LOOP-H™ 3300
MULTI RATE
G.SHDSL DATA TRANSPORT
USER'S MANUAL
(Stand Alone - E1/ T1)

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1 Product Description

1.1 Overview

The Loop-H 3300 is a family of products that are based on the G.SHDSL transmission standard proposed by Bellcore. They use the standard 16PAM line format over twisted copper pairs to provide digital transport for a variety of data formats and data rates. The distances that this technology can span without repeaters are dependent on the data rate.

In one application, Loop-H 3300 can provide E1 or T1 transport without the need for is loop repeaters and copper conditioning requirements, so long as the cables meet CSA (carrier service area) guidelines.

In another application, Loop-H 3300 can provide high speed V.35 data transport over twisted copper pairs, either terminating in another V.35 interface, or as access to E1 or T1 networks.

This manual covers the stand alone models of the Loop-H 3300 with E1 interface only.

1.2 Applications

Loop-H 3300 must be used in pairs. One is configured as master, and the other slave. The master unit is usually located in central offices and is usually a rack-mounted model. The slave unit is usually located at customer's premises and is usually a stand-alone model. Both the LCD version of the stand-alone model and the rack-mounted model can be configured as either master or slave.

The Loop-H 3300 application examples are illustrated in Figure 1-1. This application essentially replaces existing or planned requirements where E1 lines are normally used. The E1 line repeater requirements and the copper conditioning requirements are considerably eased. The result is significant savings in loop plant cost when compared to E1 technology. A similar application for T1 transport is also possible.

In the next example (b), a pair of Loop-H 3300 has V.35 interfaces. In the top example (a) which is not applicable to this Loop-H 3300 DTE model of Figure 1-2. They are connected by a single pair of twisted copper wires, the 16PAM line. This application provides high-speed data transport over twisted copper wires. The spanning distances are longer for rates 768 Kbps and below. If the speed is above 768 Kbps, two pairs are necessary.

In the bottom example (c) and (d) of Figure 1-1, one unit of a pair of Loop-H 3300 is equipped with a V.35 interface and the other with an E1 interface. This allows remote data access to an E1 network. The data rates can be n*64 Kbps where n can be 1 to 32. If n are less than 31, fractional E1 services is provided. Depending on n, and depending on line speed one or two pairs of 16PAM lines are needed to interconnect the two Loop-H 3300 units.

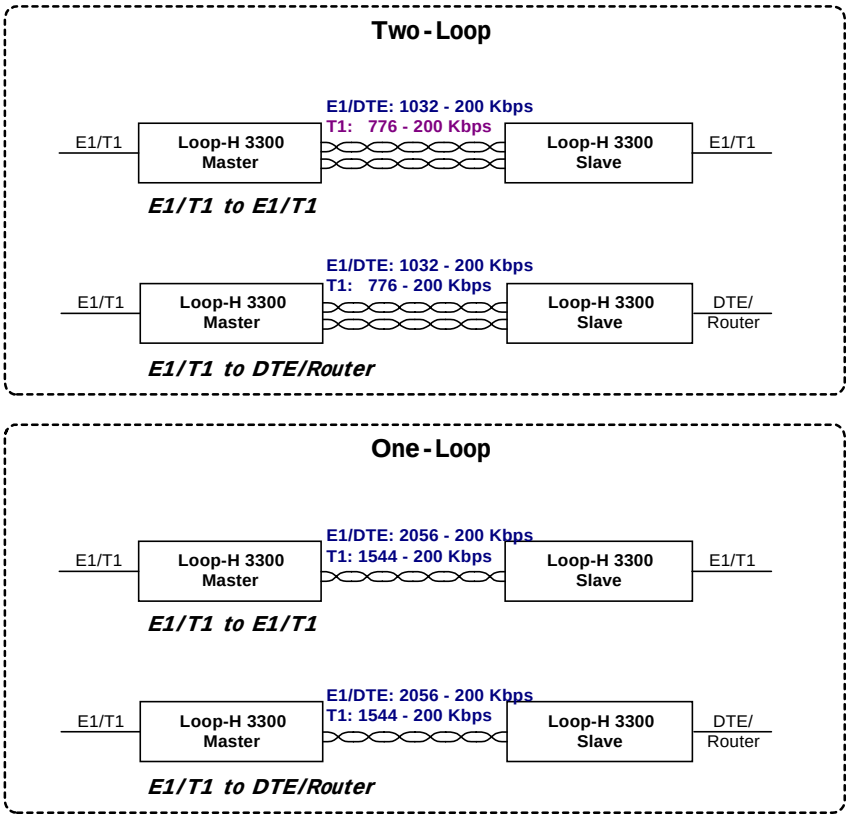


Figure 1- 1 Application of Loop-H 3300 G.SHDSL Data Transport Series

The distances achievable with 16PAM technology are dependent of the wire size and operating environment. The following table should be used only as a rough guide. The actual distance depends on many environmental factors. Maximum is for no noise. Typical is with 0dB ETSI noise.

By laws of physics, G.SHDSL should reach about 20% longer than HDSL. Some say 40%, that is if you are lucky.

Because of the different modulation method, G.SHDSL has a lower frequency band. Loss of copper cable is proportional to the square root of the frequency. Thus if you half the frequency, you get 1.414 times the distance. G.SHDSL is about 40% lower in frequency compared to HDSL, thus has only 20% more reach.

The distance you can reach is determined not by loss alone. Cross-talk also plays an important part. Thus if you avoid the frequencies where cross-talk noise is present, you can also reach longer distances. Cross-talk is proportional to frequency. Therefore, if you reduce the frequency by 40%, by cross-talk consideration alone you get 40% more reach. Nothing is quite so simple.

		Distances		Distances		Distances		Distances for T1		Distances for E1		Distances for T1		Distances for E1	
Line Speed		264 Kbps (4x64Kbps+8Kbps)		392 Kbps (6x64Kbps+8Kbps)		520 Kbps (8x64Kbps+8Kbps)		776 Kbps (12x64Kbps+8Kbps)		1032 Kbps (16x64Kbps+8Kbps)		1544 Kbps (24x64Kbps+8Kbps)		2056 Kbps (32x64Kbps+8Kbps)	
Data Rate		4 x 64 Kbps		6 x 64 Kbps		8 x 64 Kbps		24 x 64 Kbps		32 x 64 Kbps		24 x 64 Kbps		32 x 64 Kbps	
Guage-ohms/Km	Wire Dia.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
19-56Ω	0.9 mm	27.86	16.8	22.82	13.8	19.6	11.88	14	8.4	11.62	6.96	10.08	6.12	8.4	5.04
22-111Ω	0.6 mm	17.78	10.8	15.12	9.12	13.3	8.04	9.66	5.88	8.26	5.04	7.28	4.44	6.16	3.72
24-176Ω	0.5 mm	12.46	7.56	10.78	6.6	9.66	5.88	7.14	4.32	6.16	3.72	5.6	3.36	4.76	2.88
26-280Ω	0.4 mm	8.96	5.4	7.98	4.8	7.14	4.32	5.46	3.24	4.76	2.88	4.34	2.64	3.78	2.28

Through the EOC (Embedded Operations Channel), the master can provide administrative, reporting, and diagnostic functions to the remote unit as well. Administrative functions include configuration, status indication of both ends. Reports include 15-minute and 24-hour performance and alarms. Diagnostics include loop backs, error testing, performance monitoring, and alarm history.

1.3 Product Specifications

T1 Interface

Line Rate	1.544 Mbps ± 50 bps	Framing	D4 / ESF (selectable)
Line Code	AMI / B8ZS	Connector	RJ48C
Input Signal	ABAM cable length up to 655 feet	Output Signal	DSX1

E1 Interface

Line Rate	2.048 Mbps ± 50 PPM	Framing	ITU G.704
Line Code	HDB3	Connector	BNC/RJ48C
Input Signal	ITU G.703	Output Signal	ITU G.703
		Electrical	75Ω Coax/120Ω twisted pair

Performance Monitor (E1/T1)

Performance Store	The last 24 hours performance in 15-minute intervals and last 7 days in 24-hour summary
Monitor Registers	Network, E1/T1/DTE, and remote site
Performance Reports	Errored Second, Unavailable Second, Severe Errored Second
Alarm History	Alarm Type, Loop1, Loop2, E1/T1 (LOS, ES, SES), and DTE Clock Loss
Alarm Queue	Contains 40 alarm records which record the latest alarm type, and date & time

xDSL Line Interface

Full duplex with adaptive echo cancellation 16PAM line coding
Unconditioned 19-26 AWG twisted pair

Clock xDSL looped, Internal, or E1/T1/DTE

Console Port

Connector	DB9S at front panel
Electrical	RS232 interface (DCE)
Protocol	Menu driven VT-100 terminal

System Configuration Parameters (All in non-volatile memory)

Active Configuration	Current working configuration
Default Configuration	Manufacture default configuration

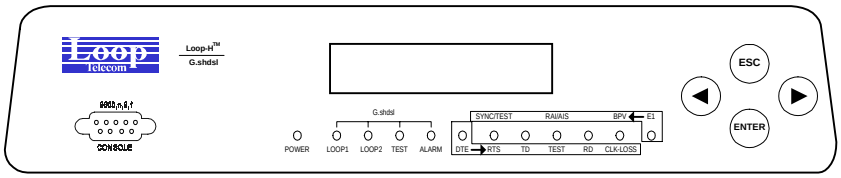
Diagnostics Test

xDSL Loopback	To-DTE, To-LINE
DTE Loopback	To-DTE, To-LINE
E1 Loopback	To-E1, To-LINE
Slave Loopback	DTE-Side, Line-Side

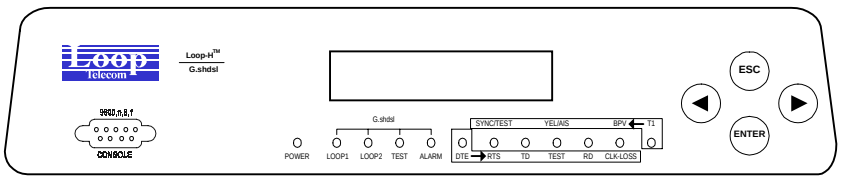
Front Panel

Keypad 4 keys:	left arrow, right arrow, ESC, and ENTER
LCD	2-line by 16-character
LED	

Front Panel for E1:



Front Panel for T1:



Physical/Electrical

Dimensions	29 x 6 x 22 cm (WxHxD)
Power	7.5 Watts max without line power or 24 Watts max with line power
Temperature range	0 – 50 °C
Humidity	0 – 95% RH (non-condensing)
Mounting	Desk-top stackable Rack Mount tray available

Compliance

EMI/EMC	EN55022, EN50081-1, EN50082-1
Safety	EN60950
G.SHDSL	G.991-2, G.994-1

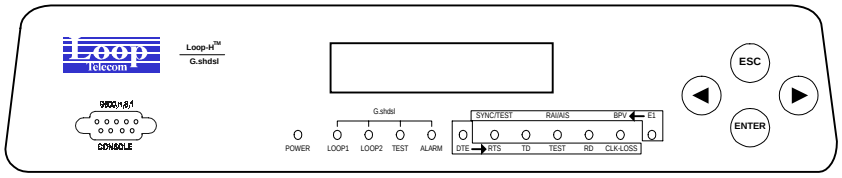
2 Installation

2.1 Mechanical Installation

Loop-H 3300 Stand-Alone unit is designed to be installed as a desk top unit, or, using optional hardware, installed individually in a 19-inch or 23-inch rack. Selection for the placement of Loop-H 3300 should consider the locations of entrance cables, availability of ac power, and cables to equipment. The site should provide a stable environment. The operating area should be clean and free from extremes of temperature, humidity, shock, and vibration.

Relatively humidity should stay between 0 and 90%. Do not operate the unit at an altitude greater than 3500 meters (10,000 feet).

Front Panel for E1:



Front Panel for T1:

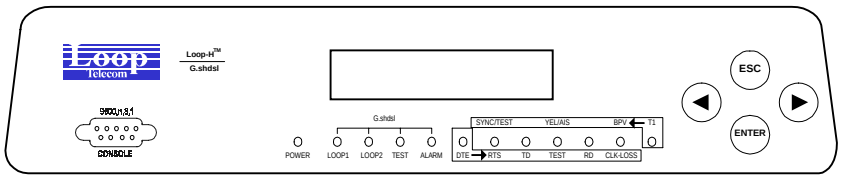


Figure 2- 1 Loop-H 3300 Stand Alone Front Panel View

2.2 Electrical Installation

The following figures show the backplane of the Loop-H 3300. It is designed to be powered from AC wall mains or 48 Vdc. The Loop-H 3300 is capable of operating from power of 100 to 240 vac, 50 to 60 Hz. Depending on the interface configuration, RJ45 jacks are provided for E1 or line connections, and V.35 connectors are provided for data connections. The 16PAM lines are connected via RJ45 jacks.

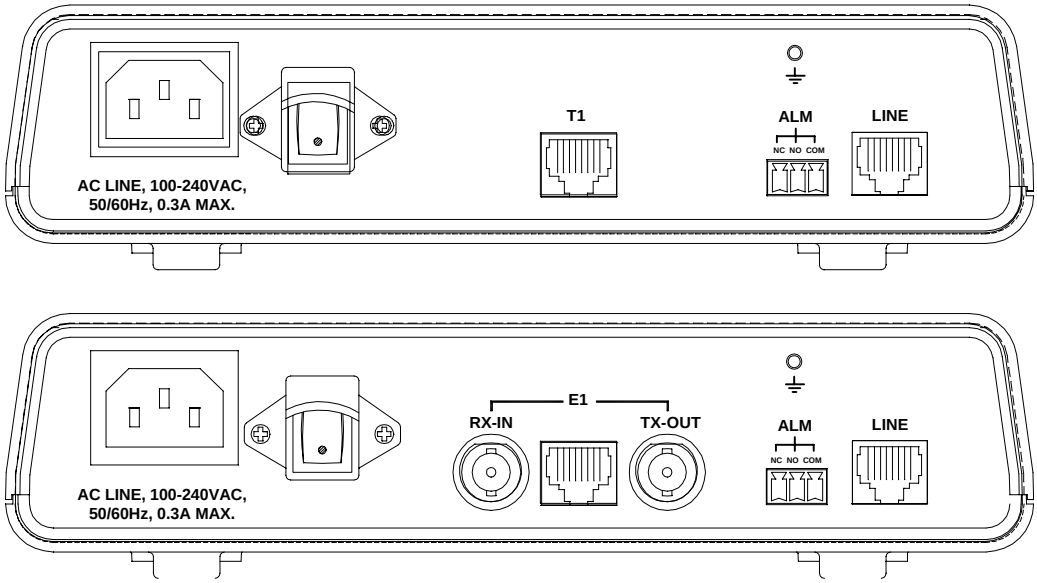


Figure 2- 2 Loop-H 3300 Rear Panels – AC Power

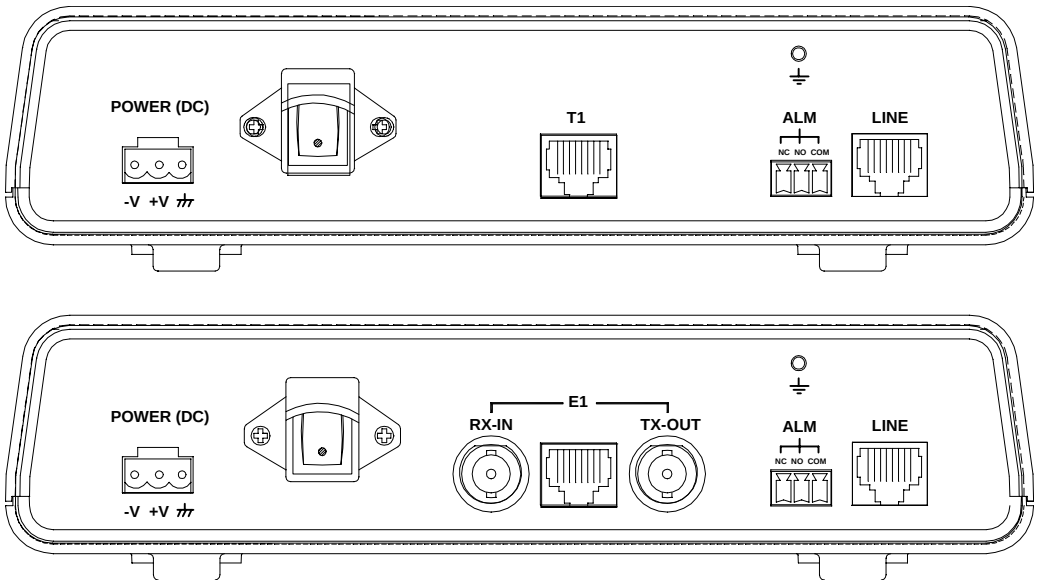


Figure 2- 3 Loop-H 3300 Rear Panels – DC Power

Table 2- 1 Console Cable

Pin Number	Signal	Source
1	Data Carrier Detect	To DTE
2	Receive Data	To DTE
3	Transmit Data	From DTE
4	Unassign	
5	Singal Ground	
6	Data Set Ready	To DTE
7	Unassign	
8	Clear to send	To DTE
9	Unassign	

After installation of the Loop-H 3300, powering up the unit will cause a self test to start. However, until the matching Loop-H 3300 and the signal inputs (E1 or T1) are also connected, the self test will not complete to the synchronization state of the input signal and of the Loop1 (and Loop2 if appropriate) 16PAM line facility. See Section 8 for front panel operations of the Loop-H 3300.

Console port is on the front panel DB9S connector. For this interface, the Loop-H 3300 is configured as a DCE. Pin definition is listed in Table 2-1.

2.3 Line Power and Sealing Current Options

The line power option allows the remote (slave) unit to operate from power supplied from the master. One unit must be the master, the power source, and the other unit must be the slave, the power sink.

The sealing current option causes a small amount of DC current to flow in the wire pairs. This prevents corrosion built-up at splices, a useful option in humid weather areas. As in the power option, one unit must be source with DC power and the other sink with AC or DC power.

If the Loop-H 3300 is ordered with "Line Power" or "Sealing Current" option, the unit will be shipped with the proper boards and jumpers installed. No further actions is necessary. The power source is usually the master, the power sink is usually the slave.

If the user wants to change a unit from line power or sealing current source to a sink, then follow the diagrams below. To change from line power to sealing current, the powering board must be changed.

Note also that when the unit is operated as power source, that unit must be DC powered.

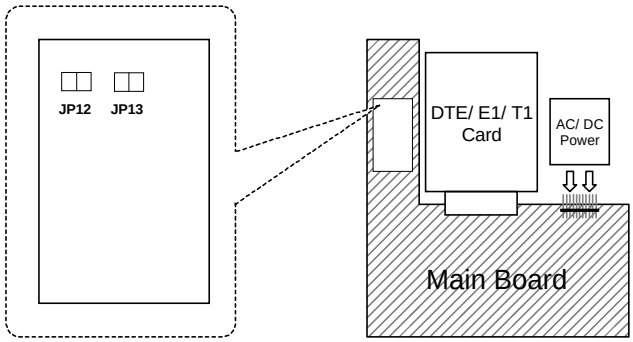
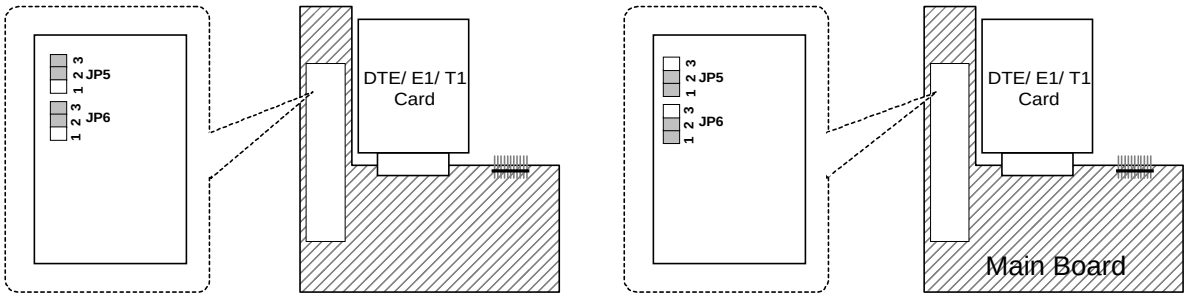
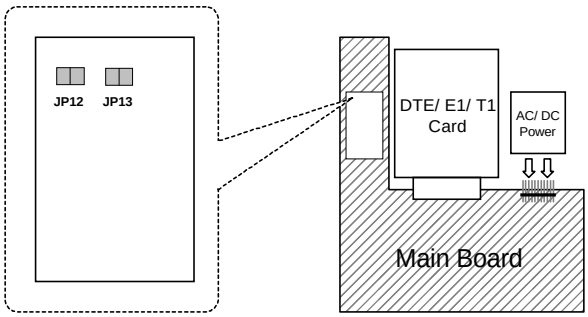


Figure 2- 4 Main Board without Line Power or Sealing Current (For H3300 Stand Alone only)



2-Pair Line Power Sinking Card **1-Pair Line Power Sinking Card**

Figure 2- 5 Line Power Sinking Card (For H3300 Stand Alone only)



2-Pair and 1-Pair Sealing Current Sinking Card for Slave

Figure 2- 6 2-Pair and 1-Pair Sealing Current Sinking Card (For H3300 Stand Alone only)

2.4 Configuration Setting

2.4.1 Hardware Configuration Setting

The only user modifiable hardware configuration is the choice of balanced or unbalanced interface for E1 lines. If the factory setting, which can be specified on the order, needs to be changed, the user must open up the case and move some jumper on the printed circuit board. See previous section for details. All other configurations are software programmable. No DIP switches are used.

2.4.2 Software Configuration Setting

There are three system configurations:

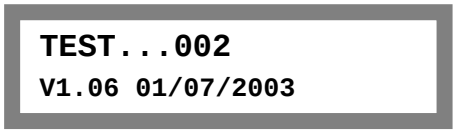
- Factory default
- Current working

Factory default configurations are not changeable. Each series is shipped with a factory default configuration.

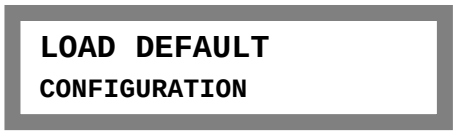
The current working configuration can be changed at any time. The system automatically stores the current working configuration into nonvolatile memory. When the system is turned off and then turned back on again, the working configuration used before power was turned off is retrieved as the current working configuration.

Procedure for Loading Default:

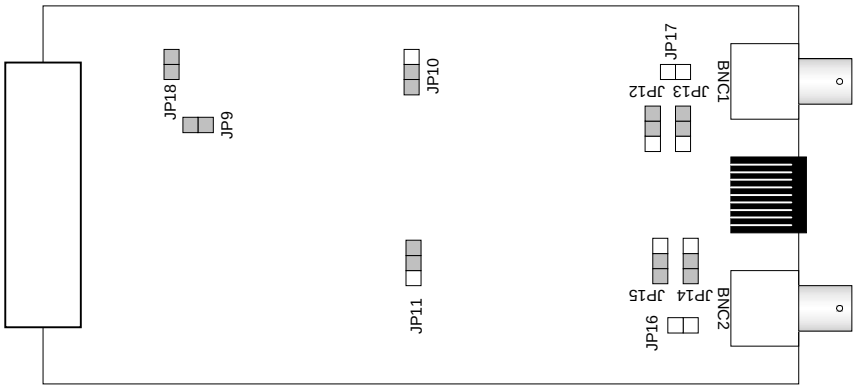
1. Power-up the unit, press and keep the ESC key until the following LCD screen shows up.



2. Then press ENTER.
3. Verify that LOAD DEFAULT is being displayed on the front panel to indicate that the operation was successful.



Below are jumper position for BNC:



NOTE:

For 75 ohm E1 card, jumper 16 can be OPEN or ON. If the jumper 16 is OPEN, BNC connector is set to Unassigned. If the jumper 16 is ON, BNC connector is set to Chassis Ground.

Figure 2- 7 Jumper Position for E1 card of 8370 chip BNC interface (75 Ω)

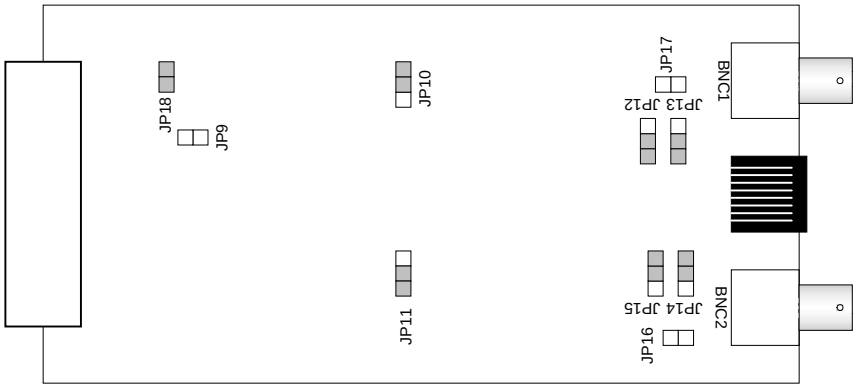


Figure 2- 8 Jumper Position for E1 card of 8370 chip TP interface (120 Ω)

NOTE:

For 120 ohm E1 card, jumper 17 can be OPEN or ON. If the jumper 17 is OPEN, pin 7 and pin 8 of RJ connector is set to Unassigned. If the jumper 17 is ON, pin 7 and pin 8 of RJ connector is set to Chassis Ground.

NOTE: When BNC connector is selected, the user has the option of grounding the received BNC shield by installing a jumper clip on the jumper location. **This is usually not necessary, but if you have any noise on your device it can often be filtered out by using this grounding process.**

Connections to the E1 or T1 lines are supported by RJ48 or BNC connector. Connections to the V.35 are supported by either M34 or DB25 connector. Connections to the 16PAM lines are by the RJ48 connector. The pin definitions for V.35/M34 DTE port, V.35/DB25 DTE port, EIA530/DB25 DTE port, X.21/DB15 DTE port, RS449/DB37 DTE port, E1/RJ48 line connector, and line xDSL connector are listed in Tables 2-2 to 2-8.

Table 2- 2 V.35/M34 DTE Port Pin Definition

Pin Number	Signal	Source
A	Cable Shield	
B	Signal Ground	
C	Request To Send	DTE
D	Clear To Send	DCE
E	Data Set Ready	DCE
F	Data Carrier Detect	DCE
H	Data Terminal Ready	DTE
J	Unassigned	
K	Unassigned	
L	Unassigned	
M	Unassigned	
N	Unassigned	
P	Transmit Data	DTE
R	Receive Data	DCE
S	Transmit Data Return	DTE
T	Receive Data Return	DCE
U	External Clock	DTE
V	Receive Clock	DCE
W	External Clock Return	DTE
X	Receive Clock Return	DCE
Y	Transmit Clock	DCE
Z	Unassigned	
AA	Transmit Clock Return	DCE
BB	Unassigned	
CC	Unassigned	
DD	Unassigned	
EE	Unassigned	
FF	Unassigned	
HH	Unassigned	
JJ	Unassigned	
KK	Unassigned	
LL	Unassigned	
MM	Unassigned	
NN	Unassigned	

Table 2- 3 V.35/DB25 DTE Port Pin Definition

Pin Number	Signal	Source
1	Cable Shield	
2	Transmit Data	DTE
3	Receive Data	DCE
4	Request To Send	DTE
5	Clear To Send	DCE
6	Data Set Ready	DCE
7	Signal Ground	
8	Data Carrier Detect	DCE
9	Receive Clock Return	DCE
10	Unassigned	
11	External Clock Return	DTE
12	Transmit Clock Return	DCE
13	Unassigned	
14	Transmit Data Return	DTE
15	Transmit Clock	DCE
16	Receive Data Return	DCE
17	Receive Clock	DCE
18	Unassigned	
19	Unassigned	
20	Data Terminal Ready	DTE
21	Unassigned	
22	Unassigned	
23	Unassigned	
24	External Clock	DTE
25	Unassigned	

Network connection is supported by RJ48 or BNC connector. The line interface is labeled with LINE. RJ48 connector pin definition is listed in Table 2-7.

Table 2- 4 E1/RJ48 Line Connector

Pin Number	Signal	Signal Direction
1	Receive Tip	From E1 Network
2	Receive Ring	From E1 Network
3	Unassigned	
4	Transmit Tip	To E1 Network
5	Transmit Ring	To E1 Network
6	Unassigned	
7	Chassis Ground	
8	Chassis Ground	

Table 2- 5 LINE xDSL Connector

Pin Number	Signal	Signal Direction
1	Loop2 Tip	To/ From xDSL Network
2	Loop2 Ring	To/ From xDSL Network
3	Unassigned	
4	Loop1 Tip	To/ From xDSL Network
5	Loop1 Ring	To/ From xDSL Network
6	Unassigned	
7	Chassis Ground	
8	Chassis Ground	

3 Operation

Many of the factories set default options can be changed either by Front Panel Operation or by Terminal Operation. See appropriate sections for detail. The allowed operations are described below.

All configuration settings are stored in non-volatile memory. Thus for all components of the Loop-H 3300 system, upon power-up, the last settings will be in place.

3.1 Mode

Operated in pairs, one Loop-H unit must have its mode set as master and the other slave. The remote unit, slave or master updates its configuration accordingly upon receipt of the new configuration.

Note: In xDSL terminology, the unit configured as master is also called LTU for E1 networks and HTU-C for T1 networks. The unit configured as slave is also called NTU for E1 networks and HTU-R for T1 networks.

3.2 Clocks

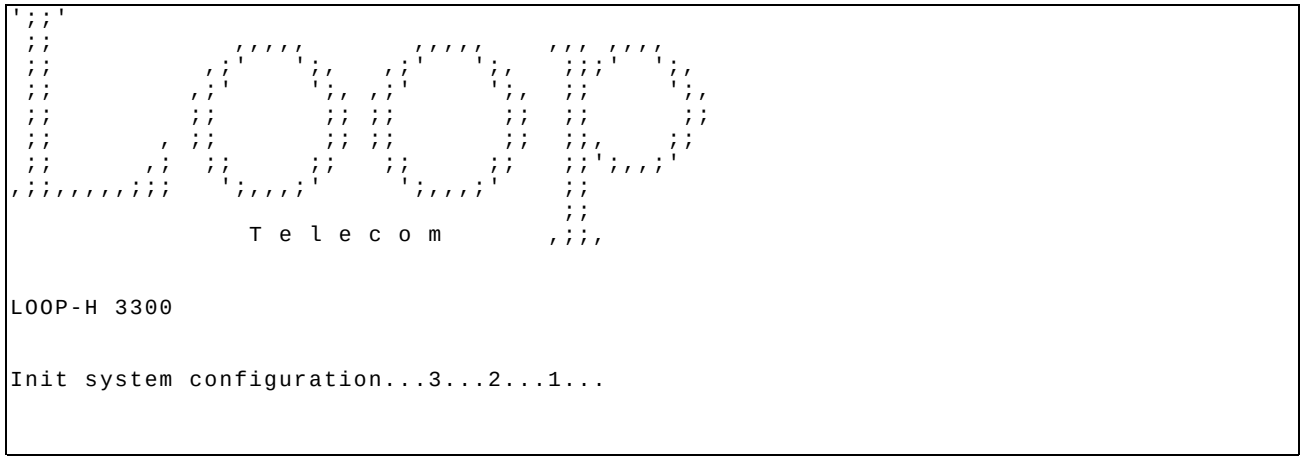
The default configuration is for the master unit clock to synchronize to the incoming signal, which may be E1, T1, or the V.35 signal, and for the slave unit clock to synchronize to the 16PAM line. This configuration can be changed individually, for each unit to use its internal clock, to loop time at either end, or to the use external clock from the incoming signal. If clocked separately, the two clocks must be within 32 ppm of each other.

3.3 Terminal configuration

The terminal configurations for administration, maintenance, and reports are fixed to 9600-8-n-1 for both the master and the slave unit. Flow control Xon/Xoff is off. The device is configured as a DCE device.

3.4 Load Default

Upon initial power up you will see the following screen on your VT-100 monitor. The H3300 will automatically load the system hardware configuration stored in the flash memory. If you prefer to load the factory default configuration press the ACO button during the countdown (ie. 3….2…1).



3.5 Alarms

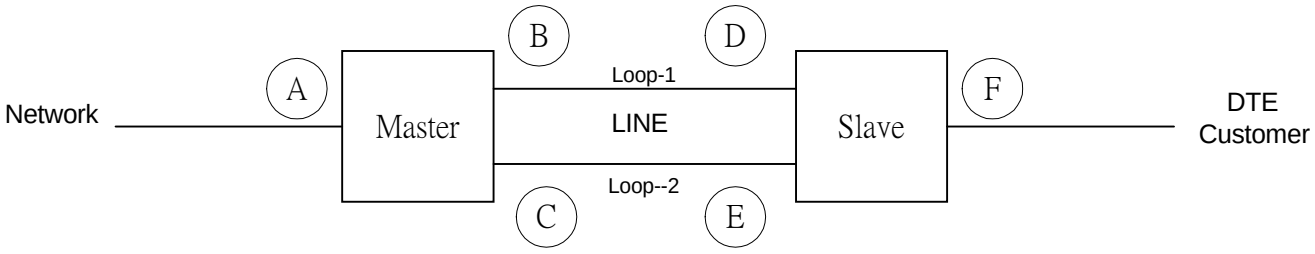


Figure 3- 1 Status and Performance Reference Points

The definition of the alarms is as follows. Each of the detection point is key to the diagram below.

Table 3 - 1 E1 version with two LOOPs

Alarm Type	Detect -ion Point	Threshold	Description
LOS, MASTER-LOOP1	B	None	Master Loop-1 Loss of signal/ LOSW*
LOS, MASTER-LOOP2	C	None	Master Loop-2 Loss of signal/ LOSW*
LOS, SLAVE-LOOP1	D	None	Slave Loop-1 Loss of signal/ LOSW*
LOS, SLAVE-LOOP2	E	None	Slave Loop-2 Loss of signal/ LOSW*
LOS/LOF, MASTER-E1	A	None	Master E1 Line Loss of signal or loss of framing
LOS/LOF, SLAVE-E1	F	None	Slave E1 Line Loss of signal or loss of framing
ES15M, MASTER-LOOP1	B	1-900 (default 1)	Master Loop-1 Error Second in current 15-minute interval
ES15M, MASTER-LOOP2	C	1-900 (default 1)	Master Loop-2 Error Second in current 15-minute interval
ES15M, SLAVE-LOOP1	D	1-900 (default 1)	Slave Loop-1 Error Second in current 15-minute interval
ES15M, SLAVE-LOOP2	E	1-900 (default 1)	Slave Loop-2 Error Second in current 15-minute interval
ES15M, MASTER-E1	A	1-900 (default 1)	Master E1 Line Error Second in current 15-minute interval
ES15M, SLAVE-E1	F	1-900 (default 1)	Master E1 Line Error Second in current 15-minute interval
SES15M, MASTER-LOOP1	B	1-900 (default 1)	Master Loop-1 Severely Error Second in current 15-minute interval
SES15M, MASTER-LOOP2	C	1-900 (default 1)	Master Loop-2 Severely Error Second in current 15-minute interval
SES15M, SLAVE-LOOP1	D	1-900 (default 1)	Slave Loop-1 Severely Error Second in current 15-minute interval
SES15M, SLAVE-LOOP2	E	1-900 (default 1)	Slave Loop-2 Severely Error Second in current 15-minute interval
SES15M, MASTER-E1	A	1-900 (default 1)	Master E1 Line Severely Error Second in current 15-minute interval
SES15M, SLAVE-E1	F	1-900 (default 1)	Slave E1 Line Severely Error Second in current 15-minute interval
ES24H, MASTER-LOOP1	B	1-65535 (default 1)	Master Loop-1 Error Second in current 24 hours
ES24H, MASTER-LOOP2	C	1-65535 (default 1)	Master Loop-2 Error Second in current 24 hours
ES24H, SLAVE-LOOP1	D	1-65535 (default 1)	Slave Loop-1 Error Second in current 24 hours
ES24H, SLAVE-LOOP2	E	1-65535 (default 1)	Slave Loop-2 Error Second in current 24 hours
ES24H, MASTER-E1	A	1-65535 (default 1)	Master E1 Line Error Second in current 24 hours
ES24H, SLAVE-E1	F	1-65535 (default 1)	Slave E1 Line Error Second in current 24 hours
SES24H, MASTER-LOOP1	B	1-65535 (default 1)	Master Loop-1 Severely Error Second in current 24 hours
SES24H, SLVAE-LOOP2	C	1-65535 (default 1)	Master Loop-2 Severely Error Second in current 24 hours
SES24H, MASTER-LOOP1	D	1-65535 (default 1)	Slave Loop-1 Severely Error Second in current 24 hours
SES24H, SLAVE-LOOP2	E	1-65535 (default 1)	Slave Loop-2 Severely Error Second in current 24 hours
SES24H, MASTER-E1	A	1-65535 (default 1)	Master E1 Line Severely Error Second in current 24 hours
SES24H, SLAVE-E1	F	1-65535 (default 1)	Slave E1 Line Severely Error Second in current 24 hours

LOW NOISE MARGIN	B, C, D, E	0 – 60 (default 1)	Signal Noise Margin of Line

* Loss of Synchronous Word

The alarm queue can be obtained for both master and slave, which contains the time stamp and alarm type of the last 40 alarms. Alarm history and alarm status registers are also kept, which are used to track the alarm count. Each alarm can be individually enabled or disabled. When disabled, no action is taken upon detection of an alarm. When enabled, the alarm counter increases by one for each alarm type. Alarm is triggered when an alarm occurs or when the counter exceeds a set threshold.

3.6 Reports

From the master unit, by use of the LCD front panel, or a terminal connected to the Loop-H, the current status of both master and slave units can be obtained. Status includes sync status of loop1, loop2, and one of V.35, E1, or T1.

Also, by use of the terminal connected to the master, the performance report of both master and slave unit can be obtained. Performance reports contain performance parameters recorded in 15-minute intervals for the past 24 hours. Reports for each of the following parameters are available.

Table 3- 1 Performance Parameter

Performance Parameter	Description
ES	Error Seconds
SES	Severe Error Second
UAS	Unavailable Second

3.7 Date and Time

The Loop-H 3300 is equipped with an RTC (real time clock). The date and time is set to Zulu+8 at the factory. Users can change the date and time. The RTC has a self-contained battery with a power-off life of 10 years from shipment.

3.8 Front Panel Lock

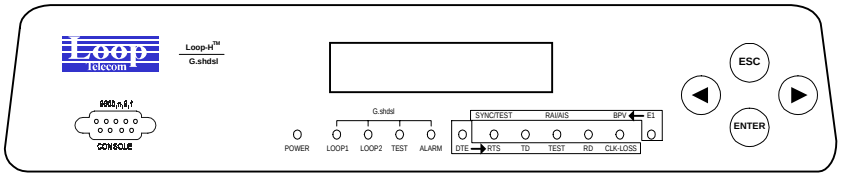
Normally, front panel can provide configuration change capability. If the "menu lock" is enabled, configuration change is allowed only with a password. Without a password, users still can operate front panel to obtain the configuration information and line status. However, no modification is allowed. This function is linked with the password enable function of the terminal operation; i.e. the password enabled in the terminal operation will lock the front panel as well.

When enabled, for some operations, users have to enter the password correctly. Use left or right arrows (<>) to pick the character. There are 66 characters to choose from. Password modification can only be done using terminal operation. The default is unlocked.

3.9 LED Indicators

The front panel of each Loop-H has 12 LEDs. One is to indicate presence of power. The next four shows the status of one or two 16PAM loops, a test condition indicator, and an alarm indicator. The next 7 LEDs are defined according to whether the interface is V.35 or E1/T1. One LED is to indicate V.35, another is to indicate E1/T1. If V.35, there are LEDs for RTS, TD, TEST, RD, and CLK-LOSS. If E1/T1, three LEDs indicate bipolar violation, RAI/AIS and a sync or test indicator.

Front Panel for E1:



Front Panel for T1:

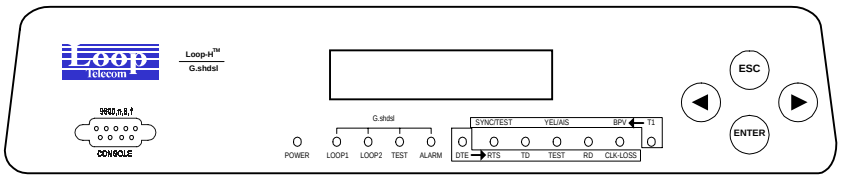


Figure 3- 2 LED Front Panel

4 Maintenance

Maintenance of the Loop-H 3300 system is aided by the self-test capability of the units and by the loopback facilities.

4.1 Self test

As each element is powered up, a self-test is automatically performed to check for internal operations. At system power up, a complete self-test routine is run to check all system elements, including the metallic loops used for the 16PAM facility. System power up means that all elements, including master and slaves, are powered up. The front panel LEDs, LCD panel, and the terminal screen can all be used to obtain the general performance of the system.

Table 4- 1 LED Indication for Normal Operation

LED		Color	Indication
Power		Green	Power on and operational
		Off	Power off, self-test failure, or during initialization
xDSL	Loop 1	Green	Loop 1 is in sync
		Flashing Green	Loop 1 synchronization is in progress
		Off	Loop 1 is not sync or not existed
	Loop 2	Green	Loop 2 is in sync
		Flashing Green	Loop 2 synchronization is in progress
		Off	Loop 2 is not sync or not existed
	Test	Off	Normal
		Amber	xDSL line-side test is in progress
	Alarm	Off	Normal
		Red	Alarm happened
E1	E1	Green	E1 Card is present
		Off	E1 Card is not present
	SYNC/TEST	Green	E1 Line frame is sync
		Flashing Green	E1 Line-side test is in progress
		Off	E1 Line frame is unsync
	RAI/AIS	Off	Normal
		Amber	Receive Remote Alarm Indication from E1 line
		Flashing Amber	Receive AIS from E1 line
	BPV	Off	Normal
		Red	E1 line has bipolar
T1	T1	Green	T1 Card is present
		Off	T1 Card is not present
	SYNC/TEST	Green	T1 Line frame is sync
		Flashing Green	T1 Line-side test is in progress
		Off	T1 Line frame is unsync
	YEL/AIS	Off	Normal
		Amber	Receive Yellow Alarm from T1 line
		Flashing Amber	Receive AIS from T1 line
	BPV	Off	Normal
		Red	T1 line has bipolar

4.2 Diagnostics

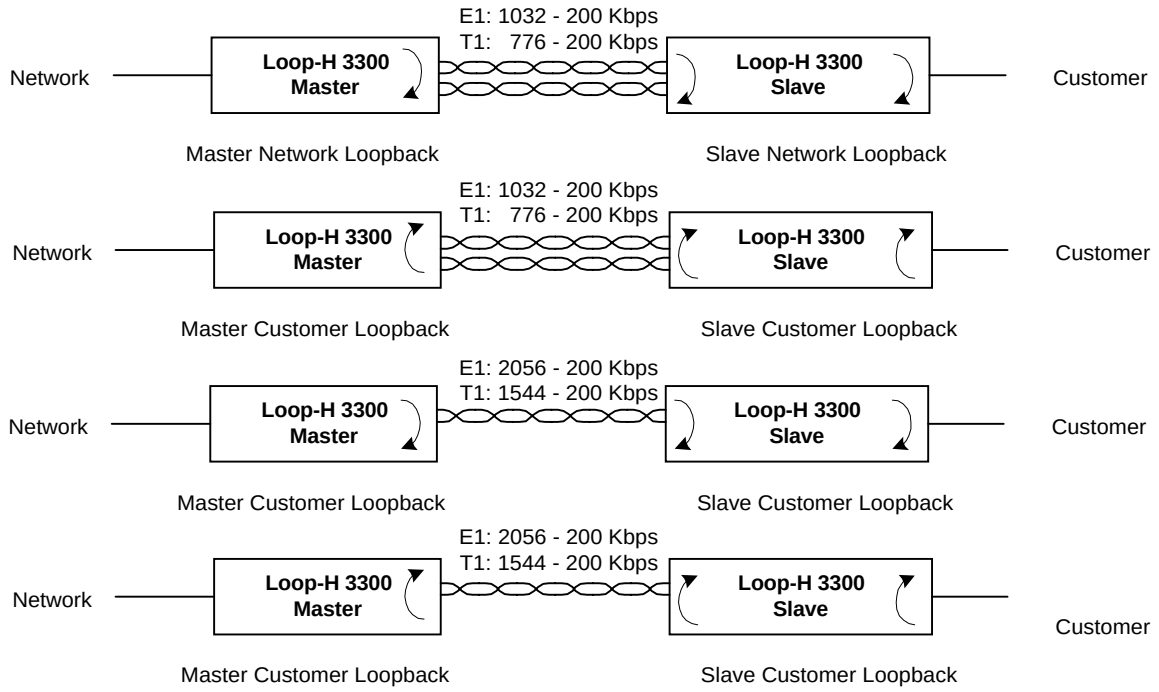
A 20-bit register QRSS (quasi-random signal sequence) is used in Loop-H 3300 as an aid in trouble location. This is used in conjunction with various loopbacks to isolate faults. In both front panel and terminal operation, user may utilize ‘ < ‘ key to reset error counter. To choose Off under BERT to terminate the BERT test.

4.3 Loopbacks

Trouble isolation of the entire xDSL system is facilitated by the use of loopbacks. By determining where one loopback is successful and another is not, the repair personnel can isolate the fault to a particular line or equipment. Loopbacks can be towards the network, or towards the customer.

NOTE: User have to terminate the current loopback function before using other loopback functions. For example, if you wants to change **xDSL to LINE loopback** as **xDSL to DTE loopback**, you must terminate the **xDSL to LINE loopback** first.

Loopbacks are activated from (a) the front panel of the units, (b) a terminal attached to the units. Only the master can activate a loopback remotely. Figure 5 illustrates the various loopbacks.



NOTE: Both network and customer site could be independently E1, T1 or DTE.

Figure 4- 1 Loopbacks available

4.3.1 Loopbacks Toward Network

Loopbacks toward the network take signals originating from the network transmit pair and send them back to the network receive pair. The various loopbacks are illustrated in the upper diagram of Figure 4-1.

4.3.2 Loopbacks Toward Customer

Loopbacks toward the customer take signals originating from the customer transmit pair and send them back to the customer receive pair.

5 E1 Front Panel Operation

The front panel of each Loop-H has 12 LEDs. One is to indicate presence of power. The next four shows the status of one or two 16PAM loops, a test condition indicator, and an alarm indicator. The next 7 LEDs are defined according to whether the interface is V.35 or E1/T1. One LED is to indicate V.35, another is to indicate E1/T1. If V.35, there are LEDs for RTS, TD, TEST, RD, and CLK-LOSS. If E1/T1, three LEDs indicate bipolar violation, RAI/AIS alarm conditions, and a sync or test indicator.

A terminal must be used for the display of other detailed status and to initiate local loopbacks. Furthermore, configuration must be performed at the master end.

Power LED is a single color LED. Loop-H 3300 performs self-test on the powering up. The power LED is green if the self-test is passed. Otherwise, it is off and the rest of LCD shows the cause of the failure.

Loop1 and Loop2 indicators show the status of the 16PAM line. It is green if synchronization is established. It is off when sync is lost. Flashing green shows the 16PAM loop is in synchronization mode.

For E1/T1 interface, the SYNC/TEST indicates the status of the DS1 interface. It is green if the interface is in sync. It is off if it is loss of sync or loss of frame. Flashing green indicates the interface is under loopback test.

The LCD menu tree is shown below. By successively selecting the menu item at each level, the desired operation or display can be obtained.

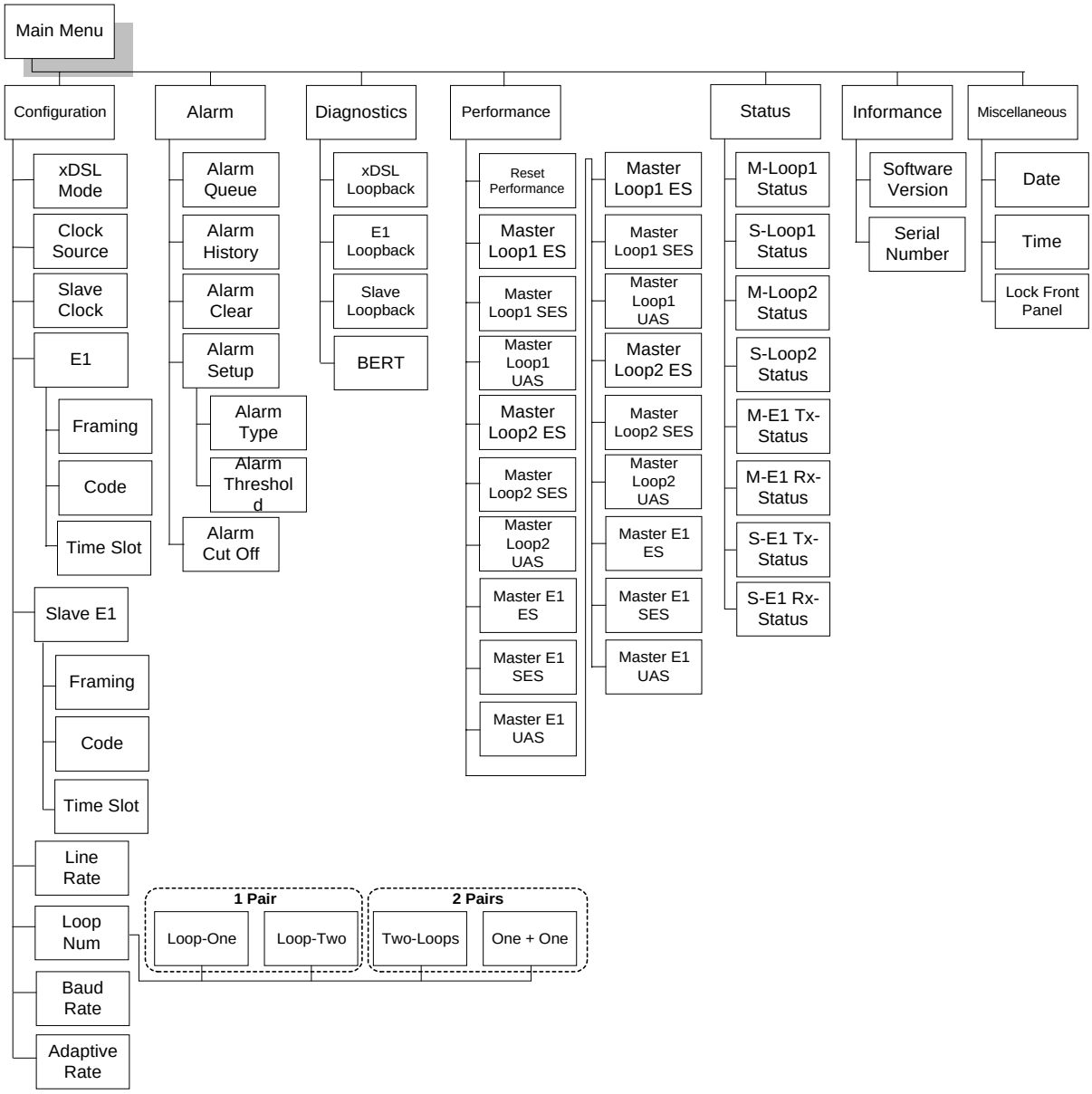


Figure 5- 1 LCD Menu Tree – E1

5.1 Main Menu

The main menu, the first menu displayed after power up, is shown below, where the underlined character indicates flashing display, meaning that this item is selected by default unless the user presses the right or left arrow keys.

5.2 Configuration Menu

Configuration group includes xDSL mode, clock source, slave clock, E1, slave E1, line rate.

```
xDSL-E1-MASTER
Configuration
```

5.2.1 xDSL Mode

Mode can be master or slave. For each pair of connected Loop-H, one must be master and the other slave.

The Slave mode Loop-H can only be synchronized to the master through the line. To change the mode to master or slave, use left and right arrow key cycle through to the desired selection and press ENTER. The current selection is indicated by "*".

```
Configuration
xDSL Mode
```

```
xDSL Mode
*MASTER
```

```
xDSL Mode
 SLAVE
```

5.2.2 Clock Source

Clock source group includes LINE, INTERNAL, E1 and Slave Clock. Press ENTER to change the clock source to LINE, INTERNAL, E1, and Slave Clock. For the mode selected, if an invalid clock is selected, the command will be ignored.

```
Configuration
Clock Source
```

```
Clock Source
*LINE
```

```
Clock Source
 INTERNAL
```

```
Clock Source
 E1
```

5.2.3 E1 Menu

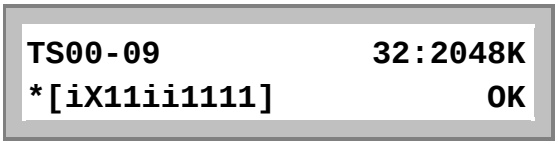
E1 menu is used to configuration the framing and code of the E1. Press ENTER to configure it.

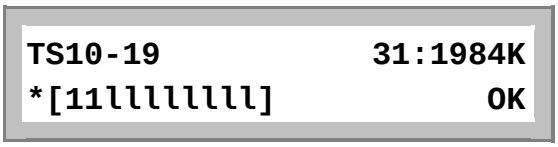
Framing:

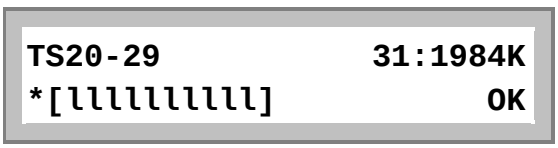
Code:

Time Slots:

Here "i" (eye, idle) means TS that cannot be used for transmission of any data; "1" (one) means active TS carrying customer data; "X" means TS available for customer data, but not in active use.







```
Time Slots
TS30-31
```

```
TS30-31          31:1984K
*[ll]                 OK
```

5.2.3.1 Slave E1

Slave E1 menu is used to configuration the framing and code of the Slave/E1. Press ENTER to configure it.

```
Configuration
Slave E1
```

Framing:

```
Slave E1
Slave E1 Framing
```

```
Slave Framing
*CRC-OFF
```

```
Slave Framing
*CRC-ON
```

```
Slave Framing
*UNFRAME
```

```
Slave Framing
*CAS-CRC-OFF
```

```
Slave Framing
*CAS-CRC-ON
```

Code:

```
Slave E1
Slave Code
```

```
Slave Code
*HDB3
```

Time Slots:

```
Slave E1
Slave Time Slots
```

5.2.3.2 Line Rate

To change the line rate, use left and right arrow key cycle through to the desired selection and press ENTER.

```
Configuration
Line Rate
```

The line rate choices are 200, 264, 392, 520, 776, 1032, 1160, 1544, and 2056 Kbps.

NOTE: Each rate is n x 64 + 8 Kbps.

```
Line Rate
*1160Kbps
```

5.2.3.3 Loop Number

Under Configuration menu, use arrow keys to select Loop Num option, which supports 1 pair and 2 pairs.

```
Configuration
Loop Num
```

Press ENTER from the above menu. Use arrow keys to select one desired number from these options: Two Loops, Loop-One, Loop-Two, and One + One. Then press ENTER after finishing the selection. The current selection will be highlighted by an asterisk (*).

When 1 pair is used, user can select Loop-One or Loop-Two as the active Loop.

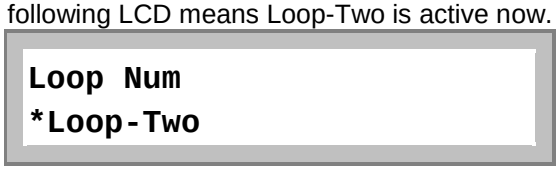
1 pair: Loop-One

```
Configuration
Loop Num
```

The following LCD means Loop-One is active now.

1 pair: Loop-Two

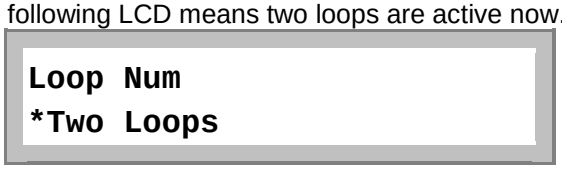
The following LCD means Loop-Two is active now.



When 2 pairs are used, user can select Two Loops used together or One + One protection.

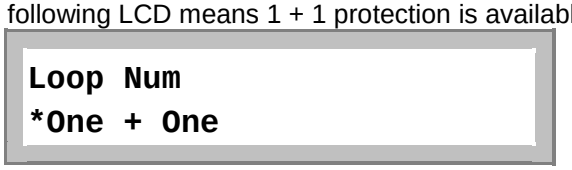
2 pairs: Two-Loops

The following LCD means two loops are active now.



2 pairs: One + One

The following LCD means 1 + 1 protection is available now.



5.2.3.4 Baud Rate

Under Configuration menu, use arrow keys to select Baud Rate option. Two options, 9600 or 19200 are available. Move the cursor to the desired option, then press ENTER to confirm the selection. The current selection will be highlighted by an asterisk (*).

```
Configuration
Baud Rate
```

```
Baud Rate
*9600
```

```
Baud Rate
 19200
```

5.2.3.5 Adaptive Line Rate

Under Configuration menu, use arrow keys to select Adaptive Rate option, press ENTER to enter into its submenu. This menu is used to enable or disable adaptive line rate.

NOTE: When "Adaptive Rate" is enabled, users are not allowed to set up "Line Rate". See also blew LCD screens.

```
Configuration
Adaptive Rate
```

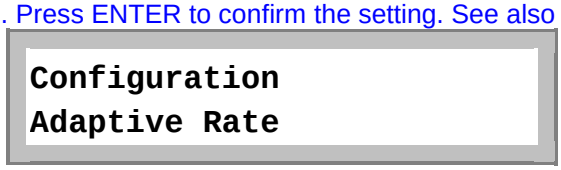
```
Adaptive Rate
*ENABLE
```

Press ESC to exit the "Adaptive Rate" menu, and use arrow keys to select "Line Rate" menu. Press ENTER to enter into its submenu to display the current line rate setting.

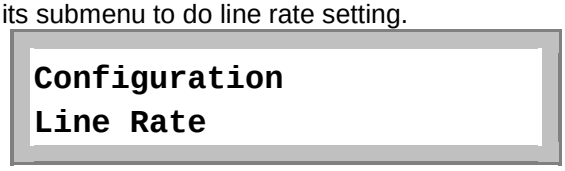
```
Configuration
Line Rate
```

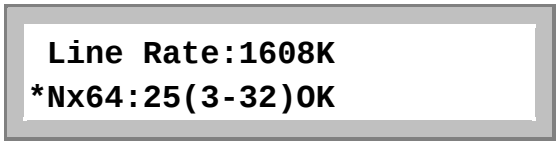
```
 Line Rate:1608K
 Nx64:25
```

NOTE: When "Adaptive Rate" is disabled, users are allowed to set up "Line Rate". An asterisk (*) will show in front of "NX64:25(3-32) OK". Use arrow keys to select a desired number, then move the cursor at "OK". Press ENTER to confirm the setting. See also blew LCD screens.



Press ESC to exit the "Adaptive Rate" menu, and use arrow keys to select "Line Rate" menu. Press ENTER to enter into its submenu to do line rate setting.





5.3 Alarm

The alarm menu allows the user to view the latest alarm. Alarm group includes Alarm Queue, Alarm History, Alarm Clear, Alarm Setup, and Alarm Cut Off. Alarm menu is used to view alarm queue and alarm history, to clear alarm queue, and alarm history, alarm cut off, as well as setup alarm threshold, etc. as in the following paragraph.

```
xDSL-E1-MASTER
Alarm
```

5.3.1 Alarm Queue

The alarm queue is a consolidation of the latest 40 alarms from all of the Loop-H plug-in cards. When the queue is full, the earliest one is replaced by the latest one.The user can select one of latest alarms.

```
Alarm
Alarm Queue
```

When the item QUEUE is first selected, the latest alarm will be displayed.

```
01 LOS,M-L1
08:09:10 04/16
```

```
21 SES24H, M-L1
08:09:10 04/16
```

5.3.2 Alarm History

Alarm History menu is used to view alarm history. Under Alarm menu, use left or right key to select Alarm History menu.

```
Alarm
Alarm History
```

```
LOS, M-L1
DISABLE 0
```

```
LOS, M-L1
ENABLE ALM 1
```

```
SES24H, M-L1
DISABLE 0
```

```
SES24H, M-L1
ENABLE 0
```

Alarm History menu shows the alarm history of various type of alarm. To view alarm history, use left or right arrow key to cycle through and the alarm history is shown.

5.3.3 Alarm Clear

Alarm Clear menu is used to clear alarm queue and history. Under Alarm menu, use left or right key to select Alarm Clear menu.

```
Alarm
Alarm Clear
```

At this menu, press ENTER to confirm clear alarm queue and history. Otherwise press ESC to exit without any action.

```
Alarm
Confirm ?
```

```
Alarm Clear
Clearing...OK
```

5.3.4 Alarm Setup

Alarm Setup menu is used to set up the threshold level of each alarm type. Some type of alarm does not have threshold level. Under Alarm menu, use left or right key to select Alarm Setup menu.

```
Alarm
Alarm Setup
```

5.3.4.1 Alarm Type

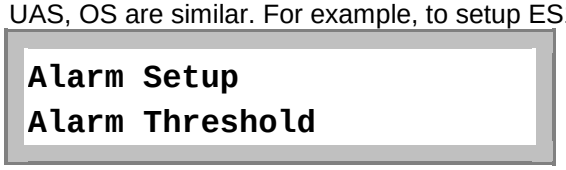
Alarm Type menu is used to disable or enable the alarm type of M-L1.

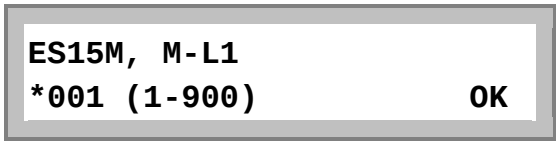
```
Alarm Setup
Alarm Type
```

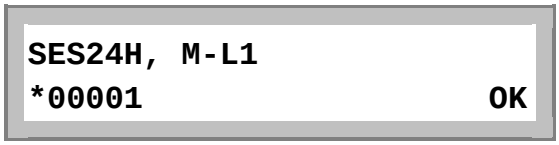
```
Alarm Type
LOS,M-L1
```

5.3.4.2 Alarm Threshold

To setup ES, UAS, OS are similar. For example, to setup ES15M, M-L1 threshold level and press ENTER.



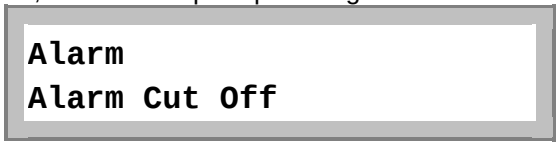


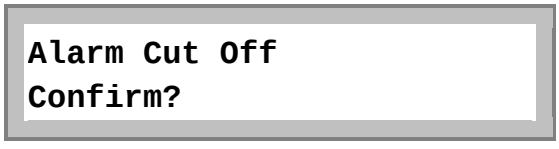


To change threshold level of ES (or others), use left or right arrow key to cycle through to the digit position, and press ENTER key to cycle through the number. This operation must be concluded by moving left or right arrow key to OK position and press ENTER to enable the changes.

5.3.5 Alarm Cut Off

To cut off alarm, enter "A". A prompt asking for action is shown.





```
Alarm Cut Off
AC0...OK
```

5.4 Diagnostics Menu

Diagnostics group includes xDSL Loopback, E1 Loopback, Slave Loopback, BERT. If a xDSL loopback is in session, the front panel SYNC/TEST LED flashes green. If a E1 Loopback is in session, the front panel TEST LED flashes green.

```
xDSL-E1-MASTER
Diagnostics
```

5.4.1 xDSL Loopback Menu

Loopback menus are used to control near end xDSL line side loopback operation such TO-E1 and TO-LINE loopback test. Under Diagnostics menu, use left or right key to select xDSL Loopback menu.

```
Diagnostics
xDSL Loopback
```

```
xDSL Loopback
*OFF
```

```
xDSL Loopback
 TO-E1
```

```
xDSL Loopback
 TO-LINE
```

To select a loopback type, use left or right arrow key to cycle through to a desired selection and press ENTER. Select OFF to end the loopback test.

5.4.2 E1 Loopback Menu

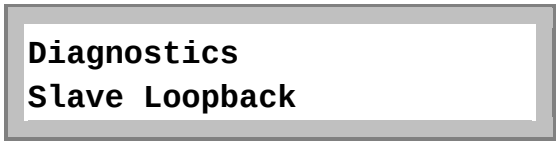
E1 loopback menu used to control E1 loopback. Under Diagnostics menu, use left or right key to select E1 Loopback menu.

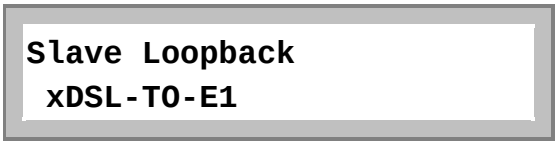
```
Diagnostics
E1 Loopback
```

To select a loopback type, use left or right arrow key to cycle through to a desired selection and press ENTER. Select OFF to end the loopback test.

5.4.3 Slave Loopback Menu

Slave Loopback is used to activate slave loopback test. A proprietary message is sent to request the remote Loop-H to perform Line or E1 loopback. Under Diagnostics menu, use left or right key to select Slave Loopback menu.





To activate slave loopback, use left or right arrow key cycle through to a desired selection and press ENTER. To deactivate slave loopback, select OFF.

5.4.4 BERT

After the loopback is in place, BERT test can be performed. Select BERT menu to start the bit error rate test.

```
Diagnostics
BERT
```

```
BERT
*OFF
```

```
BERT
 QRSS
```

5.5 Performance

PERF shows the performance information about the Reset Performance, Master Loop-1, Loop-2, and E1 Performance, Slave Loop-1, Loop-2, and E1 Performance. The current 24 hours data are recorded in performance register.

```
xDSL-E1-MASTER
Performance
```

5.5.1 Reset Performance

Reset Performance menu is used to clear all Loop-H performance status report. Under Performance menu, use left or right key to select Reset Performance menu.

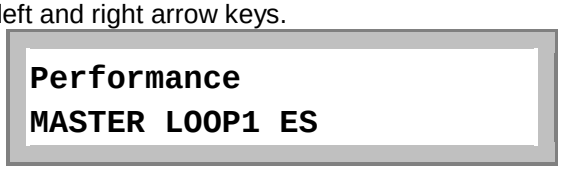
At this menu, press ENTER to confirm clear all performance status report. Otherwise press ESC to exit without any action.

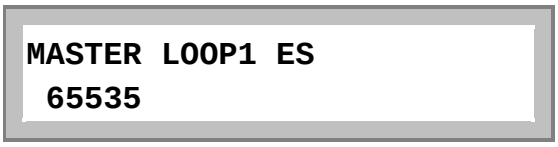
```
Performance
Reset Perf.
```

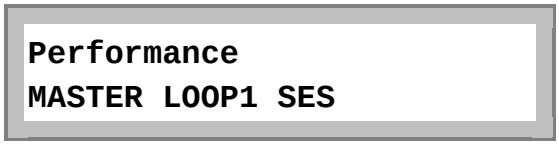
```
Reset Perf.
Corfirm?
```

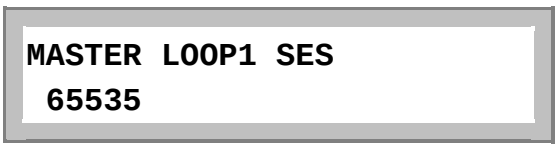
5.5.2 Master Loop1, Loop2 and E1 ES/SES/UAS Performance

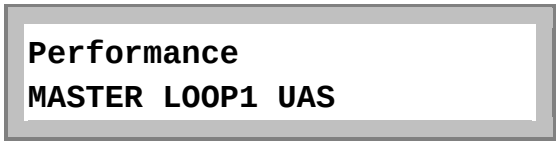
Under Performance menu, you could select ES, SES, and UAS Performance menu for Loop1, Loop2, and E1 by using left and right arrow keys.

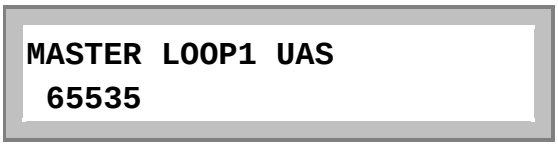


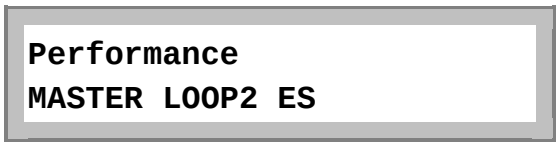


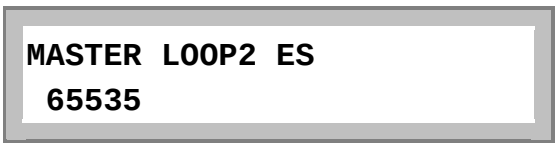


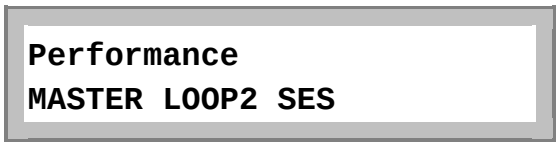


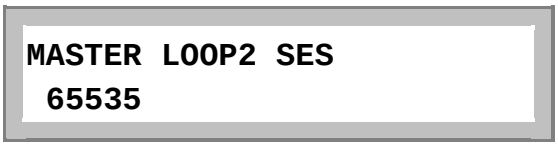


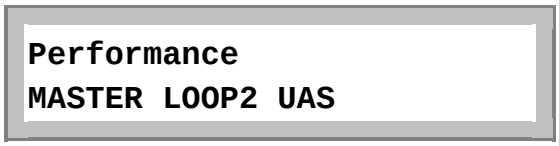


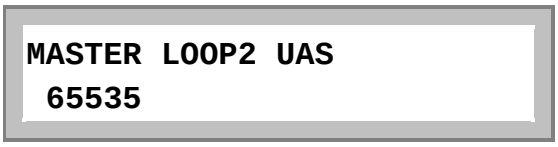






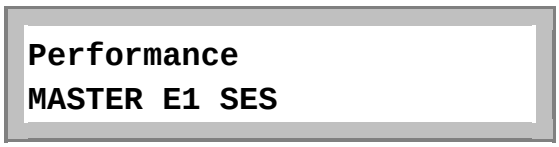

MASTER LOOP2 SES
65535


Performance
MASTER LOOP2 UAS


MASTER LOOP2 UAS
65535


Performance
MASTER E1 ES


MASTER E1 ES
65535


Performance
MASTER E1 SES

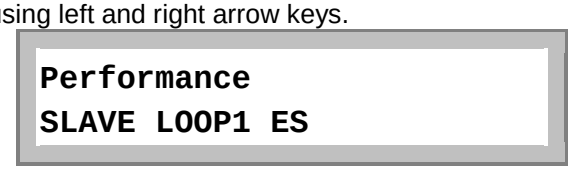

MASTER E1 SES
65535

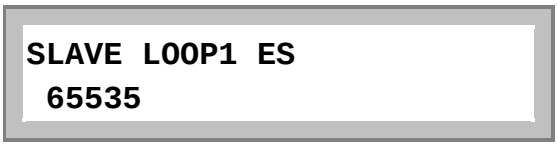

Performance
MASTER E1 UAS

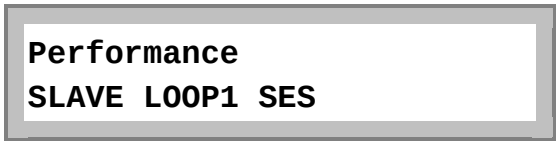

MASTER E1 UAS
65535

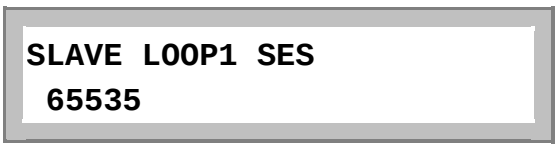
5.5.3 Slave Loop1, Loop2 and E1 ES/SES/UAS Performance

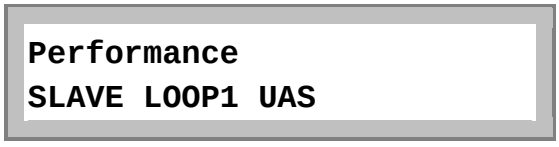
Under Performance menu, you could select slave ES, SES, and UAS Performance menu for Loop1, Loop2, and E1 by using left and right arrow keys.

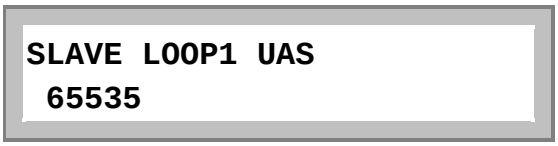


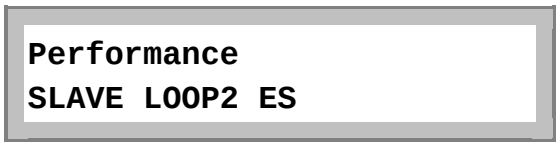


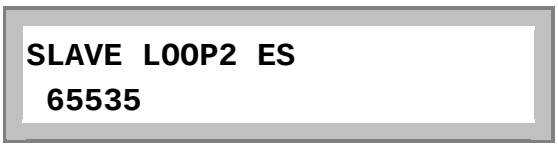


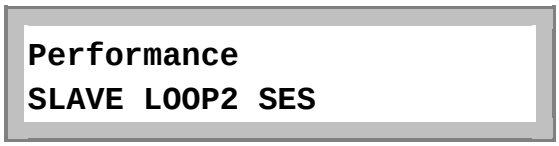


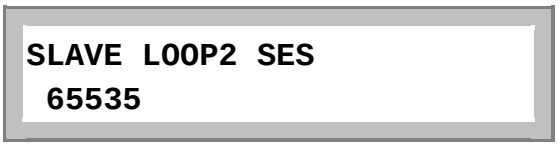


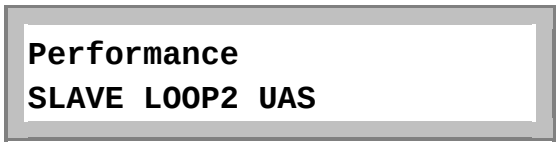


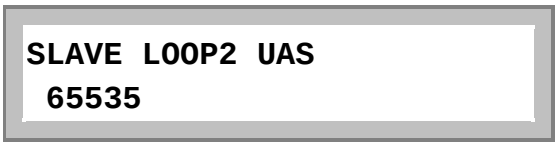






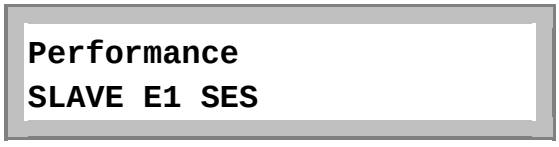

SLAVE LOOP2 SES
65535


Performance
SLAVE LOOP2 UAS

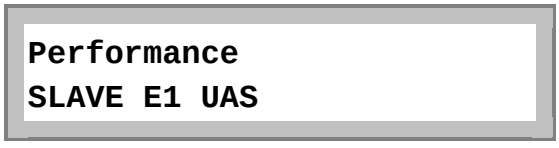

SLAVE LOOP2 UAS
65535

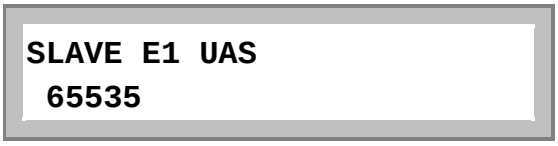

Performance
SLAVE E1 ES


SLAVE E1 ES
65535


Performance
SLAVE E1 SES


SLAVE E1 SES
65535

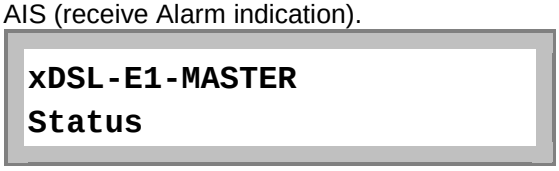

Performance
SLAVE E1 UAS

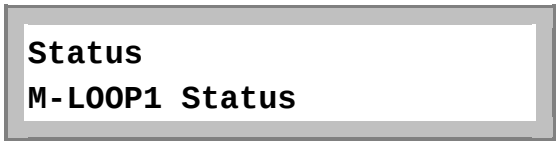

SLAVE E1 UAS
65535

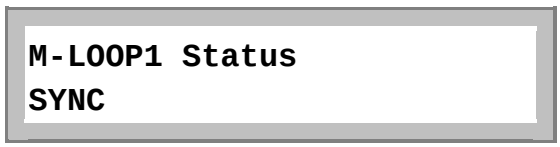
5.6 Status

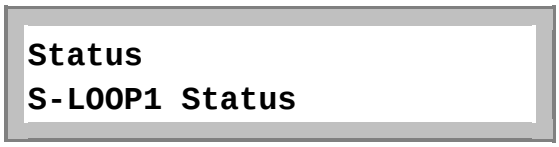
STATUS is to show the various statuses of the local or slave xDSL loops (LINE) and local or slave E1.

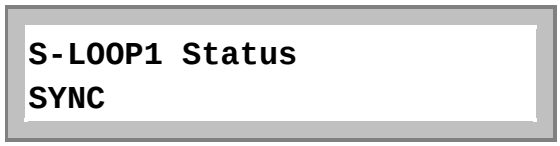
The status is shown as normal if the interface is not experienced any problem. Otherwise, the problem is shown. The possible problems are LOS (loss of signal), LOF (loss of framing), RAI (receive remote alarm information), AIS (receive Alarm indication).

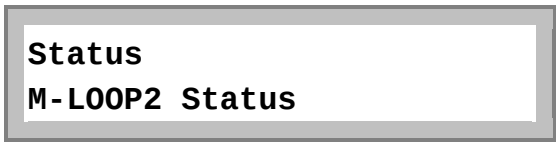


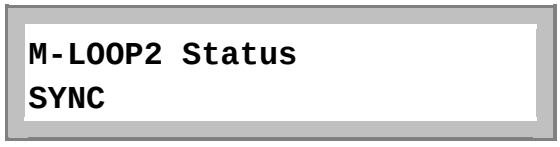


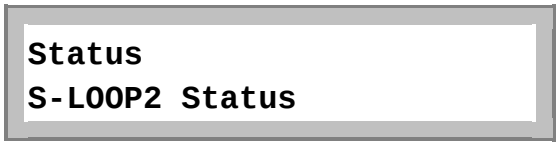


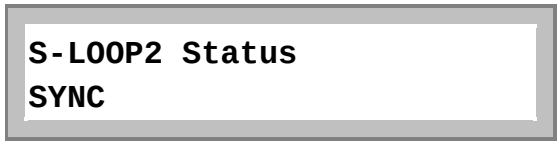


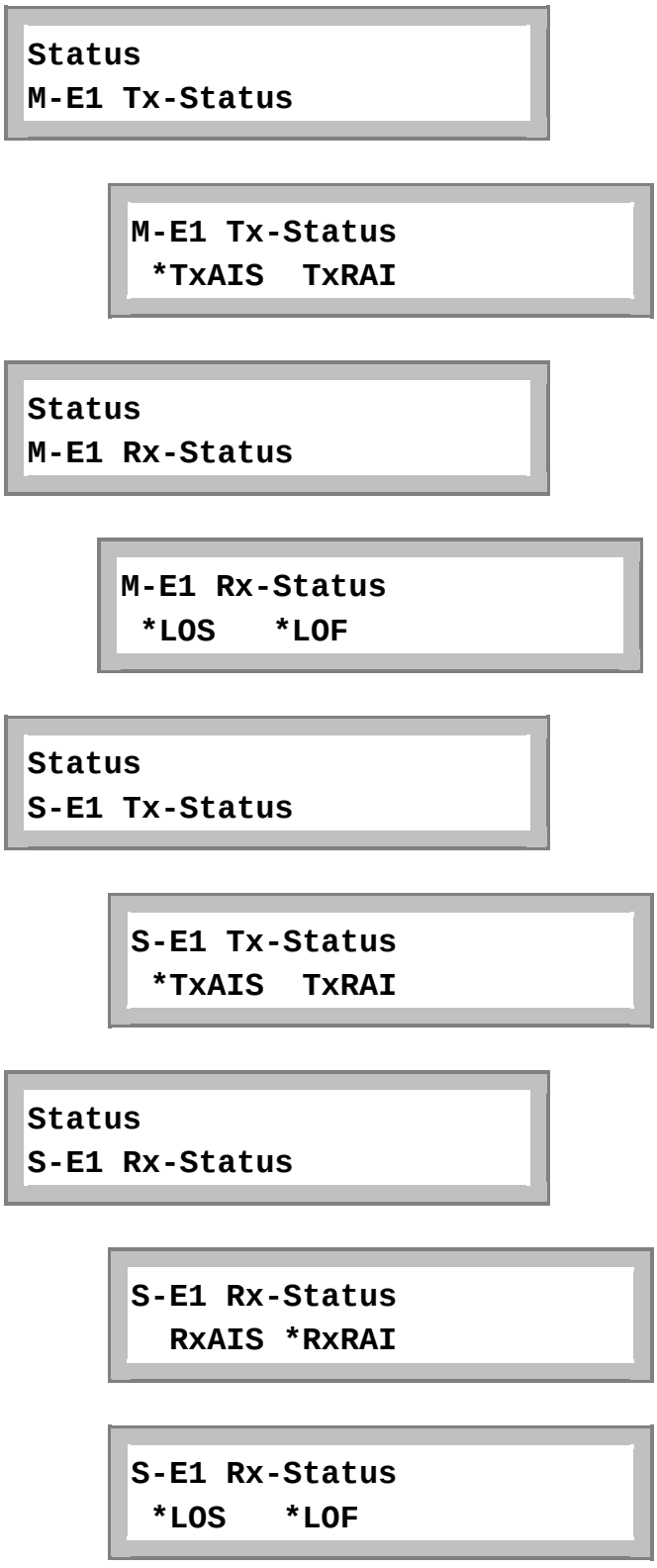






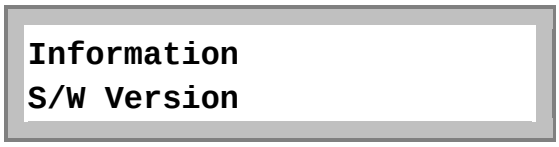


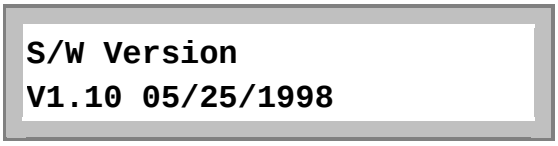



Status
M-E1 Tx-Status
M-E1 Tx-Status
*TxAIS TxRAI
Status
M-E1 Rx-Status
M-E1 Rx-Status
*LOS *LOF
Status
S-E1 Tx-Status
S-E1 Tx-Status
*TxAIS TxRAI
Status
S-E1 Rx-Status
S-E1 Rx-Status
RxAIS *RxRAI
S-E1 Rx-Status
*LOS *LOF

5.7 Information

The Information item provides software and hardware version number, and serial number of the Loop-H unit. Modifications are not allowed.



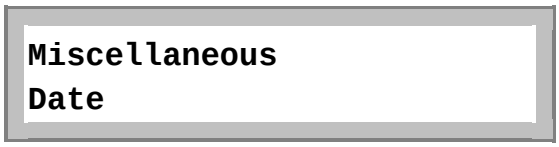


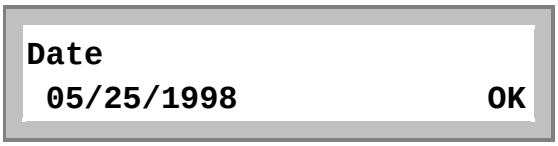
5.8 Miscellaneous

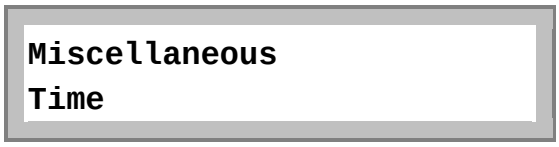
The miscellaneous group includes the date and information items.

To modify the date and time, first move cursor to the date and time digit on the first-line. Press ENTER. Then move cursor to the desired number on the second line. Press ENTER. Move the cursor to YES, then ENTER, to start the new date. Use ESCAPE key to abort the changes.

The system information includes the software release version and date, and the serial number.







5.8.1 Lock Front Panel

Lock menu is used to control LCD panel operation. Normally, front panel can provide configuration change capability. If the "menu lock" is enabled, configuration change is allowed only with a password. Without a password, users still can operate front panel to obtain the configuration information and line status. However, no modification is allowed. This function is linked with the password enable function of the terminal operation, i.e. the password enabled in the terminal operation will lock the front panel as well.

When enabled, for some operations, users have to enter the password correctly. Use left or right arrows (<>) to pick the character. There are 66 characters to choose from. Password modification can only be done using terminal operation. The default password is LOOP.

```
Lock front panel
*ENABLE
```

```
Lock front panel
*DISABLE
```

5.8.2 Password Setup

To enable the password, select "ENABLE". The previous entered password is used. The password itself is not case sensitive. If you want to select your own password, select "CHANGE". A prompt asking the original password and new password are shown.

```
PW:_____OK
0123456789ABCDEF
```

```
PW:_____OK
GHIJKLMNOPQRSTUV
```

```
PW:_____OK
WXYZ!"#$%&'()*+,
```

```
PW:_____OK
-./:;<=>?@[]^_`{
```

```
PW:_____OK
|}
```

6 T1 Front Panel Operation

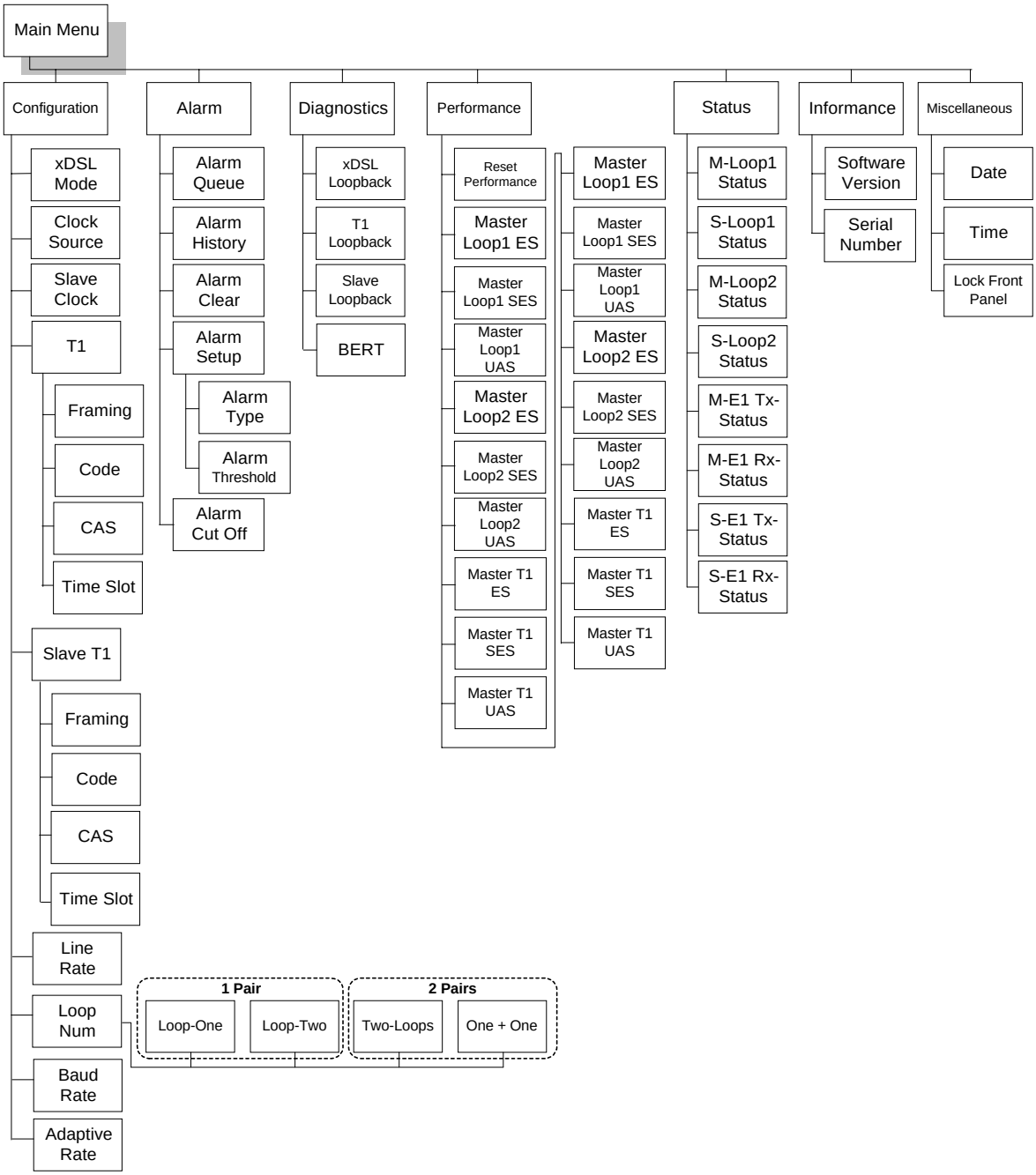


Figure 6- 1 LCD Menu Tree – T1

6.1 Main Menu

The main menu, the first menu displayed after power up, is shown below, where the underlined character indicates flashing display, meaning that this item is selected by default unless the user presses the right or left arrow keys.

6.2 Configuration Menu

Configuration group includes xDSL mode, clock source, slave clock, T1, slave T1, line rate.

```
xDSL-T1-MASTER
Configuration
```

6.2.1 xDSL Mode

Mode can be master or slave. For each pair of connected Loop-H, one must be master and the other slave.

The Slave mode Loop-H can only be synchronized to the master through the line. To change the mode to master or slave, use left and right arrow key cycle through to the desired selection and press ENTER. The current selection is indicated by "*".

```
Configuration
xDSL Mode
```

```
xDSL Mode
*MASTER
```

```
xDSL Mode
 SLAVE
```

6.2.2 Clock Source

Clock source group includes LINE, INTERNAL, T1 and Slave Clock. Press ENTER to change the clock source to LINE, INTERNAL, T1, and Slave Clock. For the mode selected, if an invalid clock is selected, the command will be ignored.

```
Configuration
Clock Source
```

```
Clock Source
*LINE
```

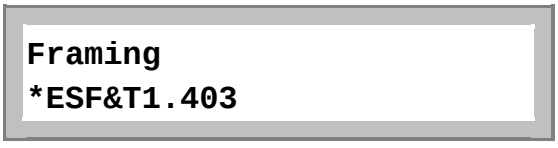
```
Clock Source
 INTERNAL
```

```
Clock Source
 T1
```

6.2.3 T1 Menu

T1 menu is used to configuration the framing and code of the T1. Press ENTER to configure it.

Framing:

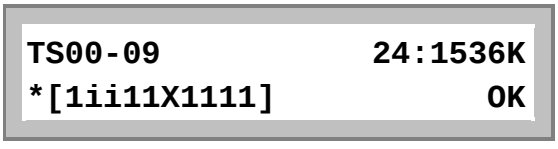


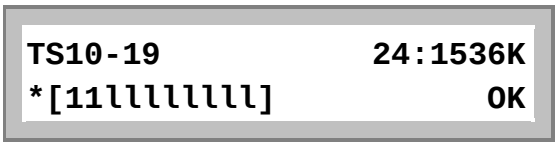
Code:

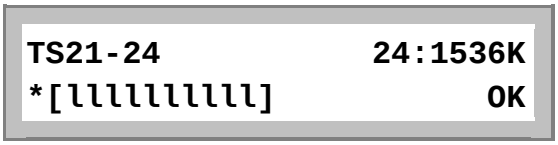
CAS:

Time Slots:

Here "i" (eye, idle) means TS that cannot be used for transmission of any data; "1" (one) means active TS carrying customer data; "X" means TS available for customer data, but not in active use.



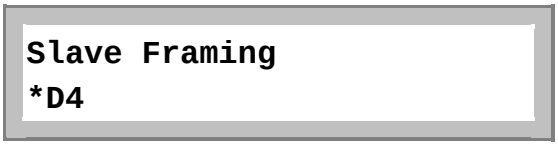


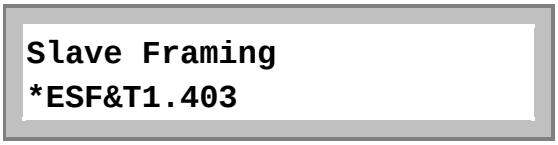


6.2.3.1 Slave T1

Slave T1 menu is used to configuration the framing and code of the Slave/T1. Press ENTER to configure it.

Framing:





Code

```
Slave Code
*B8ZS
```

```
Slave Code
AMI
```

CAS:

```
Slave T1
Slave CAS
```

```
Slave CAS
*ON
```

```
Slave CAS
 OFF
```

Time Slots:

```
Slave T1
Slave Time Slots
```

6.2.3.2 Line Rate

To change the line rate, use left and right arrow key cycle through to the desired selection and press ENTER.

```
Configuration
Line Rate
```

The line rate choices are 200, 264, 392, 520, 776, 1032, 1160, 1544, and 2056 Kbps.

NOTE: Each rate is n x 64 + 8 Kbps.

```
Line Rate
*1160Kbps
```

6.2.3.3 Loop Number

Under Configuration menu, use arrow keys to select Loop Num option, which supports 1 pair and 2 pairs.

```
Configuration
Loop Num
```

Press ENTER from the above menu. Use arrow keys to select one desired number from these options: Two Loops, Loop-One, Loop-Two, and One + One. Then press ENTER after finishing the selection. The current selection will be highlighted by an asterisk (*).

When 1 pair is used, user can select Loop-One or Loop-Two as the active Loop.

1 pair: Loop-One

```
Configuration
Loop Num
```

The following LCD means Loop-One is active now.

```
Loop Num
*Loop-One
```

1 pair: Loop-Two

```
Configuration
Loop Num
```

The following LCD means Loop-Two is active now.

```
Loop Num
*Loop-Two
```

When 2 pairs are used, user can select Two Loops used together or One + One protection.

2 pairs: Two-Loops

```
Configuration
Loop Num
```

The following LCD means two loops are active now.

```
Loop Num
*Two Loops
```

2 pairs: One + One

```
Configuration
Loop Num
```

The following LCD means 1 + 1 protection is available now.

```
Loop Num
*One + One
```

6.2.3.4 Baud Rate

Under Configuration menu, use arrow keys to select Baud Rate option. Two options, 9600 or 19200 are available. Move the cursor to the desired option, then press ENTER to confirm the selection. The current selection will be highlighted by an asterisk (*).

```
Configuration
Baud Rate
```

```
Baud Rate
*9600
```

```
Baud Rate
 19200
```

6.2.3.5 Adaptive Line Rate

Under Configuration menu, use arrow keys to select Adaptive Rate option, press ENTER to enter into its submenu. This menu is used to enable or disable adaptive line rate.

NOTE: When "Adaptive Rate" is enabled, users are not allowed to set up "Line Rate". See also blew LCD screens.

```
Configuration
Adaptive Rate
```

```
Adaptive Rate
*ENABLE
```

Press ESC to exit the "Adaptive Rate" menu, and use arrow keys to select "Line Rate" menu. Press ENTER to enter into its submenu to display the current line rate setting.

```
Configuration
Line Rate
```

```
Line Rate:1608K
Nx64:25
```

NOTE: When "Adaptive Rate" is disabled, users are allowed to set up "Line Rate". An asterisk (*) will show in front of "NX64:25(3-32) OK". Use arrow keys to select a desired number, then move the cursor at "OK". Press ENTER to confirm the setting. See also blew LCD screens.

```
Configuration
Adaptive Rate
```

```
Adaptive Rate
*DISABLE
```

Press ESC to exit the "Adaptive Rate" menu, and use arrow keys to select "Line Rate" menu. Press ENTER to enter into its submenu to do line rate setting.

```
Configuration
Line Rate
```

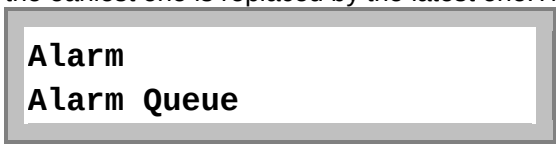
```
Line Rate:1608K
*Nx64:25(3-32)OK
```

6.3 Alarm

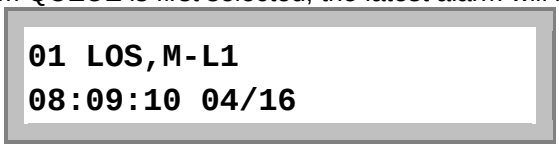
The alarm menu allows the user to view the latest alarm. Alarm group includes Alarm Queue, Alarm History, Alarm Clear, Alarm Setup, and Alarm Cut Off. Alarm menu is used to view alarm queue and alarm history, to clear alarm queue, and alarm history, alarm cut off, as well as setup alarm threshold, etc. as in the following paragraph.

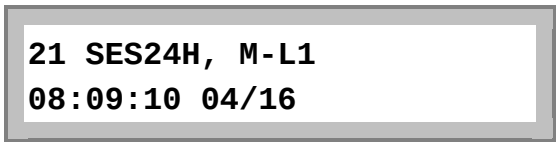
6.3.1 Alarm Queue

The alarm queue is a consolidation of the latest 40 alarms from all of the Loop-H plug-in cards. When the queue is full, the earliest one is replaced by the latest one.The user can select one of latest alarms.



When the item QUEUE is first selected, the latest alarm will be displayed.





6.3.2 Alarm History

Alarm History menu is used to view alarm history. Under Alarm menu, use left or right key to select Alarm History menu.

```
Alarm
Alarm History
```

```
LOS, M-L1
DISABLE 0
```

```
LOS, M-L1
ENABLE ALM 1
```

```
SES24H, M-L1
DISABLE 0
```

```
SES24H, M-L1
ENABLE 0
```

Alarm History menu shows the alarm history of various type of alarm. To view alarm history, use left or right arrow key to cycle through and the alarm history is shown.

6.3.3 Alarm Clear

Alarm Clear menu is used to clear alarm queue and history. Under Alarm menu, use left or right key to select Alarm Clear menu.

```
Alarm
Alarm Clear
```

At this menu, press ENTER to confirm clear alarm queue and history. Otherwise press ESC to exit without any action.

```
Alarm
Confirm ?
```

```
Alarm Clear
Clearing...OK
```

6.3.4 Alarm Setup

Alarm Setup menu is used to set up the threshold level of each alarm type. Some type of alarm does not have threshold level. Under Alarm menu, use left or right key to select Alarm Setup menu.

```
Alarm
Alarm Setup
```

6.3.4.1 Alarm Type

Alarm Type menu is used to disable or enable the alarm type of M-L1.

```
Alarm Setup
Alarm Type
```

```
Alarm Type
LOS,M-L1
```

```
LOS,M-L1
*DISABLE
```

```
LOS,M-L1
 ENABLE
```

6.3.4.2 Alarm Threshold

To setup ES, UAS, OS are similar. For example, to setup ES15M, M-L1 threshold level and press ENTER.

```
Alarm Setup
Alarm Threshold
```

```
Threshold
LOS, M-L1
```

```
ES15M, M-L1
*001 (1-900)          OK
```

```
Threshold
SES24H, M-L1
```

```
SES24H, M-L1
*00001                    OK
```

To change threshold level of ES (or others), use left or right arrow key to cycle through to the digit position, and press ENTER key to cycle through the number. This operation must be concluded by moving left or right arrow key to OK position and press ENTER to enable the changes.

6.3.5 Alarm Cut Off

To cut off alarm, enter "A". A prompt asking for action is shown.

```
Alarm
Alarm Cut Off
```

```
Alarm Cut Off
Confirm?
```

```
Alarm Cut Off
AC0...OK
```

6.4 Diagnostics Menu

Diagnostics group includes xDSL Loopback, T1 Loopback, Slave Loopback, BERT. If a xDSL loopback is in session, the front panel SYNC/TEST LED flashes green. If a T1 Loopback is in session, the front panel TEST LED flashes green.

```
xDSL-T1-MASTER
Diagnostics
```

6.4.1 xDSL Loopback Menu

Loopback menus are used to control near end xDSL line side loopback operation such TO-T1 and TO-LINE loopback test. Under Diagnostics menu, use left or right key to select xDSL Loopback menu.

```
Diagnostics
xDSL Loopback
```

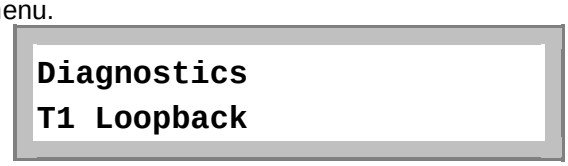
```
xDSL Loopback
*OFF
```

```
xDSL Loopback
 TO-T1
```

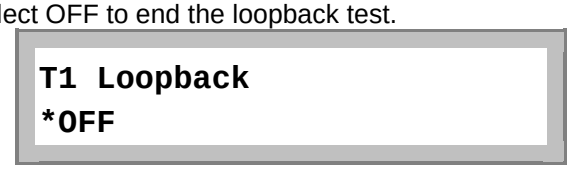
To select a loopback type, use left or right arrow key to cycle through to a desired selection and press ENTER. Select OFF to end the loopback test.

6.4.2 T1 Loopback Menu

T1 loopback menu used to control T1 loopback. Under Diagnostics menu, use left or right key to select T1 Loopback menu.

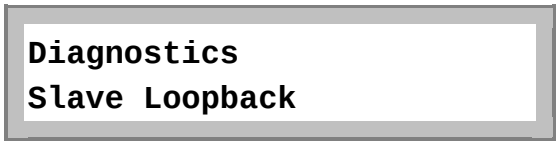


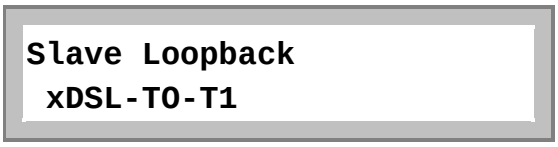
To select a loopback type, use left or right arrow key to cycle through to a desired selection and press ENTER. Select OFF to end the loopback test.



6.4.3 Slave Loopback Menu

Slave Loopback is used to activate slave loopback test. A proprietary message is sent to request the remote Loop-H to perform Line or T1 loopback. Under Diagnostics menu, use left or right key to select Slave Loopback menu.

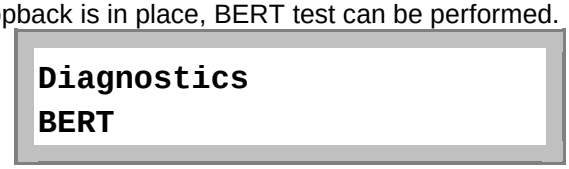




To activate slave loopback, use left or right arrow key cycle through to a desired selection and press ENTER. To deactivate slave loopback, select OFF.

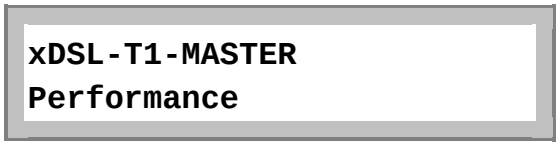
6.4.4 BERT

After the loopback is in place, BERT test can be performed. Select BERT menu to start the bit error rate test.



6.5 Performance

PERF shows the performance information about the Reset Performance, Master Loop-1, Loop-2, and T1 Performance, Slave Loop-1, Loop-2, and T1 Performance. The current 24 hours data are recorded in performance register.



6.5.1 Reset Performance

Reset Performance menu is used to clear all Loop-H performance status report. Under Performance menu, use left or right key to select Reset Performance menu.

At this menu, press ENTER to confirm clear all performance status report. Otherwise press ESC to exit without any action.

```
Performance
Reset Perf.
```

```
Reset Perf.
Corfirm?
```

6.5.2 Master Loop1, Loop2 and T1 ES/SES/UAS Performance

Under Performance menu, you could select ES, SES, and UAS Performance menu for Loop1, Loop2, and T1 by using left and right arrow keys.

```
Performance
MASTER LOOP1 ES
```

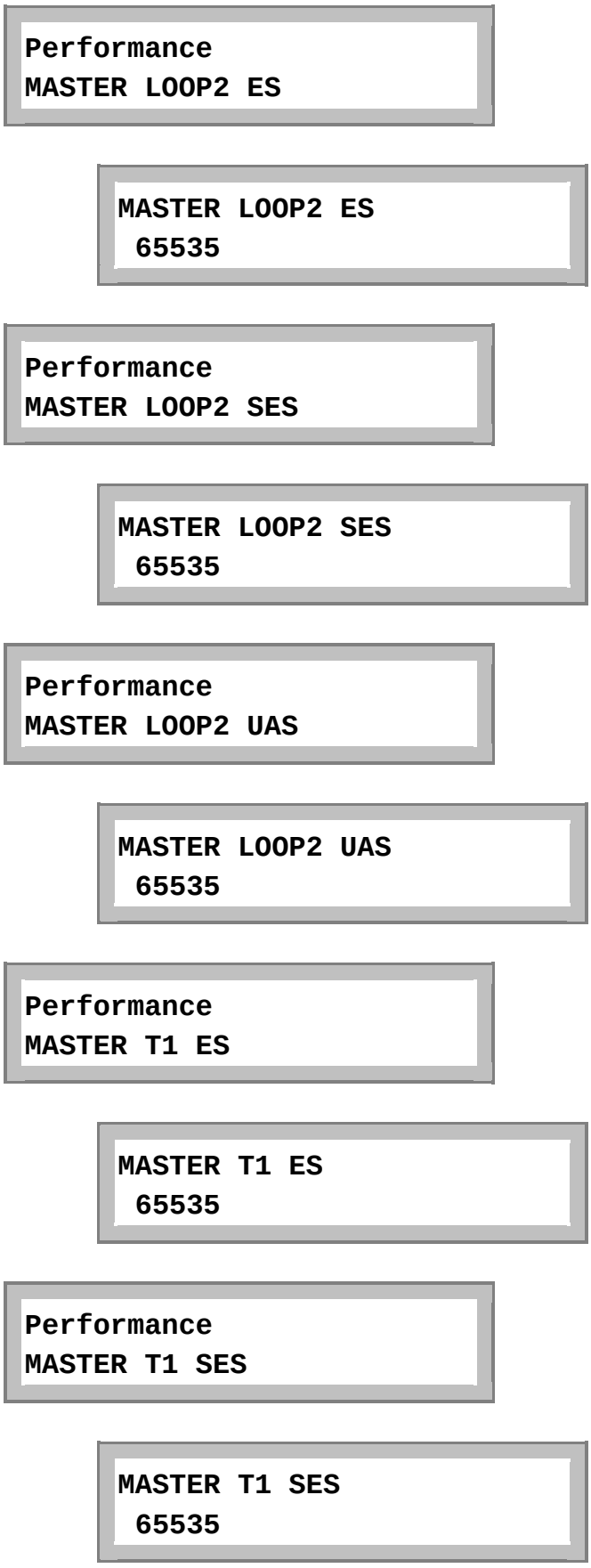
```
MASTER LOOP1 ES
 65535
```

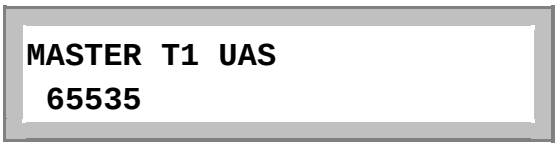
```
Performance
MASTER LOOP1 SES
```

```
MASTER LOOP1 SES
 65535
```

```
Performance
MASTER LOOP1 UAS
```

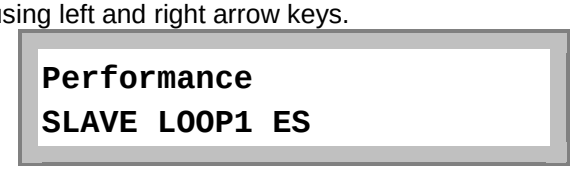
```
MASTER LOOP1 UAS
 65535
```

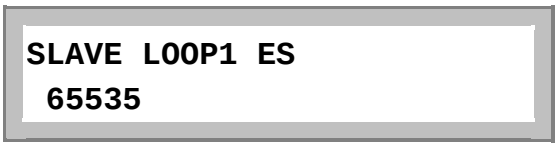

Performance
MASTER LOOP2 ES
MASTER LOOP2 ES
65535
Performance
MASTER LOOP2 SES
MASTER LOOP2 SES
65535
Performance
MASTER LOOP2 UAS
MASTER LOOP2 UAS
65535
Performance
MASTER T1 ES
MASTER T1 ES
65535
Performance
MASTER T1 SES
MASTER T1 SES
65535

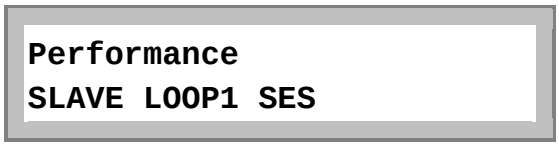


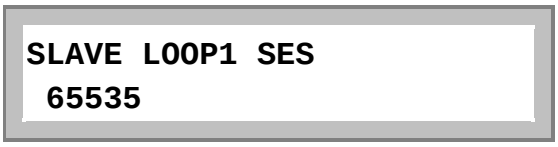
6.5.3 Slave Loop1, Loop2 and T1 ES/SES/UAS Performance

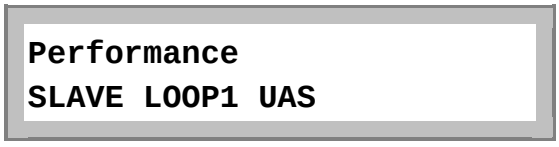
Under Performance menu, you could select slave ES, SES, and UAS Performance menu for Loop1, Loop2, and T1 by using left and right arrow keys.

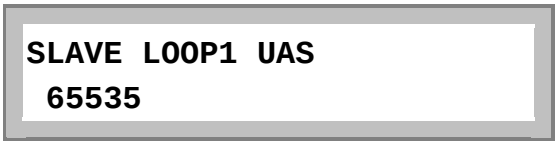


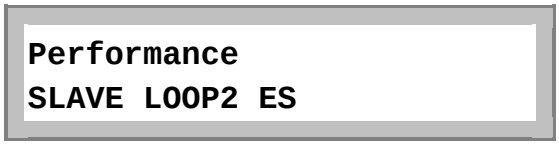


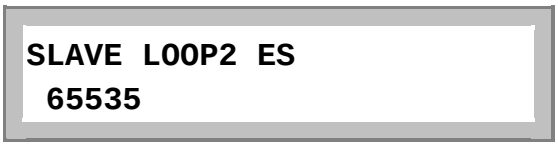


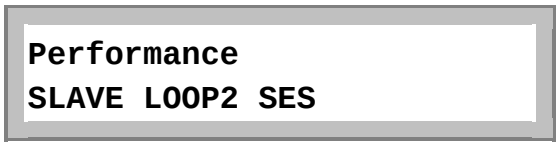


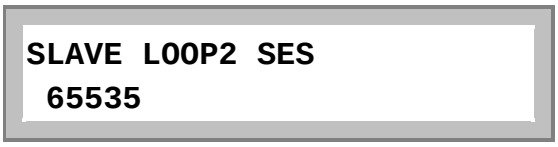


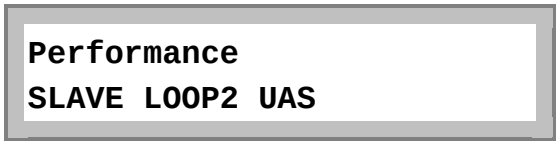


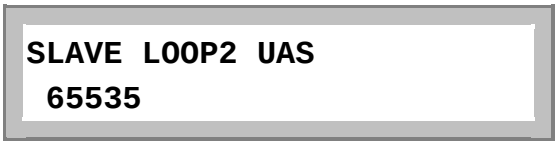



SLAVE LOOP2 ES
65535


Performance
SLAVE LOOP2 SES


SLAVE LOOP2 SES
65535


Performance
SLAVE LOOP2 UAS

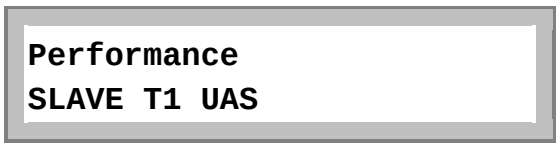

SLAVE LOOP2 UAS
65535


Performance
SLAVE T1 ES


SLAVE T1 ES
65535


Performance
SLAVE T1 SES


SLAVE T1 SES
65535


Performance
SLAVE T1 UAS

```
SLAVE T1 UAS
 65535
```

6.6 Status

STATUS is to show the various statuses of the local or slave xDSL loops (LINE) and local or slave T1. The status is shown as normal if the interface is not experienced any problem. Otherwise, the problem is shown. The possible problems are LOS (loss of signal), LOF (loss of framing), RAI (receive remote alarm information), AIS (receive Alarm indication).

```
xDSL-T1-MASTER
Status
```

```
Status
M-LOOP1 Status
```

```
M-LOOP1 Status
SYNC
```

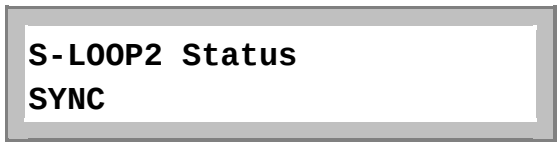
```
Status
S-LOOP1 Status
```

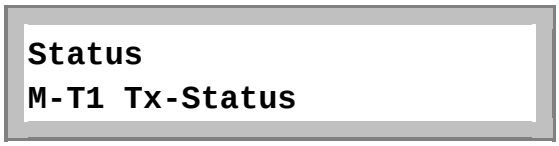
```
S-LOOP1 Status
SYNC
```

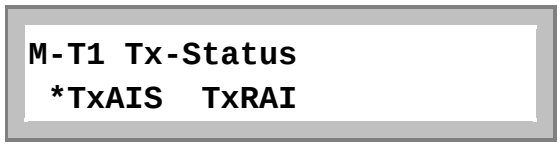
```
Status
M-LOOP2 Status
```

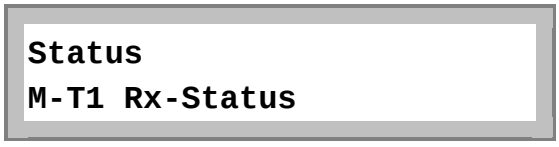
```
M-LOOP2 Status
SYNC
```

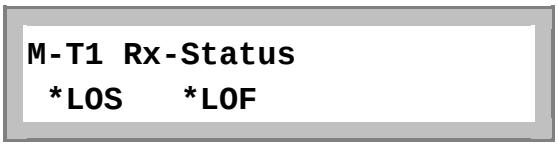
```
Status
S-LOOP2 Status
```

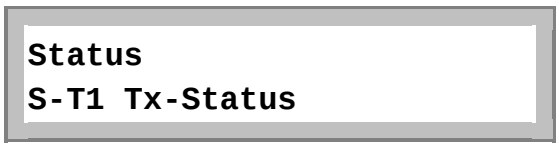

S-LOOP2 Status
SYNC

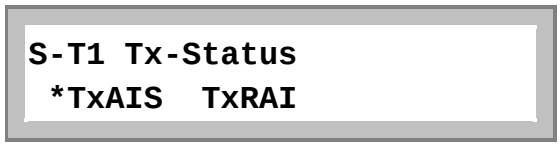

Status
M-T1 Tx-Status

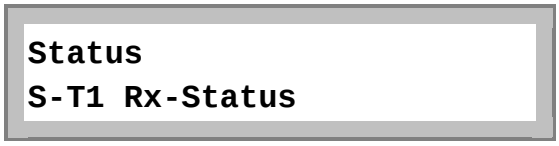

M-T1 Tx-Status
*TxAIS TxRAI

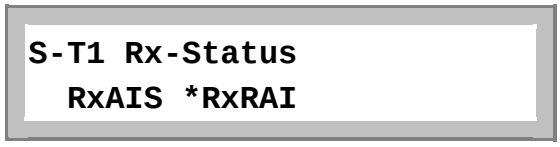

Status
M-T1 Rx-Status

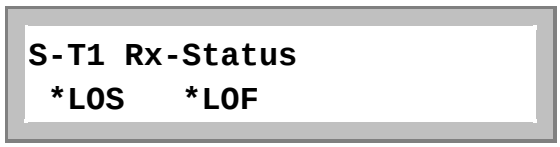

M-T1 Rx-Status
*LOS *LOF


Status
S-T1 Tx-Status


S-T1 Tx-Status
*TxAIS TxRAI

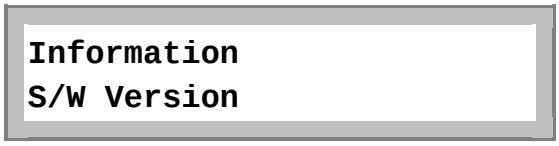

Status
S-T1 Rx-Status

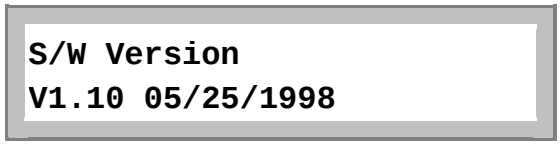

S-T1 Rx-Status
RxAIS *RxRAI


S-T1 Rx-Status
*LOS *LOF

6.7 Information

The Information item provides software and hardware version number, and serial number of the Loop-H unit. Modifications are not allowed.



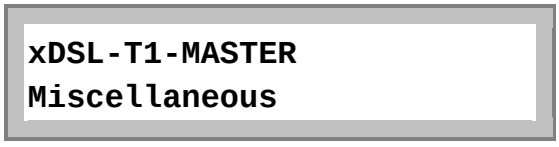


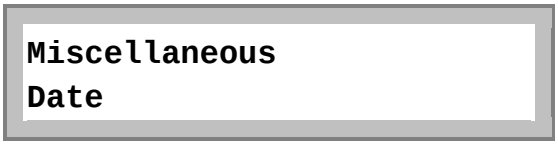
6.8 Miscellaneous

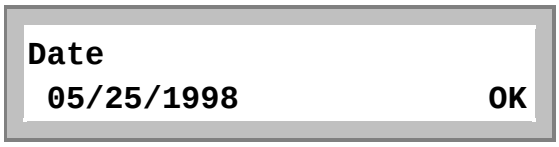
The miscellaneous group includes the date and information items.

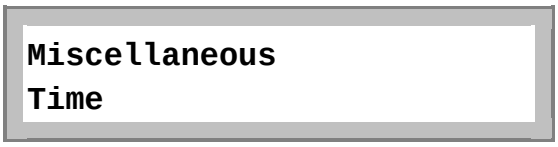
To modify the date and time, first move cursor to the date and time digit on the first-line. Press ENTER. Then move cursor to the desired number on the second line. Press ENTER. Move the cursor to YES, then ENTER, to start the new date. Use ESCAPE key to abort the changes.

The system information includes the software release version and date, and the serial number.









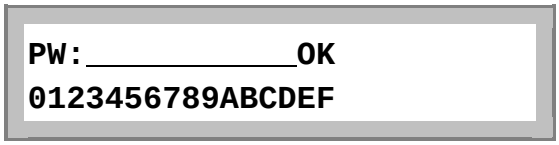
6.8.1 Lock Front Panel

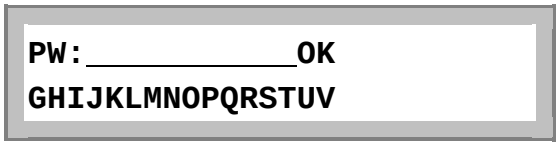
Lock menu is used to control LCD panel operation. Normally, front panel can provide configuration change capability. If the "menu lock" is enabled, configuration change is allowed only with a password. Without a password, users still can operate front panel to obtain the configuration information and line status. However, no modification is allowed. This function is linked with the password enable function of the terminal operation, i.e. the password enabled in the terminal operation will lock the front panel as well.

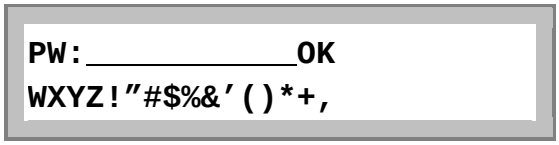
When enabled, for some operations, users have to enter the password correctly. Use left or right arrows (<>) to pick the character. There are 66 characters to choose from. Password modification can only be done using terminal operation. The default password is LOOP.

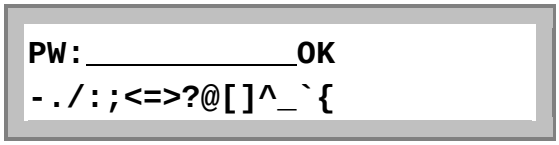
6.8.2 Password Setup

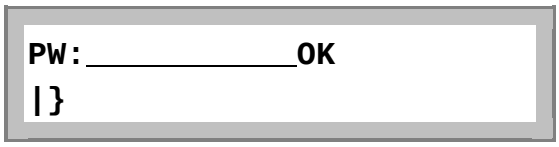
To enable the password, select "ENABLE". The previous entered password is used. The password itself is not case sensitive. If you want to select your own password, select "CHANGE". A prompt asking the original password and new password are shown.











7 Terminal Operations

Using single-character commands and arrow keys, the Loop-H 3300 system can be configured and monitored through the use of a VT100 terminal. The single-character commands are not case sensitive. On each screen, the available commands and the configurable fields are highlighted. Alarm messages are also sent to the supervisory port and are shown blinking on the top of the screen, when they are present. Else, on the upper right of every screen, the sync status is shown. The main menu consists of three groups of commands, Display, Access, and Setup. Initially only Display and Access commands are available. To enable Setup, user has to log on using the "O" command, after which the full screen is shown.

When a VT100 terminal is connected to the RS232 port on the front panel of the HTU-R, upon power up, a main menu is shown.

If password is correctly entered, or if the password option is OFF, the full main menu is shown. Else only the display options are shown.

7.1 Main Menu

7.1.1 For E1 Interface

```
xDSL-E1-MASTER-776K-2         === Main Menu ===             11:34:45 02/26/2002
Serial Number: 1030
Version      : V1 02/22/2002
Start Time   : 11:33:14 02/26/2002
Status       : Loop-1 SYNC IN_SYNC
               Loop-2 SYNC IN_SYNC

[DISPLAY]                                  [SETUP]
C -> System Configuration                  S -> System Setup
I -> System Status                         L -> Loopback and Test
R -> Performance Report                    M -> Alarm Setup
Q -> Alarm Queue                           X -> Clear Alarm Queue
H -> Alarm History                         K -> Clear Performance
U -> Customer Information                  T -> Customer Information Setup
E -> HDSL Information                      P -> Password Setup
                                           B -> Line Rate

[LOG]                                      [MISC]
F -> Log Off [SETUP] and [MISC] Menu       Y -> Load Default Config & Reset
O -> Log On  [SETUP] and [MISC] Menu       Z -> System Reset
                                           A -> Alarm Cut Off
                                           D -> Upgrade Firmware

>> SPACE bar to refresh, or enter a command --->
```

7.1.2 For T1 Interface

```
xDSL-T1-MASTER-776K-1         === Main Menu ===             15:41:00 05/31/2002
Serial Number: 0
Version      : S1.o7 05/31/2002
Start Time   : 15:22:22 05/31/2002
Status       : Loop-1 UNSYNC LOS LOSW OUT_OF_SYNC


[DISPLAY]                                  [SETUP]
C -> System Configuration                  S -> System Setup
I -> System Status                         L -> Loopback and Test
R -> Performance Report                    M -> Alarm Setup
Q -> Alarm Queue                           X -> Clear Alarm Queue
H -> Alarm History                         K -> Clear Performance
U -> Customer Information                  T -> Customer Information Setup
E -> HDSL Information                      P -> Password Setup
                                           B -> Line Rate

[LOG]                                      [MISC]
F -> Log Off [SETUP] and [MISC] Menu       Y -> Load Default Config & Reset
O -> Log On  [SETUP] and [MISC] Menu       Z -> System Reset
                                           A -> Alarm Cut Off
                                           D -> Upgrade Firmware

>> SPACE bar to refresh, or enter a command --->
```

7.2 System Configuration

Press “C” from the main menu to view the system configuration. Move the cursor at a desired option, press ENTER to enter into sub-menu. The current selection will highlighted by an asterisk (*).

```
xDSL-E1-MASTER-776K-2       === System Configuration ===       11:33:15 04/29/2005




>> Select ?   *General Setup       Advance Setup
```

7.2.1 For E1 Interface

```
xDSL-E1-MASTER-776K-2       === General Setup ===          11:33:15 04/29/2005
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS
Line Rate: 776Kbps (2 pairs)
[-------- LOCAL --------]              [------- FAR-END -------]
xDSL MODE     : MASTER                 xDSL MODE     : SLAVE
CLOCK SOURCE  : INTERNAL               CLOCK SOURCE  : LINE
E1 FRAMING    : CRC-ON                 E1 FRAMING    : CRC-ON
E1 CODE       : HDB3                   E1 CODE       : HDB3
E1 Interface  : 120 Ohm Twisted Pair   E1 Interface  : 120 Ohm Twisted Pair

Select 24 Channels from E1 time slots  Select 24 Channels from E1 time slots
to route into xDSL channels:           to route into xDSL channels:
E1 Time Slots :                        E1 Time Slots :
    [i111XXXXXXXXXXXXXXXXXXXiXiiiiii]      [i111XXXXXXXXXXXXXXXXXXiXiiiiii]
xDSL carries E1 time slots as:         xDSL carries E1 time slots as:
   TS 01 02 03 04 05 06 07 08 09 10       TS 01 02 03 04 05 06 07 08 09 10
   TS 11 12 13 14 15 16 17 18 19 20       TS 11 12 13 14 15 16 17 18 19 20
   TS 21 22 23 25                         TS 21 22 23 25


DATE and TIME : 11:33:02 04/29/2005
Baud Rate     :  38400

<< Press ESC key to return to Main Menu >>
```

7.2.2 For T1 Interface

```
xDSL-T1-MASTER-776K-1       === System Setup ===          15:46:31 05/31/2002
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS
Line Rate: 776Kbps (1 pair)
[-------- LOCAL --------]              [------- FAR-END -------]
xDSL MODE     : MASTER                 xDSL MODE     : SLAVE
CLOCK SOURCE  : INTERNAL               CLOCK SOURCE  : LINE
T1 FRAMING    : ESF                    T1 FRAMING    : D4
T1 CODE       : B8ZS                   T1 CODE       : B8ZS
T1 CAS        : OFF                    T1 CAS        : ON
T1 INTERFACE  : LONG-HAUL              Select 12 Channels from T1 time slots
T1 LBO        : 0dB                    to route into xDSL channels:
T1 YEL        : ON                     T1 Time Slots :
T1 INBAND     : OFF                        [i111111111111iiiiiiiiiii]
T1 Time Slots :                        xDSL carries T1 time slots as:
    [i111111111111iiiiiiiiiii]             TS 02 03 04 05 06 07 08 09 10 11
xDSL carries T1 time slots as:             TS 12 13
    TS 02 03 04 05 06 07 08 09 10 11
    TS 12 13



Baud Rate: 9600

<< Press ESC key to return to Main Menu >>
```

7.3 System Status

7.3.1 For E1 Interface

To view the current system status, press " I " from the main menu, then the following screen will show up.

```
xDSL-E1-MASTER-776K-2       === System Status ===           11:35:42 02/26/2002
Line Rate: 776Kbps (2 pairs)
[-------------- MASTER ---------------] [--------------- SLAVE ---------------]
Serial Number: 1030                    Serial Number: 0
[LOOP-1]     [LOOP-2]     [E1]         [LOOP-1]     [LOOP-2]     [E1]
SYNC : YES   SYNC : YES   SYNC : YES    SYNC : YES   SYNC : YES   SYNC : YES
ES   : 1     ES   : 1     ES   : 1      ES   : 1     ES   : 1     ES   : 0
SES  : 0     SES  : 0     SES  : 0      SES  : 0     SES  : 0     SES  : 0
UAS  : 21    UAS  : 15    UAS  : 0      UAS  : 21    UAS  : 15    UAS  : 0
                          TxAIS: NO                               TxAIS: NO
                          TxRAI: NO                               TxRAI: NO
                          RxAIS: NO                               RxAIS: NO
                          RxRAI: NO                               RxRAI: NO
                          LOS  : NO                               LOS  : NO
                          LOF  : NO                               LOF  : NO
[Loopback Status]
xDSL Loopback  : OFF
E1 Loopback    : OFF
Slave Loopback : OFF
BERT           : OFF
Slave BERT     : OFF


<< ESC key to return to Main Menu, SPACE bar to refresh >
```

7.3.2 For T1 Interface

```
xDSL-T1-MASTER-776K-1       === System Status ===           15:43:27 05/31/2002
Line Rate: 776Kbps (1 pair)
[-------------- MASTER ---------------] [--------------- SLAVE ---------------]
Serial Number: 0                       Serial Number: 0
[LOOP-1]           [T1]                [LOOP-1]           [T1]
SYNC : YES         SYNC : NO           SYNC : YES         SYNC : NO
ES   : 2           ES   : 0            ES   : 2           ES   : 0
SES  : 0           SES  : 0            SES  : 0           SES  : 0
UAS  : 833         UAS  : 1260         UAS  : 833         UAS  : 16
                   TxAIS: NO                              TxAIS: NO
                   TxYEL: YES                             TxYEL: YES
                   RxAIS: NO                              RxAIS: NO
                   RxYEL: NO                              RxYEL: NO
                   LOS  : YES                             LOS  : YES
                   LOF  : YES                             LOF  : YES
[Loopback Status]
xDSL Loopback  : OFF
T1 Loopback    : OFF
Slave Loopback : OFF
BERT           : OFF
Slave BERT     : OFF


<< ESC key to return to Main Menu, SPACE bar to refresh >>
```

7.4 Performance Report

7.4.1 For E1 Interface

Press “R” from the main menu to display performance report, the system will show up a prompt asking for selecting a desired location: MASTER-E1, MASTER-L1, MASTER-L2, SLAVE-L1, SLAVE-L2, and SLAVE-E1. Use arrow keys to select an option, press ENTER. The current selection will highlighted by an asterisk (*).

```
xDSL-E1-MASTER-776K-2     === Performance report ===        11:36:10 02/26/2002



>>Location ? *MASTER-E1  MASTER-L1  MASTER-L2  SLAVE-L1  SLAVE-L2  SLAVE-E1
```

After done the selection from the above screen, press ENTER, then the screen for performance report will show.

```
xDSL-E1-MASTER-776K-2     === Performance report ===        11:36:34 02/26/2002

Location: MASTER-E1
Valid Seconds in Current 15-Min Interval : 127 seconds
Valid 15-Min Intervals in Current 24-hour: 0
[15 Minute registers]
         [------ ES ------]      [------ SES -----]      [------ UAS -----]
Current:   1                       0                       0
   1-4 :   .     .     .     .       .     .     .     .       .     .     .     .
   5-8 :   .     .     .     .       .     .     .     .       .     .     .     .
  9-12 :   .     .     .     .       .     .     .     .       .     .     .     .
 13-16 :   .     .     .     .       .     .     .     .       .     .     .     .
 17-20 :   .     .     .     .       .     .     .     .       .     .     .     .
 21-24 :   .     .     .     .       .     .     .     .       .     .     .     .
 25-28 :   .     .     .     .       .     .     .     .       .     .     .     .
 29-32 :   .     .     .     .       .     .     .     .       .     .     .     .

[24 hour registers]
   [Current]    [ 1 ]    [ 2 ]    [ 3 ]    [ 4 ]    [ 5 ]    [ 6 ]    [ 7 ]
ES :       1        .        .        .        .        .        .        .
SES:       0        .        .        .        .        .        .        .
UAS:       0        .        .        .        .        .        .        .

<<TAB to change location, SPACE bar to refresh, ESC to return to Main Menu>>
```

7.4.2 For T1 Interface

```
xDSL-T1-MASTER-776K-1     === Performance report ===        15:43:44 05/31/2002



>>Location ? *MASTER-T1  MASTER-LOOP1  SLAVE-LOOP1  SLAVE-T1
```

```
xDSL-T1-MASTER-776K-1     === Performance report ===        15:43:53 05/31/2002

Location: MASTER-T1
Valid Seconds in Current 15-Min Interval : 387 seconds
Valid 15-Min Intervals in Current 24-hour: 1
[15 Minute registers]
         [------ ES ------]      [------ SES -----]      [------ UAS -----]
Current:   0                       0                     387
   1-4 :   0     .     .     .       0     .     .     .     898     .     .     .
   5-8 :   .     .     .     .       .     .     .     .       .     .     .     .
  9-12 :   .     .     .     .       .     .     .     .       .     .     .     .
 13-16 :   .     .     .     .       .     .     .     .       .     .     .     .
 17-20 :   .     .     .     .       .     .     .     .       .     .     .     .
 21-24 :   .     .     .     .       .     .     .     .       .     .     .     .
 25-28 :   .     .     .     .       .     .     .     .       .     .     .     .
 29-32 :   .     .     .     .       .     .     .     .       .     .     .     .

[24 hour registers]
   [Current]    [ 1 ]    [ 2 ]    [ 3 ]    [ 4 ]    [ 5 ]    [ 6 ]    [ 7 ]
ES :       0        .        .        .        .        .        .        .
SES:       0        .        .        .        .        .        .        .
UAS:    1285        .        .        .        .        .        .        .

<<TAB to change location, SPACE bar to refresh, ESC to return to Main Menu>>
```

7.5 Alarm Queue

7.5.1 For E1 Interface

Press “Q” from the main menu to view alarm queue.

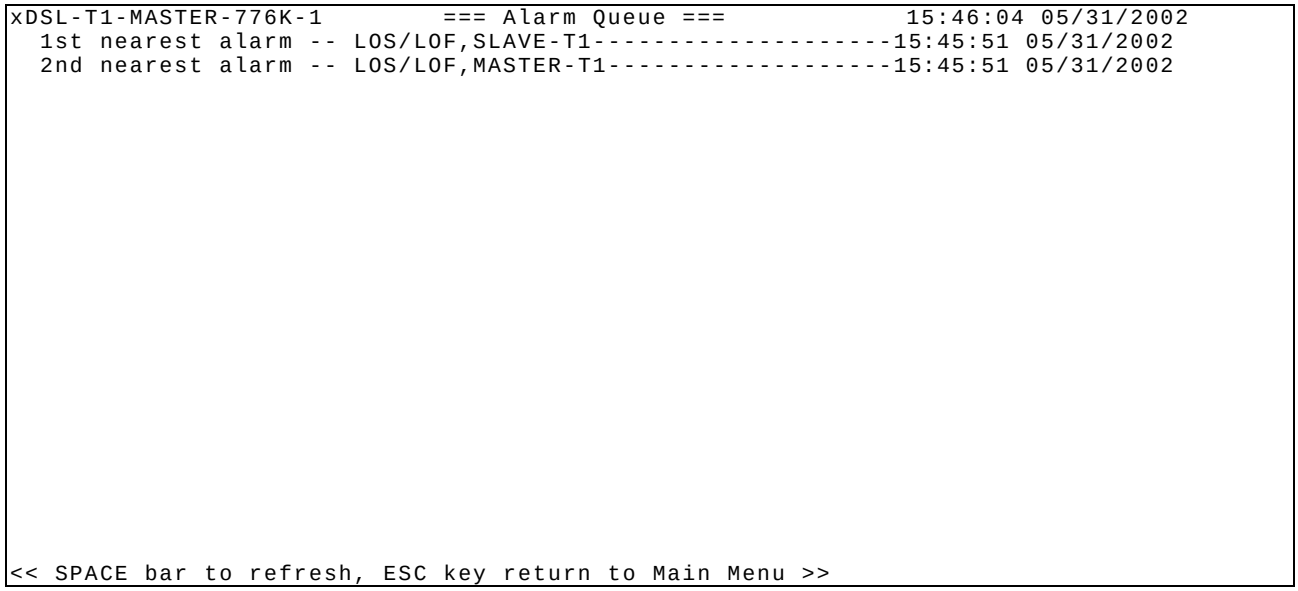
```
xDSL-E1-MASTER-776K-2        === Alarm Queue ===            11:38:31 02/26/2002
  1st nearest alarm -- ES24H,SLAVE-LOOP2------------------11:38:28 02/26/2002
  2nd nearest alarm -- ES15M,SLAVE-LOOP2------------------11:38:28 02/26/2002
  3rd nearest alarm -- ES24H,SLAVE-LOOP1------------------11:38:28 02/26/2002
  4th nearest alarm -- ES15M,SLAVE-LOOP1------------------11:38:28 02/26/2002
  5th nearest alarm -- ES24H,MASTER-LOOP2-----------------11:38:26 02/26/2002
  6th nearest alarm -- ES15M,MASTER-LOOP2-----------------11:38:26 02/26/2002
  7th nearest alarm -- ES24H,MASTER-LOOP1-----------------11:38:26 02/26/2002
  8th nearest alarm -- ES15M,MASTER-LOOP1-----------------11:38:26 02/26/2002
  9th nearest alarm -- LOW NOISE MARGIN-------------------11:38:24 02/26/2002
 10th nearest alarm -- LOS,SLAVE-LOOP2--------------------11:38:06 02/26/2002
 11th nearest alarm -- LOS,MASTER-LOOP2-------------------11:38:06 02/26/2002
 12th nearest alarm -- LOS,SLAVE-LOOP2--------------------11:37:49 02/26/2002
 13th nearest alarm -- LOS,MASTER-LOOP2-------------------11:37:49 02/26/2002
 14th nearest alarm -- LOS,SLAVE-LOOP1--------------------11:37:49 02/26/2002
 15th nearest alarm -- LOS,MASTER-LOOP1-------------------11:37:49 02/26/2002
 16th nearest alarm -- LOW NOISE MARGIN-------------------11:37:33 02/26/2002




<< SPACE bar to refresh, ESC key return to Main Menu >>
```

7.5.2 For T1 Interface

```
xDSL-T1-MASTER-776K-1        === Alarm Queue ===            15:46:04 05/31/2002
  1st nearest alarm -- LOS/LOF,SLAVE-T1-------------------15:45:51 05/31/2002
  2nd nearest alarm -- LOS/LOF,MASTER-T1------------------15:45:51 05/31/2002
```



```
<< SPACE bar to refresh, ESC key return to Main Menu >>
```

7.6 Alarm History

7.6.1 For E1 Interface

Press "H" from the main menu to display the unit alarm history. The count column is used to display the total alarm occurrences, the state column is used to display the current alarm state, and the mode column is used to indicate whether this alarm will cause the alarm relay and ACO LED to operate.

```
xDSL-E1-MASTER-776K-2     === Unit Alarm History ===        11:39:01 02/26/2002


[----Alarm Type----][Cnt][Sta][-Setup-] [----Alarm Type----][Cnt][Sta][-Setup-]
LOS,MASTER-LOOP1    1         EN        ES24H,MASTER-LOOP1  1     ALM EN  1
LOS,MASTER-LOOP2    2         EN        ES24H,MASTER-LOOP2  1     ALM EN  1
LOS,SLAVE-LOOP1     1         EN        ES24H,SLAVE-LOOP1   1     ALM EN  1
LOS,SLAVE-LOOP2     2         EN        ES24H,SLAVE-LOOP2   1     ALM EN  1
LOS/LOF,MASTER-E1   0         EN        ES24H,MASTER-E1     0         EN  1
LOS/LOF,SLAVE-E1    0         EN        ES24H,SLAVE-E1      0         EN  1
ES15M,MASTER-LOOP1  1     ALM EN  1     SES24H,MASTER-LOOP1 0         EN  1
ES15M,MASTER-LOOP2  1     ALM EN  1     SES24H,MASTER-LOOP2 0         EN  1
ES15M,SLAVE-LOOP1   1     ALM EN  1     SES24H,SLAVE-LOOP1  0         EN  1
ES15M,SLAVE-LOOP2   1     ALM EN  1     SES24H,SLAVE-LOOP2  0         EN  1
ES15M,MASTER-E1     0         EN  1     SES24H,MASTER-E1    0         EN  1
ES15M,SLAVE-E1      0         EN  1     SES24H,SLAVE-E1     0         EN  1
SES15M,MASTER-LOOP1 0         EN  1     LOW NOISE MARGIN    2     ALM EN  10
SES15M,MASTER-LOOP2 0         EN  1
SES15M,SLAVE-LOOP1  0         EN  1
SES15M,SLAVE-LOOP2  0         EN  1
SES15M,MASTER-E1    0         EN  1
SES15M,SLAVE-E1     0         EN  1

<< ESC key to return to Main Menu, SPACE bar to refresh >>
```

7.6.2 For T1 Interface

```
xDSL-T1-MASTER-776K-1     === Unit Alarm History ===        15:46:11 05/31/2002


[----Alarm Type----][Cnt][Sta][-Setup-] [----Alarm Type----][Cnt][Sta][-Setup-]
LOS,MASTER-LOOP1    0         EN        SES24H,MASTER-T1    0         EN  1
LOS,SLAVE-LOOP1     0         EN        SES24H,SLAVE-T1     0         EN  1
LOS/LOF,MASTER-T1   1     ALM EN        LOW NOISE MARGIN    0         EN  1
LOS/LOF,SLAVE-T1    1     ALM EN
ES15M,MASTER-LOOP1  0         EN  1
ES15M,SLAVE-LOOP1   0         EN  1
ES15M,MASTER-T1     0         EN  1
ES15M,SLAVE-T1      0         EN  1
SES15M,MASTER-LOOP1 0         EN  1
SES15M,SLAVE-LOOP1  0         EN  1
SES15M,MASTER-T1    0         EN  1
SES15M,SLAVE-T1     0         EN  1
ES24H,MASTER-LOOP1  0         EN  1
ES24H,SLAVE-LOOP1   0         EN  1
ES24H,MASTER-T1     0         EN  1
ES24H,SLAVE-T1      0         EN  1
SES24H,MASTER-LOOP1 0         EN  1
SES24H,SLAVE-LOOP1  0         EN  1

<< ESC key to return to Main Menu, SPACE bar to refresh >>
```

7.7 Customer Information

Press “U” from the main menu to display the customer information

```
xDSL-E1-MASTER-776K-2     === Unit Alarm History ===        11:39:01 02/26/2002


Customer Name    : LOOP TELECOMMUNICATION INTERNATIONAL, INC._________________

Customer Address : 8F, NO.8, HSIN ANN RD. SCIENCE-BASED INDUSTRIAL PARK_________



Contact Persion  : Eric









<< Press ESC key to return to Main Menu >>
```

7.8 HDSL Information

Press "E" from the main menu to display HDSL information.

```
xDSL-E1-MASTER-264K-1      === HDSL Information ===         00:09:25 03/12/2001
Line Rate: 264Kbps (1 pair)


[-------------------------- MASTER ---------------------------]
             [Loop-1]
Noise Margin: 15.0dB
Max NMR     : 15.0dB   00:09:22 03/12/2001
Min NMR     : 15.0dB   00:09:22 03/12/2001
CRC count   : 0


[-------------------------- SLAVE ----------------------------]
             [Loop-1]
Noise Margin: 15.0dB
Max NMR     : 15.0dB   00:09:22 03/12/2001
Min NMR     : 15.0dB   00:09:22 03/12/2001
FEBE count  : 0




<< ESC key to return to Main Menu, SPACE bar to refresh >>
```

7.9 System Setup

By pressing “S” from the Main Menu to do system setup. This menu is allowed to do general setup and advance setup. Move the cursor at a desired option, press ENTER to enter into sub-menu. The current selection will highlighted by an asterisk (*).

```
xDSL-E1-MASTER-776K-2        === General Setup ===          11:33:15 04/29/2005




>> Select ?    *General Setup        Advance Setup
```

7.9.1 General Setup

This menu is used to do general setting for local and remote interfaces. The operations for E1 and DS1 are same.

Here "i" (eye, idle) means TS that cannot be used for transmission of any data; "1" (one) means active TS carrying customer data; "X" means TS available for customer data, but not in active use.

The sum of [**I**] and [**x**] should equal to the sum of line rate.

NOTE: For time slot setting, "1" must be set in the front of "X". That is the user cannot put in (iXXX111). Also, the 111 must be consecutive.

In order to identify the current time slot, the system will according to the cursor's current location to provide real-time information in the behind of this column, E1 Time Slot. As below example shows, the cursor is moved at the twenty-second time slot, so the system shows [TS=22] after the E1 Time Slots column.

For E1 interface in local site and DTE interface in remote site:

The E1 has 32 TS (each TS is 64 Kbps), the line has 24 TS, and the far end DTE has 21 TS. Since the far end can only have 21 TS, for E1, the user can have at most 21 "I". But the line can carry 24 TS. So the user have to fill out the E1 with 3 "X". Finally, the user fills out the rest of the E1 with "i". For E1, TS0 is reserved for framing. So TS0 for E1 must be "i".

```
xDSL-E1-MASTER-776K-2        === General Setup ===           11:40:37 04/29/2005
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS
Line Rate: 776Kbps (2 pairs)
[-------- LOCAL --------]                [------- FAR-END -------]
xDSL MODE      : MASTER                  xDSL MODE      : SLAVE
CLOCK SOURCE   : INTERNAL                CLOCK SOURCE   : LINE
E1 FRAMING     : CRC-ON                  DTE RATE       : 1344Kbps
E1 CODE        : HDB3                    DTE CLOCK      : NORMAL
E1 Interface   : 120 Ohm Twisted Pair    DTE DATA       : NORMAL
                                         DTE RTS        : PERMANENT
Select 24 Channels from E1 time slots    DTE TTM        : OFF
to route into xDSL channels:             DTE V.54       : OFF
E1 Time Slots : [TS=22]                  DTE INTERFACE  : EIA530/RS449
    [i111111111111111111111XXXiiiiii]    DTE MAPPING    :
xDSL carries E1 time slots as:               [111111111111111111111iii]
   TS 01 02 03 04 05 06 07 08 09 10      DTE are assigned on E1 time slots:
   TS 11 12 13 14 15 16 17 18 19 20          TS 01 02 03 04 05 06 07 08 09 10
   TS 21 23 24 25                            TS 11 12 13 14 15 16 17 18 19 20
                                             TS 21

DATE and TIME : 11:37:57 04/29/2005
Baud Rate     :  38400

<< Press ESC key to return to Main Menu >>
```

For E1 interface in local site and T1 interface in remote site:

At the far end, T1 has 24 TS. If "X", then that time slot is available, but not used. If "1", then that TS is used by customer. In this example, only TS3 at the far end is used. The rest of 23 "X" are available.

At the local end, at most 24 TS can be sent. In this example the 24 TS are TS 1 to 23, and 25. Note that TS0 must be "i". Because the customer wants to send local TS25 to the far end, TS24 must be "i" to keep the total available TS to 24. Of the 24 available TS, only TS3 is used by customer.

```
xDSL-E1-MASTER-1544K-1      === General Setup ===          11:29:32 04/29/2005
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS
Line Rate: 1544Kbps (1 pair)
[-------- LOCAL --------]              [------- FAR-END -------]
xDSL MODE      : MASTER                 xDSL MODE      : SLAVE
CLOCK SOURCE   : INTERNAL               CLOCK SOURCE   : LINE
E1 FRAMING     : CRC-ON                 T1 FRAMING     : ESF
E1 CODE        : HDB3                   T1 CODE        : B8ZS
E1 Interface   : 120 Ohm Twisted Pair   T1 CAS         : OFF

Select 24 Channels from E1 time slots   Select 24 Channels from T1 time slots
to route into xDSL channels:            to route into xDSL channels:
E1 Time Slots :                         T1 Time Slots :
    [iXX1XXXXXXXXXXXXXXXXXXiXiiiiii]        [XX1XXXXXXXXXXXXXXXXXXX]
xDSL carries E1 time slots as:          xDSL carries T1 time slots as:
    TS 01 02 03 04 05 06 07 08 09 10        TS 01 02 03 04 05 06 07 08 09 10
    TS 11 12 13 14 15 16 17 18 19 20        TS 11 12 13 14 15 16 17 18 19 20
    TS 21 22 23 25                          TS 21 22 23 24


DATE and TIME : 11:29:32 04/29/2005
Baud Rate     :  38400

<< Press ESC key to return to Main Menu >>
```

For both local site and remote site are E1 interfaces:

Since the line has only 24TS, then both local and remote can only have 24 TS available. The rest must be "i". Again TS0 must be "i". of the rest of TS1 to TS31, the user picked 24 - TS1 to TS23, and TS25. Of that, only TS1 to 3 are actively used by the customer.

```
xDSL-E1-MASTER-776K-2       === General Setup ===          11:33:15 04/29/2005
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS
Line Rate: 776Kbps (2 pairs)
[-------- LOCAL --------]              [------- FAR-END -------]
xDSL MODE      : MASTER                 xDSL MODE      : SLAVE
CLOCK SOURCE   : INTERNAL               CLOCK SOURCE   : LINE
E1 FRAMING     : CRC-ON                 E1 FRAMING     : CRC-ON
E1 CODE        : HDB3                   E1 CODE        : HDB3
E1 Interface   : 120 Ohm Twisted Pair   E1 Interface   : 120 Ohm Twisted Pair

Select 24 Channels from E1 time slots   Select 24 Channels from E1 time slots
to route into xDSL channels:            to route into xDSL channels:
E1 Time Slots :                         E1 Time Slots :
    [i111XXXXXXXXXXXXXXXXXXiXiiiiii]        [i111XXXXXXXXXXXXXXXXXiXiiiiii]
xDSL carries E1 time slots as:          xDSL carries E1 time slots as:
   TS 01 02 03 04 05 06 07 08 09 10        TS 01 02 03 04 05 06 07 08 09 10
   TS 11 12 13 14 15 16 17 18 19 20        TS 11 12 13 14 15 16 17 18 19 20
   TS 21 22 23 25                          TS 21 22 23 25


DATE and TIME : 11:33:02 04/29/2005
Baud Rate     :  38400

<< Press ESC key to return to Main Menu >>
```

7.9.2 Advance Setup

This menu is used to set up annex type, clock mode, PSD mask, and PBO mode.

```
xDSL-T1-SLAVE-776K-1        === Advance Setup ===          17:07:53 05/04/2005
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS

[-------- LOCAL --------]
ANNEX TYPE : A
CLOCK MODE : PLESIOSYNCHRONOUS
PSD   MASK : SYMMETRIC
PBO   MODE : AUTOMATIC









<< Press ESC key to return to Main Menu >>
```

7.10 Loopback and Test

7.10.1 For E1 Interface

Press “L” from the main menu to do loopback test, then the following screen will show up.

```
xDSL-E1-MASTER-776K-2     === Loopback and Test ===         11:40:30 02/26/2002
ARROW KEYS: CURSOR MOVE, ENTER: SELECT

[TEST MENU]
xDSL Loopback  : *OFF  TO-E1  TO-LINE
E1 Loopback    : *OFF  TO-E1  TO-LINE
Slave Loopback : *OFF  E1-TO-LINE  xDSL-TO-LINE  E1-TO-E1  xDSL-TO-E1
BERT           : *OFF  QRSS









<< Press ESC key to return to Main Menu >>
```

7.10.2 For T1 Interface

```
xDSL-T1-MASTER-776K-1     === Loopback and Test ===         15:46:42 05/31/2002
ARROW KEYS: CURSOR MOVE, ENTER: SELECT

[TEST MENU]
xDSL Loopback  : *OFF  TO-T1  TO-LINE
T1 Loopback    : *OFF  TO-T1  TO-LINE
Slave Loopback : *OFF  T1-TO-LINE  xDSL-TO-LINE  T1-TO-T1  xDSL-TO-T1
BERT           : *OFF  QRSS
Send Loopback Active Code To Far-End :
        *IN-BAND  AT&T-P  ANSI-P  ANSI-L
Send Loopback Deactive Code To Far-End :
        *IN-BAND  AT&T-P  ANSI-P  ANSI-L









<< Press ESC key to return to Main Menu >>
```

7.11 Alarm Setup

7.11.1 For E1 Interface

To enable or disable alarm setup, press "M" from the main menu.

```
xDSL-E1-MASTER-776K-2        === Alarm Setup ===            11:41:07 02/26/2002
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS

[----- Type ------] [Alarm] [Threshold] [----- Type ------] [Alarm] [Threshold]
LOS,MASTER-LOOP1    ENABLE              ES24H,MASTER-LOOP1  ENABLE  1
LOS,MASTER-LOOP2    ENABLE              ES24H,MASTER-LOOP2  ENABLE  1
LOS,SLAVE-LOOP1     ENABLE              ES24H,SLAVE-LOOP1   ENABLE  1
LOS,SLAVE-LOOP2     ENABLE              ES24H,SLAVE-LOOP2   ENABLE  1
LOS/LOF,MASTER-E1   ENABLE              ES24H,MASTER-E1     ENABLE  1
LOS/LOF,SLAVE-E1    ENABLE              ES24H,SLAVE-E1      ENABLE  1
ES15M,MASTER-LOOP1  ENABLE  1           SES24H,MASTER-LOOP1 ENABLE  1
ES15M,MASTER-LOOP2  ENABLE  1           SES24H,MASTER-LOOP2 ENABLE  1
ES15M,SLAVE-LOOP1   ENABLE  1           SES24H,SLAVE-LOOP1  ENABLE  1
ES15M,SLAVE-LOOP2   ENABLE  1           SES24H,SLAVE-LOOP2  ENABLE  1
ES15M,MASTER-E1     ENABLE  1           SES24H,MASTER-E1    ENABLE  1
ES15M,SLAVE-E1      ENABLE  1           SES24H,SLAVE-E1     ENABLE  1
SES15M,MASTER-LOOP1 ENABLE  1           LOW NOISE MARGIN    ENABLE  10
SES15M,MASTER-LOOP2 ENABLE  1
SES15M,SLAVE-LOOP1  ENABLE  1
SES15M,SLAVE-LOOP2  ENABLE  1
SES15M,MASTER-E1    ENABLE  1
SES15M,SLAVE-E1     ENABLE  1

<< Press ESC key to return to Main Menu >>
```

7.11.2 For T1 Interface

```
xDSL-T1-MASTER-776K-1        === Alarm Setup ===            15:46:51 05/31/2002
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS

[----- Type ------] [Alarm] [Threshold] [----- Type ------] [Alarm] [Threshold]
LOS,MASTER-LOOP1    ENABLE              SES24H,MASTER-T1    ENABLE  1
LOS,SLAVE-LOOP1     ENABLE              SES24H,SLAVE-T1     ENABLE  1
LOS/LOF,MASTER-T1   ENABLE              LOW NOISE MARGIN    ENABLE  1
LOS/LOF,SLAVE-T1    ENABLE
ES15M,MASTER-LOOP1  ENABLE  1
ES15M,SLAVE-LOOP1   ENABLE  1
ES15M,MASTER-T1     ENABLE  1
ES15M,SLAVE-T1      ENABLE  1
SES15M,MASTER-LOOP1 ENABLE  1
SES15M,SLAVE-LOOP1  ENABLE  1
SES15M,MASTER-T1    ENABLE  1
SES15M,SLAVE-T1     ENABLE  1
ES24H,MASTER-LOOP1  ENABLE  1
ES24H,SLAVE-LOOP1   ENABLE  1
ES24H,MASTER-T1     ENABLE  1
ES24H,SLAVE-T1      ENABLE  1
SES24H,MASTER-LOOP1 ENABLE  1
SES24H,SLAVE-LOOP1  ENABLE  1

<< Press ESC key to return to Main Menu >>
```

7.12 Clear Alarm Queue

To clear alarm queue, press "X" from the main menu. Then press “Y” or “N” to confirm it.

```
==>> Clear alarm queue - are you sure ? [Y/N]
```

7.13 Clear performance Data

Press “K” from the main menu to clear performance data. Press “Y” or “N” to confirm it.

```
 Clear Performance Data - Are you sure ? (Y/N)
```

7.14 Customer Information Setup

Under the main menu, press “T” to setup the customer information. Use arrow keys to move the cursor, and BACKSPACE key to edit the content.

```
xDSL-E1-MASTER-400K-2    === Customer Information ===      20:37:20 02/09/2000
ARROW KEYS: CURSOR MOVE, BACKSPACE to edit, ESC to abort


Customer Name    : LOOP TELECOMMUNICATION INTERNATIONAL, INC._________________

Customer Address : 8F, NO.8, HSIN ANN RD. SCIENCE-BASED INDUSTRIAL PARK_________




Contact Persion  : Eric









<< Press ESC key to return to Main Menu >>
```

7.15 Password Setup

Press “P” from the main menu to setup password.

```
xDSL-E1-MASTER-776K-2       === Password Setup ===          11:41:26 02/26/2002
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS


       Enable Password : YES
       Change Password : NO









<< Press ESC key to return to Main Menu >>
```

7.16 Line Rate

7.16.1 For E1 Interface

To change line rate, press "B" from the main menu. After using TAB key to select a proper line rate, press ENTER. Then enter "Y" to save the change.

NOTE 1: Each rate is n x 64 + 8 Kbps.

NOTE 2: If software version is **lower than Version 1.07**, the "Line Rate" menu will show as below.

```
XDSL-E1-MASTER-776K-2          === Line Rate ===              11:42:05 02/26/2002
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS


LINE RATE :  776Kbps
LOOP NUM  :  Two Loops









<< Press ESC key to return to Main Menu >
```

If software version is **Version 1.07 or over**, the "Line Rate" menu will support "Adaptive Line Rate" option for users to disable or enable this function, see also below screen shows.

NOTE: When "Adaptive Line Rate" is enable, this bandwidth option, "NX64", will not allowed to be set up. "NX64", N = 3 to 32.

```
xDSL-E1-SLAVE-1608K-1          === Line Rate ===              17:20:35 08/30/2004
ARROW KEYS: CURSOR MOVE, Please Input: 0~9, BACKSPACE to edit

Nx64 : 25
LINE RATE : 1608Kbps
LOOP NUM  :  Loop_One
ADAPTIVE LINE RATE : DISABLE









<< Press ESC key to return to Main Menu >>
```

7.16.2 For T1 Interface

NOTE 2: If software version is **lower than Version 1.07**, the "Line Rate" menu will show as below.

```
xDSL-T1-MASTER-776K-1          === Line Rate ===              15:47:50 05/31/2002
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS


LINE RATE :  776Kbps
LOOP NUM  :  Loop_One









<< Press ESC key to return to Main Menu >>
```

If software version is **Version 1.07 or over**, the "Line Rate" menu will support "Adaptive Line Rate" option for users to disable or enable this function, see also below screen shows.

NOTE: When "Adaptive Line Rate" is enable, this bandwidth option, "NX64", will not allowed to be set up. "NX64", N = 3 to 32.

```
xDSL-E1-SLAVE-1608K-1          === Line Rate ===              17:20:35 08/30/2004
ARROW KEYS: CURSOR MOVE, Please Input: 0~9, BACKSPACE to edit

Nx64 : 25
LINE RATE : 1608Kbps
LOOP NUM  :  Loop_One
ADAPTIVE LINE RATE : DISABLE









<< Press ESC key to return to Main Menu >>
```

7.17 Load Default Configuration and Reset

Press "Y" from the main menu to load default configuration.

```
xDSL-E1-MASTER-776K-2         === Main Menu ===            11:42:38 02/26/2002
Serial Number: 1030
Version      : V1 02/22/2002
Start Time   : 11:40:25 02/26/2002
Status       : Loop-1 SYNC IN_SYNC
               Loop-2 SYNC IN_SYNC

[DISPLAY]                                [SETUP]
C -> System Configuration                S -> System Setup
I -> System Status                       L -> Loopback and Test
R -> Performance Report                  M -> Alarm Setup
Q -> Alarm Queue                         X -> Clear Alarm Queue
H -> Alarm History                       K -> Clear Performance
U -> Customer Information                T -> Customer Information Setup
E -> HDSL Information                    P -> Password Setup
                                         B -> Line Rate

[LOG]                                    [MISC]
F -> Log Off [SETUP] and [MISC] Menu     Y -> Load Default Config & Reset
O -> Log On  [SETUP] and [MISC] Menu     Z -> System Reset
                                         A -> Alarm Cut Off
                                         D -> Upgrade Firmware

Return to Default - Are you sure ? (Y/N)
```

7.18 System Reset

Press "Z" from the main menu to reset the system. Move the cursor to select the desired location, LOCAL or FAR_END, then press ENTER to confirm the selection. The current selection will be highlighted by an asterisk (*).

```
xDSL-E1-MASTER-776K-2        === System Reset ===          14:12:40 07/26/2002




>>Location ? *LOCAL   FAR_END
```

Then the system will prompt the following message to ask user enter a valid password to execute this commend.

```
xDSL-E1-MASTER-776K-2         === Main Menu ===            11:42:38 02/26/2002
Serial Number: 1030
Version      : V1 02/22/2002
Start Time   : 11:40:25 02/26/2002
Status       : Loop-1 SYNC IN_SYNC
               Loop-2 SYNC IN_SYNC

[DISPLAY]                                [SETUP]
C -> System Configuration                S -> System Setup
I -> System Status                       L -> Loopback and Test
R -> Performance Report                  M -> Alarm Setup
Q -> Alarm Queue                         X -> Clear Alarm Queue
H -> Alarm History                       K -> Clear Performance
U -> Customer Information                T -> Customer Information Setup
E -> HDSL Information                    P -> Password Setup
                                         B -> Line Rate

[LOG]                                    [MISC]
F -> Log Off [SETUP] and [MISC] Menu     Y -> Load Default Config & Reset
O -> Log On  [SETUP] and [MISC] Menu     Z -> System Reset
                                         A -> Alarm Cut Off
                                         D -> Upgrade Firmware

==>Enter Password:
```

7.19 Alarm Cut Off

To cut off alarm indication, press "A" from the main menu. Then press “Y” or “N” to confirm the change.

```
xDSL-E1-MASTER-776K-2          === Main Menu ===              11:43:05 02/26/2002
Serial Number: 1030
Version      : V1 02/22/2002
Start Time   : 11:40:25 02/26/2002
Status       : Loop-1 SYNC IN_SYNC
               Loop-2 SYNC IN_SYNC

[DISPLAY]                                  [SETUP]
C -> System Configuration                  S -> System Setup
I -> System Status                         L -> Loopback and Test
R -> Performance Report                    M -> Alarm Setup
Q -> Alarm Queue                           X -> Clear Alarm Queue
H -> Alarm History                         K -> Clear Performance
U -> Customer Information                  T -> Customer Information Setup
E -> HDSL Information                      P -> Password Setup
                                           B -> Line Rate

[LOG]                                      [MISC]
F -> Log Off [SETUP] and [MISC] Menu       Y -> Load Default Config & Reset
O -> Log On  [SETUP] and [MISC] Menu       Z -> System Reset
                                           A -> Alarm Cut Off
                                           D -> Upgrade Firmware

==>> Cut off alarm indication - are you sure ? [Y/N]
```

7.20 Upgrade Firmware

Press “D” from the main menu to upgrade firmware, the screen will show up as below. Move the cursor to select the desired location, LOCAL or FAR_END, then press ENTER to confirm the selection. The current selection will be highlighted by an asterisk (*).

```
xDSL-E1-MASTER-776K-2     === Firmware Download ===          14:13:02 07/26/2002



>>Location ? *LOCAL   FAR_END
```

Move the cursor to select local firmware from the above screen. Then press “Y” or “N” to confirm the upgrade of local firmware.

```
xDSL-E1-MASTER-776K-2     === Firmware Download ===          14:13:23 07/26/2002

Current Bank 1 Version   :*S1.e2 07/26/2002
Current Bank 2 Version   : S1.e2 07/26/2002
Upgrade Local Firmware - Are you sure ? (Y/N)









<< Press ESC key to return to Main Menu >>
```

Move the cursor to select far-end firmware. Then press “Y” or “N” to confirm the upgrade of local firmware.
Note that loopback and BERT have to be turned off before upgrading far-end firmware.

```
xDSL-E1-MASTER-776K-2     === Firmware Download ===          14:13:30 07/26/2002


Please turn off the loopback and BERT before upgrade Far_end firmware.

Upgrade Far_end Firmware - Are you sure ? (Y/N)









<< Press ESC key to return to Main Menu >>
```