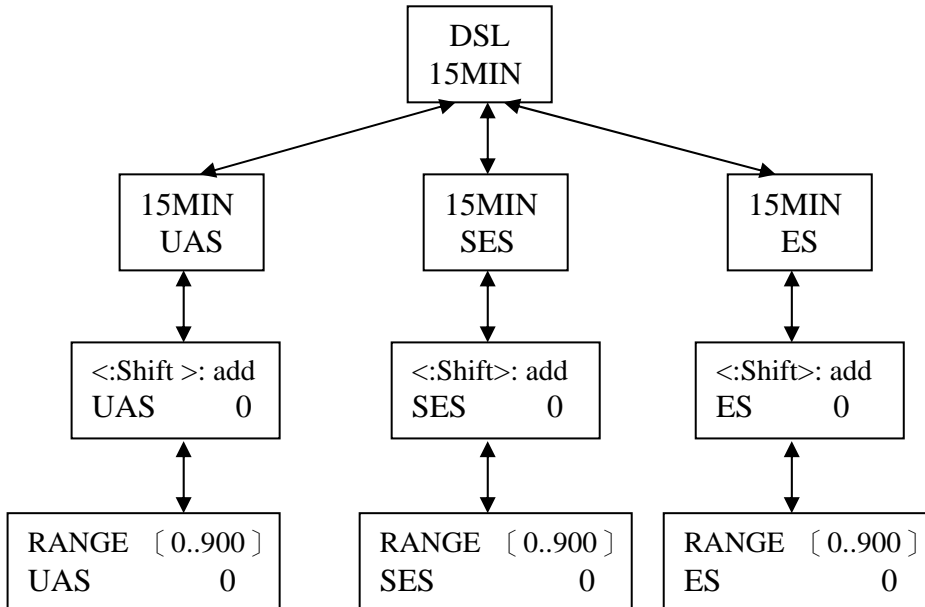


Users can press ◀ or ▶ to browse those selections and then click on **ENTER** to proceed further configuration. Press or ▶ to add or ◀ to decrease the threshold value and press **ENTER** to confirm. Press **EXIT** at any time will move back to previous menu level without saving the changes.

Note: Refer to Appendix B for detailed explanation of the terms mentioned in the menu selection.

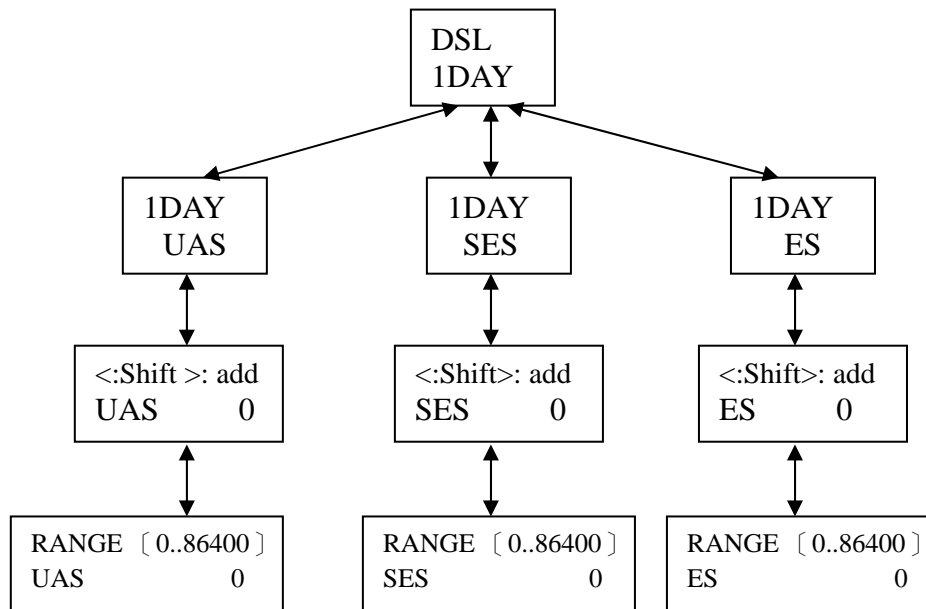
6.2.1.4.1 15MIN DSL Threshold Menu

Under the 15MIN DSL Threshold Menu, users can configure the ES, SES and UAS for Ethernet, V.35, E1 and T1 interfaces. If the value is configured as 0, SES, ES, and UAS 15MIN threshold will be disable. The alarm message will be displayed on the LCD panel, if the threshold is exceeded. Press **ENTER** to enter next screen. Click on ◀ to shift to ten-digit number and ▶ to add number.



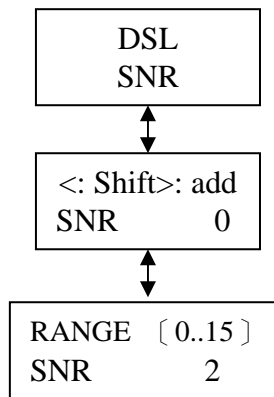
6.2.1.4.2 1DAY DSL Threshold Menu

Under the 1DAY DSL Threshold Menu, users can configure the ES, SES and UAS for Ethernet, V.35, E1 and T1 interface. If the value is set as 0, SES, ES, and UAS 15MIN threshold will be disable. The alarm message will be displayed on the LCD panel, if the threshold is exceeded. Press **ENTER** to enter next screen. Click on ◀ to jump the cursor to the next entry field and ▶ to increase number.



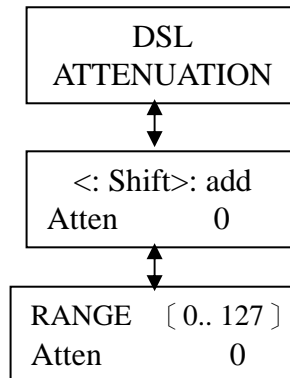
6.2.1.4.3 DSL SNR Threshold Menu

The SNR threshold can be configured from 0 to 15 dB in the SNR threshold menu. Users can press ▶ to increase or ◀ to decrease the SNR threshold. Press **ENTER** to confirm your setting and **EXIT** move back to previous menu level without saving the changes.



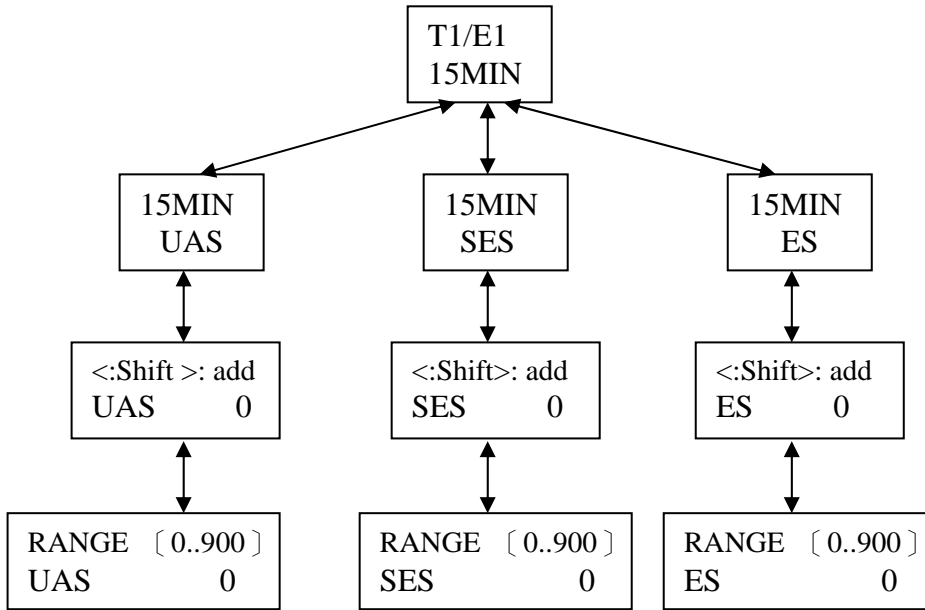
6.2.1.4.3 DSL Attenuation Threshold Menu

The attenuation threshold can be configured from 0 to 127 dB in the SNR threshold menu. Users can press **▶** to increase or **◀** to decrease the attenuation threshold. Press **ENTER** to confirm your setting and **EXIT** move back to previous menu level without saving the changes.



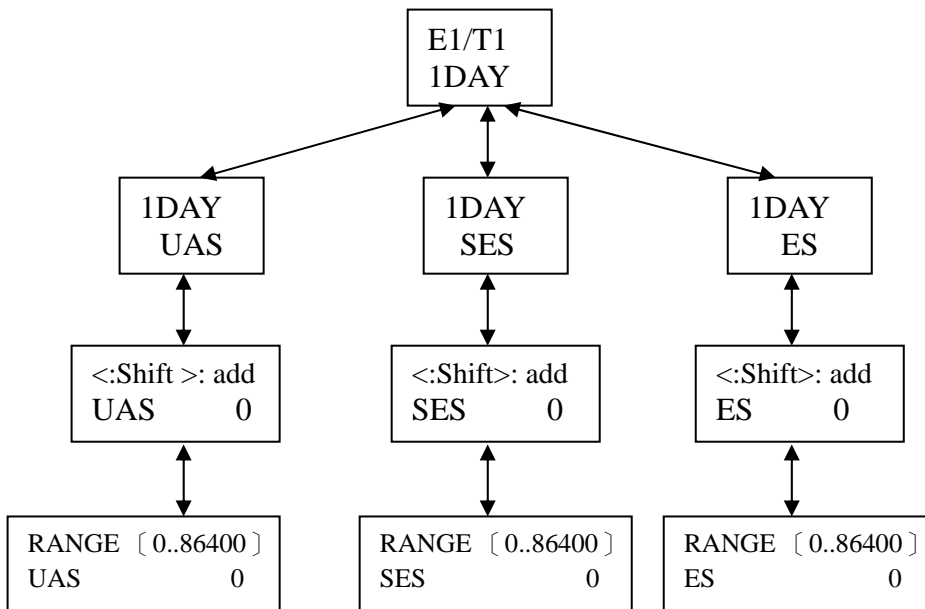
6.2.1.4.3 E1/T1 15MIN Threshold Menu

Under the E1/T1 15MIN Threshold Menu, users can configure the ES, SES and UAS for E1 and T1 interface. If the value is set as 0, SES, ES, and UAS 15MIN threshold will be disable. The alarm message will be displayed on the LCD panel, if the threshold is exceeded. Press **ENTER** to enter next screen. Click on **◀** to jump the cursor to the next entry field and **▶** to add number.



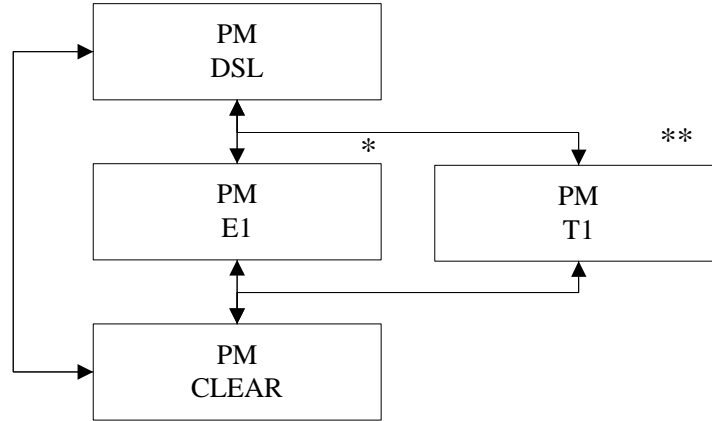
6.2.1.4.3 E1/T1 1DAY Threshold Menu

Under the E1/T1 1DAY Threshold Menu, users can configure the ES, SES and UAS for E1 and T1 interface. If the value is set as 0, SES, ES, and UAS 1DAY threshold will be disable. The alarm message will be displayed on the LCD panel, if the threshold is exceeded. Press **ENTER** to enter next screen. Click on ◀ to jump the cursor to the next entry field and ▶ to add number.



6.2.2 Performance Monitor Menu

The PM menu display varies with the type of interface equipped with the unit. Only the DSL interface performance monitoring parameters are available for the Ethernet and V.35 interfaces. Three additional E1 or T1 performance monitoring parameters are available for E1 or T1 interface.



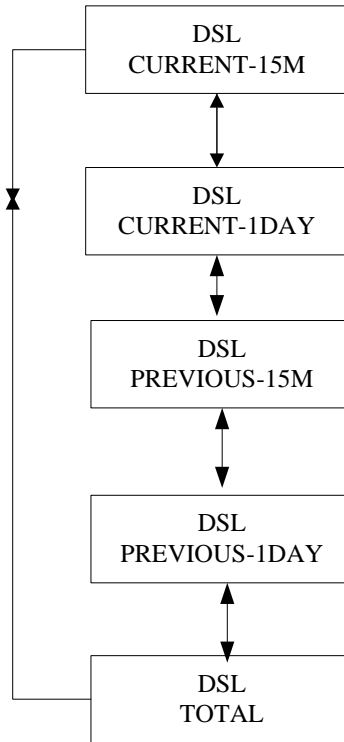
* This menu will only appear for E1 interface.

** This menu will only appear for T1 interface.

6.2.2.1 DSL Menu

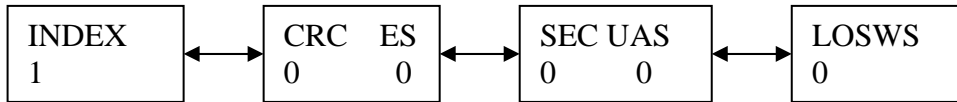
The DSL menu contains five main selections, Current-15M, Current-1DAY, Previous-15M, Previous-1DAY and Total,. The Current-15M contains the current PM counter values for the present 15 minutes interval. The Current-1DAY contains the current PM counter values for the present 24 hours interval. The Total contains the PM counter values accumulated until now. The Previous-15M contains 96 previous PM intervals with each interval being 15 minutes long. The Previous-1DAY contains 96 previous PM intervals with each interval being 24 hours long.

Use the ◀ or ▶ keys to scroll through all the displays. The **EXIT** key is used to jump back to previous menu level.



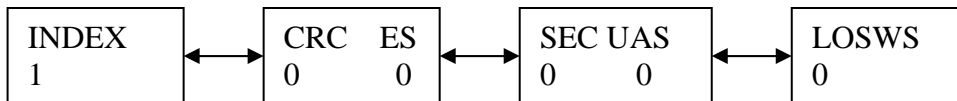
6.2.2.1.1 Current-15M Menu

The Current-15M menu displays the accumulated PM counter values for the current 15 minutes interval. Use the ◀ or ▶ keys to scroll through all the displays. Press **ENTER** key to browse next data. The **EXIT** key is used to jump back to previous menu level.



6.2.2.1.2 Current-1DAY Menu

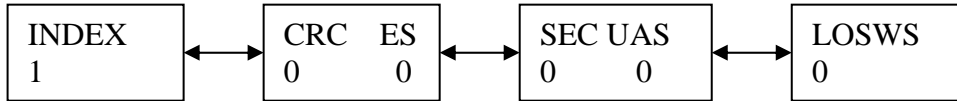
The Current-1DAY menu displays the accumulated PM counter values for the current 24 hours interval. Use the ◀ or ▶ keys to scroll through all the displays. Press **ENTER** key to browse next data. The **EXIT** key is used to jump back to previous menu level.



6.2.2.1.3 Previous-15M Menu

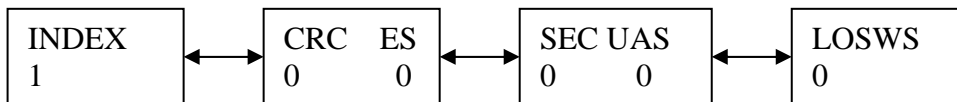
The Previous-15M menu displays the accumulated PM counter values for the 96 previous 15 minutes interval. The 96 intervals will appear as the time progress; therefore, when the system is first powered on, there are no previous entries. The 96 intervals are filled as time progress onward, where the previous 1 interval is the interval closest to the current 15M interval and

the previous 96th interval is the furthest interval away from current 15M interval. Use the ◀ or ▶ keys to scroll through all the displays. Press **ENTER** key to browse next data. The **EXIT** key is used to jump back to previous menu level.



6.2.2.1.4 Previous-1DAY Menu

The Previous-1DAY menu displays the accumulated PM counter values for the 96 previous 1DAY interval. The 96 intervals will appear as the time progress; therefore, when the system is first powered on, there are no previous entries. The 96 intervals are filled as time progress onward, where the previous 1 interval is the interval closest to the current 1DAY interval and the previous 96th interval is the furthest interval away from current 1DAY interval. Use the ◀ or ▶ keys to scroll through all the displays. Press **ENTER** key to browse next data. The **EXIT** key is used to jump back to previous menu level.



6.2.2.1.5 Total Menu

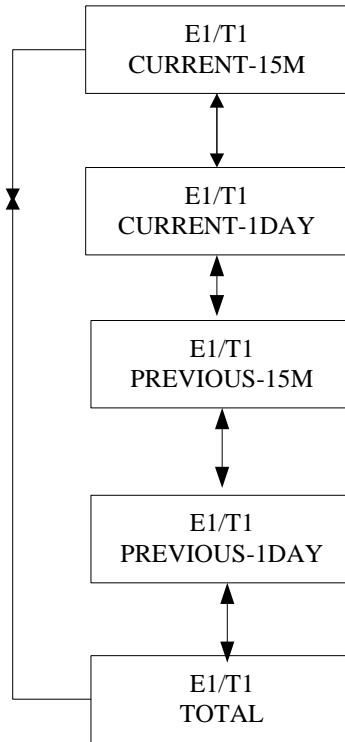
The Total menu displays the accumulated PM counter values until now. Use the ◀ or ▶ keys to scroll through all the displays. The **EXIT** key is used to jump back to previous menu level. Press **ENTER** key to browse next data.



6.2.2.2 E1 and T1 PM Menu

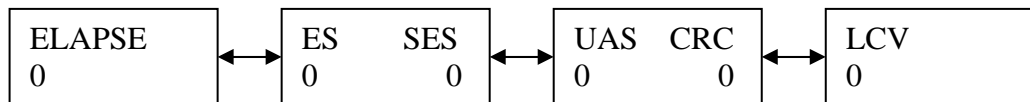
The E1/T1 PM menu contains five main selections, Current-15M, Current-1DAY, Previous-15M, Previous-1DAY and Total,. The Current-15M contains the current PM counter values for the present 15 minutes interval. The Current-1DAY contains the current PM counter values for the present 24 hours interval. The Total contains the PM counter values accumulated until now. The Previous-15M contains 96 previous PM intervals with each interval being 15 minutes long. The Previous-1DAY contains 96 previous PM intervals with each interval being 24 hours long.

Use the ◀ or ▶ keys to scroll through all the displays. The **EXIT** key is used to jump back to previous menu level.



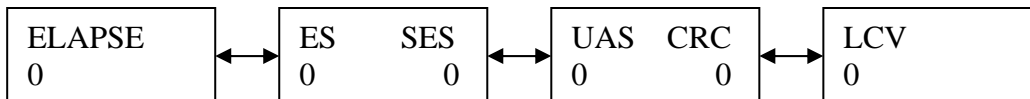
6.2.2.2.1 Current-15M Menu

The Current-15M menu displays the accumulated PM counter values for the current 15 minutes interval. Use the ◀ or ▶ keys to scroll through all the displays. Press **ENTER** key to browse next data. The **EXIT** key is used to jump back to previous menu level.



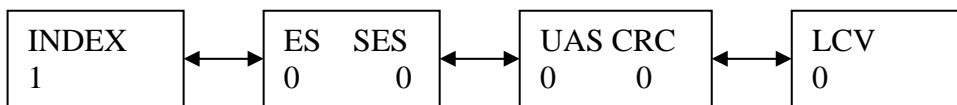
6.2.2.2.2 Current-1DAY Menu

The Current-1DAY menu displays the accumulated PM counter values for the current 24 hours interval. Use the ◀ or ▶ keys to scroll through all the displays. Press **ENTER** key to browse next data. The **EXIT** key is used to jump back to previous menu level.



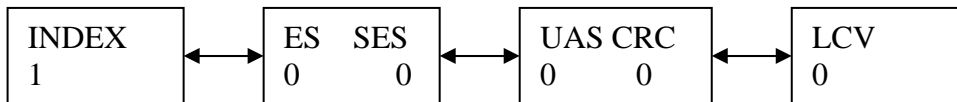
6.2.2.2.3 Previous-15M Menu

The Previous-15M menu displays the accumulated PM counter values for the 96 previous 15 minutes interval. The 96 intervals will appear as the time progress; therefore, when the system is first powered on, there are no previous entries. The 96 intervals are filled as time progress onward, where the previous 1 interval is the interval closest to the current 15M interval and the previous 96th interval is the furthest interval away from current 15M interval. Use the ◀ or ▶ keys to scroll through all the displays. Press **ENTER** key to browse next data. The **EXIT** key is used to jump back to previous menu level.



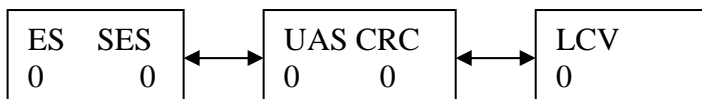
6.2.2.2.4 Previous-1DAY Menu

The Previous-1DAY menu displays the accumulated PM counter values for the 96 previous 1DAY interval. The 96 intervals will appear as the time progress; therefore, when the system is first powered on, there are no previous entries. The 96 intervals are filled as time progress onward, where the previous 1 interval is the interval closest to the current 1DAY interval and the previous 96th interval is the furthest interval away from current 1DAY interval. Use the ◀ or ▶ keys to scroll through all the displays. Press **ENTER** key to browse next data. The **EXIT** key is used to jump back to previous menu level.



6.2.2.2.5 Total Menu

The Total menu displays the accumulated PM counter values until now. Use the ◀ or ▶ keys to scroll through all the displays. The **EXIT** key is used to jump back to previous menu level. Press **ENTER** key to browse next data.



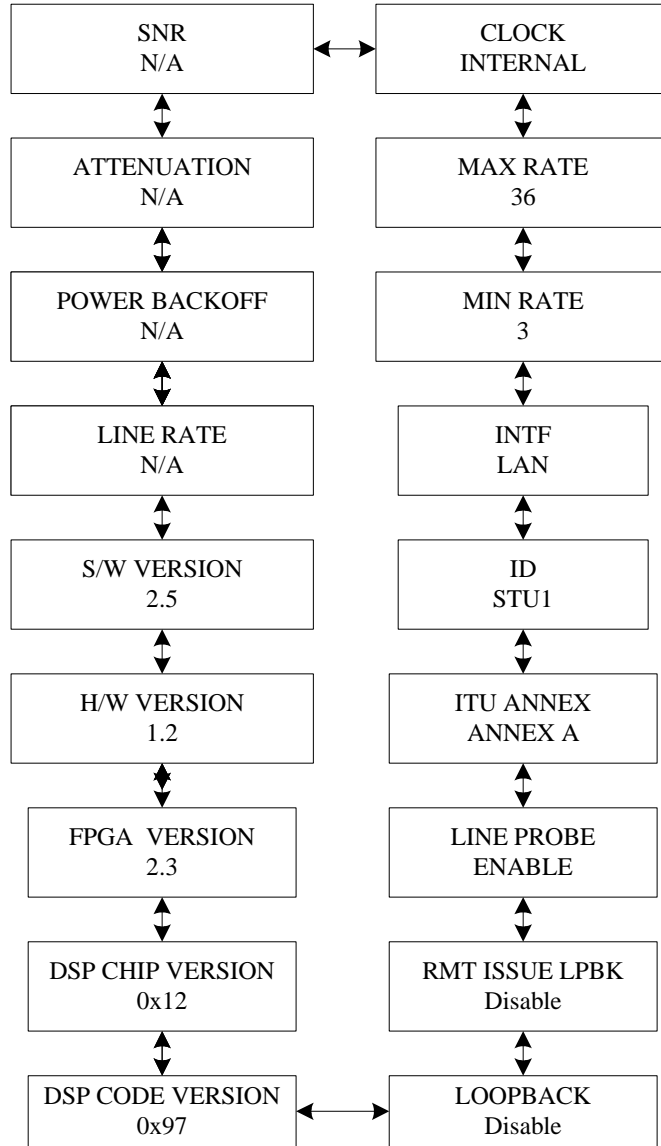
6.2.2.2.5 Clear Menu

The Clear menu, when selected, clears all the PM counters immediately upon selection. The response from the unit is the following screen. The **EXIT** key is used to jump back to previous menu level.

clear OK!
Any Key To Exit

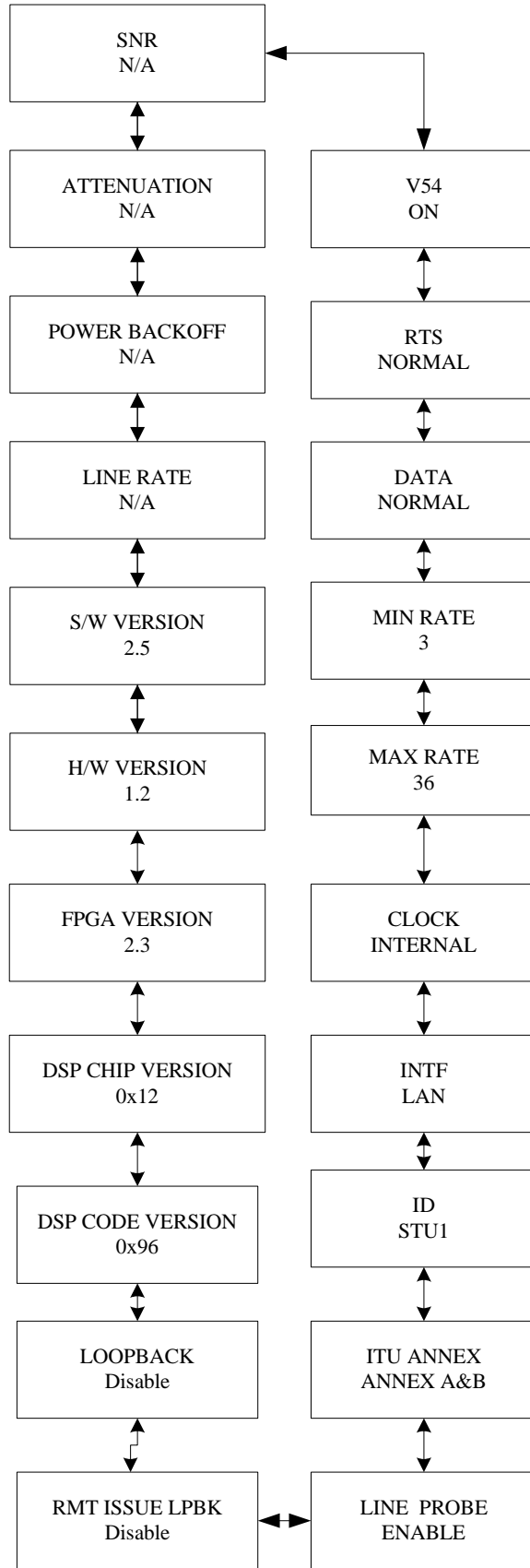
6.2.3 Status Menu

The Status menu, when selected, displays all the information about the unit. Use the ◀ or ▶ keys to scroll through all the displays. The **EXIT** key is used to jump back to previous menu level. The status menu of E1, T1, Ethernet and V.35 are listed as follows:

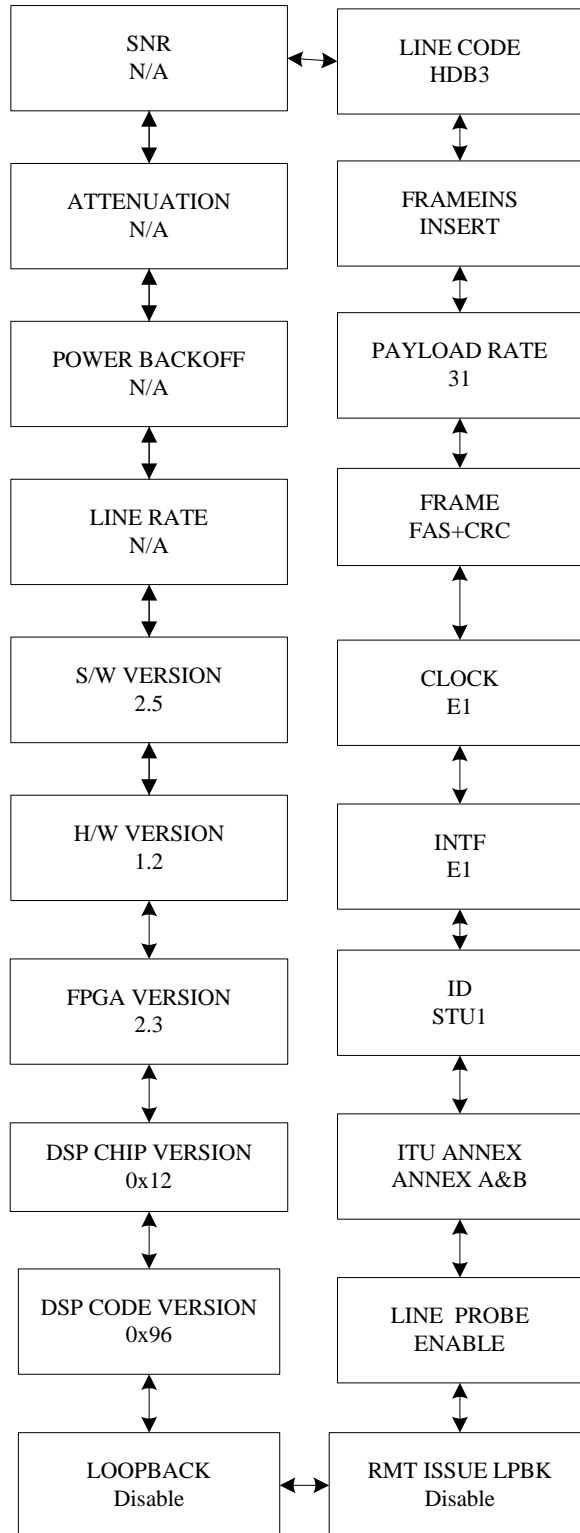


This status page is for Ethernet interface only.

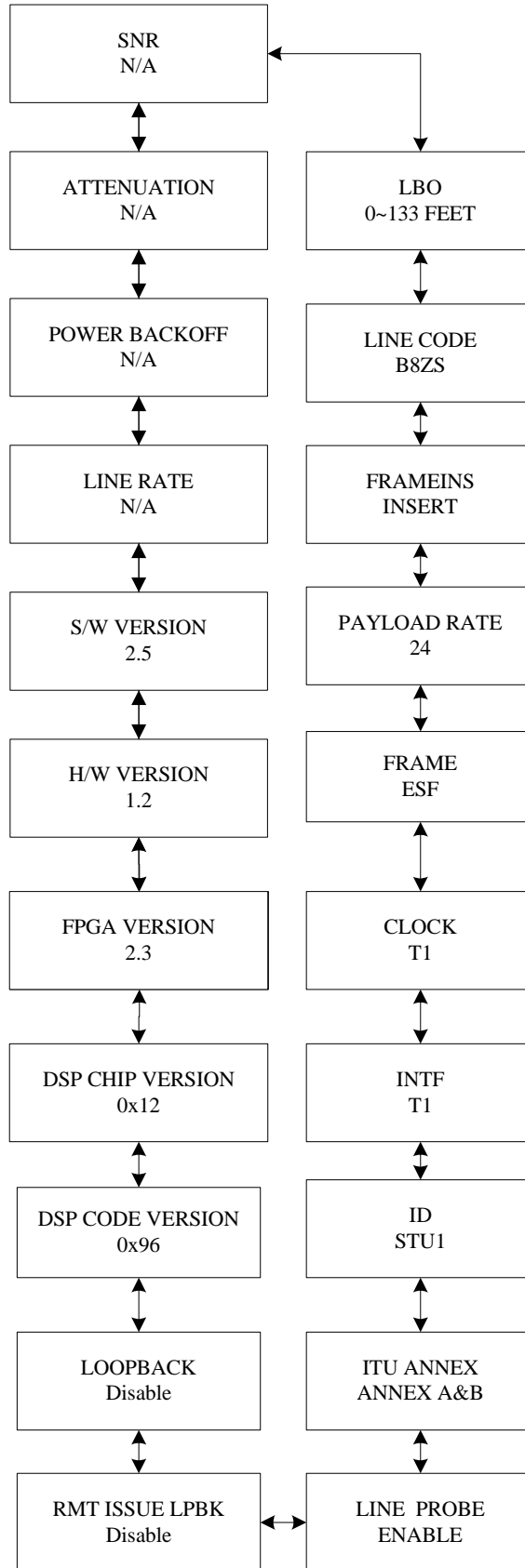
The status page below is for V.35 interface.



The status page below is for E1 interface.



The status page below is for T1 interface.

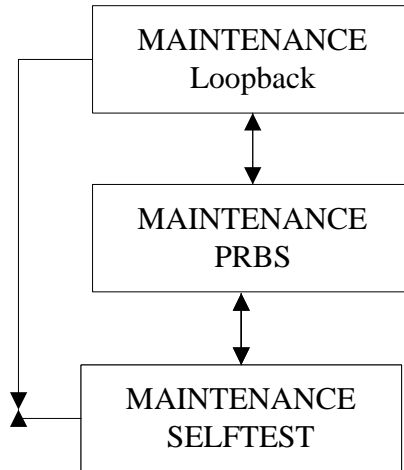


Status Parameter Table

Interface	Item	Parameter		
LAN	ITU ANNEX	ANNEX A	ANNEX B	Annex A & AnnexB (CO only)
	LINE PROBE	DISABLE	ENABLE	
	RMT ISSUE LPBK	DISABLE	RmtIssued-RLB	RmtIssued-PLB
	LOOPBACK	Disable	LocalLB	ReomteLB
		PayloadLB	NearEndLB	
PCLK	LAN	INT (CO only)	DSL (RT only)	
V.35	ITU ANNEX	ANNEX A	ANNEX B	Annex A & AnnexB (CO only)
	LINE PROBE	DISABLE	ENABLE	
	RMT ISSUE LPBK	DISABLE	RmtIssued-RLB	RmtIssued-PLB
	LOOPBACK	Disable	LocalLB	ReomteLB
		PayloadLB	NearEndLB	V54LB
PCLK	DTE	INT (CO only)	DSL (RT only)	
E1	ITU ANNEX	ANNEX A	ANNEX B	Annex A & AnnexB (CO only)
	LINE PROBE	DISABLE	ENABLE	
	RMT ISSUE LPBK	DISABLE	RmtIssued-RLB	RmtIssued-PLB
	LOOPBACK	Disable	LocalLB	ReomteLB
		PayloadLB	NearEndLB	
	PCLK	E1	INT (CO only)	DSL (RT only)
	LINE CODE	HDB3		
	FRAMEINS	INSERT	BYPASS	
FRAME	FAS+CRC	FAS	UNFAME	
T1	ITU ANNEX	ANNEX A	ANNEX B	Annex A & AnnexB (CO only)
	LINE PROBE	DISABLE	ENABLE	
	RMT ISSUE LPBK	DISABLE	RmtIssued-RLB	RmtIssued-PLB
	LOOPBACK	Disable	LocalLB	ReomteLB
		PayloadLB	NearEndLB	
	PCLK	T1	INT (CO only)	DSL (RT only)
	LINE CODE	B8ZS	AMI	
	FRAMEINS	INSERT	BYPASS	
	FRAME	UNFRAME	ESF	SF
	LBO	0~133 FEET	133~266FEET	266~399 FEET
399~533 FEET		533~655 FEET		

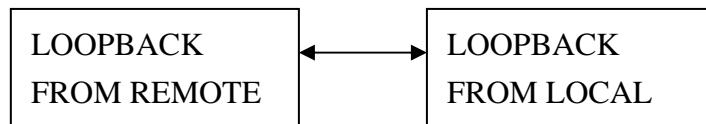
6.3 Maintenance Menu

This menu consists of the various maintenance loopback functions. Use the ◀ or ▶ keys to scroll through all the displays. The **ENTER** key is used to select the particular operation and **EXIT** key is used to jump back to previous menu level.



6.3.1 Loopback Menu

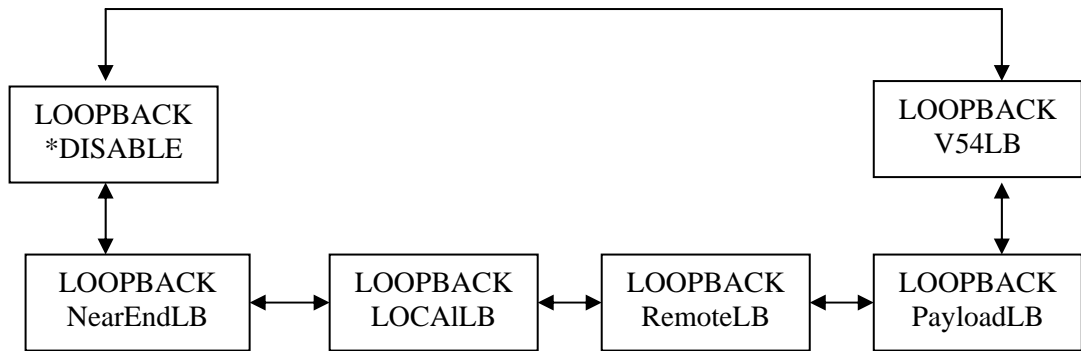
Loopback menu is used to control the local SHDSL equipment's network interface loopback tests. Two kinds of loopback are available, the direction of loopback toward Local site or remote site. They will be explained in detail below. Use the ◀ or ▶ keys to scroll through all the displays. The **ENTER** key is used to confirm and **EXIT** key is used to jump back to previous menu level.



6.3.1.1 From Local Menu

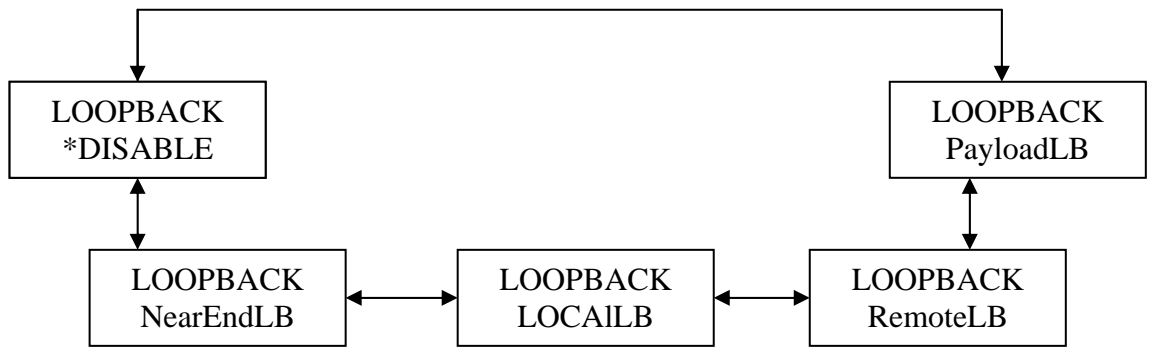
The From Local Loopback menu is used to perform local Loopback tests which would be looped back toward the user. Different with E1,T1 and Ethernet interfaces, only the From Local menu for V.35 interface can activate V54LB loopback. The difference are presented in the following figures:

V.35 loopback menu (from local)



Note: V54 function in configuration menu must be preconfigured as enable when users want to activate V54LB command.

E1/T1/Ethernet loopback menu(from local)

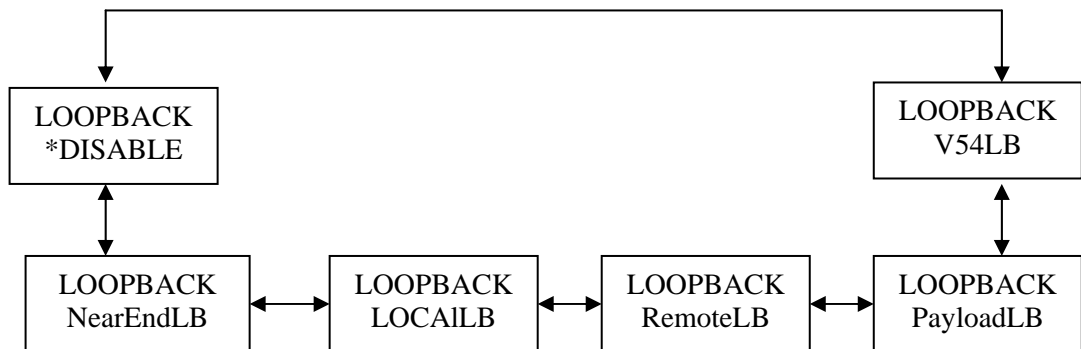


Use the ◀ or ▶ keys to scroll through all the displays. The **ENTER** key is used to confirm user's selection and **EXIT** key is used to jump back to previous menu level.

6.3.1.2 From Remote Menu

The From Remote Loopback menu is used to perform local Loopback tests which would be looped back toward the remote site. Different with E1,T1 and Ethernet interfaces, the From Remote menu for V.35 interface can activate V54LB loopback mode. The difference are presented in the following figures:

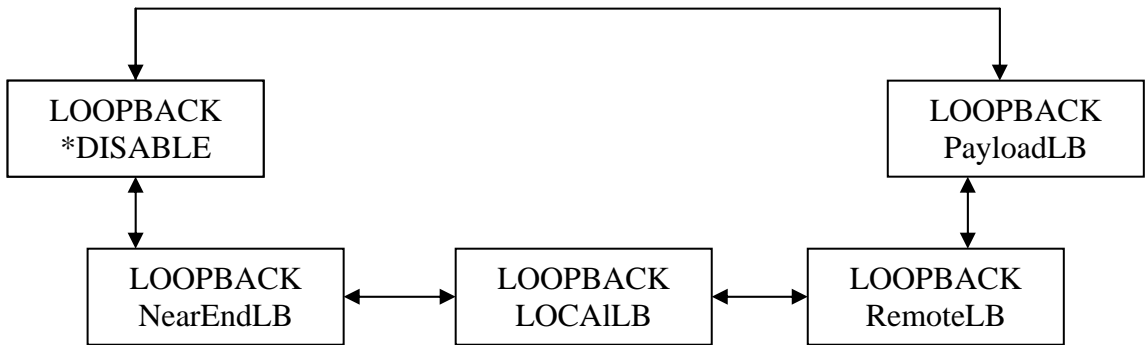
V.35 loopback menu (from remote)



Note: V54 function in configuration menu must be preconfigured as enable

when users want to activate V54LB command.

E1/T1/Ethernet loopback menu(from local)

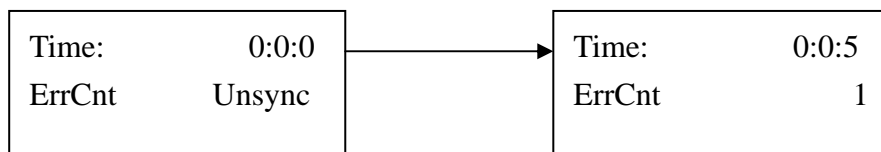


Use the ◀ or ▶ keys to scroll through all the displays. The **ENTER** key is used to confirm user's selection and **EXIT** key is used to jump back to previous menu level.

6.3.2 PRBS Menu

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 menu. Click on **ENTER** to start the PRBS test . Press ◀ or ▶ keys will result in injecting 1 error bit to test. One more clicking on **ENTER** can do RESYNC. **EXIT** key is used to jump back to previous menu level. The figure on the left side shows the screen of Unsync while the figure on the right side shows the screen of Sync.

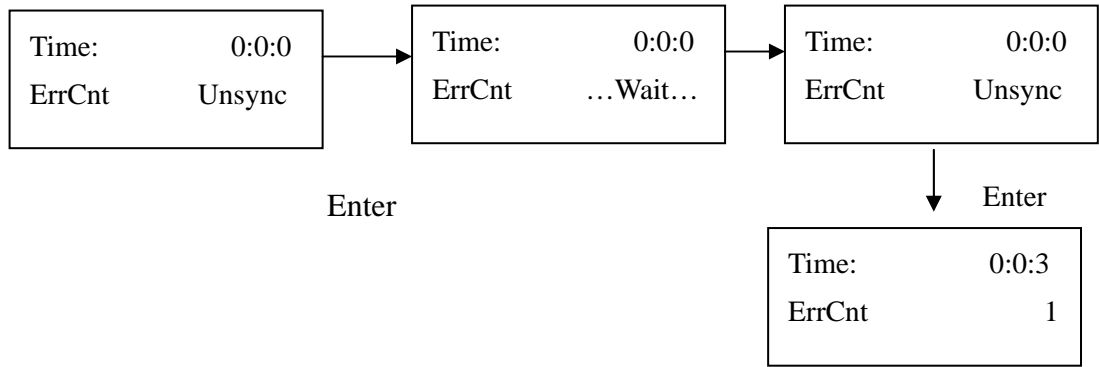
Note: ErrCnt could be the PRBS code injected or the the errored code is generated from the abnormal DSL line.



6.3.3 SELFTEST Menu

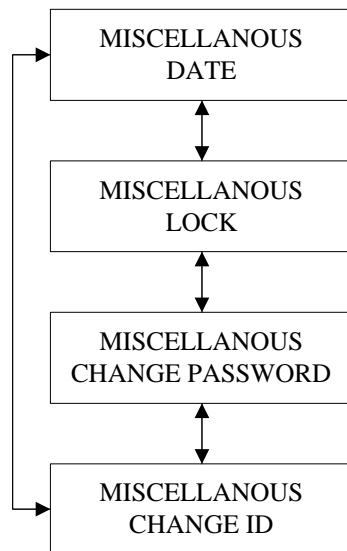
This test is used to perform unit selftest by testing the data path. The selftest code is issued toward DSL and would be looped back at the transceiver side. When the Selftest is proceeding, the loop connection will be disrupted during the test.

Press **ENTER** to test the transceiver is normal or not, and then click on **ENTER** will start Selftest. Press ◀ or ▶ keys will result in injecting 1 error bit to test. One more clicking on **ENTER** can do RESYNC. **EXIT** key is used to jump back to previous menu level.



6.4 Miscellaneous Menu

The Miscellaneous menu sets various non-system affecting parameters, for example, date, CID and LCD lock, change password and change unit ID.



To change the selection, use the ◀ or ▶ keys to scroll through all the displays then use the **ENTER** key to select the operation and **EXIT** key is used to jump back to previous menu level.

6.4.1 Date Menu

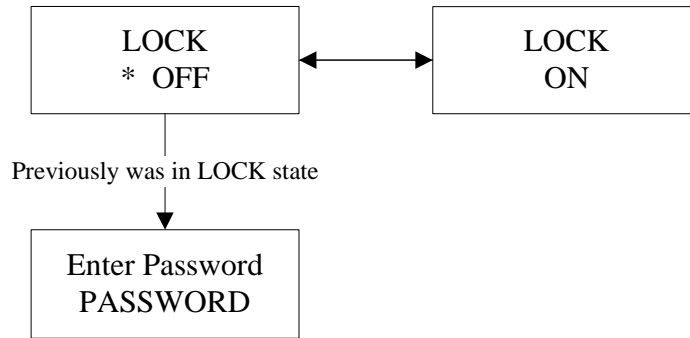
The Date menu is used to enter the current time and date into the system. The date and time are reset to 1/1/2000 and 0:0:0 whenever the system is reset.

To change a particular entry, use the ◀ or ▶ keys to increase or decrease the value then use the **ENTER** key to jump the cursor to the next entry field and **EXIT** key is used to jump back to previous menu level.

TIME	0:0:0
DATE	1:1:2000

6.4.2 Lock Menu

The lock menu is used to control LCD panel and CID port operation. Normally, configurations and maintenance can be changed from LCD panel and CID port. To avoid unauthorized user from changing the G.SHDSL system's setting, LCD panel and 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 select "OFF" and enter a password.



Use the ◀ or ▶ keys to scroll through all the displays then use the **ENTER** key to select the operation and **EXIT** key is used to jump back to previous menu level.

Config Lcoked This is returned when LOCK is ON and access is prohibited.

6.4.3 Change Password Menu

The LCD panel does not support this function. Please change from RS-232 port(CID), if necessary.

Please Change
from RS-232 port

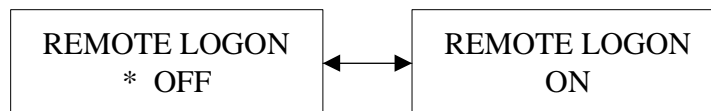
6.4.4 Change Unit ID

The LCD panel does not support this function. Please change from RS-232 port(CID), if necessary.

Please Change
from RS-232 port

6.5 Remote Logon

To control the remote logon menu, use the ◀ or ▶ keys to scroll through all the displays then use the **ENTER** key to select the operation. **EXIT** key is used to jump back to previous menu level. The remote logon is used to control the STU-R from the STU-C. Once the remote logon is turned on, the users will have access to STU-R's configuration, and surveillance and miscellaneous selections will not be shown simultaneously. The menu characters will be lower-case while the Remote Logon is activated. .



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	

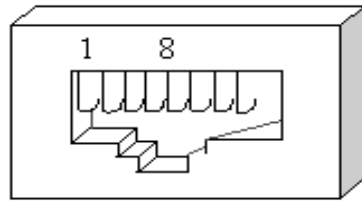
CID (RS-232) PIN ASSIGNMENT TABLE

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

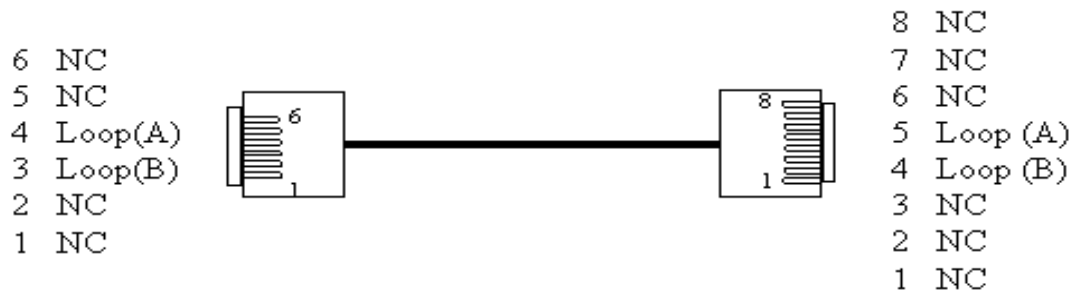
E1 and T1 INTERFACE PIN ASSIGNMENT TABLE

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

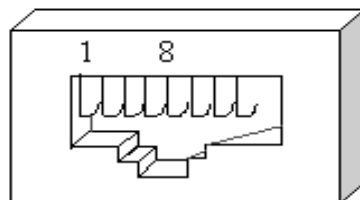
Ethernet Assignment



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.
DSLLOS	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.
DSLLOS	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.
DSLUAS15Min	PM Threshold alarm for 15-Minute count. Alarm will active when DSLUAS 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.
DSLUASDay	PM Threshold alarm for 1-Day count. Alarm will active when DSLUAS 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).
ET1UAS15Min	PM Threshold alarm for 15-Minute count. Alarm will active when ET1UAS 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.
ET1UASDay	PM Threshold alarm for 1 Day count. Alarm will active when ET1UAS value for the 1-Day interval is larger than

ET1SESDay

set threshold value.
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

Two Ethernet Interfaces are available in PAMSPAN-2000: 10 BaseT Ethernet Interface and 10/100 BaseT Ethernet Interface. They will be introduced separately in the following section.

■ 10 BaseT Ethernet:

There are two dip switches on the back of the SHDSL unit, where the 10 BaseT Ethernet Interface is. The two dip switches select the following parameters:

Switch 1: Enable or disable the tinygram compression algorithm.

When enabled on both sides, this will improve the transfer rate of small packets. Since it will not transmit the stuff bytes required forming a fixed length packet.

Switch 2: Enable or disable the filtering of the etherbridge.

Filter and forward is the main function of the etherbridge, where it learns all the MAC addresses and store it in LAN table of up to 10,000 addresses.

When enabled, it will forward those frames destined for outside of LAN. When disabled, it will transparently pass all frames over to the other side.

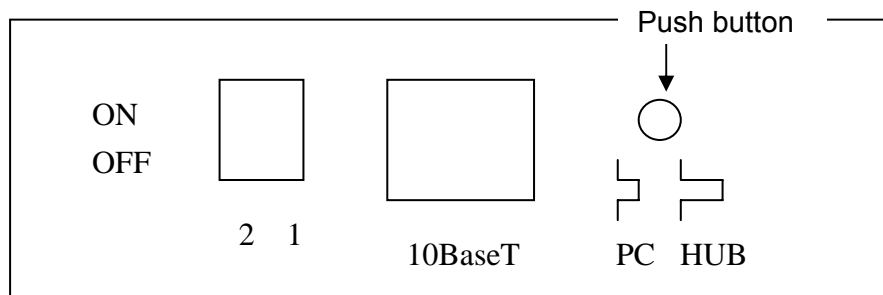
Switch		OFF	Note
1	Enable	Disable	Compression
2	Disable	Enable	Filtering

The default setting is switches 1 and 2 are both off.

The push button selects which device the 10 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 BaseT Ethernet Interface Panel



■ 10/100 BaseT Ethernet Interface:

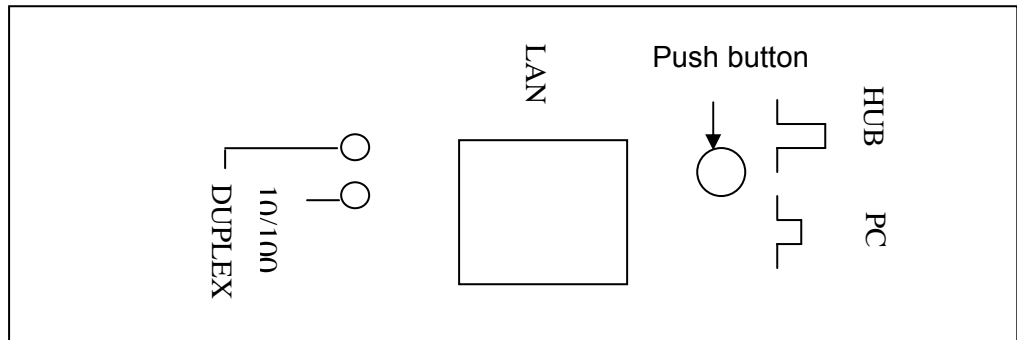
There are two LEDs on the panel of 10/100 BaseT Ethernet Interface: DUPLEX and 10/100.

DUPLEX: the DUPLEX LED will be green when this interface is power on; if the LED turns into red, the DUPLEX mode is activated.

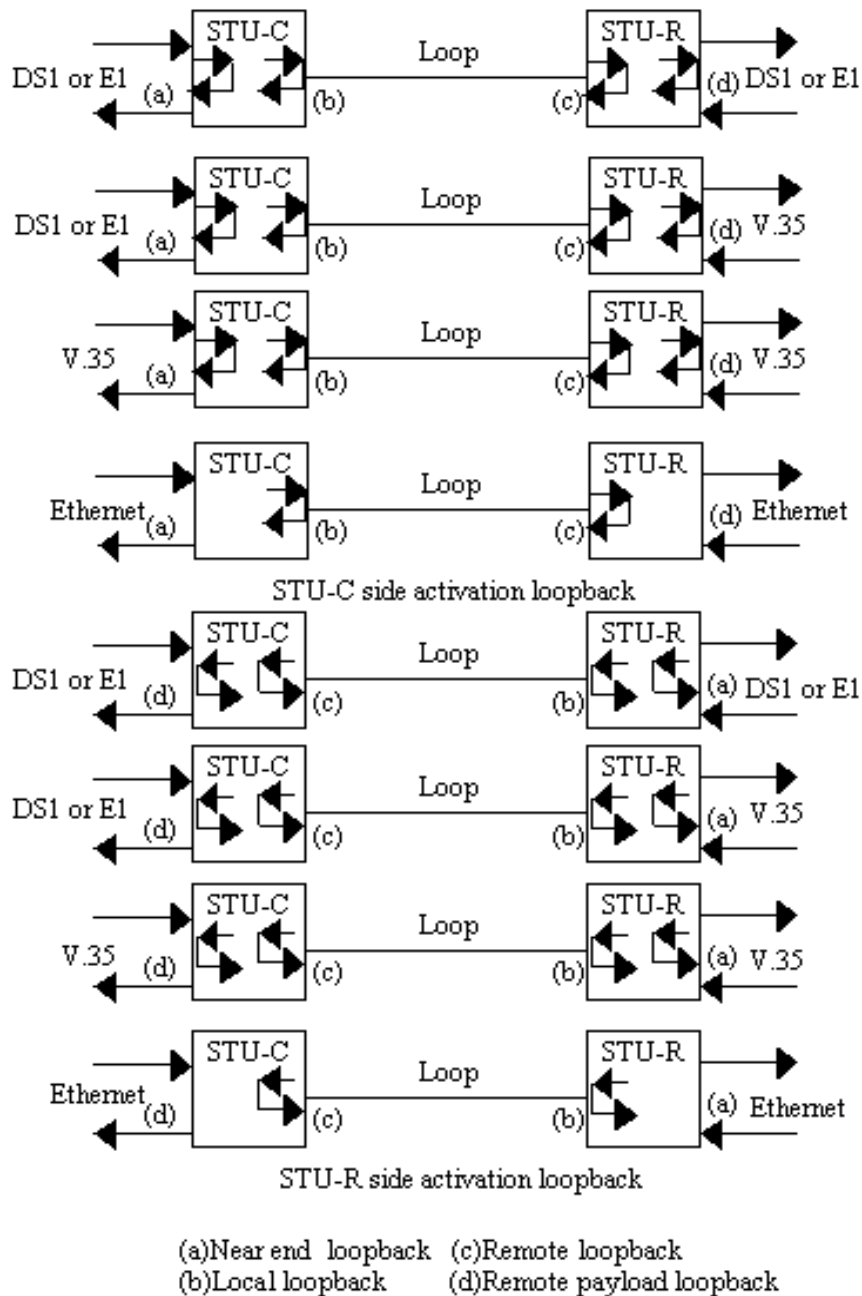
10/100: red shows the speed is 10Mbps and green shows the speed is 100Mbps.

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



APPENDIX E: PAMSPAN-2000 Specification

Standalone type	Number of G.SHDSL lines	One line per unit
	Network interface:	Ethernet, EIA-530, T1 and E1; V.35, RS-449 and X.21 needs conversion cable
	Management:	LED indicator, Power, DSL, Link, Alarm, Test and other CID/RS-232
	External AC Power Requirement:	90V~264 V AC or -42V~-56V DC
	Built in dual power requirement (option)	90V~264 V AC and -42V~-56V DC
	External AC Power model Dimension:	35mm(H)×210mm(W)×193mm(D)
	Built in dual power Dimension (option)	43 mm(H)×430 mm(W)×190 mm(D)
	Loop connection:	RJ-48C
Loop Interface	Number of wire	Two wires
	Standard	Comply ITU-T G.991.2 Annex A and B
	Line impedance	135 ohms
	Payload rate	192K, 256K, 384K, 512K, 768K, 1024K, 1168K, 1280K, 1544k, 2048K; 2312Kb/s for V.35 and Ethernet interfaces
	Transmission distance	4.1~7.1 km (0.4 mm wire)
Ethernet Interface	Bridge support	4K hash table
	Payload rate	N×64kb/s, $1 \leq N \leq 36$
	Connector	RJ-45
V.35 Interface	Data rate	N×64kb/s, $1 \leq N \leq 36$
	Clock source	Internal, DSL or DTE
	Connector/Role	ISO-2593 female/DCE
E1 Interface	Line code/interface	HDB3/ITU-T G.703, 2.048 Mbps
	Frame format	Framed and transparent
	Payload rate	N×64kb/s, $1 \leq N \leq 31$
	Line impedance & connector	DB 15 pin for 120 ohms
T1 Interface	Line code/interface	AMI, B8ZS /ANSI T1.403, 1.544 Mbps
	Frame format	SF, ESF and Transparent
	Payload rate	N×64kb/s, $1 \leq N \leq 24$
	Line impedance & connector	DB 15 pin for 100 ohms
Environment	Storage Temperature	-40°C~60°C
	Storage Humidity	5%~95%
	Operating Temperature	0°C~60°C
	Operating Humidity	5%~95%, none condense
Maintenance	V.54 remote loopback	Built-in
	QRSS pattern generator	Built-in